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2024

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Tsotetsi, Lerato. (2024). Investigating Knowledge, Attitudes and Challenges for Digital Mental Health Interventions Among Youth in Soweto, South Africa. [Master's dissertation, University of the Witwatersrand, Johannesburg]. WIReDSpace. https://hdl.handle.net/10539/48572

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INVESTIGATING KNOWLEDGE, ATTITUDES AND CHALLENGES FOR DIGITAL MENTAL HEALTH INTERVENTIONS AMONG YOUTH IN SOWETO, SOUTH AFRICA

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A research report submitted for the degree of Masters in Psychology (Course Work and Research Report)



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2024

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DECLARATION

I, Lerato Tsotetsi, Student Number 1874375, am a student registered for a Master's degree with the University of the Witwatersrand's Department of Psychology.

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ABSTRACT

Background

Poor mental health in South Africa has been reported to be higher than it has been in previous years and research has shown that prevalence is mostly among adolescents and youth. According to the World Health Organisation (WHO), mental health in adolescents and young people is a major health crisis. Several studies have provided evidence that although efforts have been made mental health services are not easily available to adolescents and youth in low and middle income settings. Digital health interventions could help alleviate this gap. This study aimed to investigate knowledge, attitudes and challenges for digital mental health interventions among youth in Soweto, South Africa.

Methods

Our study used a mixed-methods research design, data was collected through an online survey amongst youth (18-24 years) in Soweto, South Africa. The online survey was administered through REDCap and took +/- 30 minutes to complete. The survey included close-ended and open-ended questions using a combination of self-constructed questions and the Mental Health Literacy Scale. Descriptive analysis was conducted using the IBM SPSS Software. Open-ended questions were analysed using content analysis.

Results

We had 77 participants in total who completed the survey. Most of the participants identified as female (61%), 26% identified as male and only 1 participant identified as transgender. Majority of the participants were above the age of 20 years (66.3%). We had a representation amongst the different age groups, with 18 (18.2%) and 21 (18.2%) being the most represented age groups, with a mean age of 20.14. Majority of the participants had access to mobile phones (93.5%) and had access to mobile data (87%) through prepaid cellular data (36.4). Participants had adequate knowledge of mental health (m=119.53) and available digital mental health interventions. Almost all participants (n=60) noted that access to data and mobile phones might be a challenge in implementing these interventions in the community. Participants noted that digital interventions are easily accessible and would be helpful for youth mental wellbeing and also potentially assist with stigma. However they perceived digital interventions as lacking in human interaction. Data costs, access to mobile phones, lack of knowledge, lack of trust in digital platforms and lack of interest in general

health interventions were noted as barriers to the use of digital interventions. Participants recommended the use of data free platforms, more community education/awareness and using hybrid approaches to mitigate some of the key barriers mentioned above.

Conclusion

Our study highlights the growing interest among young people in South Africa for digital mental health interventions, particularly in light of the accessibility and convenience these platforms offer. However, our findings also underscore the importance of addressing key barriers, such as the cost of data and limited access to reliable internet, which continue to hinder the widespread implementation of digital interventions in low-resource communities. While most participants in this study had access to mobile phones, the financial constraints associated with prepaid data plans remain a significant challenge for consistent engagement with digital mental health platforms. Furthermore, the preference for a hybrid model—integrating both digital and in-person interventions should be adopted by stakeholders when developing interventions for young people.

Key words: Mhealth; Mental Health; Digital Interventions; Youth; South Africa.

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Dr Michael Pitman, for supervising me with patience and intelligence. Your guidance and support throughout this journey have been truly valuable. I would also like to thank Prof Dietrich for her mentorship and support throughout.

To my entire family, thank you for your support and for always believing in me. Your joy and zeal have given me the strength to push through.

DEDICATION

For my dad. My Hero.

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CHAPTER 1: Introduction

This chapter focuses on presenting the introduction to the study. This includes the main focus of the study, the study rationale. Additionally we will present the study aims, objectives and the research questions of this study.

1.1 Introduction

Poor mental health in South Africa has been reported to be currently higher than it has been in previous years, and research has shown that prevalence is mostly among adolescents and youth (Sorsdahl, 2021). According to the World Health Organisation (WHO) (World Health Organization, 2024), mental health in adolescents and young people is a major health crisis, it is noted that suicide is the fourth leading cause of death among 15-29 year-olds. According to this report, failing to address mental health conditions in this group has dire consequences that extend into adulthood. Adolescent and young people are categorized as a 'high risk' group in terms of mental health and public health policies have been in recent years adapted to include mental health support. Mental health is defined as a "state of wellbeing in which the individual realizes 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" (World Health Organization, 2021). This definition is line with the Centers for Disease control and Prevention's (CDC) definition which holds that mental health is component of health that includes our emotional, psychological, and social wellbeing (Centers for Disease Control and Prevention, 2024).

Several studies have provided evidence that, although efforts have been made, mental health services are not easily available to adolescents and youth in low and middle (Mindu et al., 2023). Some of the challenges cited include the absence of a formally supported mental health policy (Draper et al., 2009); the minimal emphasis placed on mental health (Draper et al., 2009); prejudice and discrimination (Kakuma et al., 2010); insufficient incorporation of mental health into primary health care (Petersen et al., 2009). In 2002 the patient to staff ratio for mental health in South Africa was reported 0.4/100 000 people, at that time this was reported to be lower than most developed and developing countries this has however improved slightly since then, in 2013-

2020 national mental health policy framework and strategic plan it was noted that the ratio of staff working in mental health in the Department of Health and NGOs was 9.3/100 000; (Lund et al., 2002; Republic of South Africa, 2012). A recent report indicated that over 6.5 million individuals in South Africa require some form of professional mental health support, yet there are only 19,752 beds available in total across public and private mental health care institutions (Clarke, 2022).

There are limited studies reporting on the challenges adolescents and youth face in utilising mobile health (mhealth) tools in South Africa and in low-middle income countries settings which have unique challenges in comparison to high income settings (Onukwugha, 2022). Mhealth refers to the use of mobile phones and other wireless technologies such as computers, wearable devices to support the fulfilment of certain health objectives (Sheikh et al., 2018). Mhealth tools have varying uses ranging from: monitoring patient health outcomes, education, adherence, consulting with healthcare professionals, diagnoses, health compliance and management of chronic condition amongst others (Smahel et al., 2019). The current study aims to determine knowledge of youth in regards of mental health and digital mental health offerings. A study by Zita (2018) showed that although youth are mostly at risk of mental health disorders, a considerable amount of youth still have limited mental health literacy which affects their ability to identify signs and symptoms early and seek help.

Research has shown that often there is a gap between web applications (app) development and the end users, this affects the uptake of digital tools (Swartz, 2021). This study also aims to highlight some unique challenges faced by youth in accessing digital mental health tools. The results from this study have potential to offer valuable information for digital health uptake by offering end-user information on the unique challenges encountered by youth when engaging with digital health tools especially those targeted at mental health and wellbeing. This information may be useful to improve uptake and adoption of digital mental health tools by adolescent and youth. The overall benefit is that when barriers are addressed, mhealth tools have the potential to empower young people with resources to reduce the burden of mental wellbeing in South Africa.

1.2 Rationale

In recent years the world has been moving towards the fourth industrial revolution and some scholars have suggested that digital interventions and innovations have the potential to alleviate the gap between the need for mental health support and the resources available in South Africa (Signé, 2020; Taylor, 2020). Digital interventions have been used for a various reasons, including to monitor and track health data and regime adherence (Chan, 2022). There have been multiple interventions and strategies developed by the Government and other private entities to help combat the high prevalence of mental health in South Africa (Jack et al., 2014). The digital interventions, such as the mental health Global Action Programme Intervention Guide app (mhGAP) (World Health Organization, 2020) and MEGA Project Mobile App (MEGA, 2020) are focused on offering digital support and education to primary healthcare workers, practitioners and students. Girl Effect (Girleffect, 2021), Lovelife (Love Life, 2023) and Khuluma (Khuluma , 2020) Panda (Panda, 2020) are a few examples of current digital solutions available in South Africa for adolescents and young people to support with coping strategies for some mental health challenges. However, studies have shown that these services may not be easily accessible to high-risk youth in South Africa (Mokwena, 2023). Additionally, although some studies are reporting on the effectiveness of mental health strategies and interventions in combating mental health challenges in youth at high-risk in South Africa, the literature is limited (Mokitimi, 2018). Mental health literacy among youth has been neglected and limited studies are focusing on this aspect. The level of knowledge on mental health and interventions affects help-seeking rates. Research has emphasised that community education on mental health disorders is needed as it affects people's decisions to seek help and that lack of knowledge often leads community members to label symptoms as being 'not too serious' (Hugo et al., 2004). A focus on digital mental health interventions offers critical insights into how such tools can advance the country's progress toward the Sustainable Development Goals (SDGs), particularly SDG 3: Good Health and Well-being (Statistics SA, 2023). SDG 3.4 emphasis the country's target to reduce premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being by 2030 (United Nations South Africa, 2025). Additionally, the focus on digital tools align with national health priorities and the South African National Mental Health Policy Framework and Strategic Plan, which emphasizes community-based care and

integration of mental health into primary health services (National Department of Health, 2023). Furthermore, by improving mental health outcomes, these interventions indirectly support SDG 4 (Quality Education) and SDG 8 (Decent Work and Economic Growth), as mental well-being is closely tied to educational attainment and workforce productivity (United Nations South Africa, 2025). Thus, digital mental health solutions not only offer immediate therapeutic benefits but also inform long-term mental health policy and systems reform in South Africa. Finally, our study aimed to offer insight into youth attitudes on digital mental health tools and the unique challenges in an urban setting. This is important as it offers valuable information on factors to consider when designing interventions and may improve the feasibility of digital mental health tools in a low-middle income setting.

1.3 Research Question, Aims and Objectives

1.3.1 Research Questions

1. What is the level of knowledge of mental health amongst adolescents and youth in Soweto South Africa?
2. What barriers affect the use of digital mental health tools amongst youth in Soweto, South Africa?
3. What are youth attitudes towards using digital mental health interventions?

The proposed research aimed to investigate knowledge, attitudes and challenges for digital mental health interventions among youth in Soweto, South Africa. This was done by focusing on the below objectives using a mixed method research design through an online survey.

1.3.2 Objectives

1. To determine youth's knowledge of digital mental health interventions in South Africa.
2. To explore youth attitudes to using digital mental health tools.
3. To investigate challenges experienced by youth when engaging with digital mental health interventions.
4. To investigate preferences for mental health intervention components (for instance, place, time, and platform for support) among adolescents and youth in Soweto.

This research report will be organized as follows: Chapter One will outline the theoretical and conceptual foundations that underpin the importance of this study, examining the prevalence of mental health issues among young people, the accessibility of mental health services in South

Africa, and the emergence of digital mental health solutions both locally and globally. Chapter Two details the methodology employed in this study, including the methods used, research design, study setting, sampling approach, data collection processes, and the analysis of the data conducted. Chapter Three reveals the study's findings in accordance with the previously established research questions. Chapter Four provides a critical examination of the results in relation to existing literature, analysing the implications of these findings and their overall contribution to the current body of knowledge. Finally, Chapter Five offers a conclusion that encapsulates the findings while also discussing the study's strengths and limitations, along with future considerations and implications derived from the research.

CHAPTER 2: Literature Review

This chapter presents the theoretical framework and conceptual theory underpinning and informing the research design and how the theory was plied to interpret the results from this study. Additionally, it provides an account of existing literature on mental health and digital interventions while also focusing on barriers as facilitators identified in literature. The aim is to provide an overview of existing insights and to identify the potential gap that this study may fill.

2.1 Theoretical Framework

This research utilised the Health Belief Model (HBM) to understand how knowledge, attitudes and challenges affect behaviour. The HBM was developed in the 1950's by a group of social scientists to help understand the lack of success in people adhering to disease prevention strategies (Brannon, Feist, & Updegraff, 2013 & Alyafei & Easton-Carr, 2024). The theory was established after researchers found that factors such as socio-economic status, gender, ethnicity, and age were linked to patterns of health-related behaviours. The researchers found that even in instances where interventions were financed, socio-economic status was still a big factor in determining health-related behaviour. The HBM takes its assumptions from both psychological and behavioural theory, and the two fundamentals of the health-related behaviour are "1) the desire to avoid illness, or conversely get well if already ill; and, 2) the belief that a specific health action will prevent, or cure, illness. Ultimately, an individual's course of action often depends on the person's perceptions of the benefits and barriers related to health behaviour" (LaMorte, 2022, p. 3).

There are six constructs of the HBM (Figure 1) – originally there were four, but through the years, two more were added to produce a more rounded approach (Green et al., 2020). Figure 1 gives an overview of the 6 constructs of the Health Belief Model and how they interact with each other to influence potential change. The six constructs are:

1. Perceived susceptibility – This points to an individual's subjective ideas about how at risk they are of a specific condition.

