Attitudes, knowledge, and practices of physiotherapists towards lifestyle interventions in the management of mental health disorders.

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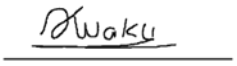
Signature: 

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Dedication

I thank the Lord almighty for giving me strength and resilience to finish this project. This paper is dedicated to my mother, Lulama Twaku and my late grandparents, Nolusapho and Ludumo Twaku. Thank you for always believing in me and instilling good educational principles. To my husband Sizwe Sibande and my sisters, thank you for your prayers, unconditional love and support.

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Abstract

Introduction: Mental health disorders (MHD) are associated unhealthy lifestyle behaviours which puts individuals at high risks of developing cardiometabolic conditions. Lifestyle interventions are management strategies that are aimed at promoting wellness and healthy lifestyle choices in individuals. The role of physiotherapy in mental health is often neglected and misunderstood. Patients with MHD, policy makers, and members of the interprofessional team seem to be unsure of the role of physiotherapy in mental health which has led to physiotherapy not being prioritised in mental health. Physiotherapists' knowledge, attitudes, and practices of lifestyle interventions remains an under researched area in literature.

Aim: The aim of the study is to determine the attitudes, knowledge, and practices that physiotherapists have towards lifestyle interventions in the management of mental health disorders.

Methodology: This study was a cross-sectional study. Qualified South African physiotherapists who are registered members of the South African Society of Physiotherapy (SASP) and Physiotherapy Association of South Africa (PASA), managing or have managed patients with mental health disorders were invited to complete a self-developed online questionnaire. The results of the study were analysed using descriptive statistics, and relationships were identified using Chi-square test or Fisher exact. Statistical significance was set at 5%.

Results: 82 participants completed the online survey. Most participants were female (82%), between the ages of 26-30 years (40%) with no previous experience of working at a psychiatric hospital or mental health facility (74%). Participants generally had good attitudes and knowledge about lifestyle interventions for patients with mental health disorders (MHD). Physical activity and stress management were the most common lifestyle intervention utilised. The study found that postgraduate mental health training did not affect the choice of lifestyle intervention used by participants in the treatment of patients with MHD (physical activity; $p=1$, nutrition and weight management advice; $p=0.67$, smoking and substance use cessation; $p=0.07$, and stress management advice; $p=0.44$). The study found that participants who used stress management and nutrition and weight management advice as lifestyle interventions commonly encountered patients with anxiety, arthritis, and chronic upper limb pain.

Conclusion: Lack of undergraduate training is the most prevalent barrier to physiotherapists in the management of patients with comorbid MHD. Participants in this study demonstrated good knowledge and a positive attitude towards the use of lifestyle interventions in patients with MDH but that does not always translate into practice.

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Nomenclature

BMI: Body mass index

COPD: Chronic obstructive pulmonary disease

MHD: Mental health disorder

NCD: Non-communicable diseases (NCD)

PASA: Physiotherapy Association of South Africa

PTSD: Post-traumatic stress disorder

REDCap: Research Electronic Data Capture

SASP: South African Society of Physiotherapy

WHO: World Health organisation

Chapter 1: Background and Need for the Study

1.1 Introduction

Mental health disorders (MHD) are a global concern. It is estimated that at least 25% of the population will have a MHD in their lifetime (Meyer, Matlala & Chigome, 2019). In South Africa one in every six people suffer from anxiety, substance use disorders or mood disorders (Meyer et al., 2019; Nguse & Wassenaar, 2021). The World Health Organization (WHO) (2004) defines MHD as group of disorders that present as "abnormal thoughts, perceptions, emotions, behaviour and relationships with others" (p.10). Mental health disorders affect an individual's physical, social, and occupational functions Alhowimel, AlOtaibi, Radford & Coulson, 2018; Andrew, Briffa, Waters, Lee &Fary, 2019; Vancampfort et al., 2018). Mental health disorders are more prevalent in low- and middle-income countries (Jorns-Presentati, Napp, Dessauvagie, Stein, Jonker, Breet, Charles, Swart, Lahti, Suliman, Jansen, Van Den Heuvel, Seedat & Groen, 2021; Meyer et al., 2019). It is hypothesised that this is due to trauma, poverty, social inequalities, and limited availability of health and social-care services (Meyer et al., 2019).

Poor physical health and decreased quality of life has been reported among those with MHD (Alhowimel et al., 2018; Meyer et al., 2019; Vancampfort et al., 2018). Mental health disorders have been reported to predispose individuals to chronic pain conditions or intensify pre-existing ones (Connaughton & Gibson, 2016; Hooblaul, Cobbing & Daniels, 2020; Peltzer et al., 2012; Winkler, Horáček, Weissová, Šustr & Brunovský, 2015). Several studies have demonstrated that MHD are associated with unhealthy lifestyle behaviours which includes physical inactivity, poor eating habits, high smoking rates and substance use, putting individuals at high risks of developing cardiometabolic conditions (Andrew et al., 2019; Bjerg, Lassen, Helles, Strazek & Nyboe, 2021; Cabassa, Ezell & Lewis-Fernández, 2010; Meyer et al., 2019; Vancampfort et al., 2018). Antipsychotic medication causes metabolic and endocrine changes which leads to weight gain, further exacerbating the burden of cardiometabolic conditions (Andrew et al., 2019).

Lifestyle interventions are an adjunctive therapy in the management of MHD. These management strategies have been shown to be effective in lowering morbidity and the risk of cardiometabolic conditions associated with MHD by promoting wellness and healthy lifestyle choices (Cabassa et al., 2010; Derman, Patel, Nossel & Schwellnus, 2008; Fleming & Godwin, 2008). Lifestyle interventions include physical activity, stress management, smoking and substance use cessation and weight management, and healthy nutrition habits (Cabassa et al., 2010; Deenik, Czosnek, Teasdale, Stubbs, Firth, Schuch, Tenback, Lederman, Ward, Hendriksen, Vancampfort & Rosenbaum, 2020; Derman et al., 2008). When combined with antipsychotic medication, lifestyle interventions have been found to be more effective in improving cognitive function and the severity of psychotic symptoms, than using antipsychotic medication alone (Fernández-Abascal, Suárez-Pinilla, Cobo-Corrales, Crespo-Facorro & Suárez-Pinilla, 2021).

Internationally, physiotherapists are trained to incorporate essential components of lifestyle interventions into the management of their patients (International Organization of Physical Therapy in Mental Health, 2019 Cabassa et al., 2010). They are trained in health education, promotion, and prevention (International Organization of Physical Therapy in Mental Health, 2019). Physiotherapists use exercise to increase physical activity levels and manage weight gain in patients with MHD (Andrew et al., 2019b; Cabassa et al., 2010; Hooblaul et al., 2020; Vancampfort et al., 2018). Physiotherapists empower their patients to self-manage the physical conditions they present with. Globally, at undergraduate level they are trained in motivational interviewing and goal setting (Health Professions Council of South Africa, 1976; International Organization of Physical Therapy in Mental Health, 2019).

Physiotherapists play an integral part in the management of MHD. A study conducted by Andrew et al. (2019) in Western Australia, revealed that 93% of physiotherapists acknowledge that managing patients with MHD is a part of their job. This study further revealed that physiotherapists commonly manage MHD through lifestyle programmes and physical activity. Several authors, however, have reported on the gap that exists in the knowledge

physiotherapists have about the management of patients with MHD (Andrew et al., 2019; Hooblaul et al., 2020). Thus, physiotherapists have reported lack of confidence in managing patients with MHD and negative perceptions regarding the behaviour of patients with MHD causing physiotherapists to have safety concerns when interacting with these patients (Andrew et al., 2019).

Mental health disorders are often reoccurring and long lasting (Meyer et al., 2019). They have a negative impact on individual's social and physical health as well as their self-perceived quality of life (Winkler et al., 2015). Patients with MHD often present with multidimensional problems. A biopsychosocial approach aimed at lifestyle changes is therefore important in the management of these patients. This approach ensures that patients are managed holistically and all the factors relating to their MHD are addressed rather than focusing only on the biopathology of the MHD (Hohls, König, Quirke & Hajek, 2019; Winkler et al., 2015).

1.2 Problem Statement

Physiotherapists are often unsure of how to manage patients with MHD (Andrew et al., 2019b; Hooblaul et al., 2020, 2023). Hooblaul, Cobbing and Daniels (2020) conducted a study in Kwa-Zulu Natal, South Africa that explored the knowledge, attitudes, and perceptions of physiotherapists about their role in mental health. This study found that physiotherapists have a positive attitude towards the management of patients with MHD. They reported having limited theoretical knowledge and practical treatment skills for this population group. The benefits of lifestyle interventions in patients with MHD is well researched in literature (Cabassa et al., 2010; Deenik et al., 2020; Pape, Adriaanse, Kol, van Straten & van Meijel, 2022; Walburg et al., 2023). These studies have primarily involved medical doctors, nurses, and dietitians (Derman et al., 2008; Fleming and Godwin, 2008; Cabassa, Ezell and Lewis-Fernández, 2010). However, the role of physiotherapists in this area is excluded. Several studies have investigated the benefits and use of physical aspects of lifestyle interventions like aerobic exercises, strength training, tai-chai, yoga, proprioceptive and balance exercise in patients with MHD (Andrew et al., 2019a; Gbiri, Akinpelu & Odole, 2011; Hooblaul et al., 2020; Rauf et al., 2013; Vancampfort et al., 2018a). However, physiotherapists' practices of other

lifestyle interventions (weight management advice, smoking and substance use cessation, and stress management) in the management of MHD remains under researched.

1.3 Aim of the Study

The aim of the study was to determine the attitudes, knowledge, and practices that physiotherapists have towards lifestyle interventions in the management of patients with mental health disorders.

1.3.1 Objectives of the Study

The objectives of the study were:

2.2.1 To describe the demographic profile of participants.

2.2.2 To determine the attitudes physiotherapists have towards lifestyle interventions in the management of mental health disorders.

2.2.3 To determine the knowledge physiotherapists have about lifestyle interventions in the management of mental health disorders.

2.2.4 To determine the practice of lifestyle interventions in the management of mental health disorders.

2.2.5 To determine an association between demographic factors and the type of lifestyle interventions used by physiotherapists.

1.4 Significance of the Study

The role of physiotherapy in mental health is neglected and misunderstood (Andrew et al., 2019b; Vancampfort et al., 2018). Physiotherapists are physical activity experts and physical activity is beneficial in improving mood, emotional stress, sleeping pattern, social interaction, withdrawal symptoms, substance use relapse, weight management, and reducing the use of mechanical restraints, in patients with MHD (Andrew et al., 2019; Bjerg et al., 2021; Cabassa et al., 2010; Deenik et al., 2020; Gbiri et al., 2011; Vancampfort et al., 2018). This study therefore aimed to highlight the knowledge South African physiotherapists have about lifestyle interventions, and to emphasise the value of physiotherapy in the management of

patients with MHD. Data from this study can be used to impact policy makers and funders to recognise physiotherapy as a core service in mental health and assist in identifying training needs for clinicians and for undergraduate and postgraduate programs. Additionally, the results of this study may contribute to the improvement of clinical management of patients with MHD by highlighting the importance of other lifestyle interventions (weight management advice, smoking and substance use cessation, and stress management) rather than physical activity alone. Lastly, this study served as a baseline for future studies that may want to assess effectiveness of these lifestyle interventions that physiotherapists use.

1.5 Conclusion

Mental health disorders place a significant burden on individuals' physical health and overall quality of life. Lifestyle interventions are a vital component in the management of patients with MHD. Although physiotherapists frequently encounter patients with comorbid MHD, they often feel ill-equipped to manage these patients due to limited undergraduate training in mental health. Currently, there is a lack of research within the South African context exploring physiotherapists' knowledge and practices regarding lifestyle interventions. This study offers valuable insight into the use of lifestyle interventions and underscores the important role of physiotherapy in supporting mental health.

Chapter 2 Literature Review

2.1 Introduction

This chapter includes the literature appraisal on mental health, lifestyle interventions and their effectiveness as well as physiotherapy in mental health. Literature published in English from 2005-2024 was sourced from PubMed, EBSCOhost, and Google Scholar. The older literature included in this chapter still provides insightful and relevant information. Some of these older sources are mental health studies conducted in the South African context where no similar recent studies have been done. The key terms used were “mental health, physiotherapy, lifestyle interventions, physical activity, chronic pain, knowledge and substance abuse”.