2. Perceived severity – This construct is concerned with how serious an individual considers a condition to be if they get it, and this often involves considerations of both the medical and social consequences of the condition.
3. Perceived benefits - This refers to an individual's ideas on how beneficial a proposed intervention or health behaviour will be, and ultimately, it is believed that people make decisions on health actions based on whether they perceive the recommended intervention to be beneficial to them or not.
4. Perceived barriers - This construct is concerned with an individual's feelings on the perceived challenges to undertaking a recommended health intervention. Scholars further emphasise under this construct that "there is wide variation in a person's feelings of barriers, or impediments, which lead to a cost/benefit analysis. The person weighs the effectiveness of the actions against the perceptions that it may be expensive, dangerous (e.g., side effects), unpleasant (e.g., painful), time-consuming, or inconvenient" (Charles and Sherman, 2015, 35)
5. Cues to action - This concept focuses on the motivation necessary to drive suggested health behaviours. Motivation can stem from personal experiences (such as symptoms) or external sources (for example, suggestions from others, a relative's illness, or an article in the newspaper).
6. Self-efficacy - This is the final construct and is concerned with whether individuals trust themselves to be able to perform the recommended action to promote health.(Charles and Sherman, 2015, 35)

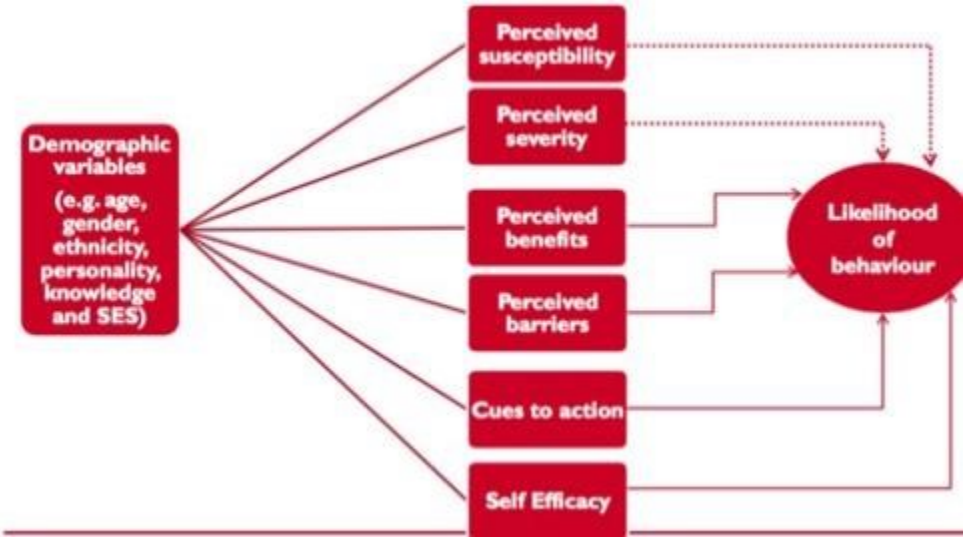


Figure 1: **The Health Belief Model** (Stretcher & Rosenstock, 1997)

2.2 Application of HBM

The HBM hypothesises that messages regarding health interventions will lead to changes in behaviour if they effectively address perceived obstacles, advantages, self-confidence, and risks

(Jones, et al., 2015). The proposed intervention for this study was the available mhealth tools, and the corresponding health risk would be mental health challenges. Finally, the expected behaviour outcome was that youth adopt the use of digital mental health tools into their everyday lives. Data analysis was informed by the HBM, perceived susceptibility was investigated by asking participants questions about how likely they thought it was that they are at risk of mental health in the future. Perceived severity was beneficial in understanding to how worried young people are about the consequences of developing mental health challenges or disorders and whether they have had personal experiences of suffering from mental health challenges. The survey probed on perceived benefits and perceived barriers, self-efficacy (where we explored if participants believe that they would trust themselves to perform the required action, proficiency in using digital tools). This model assisted in holistically understanding the decision-making process amongst youth when making decisions about using digital mental health interventions and tools.

2.3 Mental Health as a Health Crisis

The focus on mental health has increasingly gained attention over the past few decades with growing recognition of its significance in both individual and public health (Fuhrer & Keyes, 2019). Despite this rising attention, the progress in addressing mental health issues has been slow, particularly in low- and middle-income countries (LMICs) where access to mental health services and resources remains limited (Wainberg et al., 2017). In these regions, mental health challenges are made of a variety of socio-economic and cultural factors, including stigma, discrimination, lack of knowledge, and insufficient resources, all of which significantly impede efforts to improve mental health outcomes (Ahmedani, 2011). These barriers are not only prevalent in LMICs but also affect more developed countries, though to a lesser extent.

Jorm (2012) emphasized that for other major health conditions, such as infectious diseases, widespread knowledge of preventive measures, early intervention, and treatment has been proven to benefit communities. However, mental health has not been afforded the same level of focus in terms of public awareness and educational initiatives. Jorm's assertion underlines the critical gap in mental health education, noting that while some improvements have been seen in certain countries, much more needs to be done. Specifically, Jorm (2012) advocated for an increased

investment in mental health literacy, suggesting that integrating mental health education into national health policies could empower communities to better recognize, manage, and prevent mental health issues. The promotion of mental health literacy, he argued, is key to minimizing stigma and improving help-seeking behaviours, thus fostering a more supportive environment for mental well-being.

Mental health literacy is defined as "knowledge and beliefs about mental disorders which aids recognition, management or prevention" (Jorm, 2012, p.396). This idea includes not just an awareness of the signs and symptoms associated with mental health disorders, but also an understanding of effective coping strategies, available treatments, and ways to mitigate risks. Research indicates that enhanced mental health literacy can lead to improved identification of mental health issues and a greater readiness to seek assistance (Gulliver et al., 2012). In their research, Jorm and colleagues (2006) discovered that individuals who possess adequate mental health knowledge are more inclined to recognize mental health disorders early, pursue professional help, and adopt preventative strategies. Furthermore, a study by Afşar & Özkan (2023) explored the connection between health knowledge and health-seeking behaviours among chronic patients, revealing a negative correlation between health literacy and health-seeking actions; this relationship was also influenced by demographic factors such as age and education level.

Furthermore, studies have demonstrated that improving mental health literacy can also play a significant role in reducing stigma and promoting mental health as a legitimate and important aspect of overall well-being (Thornicroft et al., 2016). This is particularly crucial in cultures where mental health issues are often marginalized or viewed negatively. In such contexts, mental health literacy initiatives have been identified as vital tools for shifting public attitudes and fostering greater acceptance and understanding of mental health conditions (Pinfold et al., 2003). For example, in a South African context, improving mental health literacy has been associated with an increased willingness to seek help and reduced perceptions of shame associated with mental health problems (Sartorius, 2007).

Despite the importance of mental health literacy, challenges persist, especially in LMICs, where structural factors such as limited healthcare infrastructure, lack of trained professionals, and

financial constraints further hinder progress (Wainberg et al., 2017). These barriers not only limit access to care but also make it more difficult to implement comprehensive mental health literacy campaigns that can address the complex and multifaceted nature of mental health. As highlighted by Patel et al. (2018), efforts to improve mental health literacy must be paired with increased investments in mental health services, particularly in LMICs, where mental health systems are often underfunded and limited.

While mental health literacy represents a critical area for intervention, particularly in LMICs, efforts to improve it must be integrated into broader policy and community health strategies. As Winkler et al, (2024) argues, mental health literacy should not be viewed in isolation but rather as part of a systemic effort to promote mental well-being, reduce stigma, and ensure that individuals have the knowledge and resources needed to manage mental health issues effectively. By prioritizing mental health education and aligning it with national health policies, societies can begin to make substantial progress toward improving mental health outcomes on a global scale (Zeng et al., 2024).

The importance of youth mental health literacy has become increasingly recognized worldwide as a vital element in enhancing mental well-being and promoting help-seeking behaviours in young individuals. Research conducted globally has emphasized that mental health literacy plays a key role in enabling youth to identify symptoms of mental health disorders, comprehend available treatment options, and mitigate the stigma surrounding mental illness (Jorm, 2012; Gulliver et al., 2012 & Patel et al., 2018).

In South Africa, the mental health understanding among young people is particularly alarming, highlighting an urgent need to tackle both the awareness gap and the significant stigma associated with mental health. Studies reveal that a considerable number of South African teenagers and young adults find it challenging to identify mental health problems, often linking symptoms to individual shortcomings or external pressures like social challenges (Herman et al., 2009; Sequeira et al., 2022; Field et al., 2020). This situation is exacerbated by ongoing issues within the country's mental health system, such as the lack of mental health professionals and resources, especially in rural and disadvantaged regions (Morales et al., 2020). Nevertheless, initiatives designed to enhance mental health awareness among young people in South Africa

have shown positive results. Programs that provide education on mental health disorders, coping tactics, and available support have been effective in diminishing stigma and promoting help-seeking behaviours (Bhana et al., 2014). These results highlight the necessity of incorporating mental health education into school programs and community outreach efforts, especially in low- and middle-income countries (LMICs), where early intervention and education are crucial for improving mental health outcomes in youth (Reddy et al., 2016).

2.4 Defining Mental Health

Mental health is often described as a "state of well-being in which an individual recognizes their own capabilities, can handle the typical stresses of life, can work in a productive and meaningful way, and is capable of contributing to their community" (World Health Organization, 2021). This definition has played a crucial role in shaping the understanding of mental health as more than simply lacking mental illness, highlighting the significance of positive psychological health and functioning. Nevertheless, other definitions have aimed to expand this perspective by focusing on the dynamic and multifaceted aspects of mental health and its impact on a person's ability to engage with society and manage life's difficulties. For example, Cattan and Tilford (2006) contend that mental health should not be strictly defined by the absence of disorders, but rather as a complex and ongoing process that encompasses emotional, social, and psychological well-being.

Silvana Galderisi and her colleagues (2015) have expanded upon the WHO definition, offering a more nuanced perspective. They propose that mental health should be viewed as:

> …a dynamic state of internal equilibrium with universal values of society. Basic cognitive and social skills; the ability to recognize, express, and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles; and a harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium that enables individuals to use their abilities in harmony" (Galderisi et al., 2015, pp. 231-232).

This expanded definition shifts the focus from a static or idealized state of well-being to a more holistic, dynamic understanding of mental health that integrates emotional regulation, social functioning, and resilience. It emphasizes the importance of cognitive and social skills, emotional

awareness, and the ability to navigate life's challenges—highlighting the relationship between an individual's psychological and physiological states.

Furthermore, the definition of mental health proposed by Galderisi et al. aligns with the biopsychosocial model, which posits that mental health is influenced by a complex interplay of biological, psychological, and social factors (Engel, 1977). This perspective is gaining traction in contemporary research, as it allows for a deeper understanding of mental health challenges that accounts for both individual vulnerabilities and societal influences. For example, Fusar-Poli et al. (2020) argue that mental health is not just the absence of illness, but a product of an individual's interaction with their environment, emphasizing resilience and social functioning as key components of mental health. Hernández-Torrano et al. (2020) further contribute to this view by suggesting that the presence of mental health is directly tied to one's capacity for personal growth and the fulfilment of life goals, reflecting a shift toward recognizing the positive aspects of mental health rather than merely focusing on its deficits.

While these expanded definitions provide a more holistic understanding, the majority of literature continues to rely on the WHO definition or closely aligned interpretations. The WHO framework remains central in many public health and policy discussions due to its simplicity and broad applicability (Fusar-Poli et al., 2020). Nevertheless, scholars argue that more comprehensive definitions are necessary to address the complexities of mental health, particularly when considering the impact of mental health issues on various domains of functioning, including work, relationships, and community involvement (Galderisi et al., 2015). This view is particularly pertinent in the context of global health initiatives, where there is increasing recognition of the need for integrated approaches that address not only the treatment of mental illness but also the promotion of mental well-being across populations.

For the purposes of this study, the expanded definition proposed by Galderisi et al. will be adopted. This integrated perspective allows for a deeper exploration of how mental health challenges affect various aspects of functioning and well-being across different life domains. By adopting a broader, more dynamic conceptualization of mental health, we can better understand the diverse factors that contribute to mental health outcomes and develop more effective interventions aimed at promoting holistic well-being.

2.5 Mental Health and Young People

The mental health of students, especially in the United States, has emerged as a significant issue, with disturbing statistics revealing a considerable level of distress among young individuals. As reported by the Centers for Disease Control and Prevention (CDC) in 2022, over 40% of students indicated that they frequently felt sad or hopeless, while around 29% suffered from poor mental health. Furthermore, it is estimated that more than 1 in 5 students seriously contemplated suicide in 2021, highlighting the critical nature of the mental health crisis impacting youth. The CDC also pointed out that students who identify as part of sexual and gender minorities (LGBTQ+), female students, and those belonging to racial or ethnic minority groups are especially at risk for mental health issues (Centers for Disease Control and Prevention, 2022). This inequality emphasizes the additional vulnerabilities faced by marginalized populations, as factors like discrimination and social exclusion lead to worse mental health outcomes (Meyer, 2003).

For the purposes of this study, students are defined as individuals whose primary role is academic engagement within a higher education institution, as noted by Bernaola et al. (2020). Moreover, the World Health Organization (2021) reported that suicide is the fourth leading cause of death among individuals aged 15 to 29, which is an alarming statistic that speaks to the urgency of addressing mental health issues among young people. In South Africa, the situation is equally concerning, with UNICEF (2022) reporting that 73% of children and young people needed mental health support in 2022, yet only 38% sought help. This underscores the significant gap between the demand for mental health support and the availability and use of services. Additionally, suicide accounts for 9% of deaths among individuals aged 15-24 in South Africa (South African Depression and Anxiety Group, 2022), emphasizing the critical need for targeted mental health interventions.

The mental health issues encountered by adolescents and young adults are shaped by various factors. Among the most commonly mentioned are genetic predispositions, experiences of adversity, peer pressure, struggles with identity formation, societal gender norms, and socioeconomic hardships (World Health Organization, 2021). Wahid et al. (2021) identified several significant risk factors for depression, highlighting family history of depression, experiences of bullying, and an unfavourable family environment as the most measurable.

Additional elements like physical health problems, exposure to trauma, and substance misuse were also found to increase the susceptibility of adolescents and youth to mental health disorders, but they were regarded as less straightforward to assess. The research emphasizes the intricate interactions among individual, familial, and societal elements that elevate the risk of mental health challenges in young individuals.