2.2 Definition of Mental Health & Classification of Mental Health Disorders

The WHO defines mental health as “A state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2004, para.1). This definition provides a good baseline in the understanding of mental health however, it has been critiqued by several authors. Galderisi, Heinz, Kastrup, Beezhold, and Sartorius (2015), and Tse & Haslam (2023) argue that this definition does not consider the impact of different cultural backgrounds and social influences. Socially accepted behaviours and norms differ with cultural backgrounds. For example, in North America, Australia, western Europe and New Zealand, “well-being” is perceived as achieving personal goals whereas in Africa, social relations and social connectedness are valued more (Idemudia & Adedeji, 2023). Additionally, though it is normal for an individual in good mental health to have a negative mental health experience and feel emotions of sadness, anger and unhappiness (Probst, 2017; Tse & Haslam, 2023), Galderisi et al. (2015) argues that the WHO’s definition of mental health implies that people with good mental health only experience positive emotions of happiness and proficiency in their environment. Furthermore, it is argued that this definition does not take into consideration physical disabilities and physical conditions that may prevent one from working productively and fruitfully (Galderisi et al., 2015).

According to the Diagnostic and Statistical Manual of Mental Disorders (5th ed., text rev; DSM–5; American Psychiatric Association, 2022, p. 14), a MHD is "A syndrome characterised by clinically significant disturbance in an individual's cognition, emotion regulation, or behaviour that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning". When a MHD is accompanied by psychosis, it is then referred to as a serious mental illness (Hardy, White, Deane & Gray, 2011). Psychosis is identified by the presence of delusions, hallucinations, or disorganised speech (American Psychiatric Association, 2013). Bipolar disorder, major depressive disorder, and schizophrenia spectrum disorders are examples of serious mental health illnesses (Andrew et al., 2019). The common MHD classifications are mood disorders (bipolar and depression), and neurodevelopmental disorders (attention deficit hyperactivity disorder and autism spectrum disorder), and anxiety disorders (5th ed.; DSM–5; American Psychiatric Association, 2013).

2.3 Prevalence of Mental Health Disorders

A systemic review and meta-analyses done on survey-based studies published between 1980-2013 over 63 countries suggested that one in five adults globally suffer from a MHD (Steel et al., 2014). Mental health disorders account for 25% of the global burden of disease. In 2017, depressive disorders were listed as the top leading cause of years lived with disability worldwide (James, Abate, Abay, Abbafati, Abbasi, Abbastabar, Abd-Allah, Abdela et al., 2018). Globally, 78.4 million new cases of anxiety and depression were recorded in 2020 due to the covid-19 pandemic, a 28% increase from the number of cases recorded in 2019 (Institute for Health Metrics and Evaluation, 2024). In the United States of America (USA), it is estimated that at least half of the population will suffer from one MHD in their lifetime (Kessler, Berglund, Demler, Ma, Jin, Merikangas, & Walters, 2005). In 2021, 13.8% of South Africans had at least one MHD (Institute for Health Metrics and Evaluation, 2024). The most common types of MHD in South Africa are anxiety, depression, and substance use disorders (Hooblaul, Nadasan & Oladapo, 2023; Stein, Seedat, Herman, Moomal, Heeringa, Kessler & Williams, 2008). Mood and anxiety disorders are more prevalent in females while substance abuse is more common in males. Mood disorders are also associated with being divorced, widowed, or separated from a spouse (Stein et al., 2008). Psychological stress has been reported to be the most

common cause of MHD in South Africa more than biological causes (Bruwer, Sorsdahl, Harrison, Stein, Williams & Seedat, 2011).

Age of onset is defined as the age at which an individual experiences symptoms of a condition for the first time (McGrath, Al-Hamzawi, Alonso, Altwaijri, Andrade, Bromet, Bruffaerts, de Almeida et al., 2023). In South Africa, the predicated age of onset for anxiety is 32 years, for mood disorders it is 37 years and 24 years for substance abuse disorders (Hooblaul et al., 2023). The age of onset for depression and anxiety seems to be lowering over the years (Schuch & Vancampfort, 2021). The young age of onset of substance abuse has been attributed to the high unemployment rate in South Africa, lack of recreational facilities, and poverty (Ramlagan et al., 2010). Stein et al. (2008) conducted a household survey study using the World Health Organization Composite International Diagnostic Interview on 4351 adult South Africans. This study found that socioeconomic privilege may protect some South Africans against stressors thereby lowering the risk of developing MHD. This implies that individuals in the upper and the upper middle classes are not exposed to poverty thus less likely to experience poverty related stress (Stein et al., 2008).

2.4 Physical Comorbidities in Patients with Mental Health Disorders

Mental health disorders predispose individuals to chronic pain conditions and worsening pre-existing ones. Inversely, individuals with chronic pain are prone to developing MHD (Martinez-Calderon, Flores-Cortes, Morales-Asencio & Luque-Suarez, 2019; Pitcher et al., 2019; Rhudy, Huber, Kuhn, Lannon, Palit, Payne, Hellman, Sturycz, Güereca, Toledo, Demuth, Hahn & Shadlow, 2020; Sheng et al., 2017). Though the specific mechanism is unclear, Pitcher et al. (2019) and Sheng et al. (2017) attempt to provide a theory for this observation. These authors argue that there is an overlap in chronic pain and depression induced neuroplasticity and neurobiological mechanisms. It has been further noted that the brain regions that are involved in regulating mood and those of the pain sensory pathways are the same. These regions include the prefrontal cortex, hippocampus, insula cortex, thalamus, anterior cingulate cortex, and the amygdala. The most common chronic musculoskeletal pain conditions patients with anxiety and depression present with are lower back pain, tension headaches, shoulder

injuries, knee arthritis, and nerve injuries (Alhowimel et al., 2018; Bhuvana, 2016; Gbiri et al., 2011).

The relationship between MHD and non-communicable diseases (NCD) such as respiratory conditions, cardiovascular disease, osteoporosis, and some cancers is known in literature (Bhattacharya, Shen & Sambamoorthi, 2014; Ee, Lake, Firth, Hargraves, de Manincor, Meade, Marx & Sarris, 2020; Sotelo & Nemeroff, 2017; D. Stein, 2019). This relationship is a bidirectional one, where these NCD can either be as a result of MHD or put individuals at risk of developing MHD (Ee et al., 2020; D. Stein, 2019). There are other factors that influence this relationship which include genetic factors, lifestyle behaviours, access to care, antipsychotic medication side effects and sleep disturbances (Ee et al., 2020).

Bhattacharya et al. (2014) conducted a level IV retrospective cross-sectional study, according to the levels of Evidence Based Medicine (Burns, Rohrich & Chung, 2011), to investigate self-reported chronic physical conditions (hypertension, asthma, osteoporosis, chronic obstructive pulmonary disease, arthritis, diabetes, and heart disease) associated with depression and/or anxiety in the United States. The study used data from the Medical Expenditure Panel Survey, for the years 2007-2009. The participants of the study were between the ages of 22 and 64 years. The participants who had comorbid depression and anxiety had the highest prevalence of the chronic conditions. The most prevalent chronic condition was arthritis (39%) followed by hypertension (35%), chronic obstructive pulmonary disease (21%), cardiac conditions (17%), diabetes (15%), asthma (14%), and osteoporosis (4%). The authors of the study aptly showed that individuals with depression and/or anxiety were also found to be at a greater risk of developing these physical conditions compared to healthy individuals. This study further stated that antipsychotic medication may also be a contributing factor to developing NCD in individuals with anxiety and depression. Psychotropic medications were used by 11% of the participants in this study. The authors of this study clearly explain that this medication causes dysfunction of the vascular endothelial cells which intern affects the integrity of the arteries, as well as affect the cardiac rhythm and conduction, leading to cardiovascular conditions.

This medication may also lead to loss of bone density as it induces hyperprolactinemia which may lead to osteoporosis.

2.5 Modifiable Behavioural Risk Factors

Individuals with MHD have been found to have unhealthy lifestyle behaviours such a low physical activity levels, sedentary lifestyles, unhealthy eating habits, substance abuse and smoking which often co-occur with each other (Ahmed, 2023; Deenik et al., 2020; Pape et al., 2022). This unhealthy lifestyle may cause weight gain and predispose individuals to NCD and worsening of their MHD (Ahmed, 2023; Deenik et al., 2020; Hooblaul et al., 2023; Pape et al., 2022). This leads to premature mortality, with a decreased life expectancy of between 15-20 years compared to the health population (Deenik et al., 2020; Pape et al., 2022; Schuch & Vancampfort, 2021).

2.5.1 Physical Inactivity

The WHO (2022) recommends that adults partake in at least 150–300 minutes of moderate-intensity aerobic exercise or 75–150 minutes of vigorous intensity aerobic exercise per week. Vancampfort et al. (2017) published a systematic review and meta-analysis on 68 studies that were conducted in Europe, Asia, South and North America, Africa, and Oceania. The aim of the review was to determine the average time individuals with severe MHD spend being physically active or sedentary and to report on the differences in physical activity levels between the different MHD. This review included studies that determined physical activity levels subjectively, objectively, and by using surveys. The Begg and Mazumdar test was conducted on all the findings of this study to eliminate publication bias, however the quality of the studies included in this systematic review is not known. All 68 studies were included in the meta-analysis and the results showed that 54.7% of individuals with severe MHD did not meet the weekly exercise recommendation. In Europe, however individuals with severe MHD were found to be more physically active than the rest of the countries. These findings are also supported by Ehrbar, Brand, Colledge, Donath, Egger, Hatzinger, Holsboer-Trachsler, Imboden, Schweinfurth, Vetter, and Gerber (2018) where their survey-based study conducted in Switzerland found that 57% of patients with MHD did meet the physical activity

recommendations. This may be because in Europe, physiotherapy and structured exercise form part of the standard treatment regime in most psychiatric hospitals (Ehrbar et al., 2018; Vancampfort et al., 2017). Vancampfort et al. (2017) indicated that those with depression, bipolar and psychotic disorders spend on average 7.8 hours per day sedentary. Sedentary behaviour has been described as any behaviour where the energy expenditure is less than 1.5 metabolic equivalents when a person is awake in a lying, sitting or reclined position. This includes activities such as watching television, using the computer, or playing video games (Tremblay et al., 2017).

There are several factors that are associated with physical inactivity in patients with MHD. Males, those that are unemployed, single, with a high body mass index (BMI), have lower levels of education, use antipsychotic and antidepression medication, and with a longer duration of a MHD have been found to be the least active (Schuch & Vancampfort, 2021; Stubbs et al., 2014; Vancampfort et al., 2017). Individuals with Schizophrenia have been reported to be the least physically active while those with bipolar the most (Vancampfort et al., 2017).

2.5.2 Obesity

Obesity in individuals with MHD may be due to unhealthy eating habits, low physical activity levels and the side effects of some antipsychotic medications (Ahmed, 2023; Schuch & Vancampfort, 2021). Antipsychotic medication has been reported to cause dyslipidaemia, which is associated weight gain (Ee et al., 2020). Chronic high levels of cortisol associated with high stress levels seen in patients with anxiety and depression have also been noted as contributing factors to weight gain (Castanon, Lasselin & Capuron, 2014; Osimo, Cardinal, Jones & Khandaker, 2018).

Obesity is characterised by low grade inflammation which is defined as serum C-reactive protein levels of 3-10 mg/L (Ahmed, 2023; Castanon et al., 2014; Osimo et al., 2018). This low-grade inflammation is thought to be a contributing factor to the development of depression,

anxiety, bipolar and eating disorders (Castanon et al., 2014; Osimo et al., 2018). An observational study conducted by Osimo et al. (2018) revealed that 19%-47% of patients with depression also present with increased serum C-reactive protein levels, putting them at risk of developing obesity.

Obesity has been noted as a contributing factor to developing chronic pain conditions such as lower back pain, pelvic pain as well as knee and hip osteoarthritis due to overloading of the joint (Narouze & Souzdalnitski, 2015; Rogers, Kauffman, Garey, Asmundson & Zvolensky, 2022). Due to this chronic pain, patients may misuse opioids which may lead to dependency, developing tolerance, and further increasing sensitivity to pain (Rogers et al., 2022).

2.5.3 Smoking

The relationship between MHD and smoking is nonlinear (Boksa, 2017; Tomita & Manuel, 2009). Patients with MHD often smoke and use other substances to alleviate symptoms of depression (Tomita & Manuel, 2020). It is therefore suggested that depression may be a risk factor to smoking. Similarly, smoking is also thought to be a risk factor for developing depression (Boksa, 2017; Tomita & Manuel, 2020). Tomita and Manuel (2020) provide a helpful hypothesis that nicotine and other drugs affect neurotransmission causing a feeling of being out of sync with norms, which can lead to symptoms of depression. Boksa (2017) further adds that nicotine is associated with thinning of the thalamus, parahippocampus, insula, prefontal cortex, and cerebellum (Boksa, 2017). This may then cause, memory loss, decrease pain tolerance, disturbances in attention, and further worsening mental health (Ahmed, 2023; Boksa, 2017).

Smoking is a risk factor for developing respiratory conditions. The toxic chemicals from cigarette smoking are absorbed by the airways and the particles are deposited into the alveola of the lungs, causing damage to these structures (United States Department of Health and Human Services, 2010). A prevalence study by Himelhoch et al. (2004) found that 22.6% of those that have serious MHD have comorbid chronic obstructive pulmonary disease (COPD).

This study reported that individuals with serious MHD are three times more likely to develop chronic bronchitis and over five more likely to have emphysema than the general public (Himelhoch et al., 2004). This study, however, did not verify the diagnosis of COPD in participants by means of medical record reviews or objective testing which may have compromise the quality of the study.

2.6 Lifestyle Interventions

The European Psychiatric Association defines lifestyle interventions as interventions that are non-pharmacological and focuses on diet, physical activity, or sleep interventions (Maurus, Wagner, Spaeth, Vogel, Muenz, Seitz, von Philipsborn, Solmi, Firth, Stubbs, Vancampfort, Hallgren, Kurimay, Gerber, Correll, Gaebel, Möller, Schmitt, Hasan, & Falkai, 2024). These interventions use behavioural and self-management strategies to empower patients to make better health choices. These interventions are aimed at improving individual's physical and mental health, thereby reducing the modifiable risk factors that are associated with developing NCD (Cabassa et al., 2010; Deenik et al., 2020; Maurus et al., 2024).

Lifestyle interventions are usually carried out by an interprofessional team which includes doctors, psychologists, nurses, physiotherapists, fitness instructors, case managers, and dietitians (Cabassa et al., 2010). Nutrition management strategies are aimed at managing one's weight by encouraging reduction of food intake that is high in fat, sugar, and sodium while increasing the consumption of fruit, vegetables, and water. This is achieved by teaching patients about food portion control, how to read food labels, how to keep daily food diaries, and count their calorie intake (Cabassa et al., 2010; Pape et al., 2022; Walburg et al., 2023). Physical activity strategies also assist in weight management as well as minimising the sedentary lifestyle of individuals with MHD, and increasing their cardiovascular fitness (Mahindru, Patil & Agrawal, 2023; Schuch & Vancampfort, 2021). Behavioural strategies are used to introduce and maintain new behaviours and habits (Probst, 2017). They include reward reinforcement, social support, motivational counselling, substance use cessation and stress management. Individuals are also equipped with assertive training, goal setting, relapse

monitoring, and problem-solving skills (Cabassa et al., 2010; Pape et al., 2022; Vancampfort et al., 2018).

There is a notable lack of tools that comprehensively assess lifestyle factors in patients with MHD (Maurus et al., 2024). Anthropometric measures and self-reported questionnaires are usually used to evaluate and monitor patients' progress of their MHD and assess the effectiveness of lifestyle intervention (Fernández-Abascal et al., 2021; Maurus et al., 2024). The 12-Item Short Form Survey and the Patient Activation Measure are examples of valid and reliable questionnaires that are used as outcome measure in patients with MHD (Huo, Guo, Shenkman & Muller, 2018; Ng, Liau, Tan, Tang, Ong, Thumboo & Lee 2024). The 12-Item Short is aimed at assessing and individual's health-related quality of life while the Patient Activation Measure evaluates the confidence, knowledge, and skills of a patient to self-manage their MHD (Huo et al., 2018; Ng et al., 2024). The absence of adequate screening and monitoring tools for lifestyle factors contributes to the delayed identification of unhealthy behaviours, which further hampers the timely implementation of lifestyle interventions. In response to this gap, Maurus et al. (2024) recommends the development of a tools that will comprehensively assess sleep quality, dietary patterns, and physical activity in patients with MHD.

The effectiveness of lifestyle interventions in improving MHD is known in literature. Fernandez-Abascal et al. (2021) conducted a systematic review and meta-analysis investigating the effectiveness of lifestyle interventions (motivational interviewing, psychoeducation, cognitive behavioural therapy, behavioural counselling, physical activity, and dieting) on improving mental and physical health and well-being in patients with schizophrenia spectrum disorder and psychosis. Sixty randomised controlled trials were included in this study, most of which were of good quality according to the Cochrane criteria. This study also mitigated for publication bias using the trim-and fill-method. This study successfully identified that lifestyle interventions are effective in reducing the severity of psychotic, depression, and anxiety symptoms. A systematic review by Cabassa et al. (2010) and a meta review by Maurus et al. 2024 support the findings of this study.

Lifestyle interventions are effective in decreasing weight and BMI in patients with MHD (Cabassa et al., 2010; Fernández-Abascal et al., 2021; Pape et al., 2022; Walburg et al., 2023). A randomised controlled trial conducted by Walburg (2023) showed that the intervention group that received lifestyle interventions lost an average of 2.6 kg while the control group gained 7.1 kg over a 12-month period. The intervention period was 12 months and participants attended weekly group sessions that were each two hours long. The first six months focused on goal setting, stress management, physical activity as well as nutrition and weight management. For the last six months of the intervention period was the maintenance phase and the sessions were mainly focused on weight loss maintenance. This randomised controlled trial was of good quality; the methodology was clear and easy to follow, participants and providers were blinded, and the BMI of participants in the treatment and controlled were similar at baseline. The overall dropout rate at 1 year follow up was 24.6% which is higher than recommended 18%-20% for clinical trials (Bell, Kenward, Fairclough & Horton, 2024).

There is a high prevalence of metabolic syndrome in patients with severe MHD which is associated with an increased risk in developing cardiovascular diseases (Chacón, Mora, Gervás-Ríos & Gilaberte, 2011). Metabolic syndrome is characterised by an increase in fasting glucose and insulin levels, waist circumference, triglycerides, low density lipoproteins, hypertension, and a decrease in high density lipoproteins (Chacón et al., 2011). There is consensus among authors that lifestyle interventions are effective in improving triglycerides levels in patients with MHD (Bruins et al., 2014; Caemmerer, Correll & Maayan, 2012; Chacón et al., 2011; Fernández-Abascal et al., 2021). Studies have found no changes in waist circumference, diastolic blood pressure and cholesterol levels after lifestyle interventions in patients with MHD (Fernández-Abascal et al., 2021; Fleming & Godwin, 2008; Walburg et al., 2023). There is conflicting evidence of the effectiveness of lifestyle interventions on fasting glucose and insulin levels. Earlier systematic review and meta-analysis have found that lifestyle interventions are effective in reducing fasting glucose and insulin levels (Bruins et al., 2014; Caemmerer et al., 2012; Chacón et al., 2011) while more recent research has reported no statistically significant effects (Fernández-Abascal et al., 2021; Walburg et al., 2023). In all the aforesaid studies the lifestyle interventions used were physical activity and dietary interventions aimed at weight loss and management (Bruins, Jörg, Bruggeman, Slooff,

Corpeleijn & Pijnenborg, 2014; Caemmerer et al., 2012; Chacón et al., 2011; Fernández-Abascal et al., 2021; Fleming & Godwin, 2008; Walburg et al., 2023).

Two systematic reviews found that the risk of mortality, the development of cardiovascular diseases and metabolic syndrome is reduced after lifestyle interventions are used in the management of MHD (Cabassa et al., 2010; Fernández-Abascal et al., 2021). Fleming & Godwin (2008) however, in their systematic review found that lifestyle interventions are not effective in reducing the risk of cardiovascular diseases. This study however, had a small sample size and no meta-analysis was done. Fernández-Abascal et al. (2021) explained that lifestyle interventions that include exercise improve cardiovascular performance which is then associated with the decreased risk of developing cardiovascular diseases.

There is conflicting evidence on the effectiveness of lifestyle interventions on improving quality of life in patients with MHD (Maurus et al., 2024). Some studies have found that lifestyle interventions are effective in improving the quality of life in patients with MHD while others have found no statistically significant effect (Fernández-Abascal et al., 2021; Pape et al., 2022; Walburg et al., 2023). Pape et al. (2022) introduce a useful hypothesis that the quality of life may be improved in some subgroups, which have not yet been determined in the literature. Maurus et al. 2024 conducted a study on guidelines and recommendations on lifestyle interventions for adults with severe mental illness based on a meta-review. This study provides greater clarity on the effectiveness of lifestyle interventions on quality of life. The study suggests that quality of life may be improved in patients with severe MHD if lifestyle interventions programs combine physical activity, motivational or behavioural change strategies, and nutritional counselling (Maurus et al., 2024). Despite the conflicting evidence on the effectiveness of lifestyle interventions on well-being and quality of life. There is overwhelming evidence that supports the use of lifestyle interventions to manage and improve the physical and mental health of patients with MHD.

A meta-analysis done in a systematic review by Pape et al. (2022) reported that lifestyle interventions are not effective in smoking and substance use cessation. The lifestyle interventions used in these studies were aimed at weight management, health promotion and improving cardiometabolic health. Motivation to quit also did not improve with these lifestyle interventions (Pape et al., 2022). Although this study only included randomised controlled trials, most of them were of low quality due to the high risk of bias.

2.7 Physiotherapy in Mental Health

The physiotherapy profession deals with movement and maximising of an individual's physical ability and uses a biopsychosocial approach to manage patients holistically (Hooblaul et al., 2020). In 2011, physiotherapy in mental health and psychiatry was recognised as a subgroup in the World Confederation of Physiotherapy (World Physiotherapy, 2011). The goal of this subgroup was to reinforce the role of physiotherapy in mental health which is often unclear (Probst, 2017). In patients with MHD, physiotherapist have the role of health promotion and prevention (Andrew et al., 2019; Hooblaul et al., 2023; Probst, 2017; Stubbs et al., 2014). They encourage patients to make healthier choices that will optimise their physical functioning, psychological and social well-being (Probst, 2017; Stubbs et al., 2014). A survey study conducted in Nigeria by Abaraogu, Ogaga, and Dean (2017) aimed at determining the attitudes, knowledge, and practice of physiotherapists in health promotion strategies, found that most physiotherapists have good knowledge on the principles and applications of health promotion strategies.

Physiotherapists manage musculoskeletal pain and physical conditions that patients with MHD present with (Andrew et al., 2019a; Stubbs et al., 2014). These conditions may include obesity, metabolic syndrome, cardiovascular and respiratory conditions (Andrew et al., 2019a; Hooblaul et al., 2023; Schuch & Vancampfort, 2021; Stubbs et al., 2014). Physiotherapists are trained to screen for psychological and social factors that may negatively impact the outcomes of therapy and thereafter refer to the relevant members of the interprofessional team (Stubbs et al., 2014). Physiotherapy helps bridge the gap between physical and mental health of individuals with MHD (Stubbs et al., 2014). Furthermore physiotherapists are physical health

experts who use exercise, relaxation therapy, touch therapy and basic body awareness therapy to manage patients with MHD (Probst, 2017).

Physical activity interventions are used to improve physical and mental health of patients with MHD. Physical activity has been reported to improve symptoms of anxiety and depression in diagnosed patients but also prevents the incidence of these conditions in the healthy population (Ahmed, 2023; Brokmeier et al., 2020; Deenik et al., 2020; Schuch & Vancampfort, 2021). This may be attributed to the improved cognition and self-esteem, activation of brain reward system, improvements in sleep quality and duration associated with physical activity (Deenik et al., 2020; Vancampfort et al., 2018). Physical activity is also regarded as a protective factor against the noncommunicable diseases associated with MHD (Deenik et al., 2020; Schuch & Vancampfort, 2021). Weight loss has been documented to be one of the benefits of physical activity in patients with depression thereby decreasing the BMI, waist circumference, epicardial and subcutaneous adipose tissue (Schuch & Vancampfort, 2021).This then reduces the risk of developing type 2 diabetes mellitus, coronary artery disease, and high blood pressure (Ahmed, 2023). A decrease in chronic pain intensity, improved cardiorespiratory fitness, physical strength, bone mineral density, and management of substance cravings are other benefits of physical activity in patients with MHD (Mahindru et al., 2023).

Earlier research reported that aerobic exercises combined with strength training was more effective in reducing depressive symptoms than strengthening exercises alone (Gordon, McDowell, Hallgren, Meyer, Lyons & Herring, 2018). Recent research, however, shows that strengthening exercises done alone is sufficient to improve symptoms of anxiety and depression as well as improve visual learning and memory (Schuch & Vancampfort, 2021). Physical activity interventions may be done in a group class or in individual sessions. Group sessions improve social support, aids in enjoyment, increases motivation and compliance to treatment (Bjerg et al., 2021; Vancampfort et al., 2018b). Schuch and Vancampfort (2021) have recognised the importance of including physical activity in the standard of care for all patients with MHD.

2.7.2 Barriers to Physiotherapists Providing Quality Services in Mental Health.

There are several factors that negatively impact physiotherapists' service delivery in mental health. These include the poor access of patients to mental health care services, unclear role physiotherapists have in the management of MHD and the negative perceptions of physiotherapists about the behaviour and presentation of individuals with MHD. The lack of knowledge and shortcomings in the undergraduate curriculum are the biggest barrier (Hooblaul et al., 2023).

There is poor quality and access of mental healthcare services in South Africa (Bruwer et al., 2011). This is due to lack of financial and structural resources in state owned mental health facilities (Bruwer et al., 2011; Hooblaul et al., 2023). In South Africa, it is estimated that only 25% of individuals with MHD have access to mental health services (Bruwer et al., 2011). This then also translate to the inaccessibility of physiotherapy services (Bruwer et al., 2011). A large portion of patients who do not receive treatment for their MHD come from low- and middle-income households as they are unable to afford private healthcare (Hooblaul et al., 2020).