In South Africa, additional risk factors such as the high prevalence of HIV, exposure to violence, and substance use increase the vulnerability of youth to mental health disorders (Mokitimi, 2018). The prevalence of HIV is a particularly unique and pressing issue in South Africa, where young people are disproportionately affected by infection of HIV and other underling factors caused by high HIV infection rates such death of parents which in turn increases the number of child-headed homes, poverty and malnutrition (Sebola & Madiba, 2020). A report released in 2024 revealed that in South Africa about 44 000 children (0-17 years) live in child-headed households (Statistics SA, 2024). Child headed are defined as a household where all members are under the age of 18 (Richter & Desmond, 2008). This prevalence of child-headed household leads to added stress and potential mental health issues (Makuyana, Mbulayi, & Kangethe, 2020). Similarly, substance abuse and exposure to violence, including sexual violence and bullying, further exacerbate mental health challenges in the youth population. These issues are also influences by socio-economic hardships, such as poverty and limited access to mental health resources, making it even more difficult for youth to seek appropriate help (Kirkbride et al., 2024). Additionally, unemployment is another significant determinant of mental health among youth. In Ethiopia, a study found that depression was prevalent among 30.9% of unemployed young adults (Mokona et al., 2020). However, a study conducted in Kwa-Zulu Natal, South Africa, found no statistical significance between psychological distresses in youth who were unemployed compared to those employed (Mngoma & Ayonrinde, 2022). This suggests that the relationship between unemployment and mental health may be more complex, with other contributing factors such as the quality of social support, community resources, and individual coping mechanisms playing a significant role in mediating mental health outcomes. Unemployment and socio-economic factors are significant determinants of youth mental health, contributing to high levels of stress, anxiety, and depression. Unemployment, in particular, is closely linked to poor mental health outcomes, as it can lead to financial instability, social

exclusion, and a diminished sense of purpose (Frydenberg et al., 2019). Studies have shown that unemployed youth are more likely to experience feelings of hopelessness, lower self-esteem, and higher levels of psychological distress compared to their employed counterparts (Mokona et al., 2020). In many low- and middle-income countries (LMICs), where youth unemployment rates are particularly high, these mental health challenges are compounded by the lack of access to mental health care and support systems (Fusco et al., 2020). Socio-economic conditions like poverty, insufficient education, and restricted access to social services intensify the mental health challenges. Youth from underprivileged backgrounds are more prone to encountering long-term stressors, such as substandard housing, food scarcity, and exposure to violence, which heighten their susceptibility to mental health problems (Patel et al., 2018). These socio-economic stressors can hinder their ability to thrive emotionally and psychologically, leading to long-term consequences for mental well-being and overall development. In South Africa, for example, research has shown that the intersection of high unemployment rates and socio-economic inequality significantly contributes to poor mental health outcomes among youth, with unemployment being a key predictor of depression and anxiety (Mokitimi, 2018). The current unemployment rate amongst youth in South Africa has been reported to be 45.5% which is significantly higher than most countries (STATISTA, 2024; Stats SA, 2024)

An additional risk factor gaining attention in recent years is the prevalence of cyberbullying, particularly as adolescents increasingly engage with digital platforms and social media (Geraldine et al., 2024). With the proliferation of smartphones and internet access, young people are spending more time online, which exposes them to greater risks of cyberbullying. This form of bullying, which involves the use of digital communication technologies to harass, threaten, or intimidate others, can have severe consequences for adolescents' mental health (Albikawi, 2023). Cyberbullying has been linked to feelings of isolation, depression, anxiety, and even suicidal ideation (Cheng-Min & Tai-Kuei, 2017). The global rise in internet usage among adolescents is striking, with 15-17-year-olds accounting for one-third of internet users worldwide (UNICEF, 2021). This increase in online activity raises concerns about the detrimental impact of online harassment, as many young people are subjected to harmful online behaviours, sometimes in environments that they may not be able to escape, such as social media platforms or online gaming spaces.

In Vietnam, a study found a significant association between the amount of time adolescents spent online and the likelihood of experiencing cyberbullying. Adolescents who spent more than three hours per day online were at a higher risk of being cyberbullied, with the study highlighting that longer durations of internet usage increased the likelihood of encountering cyberbullying (Chi et al., 2020). This finding mirrors global concerns about the relationship between screen time and mental health outcomes, emphasizing the need for awareness around excessive internet use and its potential to expose vulnerable adolescents to harm. Additionally, it suggests that interventions to reduce excessive internet usage could play a critical role in mitigating the effects of cyberbullying.

Similarly, a study conducted in Limpopo, South Africa, found that over half of adolescents with access to digital technology had experienced some form of cyberbullying, with significant emotional and psychological repercussions (Parvaneh et al., 2019). The study revealed that victims of cyberbullying were more likely to experience depression, anxiety, and suicidal ideation, underlining the serious mental health consequences of online harassment. This highlights the urgent need for targeted interventions in South Africa, where adolescents face unique socio-economic pressures and often lack sufficient mental health resources. Cyberbullying is particularly concerning in the South African context, where high levels of unemployment, inequality, and exposure to violence already contribute to mental health challenges among youth (Mokitimi, 2018).

In other African countries, the impact of cyberbullying on mental health is similarly alarming. A study in Nigeria found that students who experienced cyberbullying reported increased levels of anxiety and depression, and the negative effects on their academic performance were significant (Olumide et al., 2021). The study also highlighted the role of peer pressure in exacerbating the psychological distress caused by cyberbullying, as adolescents struggle to navigate both their online and offline social worlds. These findings reflect a broader pattern in sub-Saharan Africa, where the lack of digital literacy and inadequate mental health resources amplify the harmful effects of cyberbullying. Moreover, the pervasive nature of social media platforms exacerbates the vulnerability of young people, who often lack the coping mechanisms to handle online abuse.

In response to the rising rates of cyberbullying, interventions aimed at educating both parents and adolescents about safe internet practices have been implemented in various countries. For example, in Kenya, the government has initiated campaigns to raise awareness about online safety, while schools have started incorporating digital literacy programs into their curricula to help students identify and cope with cyberbullying (Kiarie & Muindi, 2020). In South Africa, various non-governmental organizations have launched campaigns to combat cyberbullying, focusing on providing mental health support and increasing public awareness about the issue (South African Depression and Anxiety Group, 2022).

The growing prevalence of cyberbullying amongst other social ills, highlights the need for comprehensive strategies that combine digital literacy, mental health support, and public awareness to protect adolescents from its harmful effects. As the digital landscape continues to evolve, it is essential to develop proactive measures to equip young people with the tools they need to navigate online spaces safely and protect their mental health. In addition to cyberbullying, South Africa has a high prevalence for gender-based violence (GBV) which could increase youth risk to mental health challenges (Paruk, & Nassen, 2022). A report released by the Commission for Gender Equality (2024) note that reports of GBV keep increasing with a current account of 53,498 reported sexual offences, while this number is high it does not account for those cases that remain unreported by victims. Individuals affected by gender-based violence (GBV) frequently endure prolonged psychological distress, which can manifest as anxiety, depression, post-traumatic stress disorder (PTSD), and thoughts of suicide (White et al., 2024). The trauma stemming from physical, emotional, or sexual violence disrupts the individual's perception of safety and self-esteem, resulting in a cycle of declining mental health (Radell et al., 2021). In South Africa, the surrounding social and cultural environment intensifies these consequences, as survivors may encounter stigmatization, insufficient support, and restricted access to mental health services (Mkwananzi & Nathane-Taulela, 2024). Additionally, the normalizing of GBV in some communities further deepens the psychological toll on victims, preventing healing and recovery (Diko, 2023; Malatjie & Mamokhere, 2024).

According to the World Health Organization (WHO), the most prevalent mental health challenges affecting adolescents and youth globally include depression, anxiety, and behavioural disorders (World Health Organization, 2021). These mental health disorders not only affect the

emotional health of young people but also have an impact on their educational achievement, interpersonal relationships, and overall life satisfaction.

Depression ranks among the most prevalent and debilitating mental health disorders in youth. It is marked by ongoing feelings of sadness, hopelessness, and a disinterest in activities that once brought joy. Major depression, the most severe form of this condition, is defined by a depressed mood or disinterest lasting for no less than two weeks and significantly disrupting an individual's daily life (APA, 2022). Other types of depression include Persistent Depressive Disorder (dysthymia), which features milder symptoms but persists for an extended period, usually a minimum of two years. Conversely, Seasonal Affective Disorder (SAD) is associated with seasonal changes, becoming particularly common during the winter months when there is less daylight. Symptoms of depression may comprise irritability, fatigue, appetite changes, insomnia or excessive sleeping, physical discomfort, and in severe cases, suicidal thoughts (Substance Abuse and Mental Health Services Administration, 2016; APA, 2022). Worldwide, depression is among the leading causes of disability, and its effects can be more pronounced in adolescents due to the challenges they encounter regarding academic pressures, social connections, and the process of forming their identities (WHO, 2024).

For example, studies in the United States have found that depression among adolescents is widespread, with about 13% of adolescents experiencing major depressive episodes, and the prevalence is notably higher among females (National Institute of Mental Health, 2023). Furthermore, in sub-Saharan Africa, a study conducted in South Africa found that depression among youth was strongly linked to exposure to childhood adversity, including physical and emotional abuse, as well as socio-economic stressors such as poverty and unemployment (Myer et al., 2009). These findings suggest that environmental and contextual factors play a significant role in the development and exacerbation of depression among young people in both high-income and low- and middle-income countries (LMICs).

Anxiety stands out as a common mental health issue among teenagers, marked by persistent and overwhelming worry regarding various life aspects such as academic success, social relationships, and future opportunities (WHO, 2023). Anxiety disorders can manifest through physical symptoms like restlessness, fatigue, irritability, muscle tension, and disturbances in

sleep (APA, 2022). In the United States, research shows that around 31.9% of teenagers experience anxiety disorders, with a notably higher occurrence in females (National Institute of Mental Health, 2023). Likewise, research conducted in South Africa indicates that anxiety is prevalent among adolescents, particularly in high-stress situations like those characterized by elevated crime rates, poverty, and limited access to mental health resources (Marlow et al., 2023; Mkhwanazi & Gibbs, 2021; Titi et al., 2022). Anxiety frequently coincides with depression, amplifying the challenges faced by youth and negatively affecting their academic achievements and social interactions. This highlights the necessity of tackling both anxiety and depression in mental health programs aimed at young individuals.

Behavioural disorders encompass a broad range of conditions characterized by persistent patterns of disruptive behaviour that significantly impact an individual's ability to function socially or academically. Disorders such as Obsessive-Compulsive Disorder (OCD), Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), Attention-Deficit/Hyperactivity Disorder (ADHD), and Autistic Spectrum Disorders are among the most commonly identified behavioural disorders in youth (APA, 2022). These disorders can lead to significant impairments in daily functioning, with ADHD and CD being particularly common among children and adolescents. Behavioural disorders are also frequently linked with academic underachievement, strained family relationships, and involvement in risky behaviours. For instance, a study in South Africa found that ADHD was one of the leading behavioural disorders in young people, with children displaying significant difficulties in concentration and impulse control, often leading to challenges in school and social settings (Ogundele, 2018).

In low- and middle-income countries (LMICs), including many nations in Sub-Saharan Africa, adolescents and youth are often subjected to a range of stressors that significantly impact their mental health. These stressors include widespread poverty, family dysfunction, exposure to violence, and limited access to education and mental health services (WHO, 2024). The consequences of these challenges are severe, contributing to a high prevalence of mental health disorders such as depression, anxiety, and behavioural problems among young people (Barry, Clarke, & Jenkins, 2013). These stressors, often compounded by unstable socio-economic environments, create a cycle of vulnerability, where adolescents experience ongoing mental

health difficulties that not only affect their well-being but also hinder their potential for a successful academic, social, and professional future.

One of the most pressing sources of stress in low- and middle-income countries (LMICs) is poverty, which deeply affects the mental health of teenagers. In nations such as South Africa, where poverty levels are elevated, numerous adolescents are raised in settings where they lack access to fundamental resources like sufficient nutrition, healthcare, and stable housing (de Villiers, 2021; Marutlure, 2022). The pressure of financial instability and the ensuing socio-economic difficulties can greatly influence mental well-being. Evidence indicates that adolescents living in impoverished conditions are more likely to suffer from depression, anxiety, and emotional turmoil due to persistent concerns about their family's survival, scarce opportunities, and inadequate living standards (Shannon et al., 2015). Furthermore, research from South Africa has shown that youth from low-income families face heightened levels of psychological distress and are more susceptible to using substances as a means of coping (Kaunda et al., 2021).

Another major stressor affecting youth mental health in LMICs is exposure to violence, including domestic abuse, community violence, or armed conflict. In Sub-Saharan Africa, where incidents of violence are commonly reported, particularly in urban and conflict-affected areas, young individuals are at a heightened risk for developing mental health issues (WHO, 2010; Sui et al., 2021). For example, in South Africa, youth often encounter violence at home, in educational settings, or in their neighbourhoods, which can result in conditions such as post-traumatic stress disorder (PTSD), mood disorders, and substance use disorders (Myer et al., 2009). Research has also revealed that children and adolescents raised in dysfunctional households—characterized by parental neglect, substance abuse, or mental health issues—are more likely to experience depression, anxiety, and behavioural problems (Stein et al., 2008). Furthermore, intergenerational trauma has been identified as a significant factor in the mental health of youth in South Africa, with the legacy of apartheid continuing to impact mental health across generations (Kim et al, 2023). Intergenerational trauma refers to the phenomenon of passing down the effects of distressing or oppressive events, from one generation to the next, these could include things such as violence, racism oppression etc. (Chakraverty, 2023). Research conducted in South Africa has demonstrated that young people who grow up in environments marked by violence, poverty, and

family instability are more likely to suffer from mental health issues, which can further perpetuate the cycle of poverty and poor mental health (Peltzer et al., 2013).