The physiotherapy management of MHD is often misunderstood and viewed as insignificant (Andrew et al., 2019; Gbiri et al., 2011; Hooblaul et al., 2023). Physiotherapists, patients with MHD, policy makers and members of the interprofessional team including doctors, nurses, psychologists, and occupational therapists seem to be unsure of the role of physiotherapy in mental health (Andrew et al., 2019). It makes sense to conclude that this poor understanding of how physiotherapy fits into mental health care has led to physiotherapy not being prioritised in mental health and less resources being allocated to the profession. In a study by Andrew et al. (2019), only 19% of physiotherapists in Australia reported on their workplace being well resourced to treat patients with severe and persistent MHD. Furthermore, a study conducted by Gbiri et al. (2011) in Nigeria, found that doctors referred patients with MHD to physiotherapy only if they presented with a physical disability. This meant that only a small portion of patients received physiotherapy and those presenting with chronic physical conditions are neglected. Patients with MHD often have poor insight on their physical health

(Andrew et al., 2019). This leads to poor adherence and compliance to physiotherapy treatment.

Researchers in Australia and Sub-Saharan Africa agree that physiotherapists' undergraduate curriculum in does not adequately equip physiotherapists with theoretical knowledge and clinical skills that will enable them to manage patients with MHD (Andrew et al., 2019a; Hooblaul et al., 2020, 2023; Vancampfort et al., 2018b). A study by Andrew et al. (2019) found that only 18% of physiotherapists were confident in treating patients with MHD. Importantly, physiotherapists in Australia and Sub-Saharan Africa including South Africa, have expressed the need to include communication skills, the aetiology and pathophysiology, signs and symptoms of MHD, psychiatric medication used, and their side effects, in their undergraduate curriculums (Andrew et al., 2019; Hooblaul et al., 2020, 2023; Vancampfort et al., 2018). This limited self-reported knowledge has caused physiotherapists to have negative perceptions about working at a mental health facility. Physiotherapists have the perception that patients with severe MHD are often aggressive and violent, which often leads to hesitation in working at mental health facilities due to fear for their safety (Andrew et al., 2019; Hooblaul et al., 2020). Physiotherapists gain knowledge on mental health mostly through working at psychiatric hospitals and self-initiated study (Hooblaul et al., 2020). This exposure together with formal training has been reported to positively influence physiotherapists' perceptions, attitude, and beliefs about working in mental health facilities. (Hooblaul et al., 2023).

2.8 Conclusion

There is substantial evidence supporting the effectiveness of lifestyle interventions as a non-pharmacological approach to improving both mental and physical health outcomes in patients with MHD. Although many studies support the integration of lifestyle interventions into the standard of care in the mental health setting, some have methodological weaknesses, including small sample sizes, short follow-up durations, and the use of self-reported data. The role of physiotherapy in mental health is recognised in theory but remains undervalued in practice. This is concerning given the growing body of evidence supporting the use physiotherapy in mental health.

Chapter 3 Methodology

3.1 Type of Study

This is a cross-sectional, quantitative study.

3.2 Participants

3.2.1 Inclusion Criteria

Included in this study were qualified South African physiotherapists who were registered members of the South African Society of Physiotherapy (SASP) and Physiotherapy Association of South Africa (PASA), who have treated patients with any MHD. These societies are volunteer societies for physiotherapists in South Africa. Physiotherapists who were still doing their community service year were also included in this study.

3.2.2 Exclusion Criteria

This study had no exclusion criteria.

3.2.3 Population and Sample Size

Voluntary sampling and the snowballing technique was implemented for the study. Studies have suggested that a 30% response rate is acceptable for questionnaire-based studies (Brtnikova, Crane, Allison, Hurley, Beaty & Kempe, 2018). A total of 5 230 physiotherapists were registered through SASP and PASA at the time of data collection from November 2023-February 2024. It is unknown however, how many of these physiotherapists have treated or treat patients with MHD and are still practicing in South Africa. An accurate response rate could therefore not be determined. The final sample size of this study was 82.

3.4 Instrumentation and Outcome Measures

An online self-developed questionnaire (Appendix III) was used to collect the data. This questionnaire was developed though an online web-based application, Research Electronic Data Capture (REDCap) (Harris, Taylor, Minor, Elliott, Fernandez, O'Neal, McLeod, Delacqua, Delacqua, Kirby, Duda, 2019). The questions on the survey were formulated based on current literature together with the objectives of the study. The survey consisted of four subsections

namely demographic information, attitudes, knowledge, and lifestyle interventions used. The attitudes and knowledge subsection consisted of five and six general statements on attitudes and knowledge of lifestyle interventions for MHD respectively. Participants needed to rate these statements on a Likert scale of 1-5 where 1 represents strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. The higher the sub scores, the more positive attitude and the higher the knowledge towards lifestyle interventions respectively.

3.4.1 Validation of Instrument

The study was sent to three expects to review for construct and content validity. After several follow ups, only two responded. One was an academic and the other a clinical physiotherapist who was experienced in managing patients with MHD. The experts scored each question of the questionnaire using a three-point scale where 1 represents not necessary, 2 is necessary but not essential and 3 is essential (Ayre & Scally, 2014; Zamanzadeh, Ghahramanian, Rassouli, Abbaszadeh, Alavi-Majd & Nikanfar, 2015). There were no discrepancies in the scoring of the experts. Questions scored as “essential” were included in the main study and those scored “not necessary” were discarded. The questions that were scored “necessary but not essential” were either rephrased or removed based on the experts’ comments.

3.6 Procedure

3.6.1 Pilot Study

The pilot study was conducted with five participants who met the inclusion criteria with the aim of determining the test-retest reliability of the questionnaire and to identify any confounding factors. Participants had to fill in a hardcopy version of the questionnaire. In the survey, participants were required to fill in their demographic information and answer questions pertaining to the lifestyle interventions and strategies used for patients with MHD. The questionnaire had a comment section where participants were given the opportunity to comment on any confusing questions and state the time taken to complete the questionnaire. One participant commented on question 20 (The goal of lifestyle interventions in patients with MHD is to improve nutrition and weight management) and question 21 (the goal of lifestyle interventions in patients with MHD is to improve physical activity levels) stating that she was

unsure of what the statements were saying, but later realised that she misread the questions and did not read the introduction which explained what lifestyle interventions are.

Participants had to fill in the questionnaire again after seven days to determine the test-retest reliability of the questionnaire. Minor differences were noted in Likert scale strength of agreement or disagreement after the seven days in four participants. The reason for these minor discrepancies was discussed with each participant. These were not due to any confusion with the questions therefore no changes were made to the questionnaire. The results of the pilot study are included in the main study.

3.6.2 Main Study

The study was advertised on social media and through professional bodies. The Physiotherapy Association of South Africa (PASA) and South African Society of Physiotherapy (SASP) are volunteer societies for physiotherapists in South Africa. These societies were approached to grant permission to advertise the study to their registered members via their webpages (Appendix IV: PASA permission letter, Appendix V: SASP permission letter). After permission was granted all registered professionals from these organisations were sent emails via bulk emails, inviting them to partake in the study with the online survey link. PASA further shared the online survey link on their WhatsApp group chat which has registered members. The study was also advertised on social media platforms including Facebook, Instagram, Twitter, and LinkedIn (Appendix VI: Social media poster). Three reminders were posted on social media in the duration of the data collection period. This online survey was conducted though REDCap. Data was collected over four months.

3.6.3 Data analysis

The data collected from REDCAP was exported to the Statistical Package for the Social Sciences software version 26 (IMB SPSS, 2019) for data analysis. Participants' demographic characteristics were summarised using descriptive statistics. The association between demographic profile and the type of lifestyle interventions used by physiotherapists was assessed using Chi-square test or Fisher exact. These testes were used to determine the 'p-

value' of variables. The data was not normally distributed, therefore the Chi-square test was used to examine relationships between categorical variables, as it does not require the data to be normally distributed. Fisher exact was applied in cases with small sample sizes or low expected frequencies, as it provides more accurate results under these conditions (Hae-Young, 2017). Statistical significance was set at 5%. The table below (table 3.6) outlines how the data for each objective was analysed.

Table 3.1: Data analysis

Objective	Outcome measure	Type of data	Statistical test
1. **Describe the demographic profile of participants.**	Online based Self-developed questionnaire.	Continuous and categorical.	Descriptive statistics.
2. **Determine the attitudes physiotherapists have towards lifestyle interventions in the management of mental health disorders.**	Online based Self-developed questionnaire.	Ordinal	Descriptive statistics.
3. **The knowledge physiotherapists have about lifestyle interventions in the management of mental health disorders**	Online based Self-developed questionnaire.	Ordinal	Descriptive statistics.
4. **The practice of lifestyle interventions in the management of mental health disorders**	Online based Self-developed questionnaire.	Continuous and categorical.	Descriptive statistics.
5. **A relationship between the demographic profile and the type of lifestyle interventions used by physiotherapists.**	Online based Self-developed questionnaire.	Categorical	Chi-square test Fisher exact

3.7 Ethical Considerations

Ethical approval for this study was granted the University of the Witwatersrand Medical Human Research Ethics Committee. The medical clearance number is M221153 (Appendix VII) This study complied to the principles of the World Medical Association Declaration of Helsinki (2013). The participants were asked for consent (Appendix II) to participate in the study. Autonomy was maintained in the study as participation was voluntary. Furthermore, the first

section of the online survey was an information sheet (Appendix I) where the study aim, methods, risks and benefits, and the withdrawal right from the study without facing any discrimination was stipulated. The inclusion of the study benefits in the information sheet (Appendix I) ensured that the principle of beneficence is adhered to. The study had no known risks and there were no costs incurred by the participants, adhering to the principle of non-maleficence. All data obtained for the study was kept confidential. No identifying information was required from participants to maintain confidentiality

Chapter 4 Results

4.1 Introduction

This chapter will report on the results of the study as they correlate to the study objectives. The results of the study were analysed using descriptive statistics, and relationships were identified using Chi-square test or Fisher exact.

4.2 Demographic Profile of Participants

A total of 113 physiotherapists opened and attempted to do the online survey but only 82 fully completed it. The sample for this study was therefore 82.

Table 4.1 Demographic profile (N=82)

Demographics	Categories	Frequency (n)	Percentage (%)
Gender			
	female	**67**	**82**
	male	14	17
	Other	1	1
Age			
	20-25	17	21
	26-30	**33**	**40**
	31-35	12	15
	36-40	6	7
	41-45	10	12
	51-55	3	4
	>55	1	1
How many years of experience do you have as a Physiotherapist?			
	Unknown	5	6
	1-5 years	**39**	**48**
	6-10 years	16	20
	11-15 years	10	12
	>15 years	12	15
Sector you are currently working for			
	Public	36	44
	Private	**46**	**56**
What is your primary area of clinical work?			
	Inpatients	48	59
	Outpatients	**52**	**63**
	Other	9	11
What is your current place of primary employment?			
	Psychiatric Hospital	9	11

	Tertiary Hospital	18	22
	Non-tertiary Hospital	7	9
	Day Clinic or Community Health Centre	4	5
	Private Practice	**38**	**46**
	Other	6	7
Have you previously worked at a psychiatric hospital or mental health facility?			
	No	**61**	**74**
	Yes	21	26
Do you have any postgraduate mental health training?			
	No	**75**	**91**
	Yes	7	9
How many years of experience do you have in treating patients with MHD?			
	Less than 1 year	**35**	**43**
	1-5 years	33	40
	6-10 years	8	10
	11-15 years	2	2
	More than 15 years	4	5
What are the common mental health conditions you encounter with patients?			
	Anxiety disorder	60	73
	Depression	**68**	**83**
	Bipolar disorder	36	44
	Schizophrenia	24	29
	Attention deficit hyperactivity disorder	21	26
	Eating disorder	8	10
	Substance abuse disorders	36	44
	PTSD	37	45
	Obsessive-compulsive disorder	12	16
	Other	1	1
What physical conditions do you mostly treat in patients with co-morbid MHD?			
	Headaches	55	67
	Lower back pain	**65**	**79**
	Arthritis	30	37
	Chronic lower limb pain	24	29
	Chronic upper limb pain	22	27
	Neck pain	54	66
	Other	13	16

Most of the participants were female (n=67, 82%), did not have previous experience of working at a psychiatric hospital or mental health facility (74%) and did not have postgraduate training in mental health (91%).

4.3 Attitude of Physiotherapist Towards Lifestyle Interventions in the Management of Mental Health Disorders

Table 4.2: Attitude of physiotherapist towards lifestyle interventions in the management of mental health disorders (N=82).

Attitudes	Categories	Frequency (n)	Percentage (%)
Physiotherapists are key role players in the management of MHD.			
	Strongly agree	30	37
	Agree	33	40
	Neutral	14	17
	Disagree	5	6
Lifestyle interventions are an integral part of managing patients with mental health conditions			
	Strongly agree	48	59
	Agree	31	38
	Neutral	2	2
	Disagree	1	1
Physiotherapists are skilled in using lifestyle interventions to manage MHD			
	Strongly agree	18	22
	Agree	21	26
	Neutral	24	29
	Disagree	17	21
	Strongly disagree	2	2
I am confident in managing patients with MHD			
	Strongly agree	15	18
	Agree	22	27
	Neutral	27	33
	Disagree	15	18
	Strongly disagree	3	4
Undergraduate curriculum needs to include training about the use of lifestyle interventions to manage MHD			
	Strongly agree	63	77
	Agree	16	20
	Neutral	2	2
	Disagree	1	1

A vast majority (97%) of participants acknowledged that lifestyle interventions are an integral part of managing patients with MHD. Participants (97%) also believed that the undergraduate curriculum should include training about the use of lifestyle interventions to manage MHD.

4.4 The Knowledge Physiotherapists Have About Lifestyle Interventions in the Management of Mental Health Disorders.

Table 4.3: Knowledge of physiotherapist towards lifestyle interventions in the management of mental health disorders (N=82).

Knowledge	Categories	Frequency (n)	Percentage (%)
Patients with MHD commonly have low physical levels.			
	Strongly agree	28	34
	Agree	45	55
	Neutral	8	10
	Disagree	1	1
Patients with MHD commonly have poor eating habits			
	Strongly agree	24	29
	Agree	42	51
	Neutral	14	17
	Disagree	2	2
Patients with MHD commonly have high smoking and substance use rates			
	Strongly agree	26	32
	Agree	40	49
	Neutral	12	15
	Disagree	4	5
The goal of lifestyle interventions in patients with mental health conditions is to improve nutrition and weight management			
	Strongly agree	22	27
	Agree	33	40
	Neutral	21	26
	Disagree	6	7
The goal of lifestyle interventions in patients with mental health conditions is to improve physical activity levels			
	Strongly agree	38	46
	Agree	39	48
	Neutral	4	5
	Disagree	1	1
Lifestyle interventions are effective in lowering morbidity and the risk of cardiometabolic conditions associated with MHD.			
	Strongly agree	43	52
	Agree	29	35
	Neutral	8	10
	Disagree	2	2
Physical activity for patients with MHD is beneficial in improving mood, emotional stress, sleeping pattern, social interaction,			
	Strongly agree	61	74

withdrawal symptoms, substance use relapse, and weight management.	Agree	17	21
	Neutral	3	4
	Disagree	1	1

Almost all (94%) participants agreed that the goal of lifestyle interventions in patients with MHD is to improve physical activity. Participants further agreed (94%) that physical activity for patients with MHD is beneficial in improving mood, emotional stress, sleeping pattern, social interaction, withdrawal symptoms, substance use relapse, and weight management.

4.5 The Practice of Lifestyle Interventions in the Management of Mental Health Disorders.

A vast majority of the participants (93%) have indicated that they used lifestyle interventions. Physical activity was the commonly used lifestyle intervention (93%) followed by stress management (54%), and nutrition and weight management advice (30%). Individual sessions (87%) were the most common mode of delivery of these lifestyle interventions by participants. More than half (57%) of participants have reported to working closely with occupational therapists and psychologists (55%) to manage patients with comorbid mental health conditions. “Other” health professionals that participants work closely with are psychiatrists (4.9%), general practitioners (4.9%), nursing staff (3.7%), and biokinetics (1.2%).

4.6 Relationship Between the Demographic Profile and the Type of Lifestyle Interventions Used by Physiotherapists.

The results that report on the relationship between the demographic profile and the type of lifestyle interventions used by physiotherapists can be found on table 4.4. There was no significant relationship found between previous work experience at a psychiatric or mental health hospital and the use of any of the lifestyle interventions: physical activity (p=0.64), nutrition and weight management advice (p=0.17), smoking and substance use cessation (p=0.83), and stress management (p=0.42).

Additionally, no relationship was found between postgraduate mental health training and the use of physical activity (p=1), nutrition and weight management advice (p=0.67), smoking and substance use cessation (p=0.07), and stress management advice (p=0.44) in the management of patients with MHD.

4.6.1 Smoking and Substance Use Cessation.

A significant relationship was found between smoking and substance use cessation advice as an intervention and the type of MHD encountered by physiotherapists in this study. Depression (p=0.0163), substance use disorders (p=0.0148), and PTSD (p=0.0214) were the common MHD encountered by participants who advised patients on smoking and substance use cessation.

4.6.2 Nutrition and Weight Management Advice

A significant relationship was found between anxiety disorder (p=0.0447), eating disorders (p=0.0087) and the use of nutrition and weight management advice. 88% of patients who were given nutrition and weight management advice by participants had anxiety disorder and 24% were diagnosed with eating disorders. Furthermore, chronic upper limb pain and the use of nutrition and weight management advise showed to have a significant relationship (p=0.0201).

4.6.3 Stress Management

A significant relationship was found with stress management and anxiety disorder (p=0.0163). 84% of participants who used stress management as an intervention, commonly treated patients with anxiety disorder. There was no relationship noted between stress management and depression (p=0.14). Stress management interventions were also found to have a statistically significant relationship with arthritis (p=0.0242), and chronic upper limb pain. The physical conditions mostly treated by participants who use stress management included arthritis (48%), and chronic upper limb pain (41%).

Table 4.4: Relationship between the demographic profile and the type of lifestyle interventions used by physiotherapists (N=82)

Demographic Variable	Physical activity			Nutrition and weight management advise			Smoking and substance use cessation			Stress management			Other		
	Unchecked	Checked	P-value	Unchecked	Checked	P-value	Unchecked	Checked	P-value	Unchecked	Checked	P-value	Unchecked	Checked	P-value
N (%)	**6 (7)**	**76 (93)**		**57 (70)**	**25 (30)**		**61 (74)**	**21 (26)**		**38 (46)**	**44 (54)**		**74 (90)**	**8 (10)**	
Gender			1			0.1			0.81			0.88			0.4
female	5 (83)	62 (82)		45 (79)	22 (88)		50 (82)	17 (81)		32 (84)	35 (80)		59 (80)	8 (100)	
male	1 (17)	13 (17)		12 (21)	2 (8)		10 (16)	4 (19)		6 (16)	8 (18)		14 (19)		
other	0 (0)	1 (1)		0 (0)	1 (4)		1 (2)				1 (2)		1 (1)		
Age			0.65			0.64			0.05			0.47			0.72
20-25	1 (17)	16 (21)		11 (19)	6 (24)		12 (20)	5 (24)		9 (24)	8 (18)		16 (22)	1 (13)	
26-30	3 (50)	30 (39)		24 (42)	9 (36)		26 (43)	7 (33)		16 (42)	17 (39)		29 (39)	4 (50)	
31-35	0 (0)	12 (16)		9 (16)	3 (12)		9 (15)	3 (14)		4 (11)	8 (18)		11 (15)	1 (13)	
36-40	0 (0)	6 (8)		3 (5)	3 (12)		3 (5)	3 (14)		2 (5)	4 (9)		6 (8)		
41-45	2 (33)	8 (11)		8 (14)	2 (8)		10 (16)			6 (16)	4 (9)		9 (12)	1 (13)	
51-55	0 (0)	3 (4)		1 (2)	2 (8)		1 (2)	2 (10)			3 (7)		2 (3)	1 (13)	
>55	0 (0)	1 (1)		1 (2)	0 (0)			1 (5)		1 (3)			1 (1)		
How many years of experience do you have as a Physiotherapist?			0.71			0.5			0.39			0.45			0.75
unknown	0 (0)	5 (7)		3 (5)	2 (8)		2 (3)	3 (14)		3 (8)	2 (5)		5 (7)		
1-5 years	3 (50)	36 (47)		29 (51)	10 (40)		31 (51)	8 (38)		20 (53)	19 (43)		36 (49)	3 (38)	
6-10 years	1 (17)	15 (20)		11 (19)	5 (20)		12 (20)	4 (19)		5 (13)	11 (25)		13 (18)	3 (38)	
11-15 years	0 (0)	10 (13)		8 (14)	2 (8)		8 (13)	2 (10)		6 (16)	4 (9)		9 (12)	1 (13)	
>15 years	2 (33)	10 (13)		6 (11)	6 (24)		8 (13)	4 (19)		4 (11)	8 (18)		11 (15)	1 (13)	
The sector you are currently working for			0.22			0.64			0.69			0.14			1
public	1 (17)	35 (46)		26 (46)	10 (40)		26 (43)	10 (48)		20 (53)	16 (36)		33 (45)	3 (38)	
private	5 (83)	41 (54)		31 (54)	15 (60)		35 (57)	11 (52)		18 (47)	28 (64)		41 (55)	5 (63)	
What is your primary area of clinical work?															
Inpatients	2 (33)	46 (61)	0.23	34 (60)	14 (56)	0.76	34 (56)	14 (67)	0.38	22 (58)	26 (59)	0.91	44 (59)	4 (50)	0.71

Outpatients	3 (50)	49 (64)	0.66	33 (58)	19 (76)	0.12	37 (61)	15 (71)	0.37	21 (55)	31 (70)	0.15	47 (64)	5 (63)	1
Other	1 (17)	8 (11)	0.51	6 (11)	3 (12)	1	7 (11)	2 (10)	1	4 (11)	5 (11)	1	7 (9)	2 (25)	0.21
What is your current place of primary employment?			0.77			**0.0169**			0.45			0.17			0.6
Psychiatric hospital	0 (0)	9 (12)		4 (7)	5 (20)		4 (7)	5 (24)		2 (5)	7 (16)		8 (11)	1 (13)	
Tertiary hospital	1 (17)	17 (22)		16 (28)	2 (8)		14 (23)	4 (19)		11 (29)	7 (16)		16 (22)	2 (25)	
Non-tertiary hospital	0 (0)	7 (9)		3 (5)	4 (16)		6 (10)	1 (5)		4 (11)	3 (7)		7 (9)		
Day clinic or community health centre	0 (0)	4 (5)		4 (7)	0 (0)		3 (5)	1 (5)		3 (8)	1 (2)		3 (4)	1 (13)	
Private practice	4 (67)	34 (45)		24 (42)	14 (56)		29 (48)	9 (43)		14 (37)	24 (55)		35 (47)	3 (38)	
Other	1 (17)	5 (7)		6 (11)			5 (8)	1 (5)		4 (11)	2 (5)		5 (7)	1 (13)	
Have you previously worked at a psychiatric hospital or mental health facility?			0.64			0.17			0.83			0.38			0.42
no	4 (67)	57 (75)		40 (70)	21 (84)		45 (74)	16 (76)		30 (79)	31 (70)		56 (76)	5 (63)	
yes	2 (33)	19 (25)		17 (30)	4 (16)		16 (26)	5 (24)		8 (21)	13 (30)		18 (24)	3 (38)	
Do you have any postgraduate mental health training?			1			0.67			0.07			0.44			0.14
no	6 (100)	69 (91)		53 (93)	22 (88)		58 (95)	17 (81)		36 (95)	39 (89)		69 (93)	6 (75)	
yes	0 (0)	7 (9)		4 (7)	3 (12)		3 (5)	4 (19)		2 (5)	5 (11)		5 (7)	2 (25)	
How many years of experience do you have in treating patients with MHD?			0.89			0.21			0.12			0.77			0.24
less than 1 year	4 (67)	31 (41)		26 (46)	9 (36)		28 (46)	7 (33)		18 (47)	17 (39)		34 (46)	1 (13)	
1-5 years	2 (33)	31 (41)		24 (42)	9 (36)		25 (41)	8 (38)		15 (39)	18 (41)		27 (36)	6 (75)	
6-10 years	0 (0)	8 (11)		5 (9)	3 (12)		6 (10)	2 (10)		3 (8)	5 (11)		7 (9)	1 (13)	
11-15 years	0 (0)	2 (3)			2 (8)			2 (10)			2 (5)		2 (3)		
More than 15 years	0 (0)	4 (5)		2 (4)	2 (8)		2 (3)	2 (10)		2 (5)	2 (5)		4 (5)		
What are the common mental health conditions you encounter with patients?															
Anxiety disorder	4 (67)	56 (74)	0.65	38 (67)	22 (88)	**0.0447**	42 (69)	18 (86)	0.13	23 (61)	37 (84)	**0.0163**	53 (72)	7 (88)	0.67
Depression	4 (67)	64 (84)	0.27	44 (77)	24 (96)	**0.05**	47 (77)	21 (100)	**0.0163**	29 (76)	39 (89)	0.14	60 (81)	8 (100)	0.34
Bipolar disorder	2 (33)	34 (45)	0.69	23 (40)	13 (52)	0.33	25 (41)	11 (52)	0.36	15 (39)	21 (48)	0.45	30 (41)	6 (75)	0.13
Schizophrenia	0 (0)	24 (32)	0.17	15 (26)	9 (36)	0.37	16 (26)	8 (38)	0.3	10 (26)	14 (32)	0.58	19 (26)	5 (63)	**0.0436**
Attention deficit hyperactivity disorder	1 (17)	20 (26)	1	14 (25)	7 (28)	0.74	16 (26)	5 (24)	0.82	6 (16)	15 (34)	0.06	18 (24)	3 (38)	0.42
Eating disorders	0 (0)	8 (11)	1	2 (4)	6 (24)	**0.0087**	4 (7)	4 (19)	0.19	1 (3)	7 (16)	0.06	8 (11)		1
Substance abuse disorders	1 (17)	35 (46)	0.22	22 (39)	14 (56)	0.14	22 (36)	14 (67)	**0.0148**	15 (39)	21 (48)	0.45	30 (41)	6 (75)	0.13