Another significant factor contributing to mental health challenges in LMICs is the lack of access to quality education and mental health services. Education plays a crucial role in promoting psychological well-being and providing individuals with the skills necessary to cope with life's challenges. However, in many LMICs, educational systems are underfunded and overburdened, leaving many youth with limited opportunities for personal and academic growth. In South Africa, studies have highlighted that many adolescents in disadvantaged communities face difficulties accessing education due to factors like overcrowded classrooms, poor school infrastructure, and a lack of trained teachers (Nelda & Strydom, 2012; Christian & Stambach, 2024). This educational disadvantage, coupled with socio-economic stressors, often leads to increased mental health challenges, including feelings of inadequacy, low self-esteem, and hopelessness (Petersen et al., 2017).

In low- and middle-income countries (LMICs), mental health services are frequently limited and difficult to access, particularly in rural and marginalized regions. Even though there has been a rise in mental health awareness in South Africa in recent years, there remains a notable shortfall in the number of mental health professionals and treatment alternatives, especially for young people (Shisana et al., 2024). Adolescents in South Africa and other Sub-Saharan African nations often encounter obstacles when trying to obtain professional assistance due to the stigma associated with mental illness, insufficient mental health education, and financial limitations (Dlamini et al., 2019). This lack of available support results in many young individuals resorting to unhealthy coping mechanisms, such as substance abuse or self-injury, or enduring their struggles in silence without the necessary help.

The mental health challenges faced by youth in LMICs can have significant long-term implications. Adolescents who suffer from untreated mental health issues are more likely to experience academic underachievement, school dropout, and a reduced ability to succeed in future employment (McCurdy et al., 2022). In South Africa, research by Myer et al. (2009) found that childhood adversity, including exposure to trauma and violence, was significantly associated with higher rates of school dropout, particularly among adolescents experiencing mood disorders,

PTSD, and substance use disorders. These academic disruptions often result in fewer economic opportunities, reinforcing the cycle of poverty and limiting the prospects of young people. The long-term consequences of untreated mental health conditions can also extend into adulthood. Studies across LMICs have shown that untreated mental health disorders in youth are linked to higher rates of unemployment, homelessness, and involvement in criminal activities (Kaufman et al., 2020). For instance, a study conducted in South Africa highlighted that youth with untreated mental health conditions were more likely to be unemployed and engaged in risky behaviours, such as early sexual activity or substance use, which further exacerbates their vulnerability to adverse outcomes (Meyer et al., 2014).

Addressing mental health issues among young people in low- and middle-income countries (LMICs) necessitates a comprehensive strategy that enhances educational access, mitigates stigma, raises mental health awareness, and reinforces mental health services (Semrau et al., 2023). In South Africa, programs that focus on mental health in schools and community outreach initiatives by organizations like The South African Depression and Anxiety Group (SADAG) are contributing to better mental health awareness and offering essential support to youth. Furthermore, initiatives that prioritize trauma-informed care and tackle the foundational socio-economic issues leading to mental health challenges are vital for achieving lasting improvements in the mental well-being of young individuals (Shannon et al., 2015). Additionally, incorporating mental health services into primary healthcare and providing youth-friendly services that address the unique needs of adolescents can help close the treatment gap and ensure that a greater number of young people can access the care they require.

There is therefore evidence that youth in LMICs, especially South Africa, face multiple stressors that contribute to the high prevalence of mental health disorders. In 2022 the UNICEF reported that 73% of youth were in need of mental health support (UNICEF, 2022). Poverty, exposure to violence, family dysfunction, and limited access to education and mental health care are among the major factors that impact adolescent mental health (Adjei et al., 2021). These challenges not only affect the immediate well-being of young people but also have far-reaching implications for their academic success and future employment prospects (Cardenas et al, 2022). To improve mental health outcomes, it is essential to address these stressors holistically, through a

combination of community-based interventions, improved access to services, and policies that reduce the socio-economic pressures faced by adolescents.

A key challenge in LMICs like South Africa is the lack of accessible mental health care services and the stigma surrounding mental health (Monnapula-Mazabane & Petersen, 2022). The stigma often prevents youth from seeking help, which exacerbates the problems they face. In response, there is a growing recognition of the need for early intervention and mental health education to address these issues. Initiatives such as peer support programs and school-based mental health services have shown promise in reducing stigma and improving access to care (Ahad, Sanchez-Gonzalez & Junquera et al., 2023). For instance, South African organizations like SADAG have been working to raise awareness and provide support services for youth with mental health challenges, using community outreach and digital platforms to reach a wider audience (SADAG, 2024).

Mental health issues like depression, anxiety, and behavioural disorders are prevalent among adolescents worldwide (WHO, 2023). These conditions significantly affect young people's lives, jeopardizing their academic success, social interactions, and future opportunities. In low- and middle-income countries (LMICs) such as South Africa, where socio-economic difficulties and limited mental health resources exist, tackling youth mental health demands comprehensive approaches that integrate education, early intervention, and community-based support systems (Coetzer, Bold & van der Mark). By prioritizing mental health care and promoting awareness, we can diminish the stigma related to mental health and encourage young individuals to seek necessary assistance, enhancing their well-being and future prospects.

In addition to these risk factors, platforms for adolescents to discuss and receive help for their mental health concerns are crucial. In South Africa, a growing recognition of the need to support youth in addressing mental health issues has led to increased initiatives aimed at providing access to mental health care (Shisana et al., 2024). Despite progress, numerous young individuals still encounter obstacles in obtaining professional assistance, such as stigma, inadequate knowledge of available resources, and a shortage of mental health professionals, particularly in rural regions (Mokitimi, 2018). To bridge this divide, the South African government has begun to roll out policies focused on incorporating mental health services into primary healthcare and educational

environments to enhance the accessibility of mental health support for adolescents (Parker et al., 2019).

Promoting mental health literacy among youth is also a critical step toward improving mental health outcomes. Mental health literacy involves increasing young people's knowledge about mental health issues, how to recognize symptoms, and how to seek help when needed (Jorm, 2012). In South Africa, mental health literacy is being integrated into school the curricula, but challenges remain in terms of widespread awareness and the stigma associated with mental health issues (South African Department of Basic Education, 2024). Research has shown that young people with higher levels of mental health literacy are more likely to seek help and engage with available resources (Mokotimi, 2018). However, given the cultural and socio-economic challenges in many African contexts, mental health literacy programs need to be culturally sensitive and contextually appropriate to be effective.

Tackling the mental health issues that affect young people necessitates a diverse strategy. It is crucial to address risk factors like family relationships, economic status, and substance abuse, while also improving access to mental health services and combating cyberbullying, to lessen the overall mental health burden. Enhancing mental health literacy is an important aspect of aiding young individuals and empowering them to take charge of their mental well-being. As the global youth mental health crisis expands, it is essential to implement thorough, targeted strategies that reach adolescents across the globe.

2.6 Knowledge of Mental Health amongst Adolescents and Youth

Mental health literacy plays a critical role in reducing stigma, enhancing help-seeking behaviours, and empowering communities to recognize the signs and symptoms of mental health conditions. This understanding is fundamental in addressing mental health challenges across the globe. Tesfaye et al. (2021) argue that knowledge of mental health is integral in combating stigma, as it helps individuals distinguish between myths and facts, therefore encouraging those affected by mental health issues to seek timely care. By fostering a better understanding of mental health, individuals become more inclined to recognize early symptoms in themselves or others, thus improving the likelihood of intervention and reducing delays in seeking care.

Grant et al. (2021) further emphasize the importance of mental health literacy in sub-Saharan Africa, suggesting that the low demand for mental health services in this region is partly a result of poor mental health literacy. Without proper awareness or understanding of mental health, people in these areas may not recognize the need for professional assistance or may fear the social consequences of disclosing mental health struggles. This gap in awareness can be seen as a major barrier to improving access to care in sub-Saharan Africa.

In a study conducted in Iran, Mahmoodi et al. (2022) explored mental health information-seeking behaviours among undergraduate students and found that although students were actively searching for mental health information, their knowledge was limited. Most participants relied on the internet for information; however, they expressed scepticism regarding the reliability of online sources. This suggests that while the internet can serve as a valuable resource, it may not always provide accurate or trustworthy information, particularly for vulnerable groups such as students who may be unaware of reputable sources.

In South Africa, although there are relatively few studies on mental health literacy, research conducted by Madlala et al. (2022) in the Tshwane region sheds light on the challenges in this area. Their study revealed that the general knowledge of mental health among participants was suboptimal, out of 381 participants when asked whether major depressive disorder was a mental health disorder, (37.3%), correctly identified it as a mental illness while 49.9% noted that it was neither a physical nor a mental illness and 7.6%) did not know whether it was a mental disorder or not. Interestingly, the study found a disparity between individuals from urban areas and those from township areas, with the latter showing poorer levels of mental health literacy. This suggests that efforts to improve mental health awareness may need to be tailored to different socio-economic contexts, with special attention to marginalized communities where access to mental health education may be limited. The study further advocates for increased focus on mental health education, particularly in township areas, where community-based programs could foster greater understanding and help reduce the stigma associated with mental illness.

A study conducted by Jumbe et al. (2022) further supports the observation that youth in Sub-Saharan Africa, including South Africa, possess inadequate mental health knowledge. The authors emphasize that insufficient mental health literacy among young people can result in both

the underreporting of mental health issues and a hesitance to seek professional support. This highlights the necessity for interventions aimed at young people to enhance mental health awareness from an early stage.

Enhancing mental health literacy among the youth is crucial not just for promoting healthier help-seeking behaviours, but also for cultivating a wider societal comprehension of mental health. Colizzi et al. (2020) assert that increased awareness and education regarding mental health can diminish stigma, encourage early intervention, and ultimately enhance the mental well-being of young people. This can be especially impactful in environments where cultural aspects may contribute to the hesitance in discussing mental health openly.

There is evidence to suggest that mental health literacy is crucial for improving health outcomes, reducing stigma, and promoting positive behaviours in response to mental health concerns. There is a pressing need for more focused efforts to educate youth and communities about mental health, particularly in resource-limited settings like Sub-Saharan Africa and South Africa. A concerted effort to improve mental health knowledge, especially in underserved areas, will not only reduce stigma but also encourage timely intervention, ultimately contributing to better mental health outcomes for individuals and communities.

2.7 Access to Mental Health Support in Low-Middle Income Countries

There is considerable evidence that the public health sector in South Africa has struggled to meet the growing demand for mental health care, particularly in low-income areas. This is primarily due to the lack of resources, insufficient infrastructure, and a limited number of mental health practitioners, making it difficult to adequately address the needs of the population (Booysen et al., 2021). The public mental healthcare system is often overwhelmed by the high number of patients seeking care, yet it remains ill-equipped to handle the burden effectively. As noted by Docrat et al. (2019), the public mental healthcare system in South Africa faces significant challenges, including inadequate funding, a shortage of skilled professionals, and a lack of specialized services, particularly in rural and underserved areas.

One of the most troubling statistics concerning mental health care in South Africa is the significant treatment gap. SADAG reports that fewer than 16% of individuals facing mental

health challenges receive the necessary treatment (Masombuka, 2019). This figure is considerably lower than the global averages, where estimates indicate that around 35-50% of people with mental health disorders in high-income nations access some form of treatment (World Health Organization, 2013). In South Africa, there is a heavy dependence on the public healthcare system, with more than 85% of the population relying on public health services for their mental health needs. Yet, the public sector only has 18 psychiatric beds for every 100,000 individuals, with just 1% of these beds designated for children and adolescents (Docrat et al., 2019). This gap between the demand for services and their availability highlights the intense strain on the system and the critical need for increased mental health resources.

In light of these limitations, it is clear that alternative interventions are essential to improve mental health outcomes, particularly for youth. Studies indicate that 1 in 5 adolescents will experience a mental health disorder, and this prevalence often persists into adulthood when left undiagnosed or untreated (Flisher et al., 2012). The lack of early intervention and effective mental health care for young people is a critical issue that needs to be addressed to prevent long-term consequences, such as academic failure, substance abuse, and social isolation. In South Africa, mental health problems in adolescents are frequently undiagnosed, and access to appropriate care is often delayed due to logistical, financial, and social barriers (Peltzer et al., 2013). This situation emphasizes the urgent need for comprehensive mental health interventions that extend beyond traditional clinical settings.

In response to these challenges, recent efforts have focused on developing digital mental health interventions to alleviate the mental health burden in low- and middle-income countries (LMICs) like South Africa (Giebel et al., 2024, Carter et al, 2021; Chakrabarti, 2024). Digital platforms, such as mobile apps, online counselling services, and telemedicine, have emerged as promising solutions to bridge the gap in mental health service delivery. These interventions can provide a range of services, including mental health education, psychoeducation, counselling, and support for conditions like depression, anxiety, and stress, making them more accessible to youth in remote or underserved areas (Carter et al., 2021). The increasing use of smartphones and internet access, even in rural areas of South Africa, offers a potential avenue for mental health care that could reach a wider audience. However, despite the potential benefits, the implementation of

digital mental health services requires careful consideration of youth attitudes toward these interventions.

While digital interventions show promise, the need for an integrated approach remains paramount. In addition to technological solutions, efforts should be made to enhance community-based mental health education, early detection, and management in South Africa. Training teachers, community leaders, and healthcare workers to identify the early signs of mental health disorders and provide initial support can help create a more holistic approach to mental health care (Wiedermann et al., 2023). By leveraging both traditional and digital interventions, South Africa can move toward a more comprehensive mental health system that addresses the needs of its youth population.