PTSD	2 (33)	35 (46)	0.68	25 (44)	12 (48)	0.73	23 (38)	14 (67)	**0.0214**	14 (37)	23 (52)	0.16	32 (43)	5 (63)	0.45
Obsessive-compulsive disorder	0 (0)	13 (17)	0.58	7 (12)	6 (24)	0.2	8 (13)	5 (24)	0.3	3 (8)	10 (23)	0.07	11 (15)	2 (25)	0.61
Other	0 (0)	1 (1)	1		1 (4)	0.3	1 (2)	0 (0)	1	1 (3)	0 (0)	0.46		1 (13)	0.09
What physical conditions do you mostly treat in patients with co-morbid MHD?															
Headaches	4 (67)	51 (67)	1	38 (67)	17 (68)	0.91	42 (69)	13 (62)	0.56	26 (68)	29 (66)	0.81	49 (66)	6 (75)	0.62
Lower back pain	5 (83)	60 (79)	1	43 (75)	22 (88)	0.19	50 (82)	15 (71)	0.3	28 (74)	37 (84)	0.25	58 (78)	7 (88)	1
Arthritis	1 (17)	29 (38)	0.41	21 (37)	9 (36)	0.94	22 (36)	8 (38)	0.87	9 (24)	21 (48)	**0.0242**	28 (38)	2 (25)	0.7
Chronic lower limb pain	0 (0)	24 (32)	0.17	16 (28)	8 (32)	0.72	19 (31)	5 (24)	0.52	8 (21)	16 (36)	0.13	20 (27)	4 (50)	0.22
Chronic upper limb pain	0 (0)	22 (29)	0.18	11 (19)	11 (44)	**0.0201**	14 (23)	8 (38)	0.17	4 (11)	18 (41)	**0.002**	19 (26)	3 (38)	0.43
Neck pain	3 (50)	51 (67)	0.41	34 (60)	20 (80)	0.07	39 (64)	15 (71)	0.53	21 (55)	33 (75)	0.06	47 (64)	7 (88)	0.25
Other	0 (0)	13 (17)	0.58	8 (14)	5 (20)	0.52	8 (13)	5 (24)	0.3	7 (18)	6 (14)	0.55	10 (14)	3 (38)	0.11

Nearly half (43%) of participants who did not use smoking and substance use cessation as a lifestyle intervention were between the ages of 26-30 years. More than half (56%) of participants who used nutrition and weight management advise as an intervention worked at a private practice.

4.7 Conclusion

The results of this research suggest that the most common MDH encountered by physiotherapists are depression, anxiety disorders, PTSD, and substance abuse disorders. The physical conditions mostly treated by participants in patients with co-morbid MHD are lower back pain, headaches, and neck pain. Participants generally had a good attitude and knowledge about lifestyle interventions for patients with MHD. Physical activity and stress management were the most used type of lifestyle intervention. The study found that stress management and nutrition and weight management advise as lifestyle interventions had a relationship with anxiety, arthritis, and chronic upper limb pain.

Chapter 5 Discussion

5.1 Findings and Interpretation

In this chapter, the key findings of this study will be discussed in relation to the aim and objectives. This study was aimed at determining the attitudes, knowledge, and practices that physiotherapists have towards lifestyle interventions in the management of patients with MHD. This was established by describing the demographic profile, and determining the attitudes, knowledge, and practices of physiotherapists towards lifestyle interventions. This study further hoped to determine a relationship that might exist between the demographic profile of participants and the type of lifestyle interventions they used.

5.2 Demographic Profile of Participants

A lack of experience in working with patients with MHD is not uncommon as seen in the study by Alotaibi et al., 2024; they conducted a similar study to ours to determine physiotherapists' knowledge and attitudes on their role in treating patients with MHD and found that 86% of their participants had limited or no experience in working in a mental health setting. They also reported that most of the participants had never done any psychology course as part of their academic studies. Likewise, studies by Almirón, Barrios, O'Higgins, González, Castaldelli-Maia, Ventriglio, and Torales (2020) and Andrew et al. (2019) showed that only 17% and 23% of physiotherapists working in Paraguay and Australia respectively, had previous experience in working at a mental health facility. The participants in our study, predominantly female and aged between 26-30 years, worked in the private sector in an outpatient setting and not a mental health setting/facility.

The physiotherapists in our study commonly encountered anxiety (74%) and depression (84%) more than other MHD. This observation may be because anxiety and depression are the most common types of MHD in South Africa (Hooblaul et al., 2023). Also, lower back pain (79%), headaches (67%) and neck pain (67%) were the common comorbid conditions treated in these patients. These musculoskeletal pain conditions are known in literature to be the most common among patients with anxiety and depression (Alhowimel et al., 2018; Bhuvana, 2016; Gbiri et al., 2011; Wang, Pu, Ghose & Tang, 2018). Correlating with the results of our study, a

survey study by Wang et al., 2018 conducted in South Africa and Uganda found lower back pain to be the most common in patients with depression. In this study participants were classified as depressed if they answered “yes” to experiencing low energy levels, tiredness, feeling of sadness, depression and emptiness that lasted for several days in the past twelve month. The lack of a clinical diagnosis of depression may cause biased results. Patients with anxiety and depression often are fearful avoidant and have maladaptive behaviours such as substance abuse, poor sleeping habits and a sedentary lifestyle which are all associated with worsening chronic pain (Alhowimel et al., 2018; Morasco, Lovejoy, Lu, Turk, Lewis & Dobscha, 2013; Wang et al., 2018b).

5.3 Attitudes

Attitude refers to “an individual’s overall evaluation of people, objects, and things. The attitude of an individual has a wide influence on their thoughts, feelings, and behaviour” (Huajian, 2024). Our study participants generally displayed a positive attitude (97%) towards the use of lifestyle interventions for patients with MHD. Similarly, a systematic review investigating physiotherapists’ knowledge, beliefs, behaviours, and attitudes in the use of psychological interventions found that physiotherapists predominantly have a good attitude towards the use of behavioural strategies (Driver, Kean, Oprescu & Lovell, 2017). The studies included in this systematic review were of good quality as per the guidelines for critical review form that was used to assess the risk of bias and quality of the studies. The behavioural strategies used in that study included cognitive behavioural therapy, relaxation, goal setting, and motivational interviewing. Alotaibi et al. (2024) and Hooblaul et al. (2023) suggested that attitude may be influenced by exposure and knowledge and may shape behaviour. It is interesting to note that even without working experience at mental health hospitals or postgraduate training in mental health, participants in our study still had a good attitude. Attitude may also be positively affected by case specific exposure (Driver et al., 2017). Our study, however, did not explore how many patients with MHD are treated by participants on average to determine the possible influence of case specific exposure on attitude.

The physiotherapists in our study (77%) believed that they are key role players in managing patients with MHD. These results from our study are mirrored by a survey study conducted by Almirón et al. (2020). The study, however used non-probabilistic sampling which may affect the generalisability of its results. The authors state that even though physiotherapists may recognise the need for physiotherapy in mental health, they are often unsure of how to fulfil that role. This is attributed to the lack of undergraduate training in mental health particularly the management the physical conditions that patients with MHD may present with. The participants in our study agreed that training on the use of lifestyle interventions should be included in the undergraduate curriculum, only one participant disagreed with this statement. Several studies advocate for undergraduate training in mental health (Almirón et al., 2020; Connaughton & Gibson, 2016; Lennon, Ryan, Helm, Moore, Sheridan, Probst & Cunningham, 2020).

The evidence regarding physiotherapists' attitude on their competencies on the use lifestyle interventions in the mental health population is limited (Abaraogu et al., 2017). Despite the need for training, nearly half (48%) of the participants in our study stated that physiotherapists are skilled in using lifestyle interventions. A survey study investigating physiotherapists' lifestyle risk factor assessment, and intervention practices found that Nigerian physiotherapists only felt skilled in physical activity interventions and not health promotion strategies on smoking and substance use cessation, and dieting advice due to lack of training (Abaraogu et al., 2017). These participants, however, were mostly males (92%) who worked in the orthopaedic unit. The same may be true for our study where the 48% of participants who reported being skilled in lifestyle interventions may be referring to only some aspects of lifestyle interventions such as physical activity and stress management which are the interventions they most commonly use.

Almost half of the respondents (45%) in this study reported being confident in managing patients with MHD and 33% remained "neutral". Neutral responses do not always mean respondents have no opinion on the matter, but it can also mean that respondents do not have enough exposure to formulate an opinion. Neutral responses are also viewed as being

the “safe” option to individuals who are not sure without appearing as being ignorant (Muñoz van den Eynde & Lobera, 2022). The number of neutral responses, therefore, does not give a clear conclusion on the confidence of participants in this study to manage patients with MHD. Conversely, a mixed method study by Andrew et al. (2019) found consensus among their participants as 90% of them did not feel confident in managing patients with severe and persistent mental illness. This lack of confidence was accounted to the lack of practical clinical skills at both postgraduate and undergraduate level. Likewise, a scoping review by Hooblaul et al. (2023), showed the lack of confidence from physiotherapists to manage patients with MHD. Confidence was shown to improve after training on the management of MHD.

5.4 Knowledge

The knowledge on unhealthy lifestyle behaviours of patients with MHD and the goals of lifestyle interventions was tested using the Likert scale. Physiotherapist are trained in health promotion strategies or lifestyle interventions which empower individuals to make healthier life choices so to prevent the development of NCD (Padhan & Mohapatra, 2023). Our study found that most participants demonstrated good knowledge on the unhealthy lifestyle choices of patients with MHD as well as the goals of lifestyle interventions. The unhealthy lifestyle behaviours included in the survey that participants acknowledged were low activity levels, poor eating habits, and high smoking and substance use rates. There is no known study that has investigated the knowledge of physiotherapists on the use of health promotion strategies or lifestyle interventions in the mental health population. Abaraogu et al. (2017) found in their study that most physiotherapists have a good knowledge on health promotion strategies that are important for the management of patients in general. This study used similar methodology as our study by testing knowledge using the Likert scale. Most participants in that study worked at a hospital setting; however, it is not known how many manage patients with MHD.

5.5 Practises

Almost all the participants (93%) stated that they use lifestyle interventions in the management of patients with MHD and most deliver these interventions in individual patient sessions. Physical activity is the most common type of lifestyle intervention used by

participants. This is not surprising as physiotherapy is a profession that deals with human movement and function (Hooblaul et al., 2023). Furthermore, physiotherapists view themselves as physical health experts who have an important role in promoting physical and active lifestyles (Vancampfort et al., 2018b). Physical activity is cited by multiple authors as the most common type of lifestyle intervention or health promotion strategy used by physiotherapists (Abaraogu et al., 2017; Musonda & Simpamba, 2021; Padhan & Mohapatra, 2023; Vancampfort et al., 2018b).

Our study showed that participants used stress management (54%) as the second most common lifestyle intervention. Stress management strategies may include mindfulness, relaxation therapy, yoga, and basic body awareness therapy (Hooblaul et al., 2023; Vancampfort et al., 2018b; Walker & Shepherd, 2001). Likewise, Walker and Shepherd (2001) found that relaxation therapy and breathing exercises were the second most common management strategies, after physical activity, used by physiotherapists in patients with anxiety. Relaxation therapy includes techniques such as autogenic training, progressive relaxation, breathing exercises, biofeedback-assisted relaxation, and guided imagery (National Center for Complementary and Integrative Health, 2021; Webster, Halicka, Bowater, Parkhouse, Stanescu, Punniyakotty, Savović, Huntley, Dawson, Clark, Johnson, Higgins, Caldwel 2025). The results of a systematic review show that breathing exercises are effective in reducing clinical anxiety symptoms and non-clinical stress (Bentley, D'Andrea-Penna, Rakic, Arce, LaFaille, Berman, Cooley, Sprimont 2023). Our study, however, did not explore the types of stress management techniques used by participants.