It is clear that the South African public health sector faces considerable challenges in providing adequate mental health care due to a shortage of resources and mental health professionals, especially in low-income and rural areas. The limited availability of psychiatric beds, particularly for children and adolescents, exacerbates the treatment gap, leaving many young people without the support they need. Digital mental health interventions offer a promising solution to address this gap, but barriers such as privacy concerns, technical difficulties, and the need for human interaction must be considered to ensure their success. Moving forward, a combination of digital interventions, community-based approaches, and improved access to traditional mental health services will be necessary to improve the mental health outcomes for South Africa's youth.

2.8 E-Health and Digital Mental Health Interventions

E-health involves leveraging digital technologies and electronic communication to provide healthcare services, enhance health, and manage health-related information. It includes various tools such as telemedicine, online health portals, mobile health applications, electronic health records (EHR), and wearable devices. A significant advantage of e-health is its capacity to increase healthcare accessibility, especially for those in remote or underserved locations (Haleem et al., 2021). Telemedicine, for instance, enables patients to connect with healthcare professionals through video calls or messaging, minimizing travel requirements and wait times (Shaw et al., 2018). This is particularly important in rural or economically disadvantaged areas where healthcare

services are limited, and physical access to medical facilities can pose a significant challenge (Ramanadhan et al., 2013). Furthermore, e-health resources like health applications and online platforms allow individuals to monitor their health indicators (such as blood pressure, glucose levels, or physical activity) and obtain real-time feedback, which empowers patients to take charge of their health and make well-informed choices (Fitzgerald et al., 2016). E-health has also shown promise in reducing healthcare expenses by optimizing administrative tasks, enhancing the efficiency of healthcare delivery, and decreasing unnecessary hospital visits and readmissions (Bashshur et al., 2016).

Another significant advantage of e-health is its ability to enhance communication between patients and healthcare providers, as well as between healthcare professionals themselves. Through secure online platforms, patients can easily communicate with their doctors to clarify treatment plans or ask follow-up questions, reducing the need for face-to-face consultations. This ongoing communication is particularly valuable in managing chronic diseases, where continuous monitoring and adjustment of treatment plans are often required (Bauer et al., 2014). The implementation of EHR systems facilitates the smooth sharing of patient information between various healthcare providers, enhancing the continuity of care and diminishing the chances of mistakes due to incomplete or disjointed medical histories (Häyrinen et al., 2008).

Nonetheless, despite the many advantages of e-health, there are various drawbacks and challenges that must be considered. A major concern is digital literacy, especially among older adults or those from lower socioeconomic backgrounds who may lack the necessary skills or resources to effectively utilize e-health tools (Bauer et al., 2014). For these demographics, dependence on digital mediums could intensify health disparities by leaving some individuals without the essential resources needed to manage their health. In addition, privacy and security issues pose a significant obstacle to the widespread implementation of e-health. The processes of collecting, storing, and transmitting personal health data via digital channels raise concerns regarding data security, the threat of cyberattacks, and the potential misappropriation of sensitive health information (Martin & Martin, 2019). Moreover, although e-health can enhance convenience and accessibility, it may also diminish in-person interactions that are crucial for fostering trust and personal connections in healthcare settings (Davis et al., 2018). For example, during telemedicine consultations, patients might feel less at ease discussing sensitive health matters, and healthcare providers could find it

difficult to deliver thorough care without conducting a physical examination of the patient (Shaw et al., 2018).

In some cases, the implementation of e-health may also lead to increased fragmentation of care, particularly when patients use multiple health apps or devices that do not integrate with existing healthcare systems (Bashshur et al., 2016). This can result in conflicting data, complicating diagnosis and treatment. Moreover, despite the potential for cost savings, the initial implementation and maintenance of e-health infrastructure can be expensive for healthcare organizations, particularly in low-resource settings (Ramanadhan et al., 2013). For example, the cost of setting up telemedicine platforms or electronic health records systems, along with training healthcare staff, can be prohibitive for some institutions.

Some examples of digital interventions for chronic diseases include tools for patient–provider communication, remote monitoring of medical devices, and patient education (Bashi et al., 2020). Although digital interventions have had great success in developed countries, research has highlighted that successful upscaling and uptake of such interventions is highly depended on the context in which the intervention is being implemented in (McCool et al., 2020).

A study by Hawke et al. (2021) aimed to evaluate youth attitudes toward online mental health and substance use services, finding that while many adolescents were open to receiving virtual support on an individual basis, they expressed discomfort with the idea of participating in group settings. The study also revealed several barriers that hinder the success of digital mental health interventions, including concerns about privacy, lack of human contact, technical barriers, and general dissatisfaction with the online experience. While many youth reported a positive attitude toward digital interventions, these findings highlight the importance of addressing the potential drawbacks, such as privacy concerns and the need for human interaction, to make digital mental health services more acceptable and effective for young people.

In South Africa, similar barriers to digital mental health services have been identified, such as the lack of internet connectivity in rural areas, issues with data costs, and concerns about confidentiality and privacy (Tomlinson et al., 2014). Furthermore, some youth may lack the digital literacy required to navigate these platforms effectively. Nevertheless, a study conducted in Cape Town by Rotheram-Borus et al. (2020) found that mobile-based mental health interventions

tailored to adolescents were well-received, with youth particularly appreciating the ability to access resources and support discreetly. These studies underscore the importance of designing digital interventions that are not only technologically accessible but also culturally sensitive and user-friendly to encourage adoption among young people.

A research study aimed at identifying obstacles to the utilization of mHealth technologies for changing and, if feasible, enhancing health behaviours and outcomes in populations within developing nations revealed that the main three barriers to the effective implementation of mHealth interventions were inadequate infrastructure, insufficient equipment, and a technology divide (Kruse et al., 2019). The South African Department of Health, in its National Digital Health Strategy (2019-2024), prioritized the scaling of impactful mHealth initiatives for community-based programs (Republic of South Africa: Department of Health, 2019). This initiative aims to broaden health promotion outreach to vulnerable demographics, including children, the elderly, and women, among others. Recent evidence shows successful integration of digital mental health interventions, which are typically designed for one or more functions, including supporting clinical care, providing education, aiding in diagnosis, identifying mental disorders, promoting treatment adherence, facilitating recovery, offering online self-help resources for individuals dealing with mental disorders, and developing programs for the prevention and treatment of substance abuse (Naslund et al., 2017).

Consequently, although e-health holds the promise of transforming healthcare by enhancing access, empowering patients, and lowering expenses, it also presents several challenges. To guarantee that e-health is effective and fair, it is crucial to tackle issues such as digital literacy, data protection, and the risk of diminished human interaction within healthcare environments. As e-health continues to develop, it is vital to thoughtfully address these challenges to fully harness its advantages while minimizing its drawbacks.

2.9 Digital Mental Health Interventions Available In South Africa

Intervention encompasses any actions taken to enhance human health by preventing, curing, or decreasing the severity or duration of an existing illness or health condition (Smith et al., 2015). Healthcare interventions can typically be divided into two primary types: preventive and

therapeutic. Preventive interventions focus on stopping diseases from arising in the first place, thus lowering the incidence of a disease or health issue within a community. Examples of preventive measures include vaccination initiatives, public health campaigns that encourage healthy lifestyle choices like physical activity and balanced diets, and screenings for the early detection of illnesses such as cancer (World Health Organization, 2020). For example, the extensive deployment of the Human Papillomavirus (HPV) vaccine has been shown to effectively decrease the incidence of cervical cancer in several countries (Drolet et al., 2015). Conversely, therapeutic interventions are those that aim to treat, alleviate, or delay the impact of a diagnosis of a disease or health condition. These can include administering medications, such as antiretroviral therapy for individuals with HIV, as well as surgical procedures or psychological therapy for mental health disorders (Alao et al., 2022). An example of a widely acknowledged therapeutic intervention is cognitive-behavioural therapy (CBT) for addressing depression and anxiety, which can lessen symptom severity and improve long-term outcomes for patients (Hofmann et al., 2012).

Recently, digital interventions have emerged as an innovative strategy for supporting mental health, offering greater accessibility and effectiveness. Digital interventions can be generally defined as any intervention that utilizes technology platforms—like computers, smartphones, or virtual reality—to assist individuals in managing their health conditions, including mental health challenges (Gega et al., 2022). These digital resources provide flexible, accessible, and cost-efficient mental health care solutions, especially in underserved populations or regions where traditional face-to-face mental health services may be limited or hard to reach. They can be sorted into several categories based on the approaches they use to deliver support. One of the most prevalent forms of digital mental health interventions consists of therapist contact interventions. These involve real-time interaction between the patient and a healthcare professional via video calls, phone, or online messaging. Such measures have been proven to effectively deliver mental health services to individuals in remote or underserved areas. An example is Teletherapy, where patients can connect with licensed therapists from the comfort of their homes, overcoming challenges such as geographic barriers and time limitations. Research conducted in the United States indicated that online therapy for anxiety and depression was equally effective as traditional in-person therapy, resulting in significant improvements in mental

health symptoms and patient satisfaction (Andersson et al., 2014). In South Africa, platforms like BetterHelp and Psychology Today offer teletherapy at a monthly fee, enabling clients to receive professional support in both urban and rural areas where mental health practitioners are scarce.

Another type of digital intervention involves online peer support groups. These platforms enable individuals facing similar mental health challenges to engage, exchange experiences, and provide mutual support through digital forums, video conferencing, or social networking sites (Strand, Eng, & Gammon, 2021; SADAG, 2022). Peer support groups have demonstrated their effectiveness in decreasing feelings of loneliness and delivering essential emotional support for those dealing with mental health issues. A prominent example is 7 Cups, an online service that links individuals with trained listeners and offers peer assistance through text and chat services. Research indicates that these platforms can enhance emotional wellness and alleviate depressive symptoms, especially when users are actively involved in the community (Richards et al., 2017). In South Africa, digital resources such as SADAG provide online peer support for individuals facing mental health difficulties, creating a space for people to share their experiences and receive guidance from others who relate to their challenges.

Web-based therapy programs are another important category of digital interventions. These programs often provide psychoeducation, self-help tools, and therapeutic exercises that can be accessed by users at their own convenience. *MoodGym*, an online cognitive behavioural therapy (CBT) program, is an example of such an intervention that has been widely used to address symptoms of depression and anxiety (Proudfoot et al., 2004). These programs typically involve structured lessons, worksheets, and assessments that allow users to learn coping strategies, track their moods, and develop skills to manage their mental health. In South Africa, *The Digital Mental Health Project* developed by the University of Cape Town offers online therapy programs that teach individuals to cope with stress, manage anxiety, and improve their emotional well-being, particularly among young people and university students (UCT, 2020).

Mobile-based therapy programs have gained significant popularity in recent years, particularly due to the widespread use of smartphones. Mobile apps like *Headspace* (which focuses on mindfulness and meditation) and *Calm* (which offers guided meditation and stress reduction exercises) have become common tools to manage anxiety and promote mental well-being (New

York Times, 2024). Studies have shown that such apps can significantly reduce symptoms of stress, anxiety, and depression, particularly when users engage with them regularly (Furukawa et al., 2019).

Finally, digital interventions also encompass more advanced technologies such as *virtual reality (VR)* and *cognitive training programs*. VR is increasingly being explored as a tool for treating various mental health conditions, including post-traumatic stress disorder (PTSD) and anxiety disorders. For example, *Bravemind*, a VR-based program developed to help veterans cope with PTSD, immerses users in virtual environments that simulate traumatic experiences in a controlled manner, allowing for exposure therapy to occur (Rothbaum et al., 2014). Similarly, cognitive training programs, which are designed to enhance cognitive functioning and reduce symptoms of conditions like ADHD and depression, are becoming more widespread. These programs typically use interactive games or tasks to engage users while targeting specific areas of cognitive weakness, such as memory or attention.

Digital mental health interventions represent a diverse range of approaches aimed at improving mental well-being and providing accessible, effective care for individuals struggling with mental health conditions. From therapist contact via telehealth platforms to web-based therapy programs, mobile apps, and innovative tools like virtual reality, digital interventions are becoming increasingly integral in the fight against mental health challenges. These interventions not only enhance accessibility but also provide a way to lessen the stigma surrounding mental health by offering anonymous and confidential support options. As the digital health sector continues to progress, it is essential to assess the effectiveness of these interventions in various cultural contexts and ensure they are reachable for the most vulnerable groups, including those in low-resource environments like South Africa. Lehtimäki et al. (2021) conducted a systematic overview of 18 reviews covering over 180 primary studies on digital mental health interventions for adolescents and young people. The study found that these interventions particularly internet-based cognitive behavioural therapy (iCBT), mobile apps, and online platforms—are generally effective in reducing symptoms of depression and anxiety. These interventions were shown to be most effective when they included elements of professional guidance or blended care. The review also emphasized the adaptability of digital tools across different settings, highlighting their potential to address mental health needs in low-resource environments. However, the

authors noted gaps in evidence related to long-term outcomes, implementation in low- and middle-income countries, and the inclusion of diverse populations. In contrast, Hollis et al. (2017) in their systematic review found that there is moderate evidence supporting the effectiveness of digital interventions—especially for anxiety, depression, and behaviour-related disorders—with the strongest outcomes linked to structured, theory-driven programs such as computerized CBT. The results from this study call attention to the point that while digital interventions hold promise, there is a pressing need for more rigorous research, especially in real-world settings, to validate their effectiveness and inform large-scale implementation.

Below is an overview of some digital interventions available to adolescents and youth in South Africa; this is not a complete list but presents a few examples of such interventions that will be included in the survey.

Below is a description of some digital interventions available to adolescent and youth in South Africa, this is not an exhaustive list but offers a few examples of such interventions that were included in the survey.

- SADAG is a mental health support and advocacy group and is involved in counselling, outreach and capacity building work throughout South Africa. They offer various services to people experiencing mental health challenges, all the services offered are free, and these include online live counselling sessions, support groups, and a toll-free helpline service where persons can call to request support. Recently they have added WhatsApp numbers to allow access to those individuals who find it more accessible. Furthermore they have educational videos available on their websites that adolescent and youth may easily access to stay informed on key mental health challenges, they occasionally hold talks on Facebook too, to this effect (SADAG, 2022).

- Lifeline provides free 24 hours telephonic counselling services while also giving people the tools to handle stress and improve their emotional health. The organization started as a telephonic counselling service but has now expanded to offer face-to-face counselling in some areas and has explored other avenues such as WhatsApp to offer free counselling to those in need (Lifeline Johannesburg, 2012).

- Khuluma is an app-based support group run by young people for young people. In this support group youth can send texts to the group anonymously to connect with a dedicated team of professionals and mentors. The programme allows youth to share their experiences and also receive support and advice from peers under the guidance of mentors (Khuluma, 2020).

- The Panda Mental Health mobile app aims to empower people to be proactive on their mental health, some of the services offered for free to individuals include, online group session, assessments to track mental health while also providing tools to objectively measure progress. They also offer time with a registered professional and to receive individual support, via text based chat or video and in-person. Finally this apps offers access to educational resources on mental health and an online journaling service to keep track of mental wellness (Panda, 2023).

- Koko is a non-profit, web-based mental health platform developed by researchers from Stony Brook University, United States. It aims to provide on-demand peer support, crisis triage, and self-guided interventions on topics such as body image, self-harm, and stress management, depression and suicide aided by artificial intelligence. Koko services can be accessed via different messenger apps such as Telegram and Facebook (Dobias et al., 2022; Cohen et al., 2023)

More research needs to be provided on the uptake of the above mentioned interventions and usage amongst young people especially in settings such as Soweto., although these interventions do not replace the need to see a health professional when experiencing mental health symptoms and challenges, they may assist youth who find that these services are inaccessible or that lack information regarding where to receive help. Soweto, specifically presents a compelling and contextually rich setting for implementing and studying digital mental health interventions particularly among adolescents and young people. As a densely populated urban township with high youth unemployment, socio-economic inequality, and limited access to traditional mental health services, Soweto reflects many of the systemic challenges common across low- and middle-income countries (Mago, (2019). The burden of mental health issues among South

African youth is growing, with depression, anxiety, and trauma-related conditions being especially prevalent (Tomlinson et al., 2018). Yet, access to mental health care remains severely constrained, with only 0.31 psychiatrists per 100,000 people in the public sector (Docrat et al., 2019). In this context, digital interventions offer a scalable, cost-effective, and youth-friendly alternative. These interventions can overcome geographic and stigma-related barriers by providing discreet and immediate support through the use of mobile phones, which are widely used even in resource-poor communities (Stats SA, 2022).

2.10 Perceived Barriers to Digital Mental Health Intervention Use

The use of digital health interventions offers a transformative approach to improving mental health care, but it also presents unique challenges that can hinder their widespread adoption and effectiveness, especially in low- and middle-income countries (LMICs). One of the primary challenges is the expectation that users will have access to mobile phones, which are often a prerequisite for many digital health interventions (Gurupur & Wan, 2017). In many LMICs, however, not everyone has access to a smartphone or other mobile devices, and this digital divide limits the reach of these interventions. While mobile phones have become more ubiquitous, disparities in mobile phone ownership persist, especially in rural and economically disadvantaged regions (Sambuli, 2016). For instance, a study conducted in Kenya found that mobile phone ownership was significantly lower in rural areas compared to urban centers, with access to smartphones being a barrier for many individuals seeking digital health services (Sambuli, 2016). Without the basic infrastructure of mobile phones, interventions reliant on such devices are inaccessible to a significant portion of the population in LMICs.

Another critical factor is access to reliable internet connectivity, which is essential for the proper functioning of many digital health tools, including mobile apps. The internet can often be slow, unreliable, or prohibitively expensive in many low-income regions, further limiting the potential of digital health interventions (Sambuli, 2016). In South Africa, for example, internet costs are relatively high, and many rural communities have limited access to broadband services (Hogarth, 2020). For digital interventions such as online therapy, peer support platforms, or web-based therapy programs to be effective, users need consistent access to affordable and high-speed internet, which is not always feasible for individuals in underserved regions.

Aside from access to technology, research conducted by Borghouts et al. (2021) pinpointed several significant obstacles that affect user participation in digital mental health interventions. One of these is the severity of mental health conditions, which can hinder individuals from actively engaging with digital resources. Those facing severe depression, anxiety, or other mental health issues may find it challenging to muster the motivation or energy needed to interact with digital platforms, thereby complicating their ability to benefit from such interventions. Additionally, technical problems, such as app functionality issues or difficulties in navigating the platform, were also recognized as prevalent obstacles to engagement. This underscores the necessity of creating digital health interventions that are user-friendly and accessible to individuals with diverse levels of technical skills (Borghouts et al., 2021).

Additionally, the lack of personalization in some digital health tools can reduce their effectiveness. Many digital interventions provide generic content that may not resonate with users' specific cultural or psychological needs (Borghouts et al., 2021). Personalization plays a crucial role in mental health, as individuals often seek support that is adapted to their specific needs. For instance, content that is relevant to different cultural backgrounds or offers various language options can greatly improve the user experience and enhance the effectiveness of interventions. Research conducted in Nigeria revealed that a lack of familiarity with digital health interventions and inadequate knowledge regarding their usage were major obstacles to adoption among construction workers (Nwaogu et al., 2021). The research highlighted the necessity for focused educational initiatives to raise awareness and enhance understanding of digital health tools, especially in communities that may not be accustomed to such technologies.

In addition to these logistical and technical barriers, there are specific challenges related to the use of digital mental health intervention. One such barrier is the cost of data required for using digital tools, which can be a significant obstacle for individuals in LMICs, where data costs are often high relative to income (Gentili et al., 2022). In South Africa, for example, the cost of mobile data is high relative to other countries in the world, making it difficult for many individuals to regularly access online mental health resources (Moyo & Munoriyarwa, 2021). As a result, interventions that require frequent data usage, such as video calls for online therapy or continuous engagement with mobile apps, may be prohibitively expensive for individuals living in poverty.

Furthermore, there may be a general discomfort with using digital platforms for mental health support, particularly in cultures where face-to-face interactions are preferred for sensitive topics like mental health. According to Pretorius & Coyle (2021), some individuals may feel uncomfortable using digital tools for mental health care due to a lack of trust in the technology, concerns about anonymity, or simply a preference for traditional forms of care. In many cultures, mental health issues are still heavily stigmatized, and individuals may feel that digital platforms do not offer the level of privacy or confidentiality they expect from in-person sessions (Pretorius & Coyle, 2021). Additionally, some users may struggle with the learning curve associated with new technologies, which can prevent them from fully benefiting from digital interventions.

Concerns regarding privacy and safety are critical when considering digital mental health solutions. As noted by Quach et al. (2022), numerous users might hesitate to divulge sensitive personal information online due to anxieties surrounding data breaches, hacking, or the potential misuse of their details. In the context of mental health, individuals may be particularly worried about the inappropriate exposure of their personal histories or experiences. These apprehensions are particularly common in areas with low digital literacy, where people might not fully comprehend how their information is stored or utilized by online platforms. It is vital for these platforms to adhere to data protection laws and offer clear information about the handling of user data in order to foster trust in digital mental health services (Quach et al., 2022).

Finally, while digital interventions offer several advantages, including accessibility and convenience, they cannot fully replace traditional, face-to-face mental health support. Many individuals still value the human connection that comes with in-person therapy sessions, where they can establish a personal rapport with a therapist or counsellor. As Gentili et al. (2022) note, the absence of human interaction in digital interventions may limit their appeal to individuals who prefer more personal forms of support. This is especially important in communities where personal connections are essential to health care and overall well-being.

Therefore, although digital health solutions have considerable potential in tackling mental health issues in low- and middle-income countries (LMICs), several obstacles need to be addressed to guarantee their efficacy and accessibility. These obstacles include technological challenges such as restricted access to mobile devices and the internet, technical issues, and expensive data costs.

Moreover, there are mental health-specific challenges like the intensity of symptoms, discomfort with technology, concerns about privacy, and the necessity for tailored content that must be thoughtfully taken into account when creating digital interventions. To overcome these challenges, a comprehensive strategy is necessary, which involves enhancing infrastructure, boosting digital literacy, and ensuring that interventions are culturally relevant and easy to use. A study conducted in Kwa-Zulu Natal revealed similar sentiments, the study found that high data costs, restrictive religious beliefs, limited privacy, lack of native language support, low digital literacy, and complicated user interfaces (Mindu et al., 2023).

Conclusion

Understanding the specific barriers encountered by the target population of digital interventions is crucial for enhancing the adoption of these applications. Adolescents and youth, who are particularly vulnerable to mental health challenges, hinder their ability to utilize or benefit from conventional mental health support systems. With the rising prevalence of mental health disorders among adolescents, there is an increasing acknowledgment of the potential for digital interventions to alleviate some of these challenges.

These digital resources, which encompass mobile applications and online therapy programs, present accessible and cost-effective alternatives that could reach a broader audience who might otherwise avoid seeking assistance due to factors like stigma, financial constraints, or the unavailability of in-person services. Nevertheless, it is crucial to understand that digital mental health interventions are not designed to substitute traditional clinical methods, but rather to enhance them by addressing gaps in access to mental health support, particularly in underserved areas where resources are scarce. For example, in low- and middle-income countries where there may be a shortage of mental health professionals, digital interventions can offer an additional layer of support for individuals who would not otherwise receive care (Sambuli, 2016).

Furthermore, evidence indicates that a lack of awareness considerably hinders the uptake of new interventions. Many young people, especially those in under-resourced communities, may not know about the existence or efficacy of digital mental health tools. This lack of knowledge can stem from various factors, including limited education on mental health issues, inadequate outreach, and cultural barriers that inhibit conversations about mental health disorders. Educating

young people about mental health and the different digital resources available to them could be crucial in enhancing the uptake and effectiveness of these interventions. For instance, awareness campaigns directed at schools or community organizations could boost understanding and help diminish stigma surrounding mental health (Gega et al., 2022). This strategy has shown promise in improving help-seeking behaviours among youth, ultimately leading to enhanced mental health outcomes. In addition to awareness, evaluating the extent of knowledge among young individuals concerning mental health and digital interventions could create an opportunity to enhance their understanding, thereby increasing the use of these tools.

A study conducted in South Africa revealed that youth had insufficient knowledge about mental health disorders and available treatments, which increased their hesitation to seek assistance (Madlala et al., 2022). By grasping the existing level of knowledge and misconceptions held by adolescents, interventions can be more effectively customized to suit their needs. Moreover, bridging knowledge gaps through educational initiatives could cultivate a more knowledgeable and proactive youth population, better prepared to identify mental health challenges in themselves and others and seek help when needed. Lastly, assessing youth attitudes towards digital mental health alternatives is crucial to determine their suitability and effectiveness for the target demographic. Adolescents represent a diverse group with differing preferences and comfort levels regarding digital technology use. Some may be more inclined to leverage digital interventions due to their familiarity with technology, while others might be less accepting due to privacy concerns, a preference for in-person interactions, or a distrust of digital platforms. A study by Hawke et al. (2021) found that while young people were generally receptive to online mental health services, they favoured personalized support over group settings and had apprehensions about the absence of human contact and privacy issues. Recognizing these preferences is vital for creating digital tools that appeal to young users and ensuring that these resources are not only accessible but also engaging and effective. By integrating youth feedback into the design process, digital mental health interventions can be refined to align with their needs and preferences, thus enhancing their potential for success.

In conclusion, overcoming the challenges to implementing digital mental health solutions necessitates a comprehensive strategy that considers the distinct needs and difficulties encountered by adolescents and young adults. This approach involves enhancing awareness and

education surrounding mental health, ensuring that digital platforms are accessible and culturally appropriate, and evaluating young people's perspectives to grasp their preferences and concerns. By thoughtfully addressing these aspects, digital interventions may significantly contribute to tackling the mental health crisis among youth, offering an accessible, effective, and stigma-alleviating form of support. Ultimately, digital mental health solutions ought to be integrated into a wider mental health framework that enhances traditional therapeutic methods, aiding in closing the gaps in care and ensuring that young individuals receive the assistance they require.

The current literature provides global evidence to suggest that digital interventions can reduce barriers to access and improve mental health outcomes among youth, however there is limited local data on youth perspectives on these interventions in South Africa. Given the unique socio-economic, linguistic, and infrastructural landscape in South Africa it is critical to explore views of youth on how these interventions can function in the community. Most existing studies have focused on high-income countries, leaving a knowledge gap regarding how digital tools can be effectively adapted to under-resourced environments, moreover, youth in South Africa face a high burden of mental health challenges, including trauma, depression, and anxiety, exacerbated by poverty, violence, and limited service availability and given all these challenges it is important to investigate perceived attitudes and challenges for digital mental health interventions among youth in order to aid future development of sustainable and context-specific digital interventions.

2.11 Research Questions

1. What is the level of knowledge of mental health amongst adolescent and youth in Soweto South Africa?
2. What barriers affect the use of digital mental health tools amongst youth in Soweto, South Africa?
3. What are youth attitudes towards using digital mental health interventions?

The proposed research aims to investigate knowledge, attitudes and challenges for digital mental health interventions among youth in Soweto, South Africa. This will be done by focusing on the below objectives using a mixed methods research design through an online survey.

CHAPTER 3: Methodology

This chapter presents the methods used to answer the research questions. In this chapter we will focus on the research design, study setting, sampling, recruitment procedures and study procedures. Additionally this section will present information on the ethical considerations during the duration on the study.