It is interesting to note that while 80% of the participants acknowledge that individuals with MHD commonly have poor eating habits, only 30% offer their patients nutrition and weight management advise and only 33% work closely with dietitians. Similar results have been found in a survey study conducted by Abaraogu et al. (2017) where only 34% of physiotherapists indicated that they referred patients to dietitians because only a small percentage (39%) of them screen for unhealthy eating habits in patients. Musonda & Simpamba (2021), further add that physiotherapists reported to counsel and screen for unhealthy eating habits only in

overweight patients. Lack of time and access to dietitians, and lack of expertise in dietary counselling have been reported to be the main barriers to screening and advising patients on nutrition management (Abaraogu et al., 2017; Musonda & Simpamba, 2021). Our study, however, did not explore participants' barriers of referring patients with MHD to dietitians.

5.6 Relationship Between the Demographic Profile and the Type of Lifestyle Interventions Used by Physiotherapists.

Lack of knowledge, training and experience in psychiatry have been listed by several authors as barriers to physiotherapists in the management of patients with MHD (Andrew et al., 2019b; Gbiri et al., 2011; Hooblaul et al., 2020, 2023). These barriers have been self-reported through focus interviews and surveys. There are no current studies however, that have done statistical tests to determine any association between these barriers and management strategies used by physiotherapists. Our study found that postgraduate training in mental health and previous work experience at a psychiatric or mental health hospital have no statistically significant relationship with the type of lifestyle interventions used by physiotherapists in this study.

5.6.1 Smoking and Substance Use Cessation

In our study, the participants that give patients advice on smoking and substance use cessation commonly manage patients with depression, substance use disorders, and PTSD. A possible explanation for these findings is the high smoking rate in patients with depression and PTSD (Boksa, 2017; Kearns, Carl, Stein, Vujanovic, Zvolensky, Smits & Powers, 2018; Lawrence et al., 2009; Tomita & Manuel, 2020). Additionally, a South African survey study revealed that cigarette smoking was associated with depression in men aged over 15 years due to the bidirectional causal relationship between smoking and depression (Tomita & Manuel, 2020). Furthermore, a systematic review by Kearns et al. (2018) suggested that 30% of those with PTSD, smoke cigarettes daily, likewise those that smoke cigarettes are two times more likely to have PTSD than nonsmokers.

5.6.1 Anxiety, and chronic upper limb pain

The results of our study show that stress management and nutrition and weight management advice as lifestyle interventions had a relationship with anxiety, arthritis, and chronic upper limb pain. This suggests that patients who present with anxiety, arthritis, and chronic upper limb pain are commonly managed with stress management interventions as well as with nutrition and weight management advice. A possible reason for this observation is the high prevalence of anxiety in patients with arthritis and chronic upper limb pain (Beleckas, Wright, Prather, Chamberlain, Guattery & Calfee, 2018; Ortego, Villafañe, Doménech-García, Berjano, Bertozzi & Herrero, 2016). A study by Beleckas et al. (2018) found high anxiety scores in patients with chronic upper limb pain conditions (carpel tunnel syndrome, rotator cuff tendinopathy, and shoulder adhesive capsulitis) as well as those with shoulder and trapeziometacarpal joint osteoarthritis. The upper limb diagnosis of the participants in the study was made by orthopaedic surgeons, however anxiety and depression were screened using the self-reported patient health questionnaire, which is not a diagnosis tool. The authors concluded that chronic upper limb pain conditions are strong predictors of anxiety. These aforesaid results were further supported by a systematic review and meta-analysis by Ortego et al. (2016) who found that individuals with anxiety or psychological stress had a high prevalence of chronic non-specific neck and arm pain. This study only included high quality randomised controlled trials. An increased BMI and a poor dietary pattern are also reported in literature as being associated with anxiety (Aucoin, Lachance, Naidoo, Remy, Shekdar, Sayar, Cardozo, Rawana, Chan & Cooley, 2021; Tang et al., 2024). It is therefore not impossible that patients that present to physiotherapy with chronic upper limb pain and comorbid anxiety will complain of high stress levels, poor eating habits, or be overweight, prompting the physiotherapist to utilise strategies for stress management, and give weight management advice, thus lifestyle interventions.

Patients with MHD often have comorbid chronic pain conditions and lead unhealthy lifestyles (Cabassa et al., 2010; Deenik et al., 2020; Derman et al., 2008; Martinez-Calderon et al., 2019; Pitcher et al., 2019; Rhudy et al., 2020; Sheng et al., 2017). This worsens the burden of these MHD on patients leading to increased years living with disability and premature death (Alhowimel et al., 2018; Meyer et al., 2019; Vancampfort et al., 2018b). Physiotherapists,

therefore, have a role in pain management and in promoting health in patients with MHD thereby reducing the risk of developing NCD (Andrew et al., 2019b; Probst, 2017; Stubbs et al., 2014). The lack of theoretical and practical training and clinical guidelines on the use of lifestyle interventions in patients with MHD may be the reason why physiotherapists predominantly apply physical activity strategies in the management of this population. Physiotherapists report that the knowledge they have on managing patients with MHD is often self-taught and gained by working closely with other members of the interprofessional team (Hooblaul et al., 2020). This lack of knowledge hinders the positive attitude physiotherapists may have on lifestyle interventions in patients with MHD.

Chapter 6: Conclusion, Limitations, and Recommendations

6.1 Conclusion

The study highlights physiotherapists' attitudes, knowledge, and practices regarding lifestyle interventions in the management of mental health disorders. It explores the relationship between these interventions and various physical and mental health disorders. The physiotherapists in this study did not have any undergraduate and postgraduate training in mental health and no previous work experience in mental health facilities. The lack of undergraduate training has been cited globally as the most prevalent barrier to physiotherapists in the management of patients with comorbid MHD (Andrew et al., 2019; Hooblaul et al., 2020, 2023; Vancampfort et al., 2018). The participants in this study demonstrated good knowledge and a positive attitude towards the use of lifestyle interventions in patients with comorbid MHD but that does not always translate into practice. Physical activity and stress management are the most utilised lifestyle interventions by participants of this study, and only a small margin incorporated smoking and substance use cessation, and nutrition and weight management advice.

6.2 Limitations

This study has a small sample size and low response rate. The questionnaire did not ascertain whether a medical doctor had diagnosed the MHD reported by participants. The knowledge of participants was determined using a Likert scale which creates room for acquiescence bias where participants are most likely to agree with a statement that they might be in doubt about. Furthermore, this study did not include open-ended questions where participants could elaborate on their responses.

A substantial number of participants in this study (43%) had less than one year experience in treating patients with MHD. The results, therefore, may be slightly different with participants who have more experience in treating patients with MHD (Schmidt, Gummer & Robmann, 2020).

Lastly, the pilot study was administered using a hardcopy version of the questionnaire, whereas the main study was conducted online. As a result, it was not possible to assess the feasibility of the main study or accurately measure the time required to complete the online survey. Convenience sampling was also used to select the pilot study participants which may have increased the risk of response bias.

6.3 Recommendations

This study has highlighted the importance role of physiotherapy in the management of patients with MHD, calling for advocacy in the inclusion of physiotherapy as a core service in mental health. Undergraduate training institutions should consider adding more practical management skills of MHD in their curriculum. Clinically, this study has highlighted the importance of screening for anxiety in patients that present with chronic upper limb pain. Future research should explore the barriers to use of lifestyle interventions in patients with MHD. This study could be conducted on a larger scale, and participants could be asked to indicate where they completed their undergraduate training, as physiotherapy curricula vary across South African institutions.

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Appendices

Appendix I: Information sheet

INFORMATION DOCUMENT

Study title: Attitudes, Knowledge, and Practices of Physiotherapists Towards Lifestyle Interventions in the Management of Mental Health Disorders.

Good day,

My name is Abongile Twaku, I am a MSc Physiotherapy student at the University of the Witwatersrand. I am conducting research on the attitudes and knowledge, and practices of physiotherapists towards lifestyle interventions in the management of mental health disorders. Research is a way of learning more about a specific topic that has gaps in research. In this study I want to learn about what the attitudes and knowledge physiotherapists have towards lifestyle interventions in the management of mental health disorders, the types of lifestyle interventions they use and if there is any relationship between the demographic profile and the type of lifestyle interventions used by physiotherapists.

I am inviting you to take part in this research study.

What is involved in the study?

This is an online questionnaire-based study. Participants will be required to fill in an online survey that will ask demographic questions and questions related to lifestyle interventions the management of mental health conditions. The completion of this survey will take approximately 20 minutes. This is a once off study and therefore no follow up will be done.

Risks

The research study does not carry any risks. Should you feel uncomfortable answering any of the questions, you have the right not to answer them. Withdrawing from the study or refusal to partake in the study carries no consequences.

Benefits

The research study has no direct benefits for participants however the results will add to great value to South African literature on mental health. The results will highlight to policy makers and funders the need of recognising physiotherapy as a core service in mental health. The study also It hope to reveal misconceptions and knowledge gaps that physiotherapists have regarding lifestyle interventions for mental health conditions. This will therefore assist in identifying training needs for both undergraduate and postgraduate programs.

The results of the study will be made available to interested participants and via publication.

Confidentiality

All data from the study will be kept safe and confidential. There will be no identifying information asked from the questionnaires. The data will be stored in a password protected and secure web application which only the researcher and supervisor will have access to. Only generalised findings will be disseminated anonymously through congress presentations, peer-reviewed publication. They will also be presented to physiotherapists and mental healthcare practitioners.

Contact details of researcher

Abongile Twaku

Cell phone number: 079 191 9959

Email: abongiletwaku@gmail.com

Charlotte Maxeke Johannesburg Academic Hospital

17 Jubiliee Road

Parktown

Johannesburg

2193

Supervisors: Dr Vaneshveri Naidoo

Tel: 011 717 3729/3702

Email: Vaneshveri.naidoo@wits.ac.za

Mrs Sandy Lord

Tel: 011 717 3715

E-mail sandy.lord@wits.ac.za

7 York Road

Parktown

Johannesburg

2193

Contact details of HREC administrator and chair

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Appendix II: Informed Consent

INFORMED CONSENT

Study title: Attitudes, Knowledge, and Practices of Physiotherapists Towards Lifestyle Interventions in the Management of Mental Health Disorders.

I hereby agree to participate in the study as described to me in the information sheet. I hereby agree to complete the required questionnaires for the study.

I am aware that there are limited risks to partaking in the study and that I can withdraw from it at any time without any consequences to me. I understand that there will be no financial rewards for my participation and that participation is voluntary.

Accept ☐

Appendix III: Online survey

Thank you for taking the time to answer these questions. Please tick the most appropriate answer(s).

Disclaimer: All parties involved in this research will comply with the Protection of Personal Information (POPI) Act 4 of 2013 regarding the collection, processing, storage, sharing, and destruction of data.

Section 1

1	Gender	◯ Female ◯ Male ◯ Other
	Please specify	_____
2	Age	◯ 20-25 ◯ 26-30 ◯ 31-35 ◯ 36-40 ◯ 41-45 ◯ 46-50 ◯ 51-55 ◯ >55
3	How many years of experience do you have as a Physiotherapist?	◯ Community service Physiotherapist ◯ 1-5 years ◯ 6-10 years ◯ 11-15 years ◯ >15 years
4	The sector you are currently working for:	◯ Public sector ◯ Private sector
5	What is your primary area of clinical work?	☐ Inpatients ☐ Outpatients ☐ Other
	Please specify:	_____
6	What is your current place of primary employment?	◯ Psychiatric hospital ◯ Tertiary hospital ◯ Non-tertiary hospital ◯ Day clinic or community health center ◯ Private practice ◯ Other
	Please specify:	_____
7	Have you previously worked at a psychiatric hospital or mental health facility?	◯ Yes ◯ No
8	Do you have any postgraduate mental health training?	◯ Yes ◯ No

	Please state	_____
9	How many years of experience do you have in treating patients with mental health disorders?	○ less than 1 year ○ 1-5 years ○ 6-10 years ○ 11-15 years ○ More than 15 years
10	What are the common mental health conditions you encounter with patients?	☐ Anxiety disorder ☐ Depression ☐ Bipolar disorder ☐ Schizophrenia ☐ Attention deficit hyperactivity disorder ☐ Eating disorders ☐ Substance abuse disorders ☐ Post-traumatic stress disorder ☐ Obsessive-compulsive disorder ☐ Other
	Please specify	_____
11	What physical conditions do you mostly treat in patients with co-morbid mental health disorders?	☐ Headaches ☐ Lower back pain ☐ Arthritis ☐ Chronic lower limb pain ☐ Chronic upper limb pain ☐ Neck pain ☐ Other
	Please specify	_____

Section 2

Lifestyle interventions are management strategies that are aimed at promoting wellness and healthy lifestyle choices in individuals. These interventions include physical activity, stress management, smoking and substance use cessation, and healthy nutrition habits.