3.1 Research Design

This research adopted a mixed methods methodology to fulfil our intended goals. Mixed methods research is an approach that combines both quantitative and qualitative data collection and analysis within a single study. This methodology is used to provide a more comprehensive understanding of a research problem by leveraging the strengths of both data types (Creswell & Creswell, 2022) A quantitative inquiry can be characterized as research that focuses on the "application and examination of numerical data using distinct statistical methods to address queries such as who, how much, what, where, when, how many, and how" (Oberiri, 2017, 41). Furthermore, quantitative research can be seen as the elucidation of an issue or phenomenon through the collection of data in numerical format and the analysis of this data with the aid of statistical tools. To provide deeper insights, we employed a qualitative approach through the use of open-ended questions. We employed an online descriptive quantitative survey for data collection to meet the established research goals. A descriptive survey, categorized under descriptive research, is a method aimed at gathering measurable information for statistical analysis of a sample population. This data is typically collected to comprehend specific phenomena within the population (Manjunatha, 2019). This approach is broadly utilized to delineate the characteristics and behaviours of a particular sample population to gain a more profound understanding of the situation. In our study, we opted for an online survey to gather data. The survey consisted of both closed-ended and open-ended questions. A survey serves as a tool for data collection where participants answer a sequence of questions. Surveys can be used for quantitative research (producing numerical data), qualitative research (collecting open-ended responses), or mixed methods research (Ponto, 2015). Therefore, it was considered suitable to implement a survey in this research to accomplish the outlined objectives.

3.2 Study Site

The research was carried out with qualifying participants living in Soweto, South Africa. Soweto is situated in the Gauteng Province and is an urban township neighbouring Johannesburg. It has a population of 1.5 million people and covers an area of 150 km2. The types of housing include, but are not limited to, standalone homes, multi-family complexes, informal settlements, backyard shacks, and hostels (Department of Statistics: Republic of South Africa, 2022). Conducting the study in Soweto was essential because it reflects a varied population and is situated in a low-middle income environment. Many studies have focused on affluent areas where individuals may have better access to resources that facilitate the use of online tools (Julius et al., 2024). Additionally, youth in Soweto face unique challenges that increase their risk of mental distress. The increasing unemployment rate, prevalent poverty, and high levels of violence in Soweto significantly elevate the risk of mental health challenges among its youth (Mngoma & Ayonrinde, 2023). As of the second quarter of 2024, South Africa's youth unemployment rate stood at a staggering 60.2%, with figures for youth aged 15–24 reaching 60.7% (Trading Economics, 2024 & Statista, 2024). The persistent unemployment, coupled with limited access to education and career guidance, fosters a sense of hopelessness and social exclusion among young people (Mseleku, 2021). Poverty remains widespread, with over 30 million South Africans living below the poverty line of R1, 417 per month (Writer, 2023). Such economic strain often leads to food insecurity, inadequate housing, and limited access to healthcare, all of which are stressors that can adversely affect mental health (Draper et al, 2024). Additionally, the prevalence of community violence in Soweto, contributes to heightened anxiety, depression, and post-traumatic stress disorders among youth (Coetzee et al., 2018). Moreover, 60% of youth reported needing mental health support over the past year, yet only 63% of those sought help, often due to a lack of knowledge about available services (UNICEF South Africa, 2022). These interrelated factors reveal the urgent need for comprehensive interventions that consider the socio-economic determinants and provide accessible support services to the youth of Soweto.

Figure 2



Map of Soweto (Maps of the World, 2021)

3.3 Sampling and Recruitment

3.3.1 Sampling

The study used a combination of convenience and snowballing sampling, both of which are non-probability sampling methods.

Convenience sampling is described as a method of sampling that identifies participants according to the ease of accessibility (Etikan, 2016). While this approach was practical given time and resource constraints, it limits the generalizability of the findings, because participants were not randomly selected, the sample may not accurately represent the broader population, increasing the risk of sampling bias (Makwana et al., 2023). This bias potentially over represents certain demographic groups while excluding others, such as individuals not actively engaged with the institutions or networks through which recruitment occurred (Etikan, 2016). Furthermore, non-probability sampling compromises the assumptions underlying many statistical analyses, potentially affecting the validity of inferential conclusions (Vehovar et al., 2016). The likelihood

of self-selection bias is also a concern, as participants who chose to take part may systematically differ from those who did not, possibly in terms of mental health awareness, willingness to disclose, or access to resources (Golzar et al., 2022). As a result, caution should be exercised when interpreting the findings and applying them to other contexts or populations.

3.3.2 Recruitment

A survey QR Code was distributed to potential participants through pamphlets and digital posters that were posted on various social media (WhatsApp and Facebook). Information about the study was shared with those who showed interest to take part in the study through a pamphlet (**Appendix 1**) with a QR Code link to the survey. When scanned, the QR code led potential participants directly to the online survey. Digital pamphlets with the same information were also shared widely through Facebook and WhatsApp groups facilitated by a member of the community. Additionally permission was requested from the Registrar's Office at the University of Witwatersrand to recruit students registered at the university who met the criteria to take part in the study (i.e. 18- to 24-year-olds and living in Soweto). Through this process, the research objectives and link was shared by the university to all students enrolled at the University of the Witwatersrand in 2023/4. Recruiting participants from diverse groups (e.g., youth in a taxi rank and students on campus) is crucial for ensuring the inclusion of voices from different social, economic, and cultural backgrounds, thereby enhancing the generalizability and richness of findings (Carter et al, 2023) . This approach can provide a broader understanding of the research topic by incorporating varied perspectives from distinct social groups, which might otherwise remain underrepresented. However, to prevent the sample size from becoming unmanageably large, which would dilute the qualitative analysis, the study design focuses on intentional, targeted recruitment strategies rather than relying on broad sampling methods (Booysen, 2007). This ensures that each participant's experience is well explored, making qualitative findings meaningful and manageable.

As noted by Creswell and Clark (2018), mixed-methods research is especially beneficial when the researcher seeks to enrich the understanding of a topic through complementary data types and this is what informed our recruitment strategy and sampling size. A mixed-methods approach also facilitates the integration of findings, increasing the validity and robustness of the study. In

this case, combining qualitative insights with quantitative data from a diverse but manageable sample size ensures that both breadth and depth are captured without saturating the analysis process (Ahmed et al, 2024).

3.4 Study Population

In this study, the population of interest included youth. In this study we defined the youth according to the United Nations definition, which states that youth are those between 15 to 24 years (United Nations, n.d).

3.4.1 Inclusion Criteria:

1. Youth between the ages of 18-24 years old living in Soweto.
2. We enrolled both male and female participants.

3.4.2 Exclusion Criteria:

1. Any volunteers below the age of 18 were excluded from the study.

A total of 77 participants (n=77) were included in the study. The sample consisted of females (61%) and males (26%). The participants were between the ages of 18-24 years (M= 20.14). Study participants mostly identified as Black/African (89.6%). About 27.4% of the participants were enrolled as full-time students while 19.5% identified as unemployed at the time of the study and about 35.4 % noted that they had a matric certificate as their highest level of education as shown in Table 1.

Table 1: Demographics

	n	%
SEX		
Female	47	61
Male	20	26
Prefer Not To Say	6	7.8
Other (Transgender)	1	1.3
AGE		
18 Years	14	18.2
19 Years	10	13
20 Years	12	15.6
21 Years	14	18.2
22 Years	6	7.8
23 Years	13	16.9
24 Years	6	7.8
HOME LANGUAGE		
IsiZulu	28	36.4
Sesotho	12	15.6
English	8	10.4
IsiXhosa	6	7.8
Sepedi	6	6.5
Xitsonga	4	5.2
Tshivenda	4	5.2
Setswana	3	3.9
SiSwati	3	3.9
IsiNdebele	2	2.6
Afrikaans	1	1.3
POPULATION GROUP/RACE		
Black/African	69	89.6
Coloured	2	2.6
EDUCATION LEVEL		
Matric	32	41.6
High School Grade	14	18.2
Diploma	11	14.3
Undergraduate Degree	9	11.7
Primary School	1	1.3
EMPLOYMENT STATUS		
Full Time Student	31	40.3
Unemployment	15	19.5
Part-Time Student	13	16.9
Full Time Worker	7	9.1
Part Time Worker	6	7.8
Volunteer	2	2.6

3.5 Data Collection

We collected data through an online survey administered through REDCap between September 2023 and September 2024. We had a total of 117 respondents however 40 were excluded from the analyses due to survey non-completion.

3.6 Measures and Instruments

The online survey consisted of a combination of self-constructed and standardised questions from various instruments as detailed below.

1. **Demographics**- demographics were measured using a self-constructed questionnaire including questions on age, sex, language, population group and level of education and mobile phone and data access Additionally we asked questions on uses of mobile phone. Demographics are important in research to offer some sort of descriptions about the population to which the results are applicable to. The demographics questions included in the survey are in line with guidelines for demographics offered by Carol Hammer (2011).

2. **Mental Health Literacy Scale**- Knowledge of mental health was measured through the Mental Health Literacy Scale (MHLS) (O'Connor & Casey, 2015). The questionnaire has 35 items consisting of the following categories with responses ranging from very unlikely to very likely: (1) Ability to recognise disorders (*i.e. If someone became extremely nervous or anxious in one or more situations with other people (e.g., a party) or performance situations (e.g., presenting at a meeting) in which they were afraid of being evaluated by others and that they would act in a way that was humiliating or feel embarrassed, then to what extent do you think it is likely they have Social Phobia*); (2) knowledge of where to seek information (*i.e. I am confident that I know where to seek information about mental illness*); (3) knowledge of risk factors and causes (*To what extent do you think it would be helpful for someone to improve their quality of sleep if they were having difficulties managing their emotions (e.g., becoming very anxious or depressed)* ?); (4) knowledge of self-treatment ; (5) knowledge of professional help available (*i.e. I am confident I have access to resources (e.g., GP, internet, friends) that I can use to seek information about mental illness*); and (6) attitudes that promote

recognition or appropriate help-seeking behaviour (*If I had a mental illness, I would not seek help from a mental health professional*).. The total score was calculated by summing all items, with a maximum score of 160 (indicating a high level of knowledge) and a minimum score of 35 (indicating low levels of knowledge) (O'Connor & Casey, 2015). The total score was obtained by adding all items together (including reversed scored items: 10, 12, 15, 20-28). The response options were rated on a 4-point scale as follows: 1 – very unlikely/unhelpful, 4 – very likely/helpful, and on a 5-point scale: 1 – strongly disagree/definitely unwilling, 5 – strongly agree/definitely willing. For the reversed scored items, we adjusted the data in the analysis software so that these responses were inverted, and then all scores were summed to create the final score for each participant. Regarding attitudes towards digital mental health, participants' overall interest in technology was determined by calculating the mean of interest scores across the categories (Bell et al., 2022). Some items are reverse-scored, and all responses are summed to generate a total score, with possible values ranging from 35 to 160. Higher scores indicate greater mental health literacy, reflecting more accurate knowledge, more positive attitudes toward mental illness, and a stronger ability and willingness to seek help when needed, please refer to appendix 6 for the full scale. This measure had an overall good test-retest reliability estimate of ($r(69) = .797$, $p < .001$) (O'Connor & Casey, 2015). The MHLS was validated in South Africa and in Zambia using a heterogeneous expert-panel method by Korhonen et al. (2019). They found that both groups of experts in Zambia and South Africa agreed that the MHLS was appropriate to measure mental health literacy amongst health workers in both South Africa and Zambia (Korhonen et al., 2019). Reliability testing (e.g., Cronbach's alpha) was not performed for the Mental Health Literacy Scale in this study due to the limited sample size ($N = 77$), which may produce unstable or unreliable internal consistency estimates. Additionally, the MHLS, has been widely validated across diverse populations and consistently demonstrates strong internal consistency (e.g., Cronbach's $\alpha = 0.87$ in the original validation; O'Connor & Casey, 2015). Subsequent international studies have further supported its psychometric robustness, including in low- and middle-income contexts (Wei et al., 2020; Furnham & Swami, 2018). As the primary aim of this study was not to re-validate the scale but to apply it in low-income Soweto, the existing evidence of reliability was

deemed sufficient for the current analysis. Future studies with larger samples in similar contexts are encouraged to re-evaluate the scale's internal consistency.

3. **Interest in digital mental health** – Attitudes and interest toward the use of digital mental health tools among young people were measured using selected questions from the BRACE project (Bell et al., 2023). The BRACE survey was developed in consultation with young people, and was aimed to understand (1) access to and use of technology for mental health and (2) levels of interest in technologies to support mental health care among young people and clinicians (please refer to appendix 8 for the full survey). For the purposes of this study, we only used the items for Interest in technology use from the "young person" version of the original scale. This part of the scale consists of 20 items on interest in utilising digital interventions and some items that were irrelevant to the research question were omitted (e.g. 18. Using augmented reality (projecting digital objects into the real world) to learn skills and strategies for mental health and wellbeing). In the original study by Bell et al. (2023), the internal consistency of various components of a digital health scale was evaluated using Cronbach's alpha, demonstrating strong reliability across the scale's sub-dimensions. Specifically, the construct measuring perceived usefulness yielded a Cronbach's alpha of 0.939, while perceived ease of use had an alpha of 0.888. The reliability for performance expectancy and effort expectancy was also high, with values of 0.891 and 0.866, respectively. The attitude toward digital health subscale showed acceptable reliability ($\alpha = 0.793$), and the behavioural intention subscale demonstrated excellent internal consistency ($\alpha = 0.905$). The Digital Health Platform Usability Scale had a slightly lower but acceptable reliability score ($\alpha = 0.701$), however the reliability was not tested for this study due to the small sample size and the exclusion on some of the items such as the questions on augmented reality. The augmented reality questions were specifically excluded due the fact that although the use of augmented reality has seen a rise in South Africa, mostly for the use of training and education (Statista, 2024) there is still a gap in terms of exposure to this new technology across different groups (Dhurumraj et al, 2023). This discrepancy in exposure could potentially provide bias results on participants' willingness to use these types of technologies. The questionnaire asks participants questions about their level of interest

using digital mental health interventions. This includes questions such as "What is your level of interest in using the following technologies to support your mental health and wellbeing? (for example, Using a smartphone app for support with mental health and well-being; Using a smartphone app to keep track of mental health and well-being; Sharing information online about mental health and well-being with a mental health practitioner; Using video chat to talk to a mental health practitioner about mental health and well-being A list of options using a 5 Likert scale (Not at all interested , Slightly interested , Somewhat interested, Moderately interested , Extremely interested) were provided and participants could choose a response from 'not at all interested' to 'extremely interested' (Bell et al., 2023; Nicholas, et al., 2021). Each item within these subscales was rated using a 5-point Likert scale ranging from *strongly disagree (1)* to *strongly agree (5)*. Scores for each subscale were calculated by summing the individual item responses, with higher scores indicating more favourable perceptions or stronger intentions regarding digital health use.