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
L2	Physiotherapists are key role players in the management of mental health disorders.	○	○	○	○	○
L3	Lifestyle interventions are an integral part of managing patients with mental health conditions	○	○	○	○	○
L4	Physiotherapists are skilled in using lifestyle interventions to manage mental health disorders	○	○	○	○	○
L5	I am confident in managing patients with mental health disorders	○	○	○	○	○
L6	Undergraduate curriculum needs to include training about the use of lifestyle interventions to manage mental health disorders	○	○	○	○	○

Section 3

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
17	Patients with mental health disorders commonly have low physical activity levels.	○	○	○	○	○
18	Patients with mental health disorders commonly have poor eating habits.	○	○	○	○	○
19	Patients with mental health disorders commonly have high smoking and substance use rates.	○	○	○	○	○
20	The goal of lifestyle interventions in patients with mental health conditions is to improve nutrition and weight management.	○	○	○	○	○
21	The goal of lifestyle interventions in patients with mental health conditions is to improve physical activity levels.	○	○	○	○	○
22	Lifestyle interventions are effective in lowering morbidity and the risk of cardiometabolic conditions associated with mental health disorder.	○	○	○	○	○
23	Physical activity for patients with mental health disorders is beneficial in improving mood, emotional stress, sleeping pattern, social interaction, withdrawal symptoms, substance use relapse, and weight management.	○	○	○	○	○

Section 4

24 Do you use lifestyle interventions?

○ Yes
○ No

25 Which lifestyle interventions do you use to manage patients with mental health disorders?

☐ Physical activity
☐ Nutrition and weight management advise
☐ Smoking and substance use cessation
☐ Stress managment
☐ Other

Please specify

_____

26a How do you deliver the lifestyle intervantions?

☐ Group sessions
☐ Individual sessions

26b What type of group classes do you offer?

☐ Education
☐ Exercise

27 Which health professional/s do you work closely with to manage patients' comorbid mental health conditions?

☐ Psychologist
☐ Social worker
☐ Dietitian
☐ Occupational therapist
☐ I do not work closely with any other health professional
☐ Other

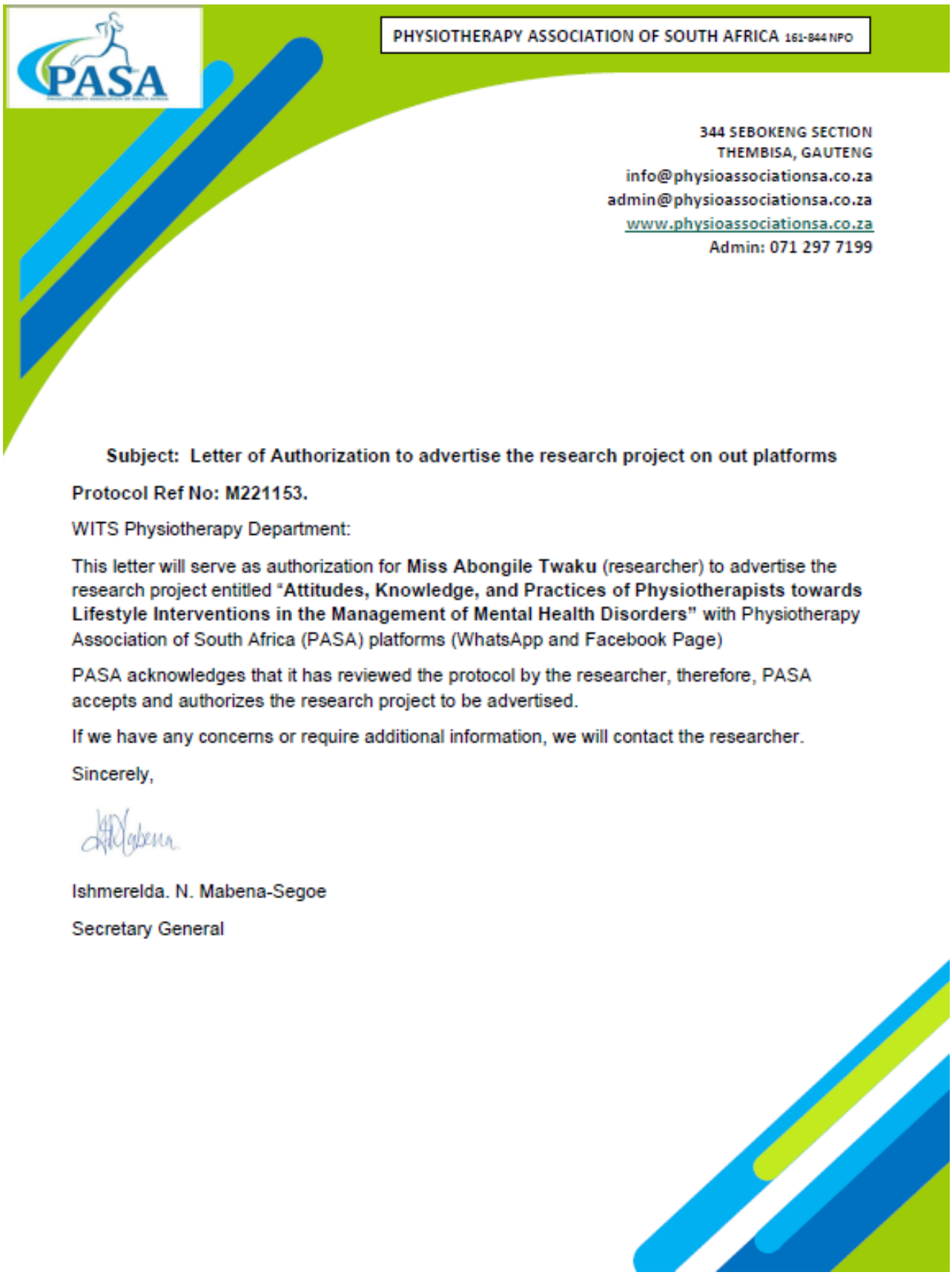
Please specify

_____

28 Is there anything you would like to add or share?

_____

Appendix IV: PASA permission letter



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THEMBISA, GAUTENG
info@physioassociationsa.co.za
admin@physioassociationsa.co.za
www.physioassociationsa.co.za
Admin: 071 297 7199

Subject: Letter of Authorization to advertise the research project on out platforms

Protocol Ref No: M221153.

WITS Physiotherapy Department:

This letter will serve as authorization for **Miss Abongile Twaku** (researcher) to advertise the research project entitled "**Attitudes, Knowledge, and Practices of Physiotherapists towards Lifestyle Interventions in the Management of Mental Health Disorders**" with Physiotherapy Association of South Africa (PASA) platforms (WhatsApp and Facebook Page)

PASA acknowledges that it has reviewed the protocol by the researcher, therefore, PASA accepts and authorizes the research project to be advertised.

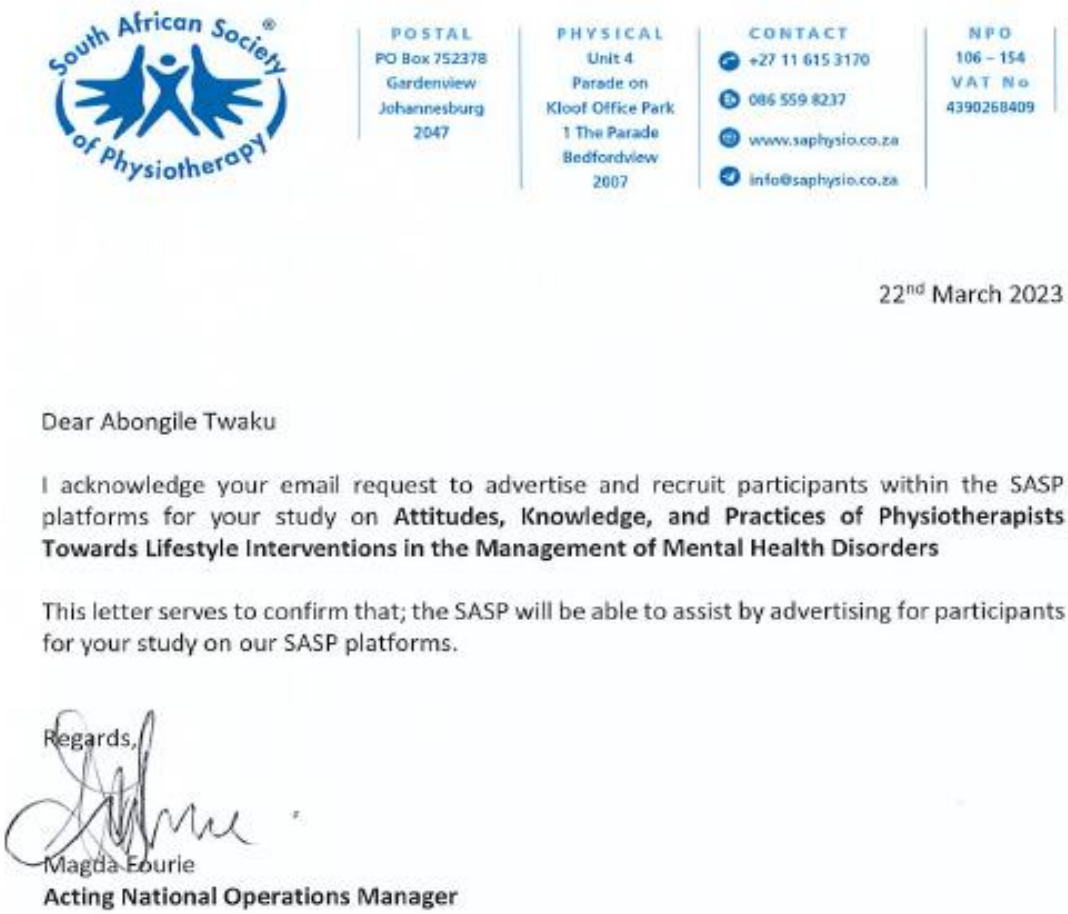
If we have any concerns or require additional information, we will contact the researcher.

Sincerely,

Ishmerelda. N. Mabena-Segoe

Secretary General

Appendix V: SASP permission letter



South African Society of Physiotherapy

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www.saphysio.co.za
info@saphysio.co.za

NPO
106 – 154
VAT No
4390268409

22nd March 2023

Dear Abongile Twaku

I acknowledge your email request to advertise and recruit participants within the SASP platforms for your study on **Attitudes, Knowledge, and Practices of Physiotherapists Towards Lifestyle Interventions in the Management of Mental Health Disorders**

This letter serves to confirm that; the SASP will be able to assist by advertising for participants for your study on our SASP platforms.

Regards,

Magda Fourie
Acting National Operations Manager

World Physiotherapy
MEMBER ORGANISATION

The Difference is in Our Hands®

Appendix VI: Social media poster

Are you a Physio and have treated a patient with a mental health condition?

We are looking for Physiotherapists to help us in a study to determine Attitudes, Knowledge, and Practices of Physiotherapists Towards Lifestyle Interventions in the Management of Mental Health Disorders.

What does the study entail?

All you need to do is to complete a short 5-minute online survey.

The results of the study will be made available to interested participants and via publication.

Criterea

Be a qualified South African physiotherapist who treat or have treated patients with mental health disorders

Benefits & risks of the study:

- The research study does not carry any risks.
- No direct benefits for participants
- Adding value to South African literature on mental health.
- Highlighting to policy makers and funders the need of recognizing physiotherapy as a core service in mental health.
- To assist in identifying training needs for physiotherapy programs on mental health conditions.

Study link:
https://redcap.core.wits.ac.za/redcap/surveys/?s=CAALDR3AA7L3MM3N

Appendix VII: Ethical clearance certificate

UNIVERSITY OF WITWATERSRAND JOHANESBURG	HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO: Ms A Twaku
School of Therapeutic Sciences
Department of Physiotherapy
Medical School
University

E-mail: abongiletwaku@gmailcom

cc: Supervisor: Dr V Naidoo and Ms S Lord
<Vaneshveri.Naidoo@Wits.ac.za>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr lain Burns
Human Research Ethics Committee (Medical)
Tel: 01 1 717 1252

E-mail: lain.Burns@wits.acza

DATE: 2023/05/16

REF: R 14/49

PROTOCOL NO: M221153 (This is your ethics application reference number, Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: Attitudes, knowledge and practices of physiotherapists towards lifestyle interventions in the management of mental health disorders

Please find attached the Clearance Certificate for the above project I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.

MSWorks2000/lain0007/Clearscan.wps

R49 Ms A Twaku

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL) CLEARANCE CERTIFICATE NO. M221153

NAME: (Principal Investigator)	Ms A Twaku
DEPARTMENT:	School of Therapeutic Sciences Department of Physiotherapy Medical School University
PROJECT TITLE:	Attitudes, knowledge and practices of physiotherapists towards lifestyle interventions in the management of mental health disorders.
DATE CONSIDERED:	2022/11/25
DECISION:	Approved unconditionally
CONDITIONS:	
NOTE:	If contact information regarding student study participants is required, please contact the Registrar's office - <Nicoleen.Potgieter@wits.ac.za>
SUPERVISOR:	Dr V Naidoo and Ms S Lord
APPROVED BY:	Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2023/05/16

This Clearance Certificate is valid for 5 years from the date of approval. An extension may be applied for.

Appendix IX: Turnitin Report

research report

ORIGINALITY REPORT

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SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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