4. **Open-ended questions**- Finally we had 3 self-constructed, open-ended questions to allow for a deeper understanding of participants ideas and to help provide insights on some aspects of the research questions that cannot be adequately addressed through close-ended questions. The open-ended questions addressed questions on attitudes towards digital health interventions, barriers in the community for youth to use digital mental health interventions, and lastly recommendations on how to combat perceived barriers.

3.7 Study Procedures

Participants accessed the online study information leaflet via the provided link (see Appendix 2). Once they reviewed the information leaflet, participants who self-identified as meeting all eligibility criteria (i.e., residing in Soweto and aged between 18-24 years) proceeded to a 'consent page' where they electronically consented to take part in the study. After granting their electronic consent, participants filled out a +/-15-minute online survey featuring a variety of both close-ended and open-ended questions. At the conclusion of the survey, participants received a

list of mental health support websites they could access in case they experienced any distress while completing the survey. The survey was created and administered using REDCap, a web-based tool for research data management provided by the University of the Witwatersrand (Witwatersrand, 2020).

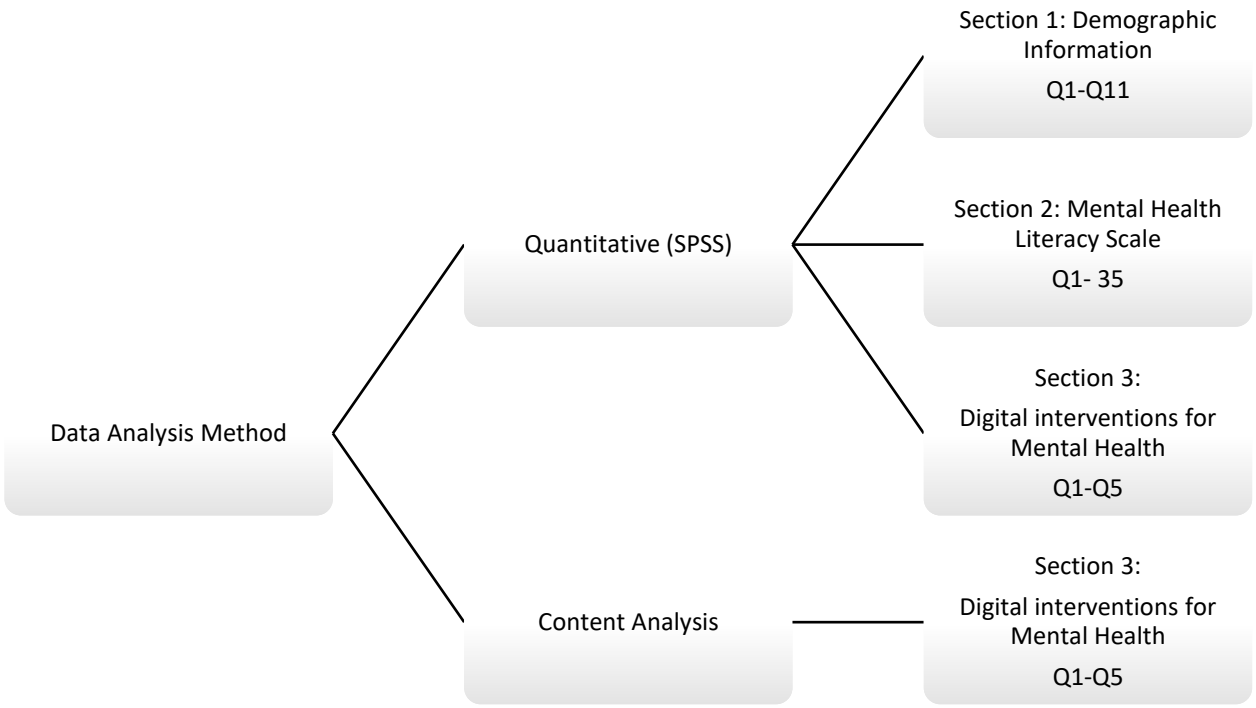
3.8 Data Analysis

The data was collected using REDCap and analysed using IBM SPSS Statistics software version 29.0, which is specifically designed for data analysis and management (IBM, 2021). The findings are depicted through frequency tables, pie charts, and bar graphs for descriptive purposes. After excluding 40 incomplete records, the data was analysed overall. A bivariate analysis was performed to identify any correlations between variables utilizing the Pearson correlation (r) method, which measures the correlation between two variables, in our study we were interested in measuring the correlation between mental health knowledge and willingness to use digital mental health interventions. Additionally, we sought to investigate any correlation between age and mental health knowledge. Scores close to 1 or -1 indicate strong correlations, while values close to zero suggest a lack of a linear relationship (Ali, 2021 & Sarah & Watters, 2008). A formal assessment of normality and other parametric assumptions (e.g., homoscedasticity, linearity) was not conducted. However, Pearson's test was selected based on the continuous nature of the data and the assumption that deviations from normality were unlikely to significantly affect the results, especially given its robustness in small to moderate samples (Ghasemi & Zahediasl, 2012; Blanca et al., 2017). The absence of formal assumption testing is acknowledged as a limitation and should be addressed in future studies with larger sample sizesOpen-ended questions were examined through content analysis. Content analysis is a widely used method in mixed methods research for analysing open-ended questions (Kleinheksel et al., 2023). This method can be characterized by the systematic and replicable procedures used to analyse text. It involves categorizing text by applying a structured, systematic coding scheme to interpret the message conveyed (Rose et al., 2015). Furthermore, content analysis allows inferences to be drawn from data by considering both the participants and their context when sorting text into related categories, thereby identifying similarities and differences, patterns, and associations (Kleinheksel et al., 2020). Open-ended questions were analysed using an inductive

approach, allowing themes to emerge directly from the text. The survey responses were extracted from SPSS. The researcher then read the responses multiple times to ensure familiarity, and then meaningful units of text were coded manually on excel. Codes were then grouped into broader categories based on similarity and relevance to the research question. Emerging themes were then developed and supported by representative quotes and interpreted in relation to the study objectives. Figure 3 provides a summary of the method of analysis for the different components of the survey. Sections 1 to 3 were analysed using SPSS to generate descriptive statistics for the variables measured across each scale. In contrast, responses in Section 4 were examined using qualitative content analysis to identify key themes and patterns.

A formal assessment of parametric assumptions—such as normality, homoscedasticity, and linearity—was not conducted in this study. Given the exploratory nature of the research and the relatively small sample size (N = 77), parametric tests were applied based on the assumption of approximate normality, which is often considered reasonable in small to moderate samples, particularly when no extreme outliers are present (Ghasemi & Zahediasl, 2012). According to the central limit theorem, the sampling distribution of the mean tends toward normality with increasing sample size, and empirical studies suggest that parametric tests can remain robust even when some assumptions are violated (Lumley et al., 2002; Blanca et al., 2017). Nonetheless, the absence of formal diagnostic testing is acknowledged as a limitation. Future research with larger samples should aim to assess these assumptions more rigorously and consider non-parametric alternatives where necessary

Figure 3



Summary of how data were analysed

3.9 Ethical Considerations

The Human Research Ethics Committee at the University of the Witwatersrand, Johannesburg (Medical) approved the study (M230745- MED23-07-016). Participants did not receive any compensation for taking part in the study. Participants, through the landing page of the survey were offered a participant information leaflet (Appendix 2) that provided detailed information on the objectives of the study, the procedures, risks and benefits and the relevant contact details for grievances. The participant information leaflet emphasised that the study was voluntary and that participants could withdraw from the study at any given time. Given that this was an anonymous survey the researcher could not evaluate if participant fully understand the information provided, however a readability assessment was performed on the consent form, information leaflet, and survey to guarantee that all participants could comprehend the questions adequately. A

readability assessment is a way to measure how easy or difficult a piece of text is to read and understand. It helps determine whether the language, sentence structure, and vocabulary are appropriate for the intended audience—whether that's schoolchildren, university students, or the general public (Murphy, 2013). To assess the clarity and accessibility of the written content, a readability analysis was conducted using Microsoft Word's built-in readability statistics tool. This analysis provided Flesch Reading Ease and Flesch-Kincaid Grade Level scores (Flesch, 1948 & Kincaid, 1975). The aim was to ensure the text was appropriate for the target audience, with a focus on achieving a balance between academic rigor and readability. A Flesch Reading Ease score between 50 and 60 and a Flesch-Kincaid Grade Level of approximately 10–12 were considered acceptable for this study, aligning with standards for academic texts intended for university-level readers. Every participant willingly provided electronic informed consent to participate in the online survey. A protocol for distress was established to address any emotional discomfort that participants might experience during the study. Although this study posed minimal risk to participants as it was conducted via an online survey, certain questions regarding mental health and stigma may have made some participants feel uneasy or distressed. In such cases, participants were encouraged to contact the mental health resources provided, and the researchers' contact information was also given for any additional support. The participants were given contact details for SADAG, PANDA, LIFELINE, KHULUMA and KOKO all of which provide virtual mental health support. The study took place in a low-middle income environment with diverse cultural backgrounds, and the researcher was aware of this, ensuring sensitivity and respect throughout the process. Protecting the confidentiality and anonymity of participants was paramount; thus, a QR code was utilized for the survey without collecting any personal identifying information. Additionally, all information related to the study remained confidential and was only accessible to the researcher and the supervisor.

3.10 Conclusion

This chapter presented the methodology followed in this study to address the research objectives. It highlighted the instruments used to collect the data together with the sampling and procedures used to recruit participants. Furthermore this chapter provided critical information on the steps

followed to analyse the data. Finally relevant ethical procedures followed in this study were discussed.

CHAPTER 4: Results

This chapter presents the results from the data collection for this study. The chapter will present the demographics of the participants, results from the Mental Health Literacy Scale. This chapter will also present results on young people's interest using digital mental interventions, their attitudes and perceptions to these interventions. Finally we will present qualitative results from the open ended questions on perceived barriers and facilitators to using digital mental health interventions.

4.1 Mobile Phone Access and Use

We had 77 participants in total who completed the survey. Most of the participants identified as female (61%), 26% identified as male and only 1 participant identified as transgender. The majority of the participants were above the age of 20 years (66.3%), we had a representation amongst the different age groups with 18 (18.2%) and 21 (18.2%) being the most represented age groups, with a mean age of 20.14..

Almost all participant had access to a mobile phone (93.5%), and only 1 participant reported that they do not have access to a mobile phone. The results show that 87% of the participants reported access to the internet while 1 participant reported that they have no access to the internet through their mobile phones. Prepaid Cellular data was the most popular way through which participants gained access to data (36.4%), however 19.5% of the participants reported having home Wi-Fi and a significant amount of participants reported School/College/University Wi-Fi as their means of internet access (22.1%). Young people reported using their mobile phones mostly for social networking (89.6%), Texting (74%), making phone calls (70.1%) and answering emails (46.8%), very few reported using their phones for health and exercising (31.2%).

Table 2: *Mobile Phone Access and Use*

	n	%
MOBILE PHONE ACCESS		
Yes	72	93.5
No	1	1.3
INTERNET ACCESS		
Yes	67	87
No	1	1.3
MEANS OF INTERNET ACCESS		
Prepaid Cellular Data Connection	28	36.4
School/College/University Wi-Fi	17	22.1
Home Wi-Fi	15	19.5
Contract Cellular Data Connection	8	10.4
Other	6	7.8
Work-Wi-Fi	1	1.3
USES OF MOBILE PHONE		
Social Networking (WhatsApp, Facebook, Etc.)	69	89.6
Text Messaging	57	74
Phone Calls	54	70.1
Entertainment	42	54.5
Accessing Emails	36	46.8
Banking	31	40.3
Exercising	24	31.2
Shopping	22	28.6
Other	1	1.3

4.2 Mental Health Knowledge amongst Adolescent and Youth in Soweto

The MHLS has 35 items with a total positive score of 160, which indicates high overall knowledge, and a minimum score of 35, which indicates low overall knowledge. The mean total mental health literacy score among respondents was found to be 119.53. This displays an overall good mental health knowledge. The mental health literacy with the lowest score being 70 and the highest score recorded as 148. Additionally, there was no significant difference amongst males and females in the scoring of the MHLS (M=123.37 and M= 112.47, respectively). When testing for correlations between sex and age on knowledge of mental health, it was found that there is a small negative correlation between sex and mental health knowledge (ρ -0.152); however, there was a slight positive correlation between age and mental health knowledge (ρ 0.256).

Additionally, when looking at the different categories of the MHLS, namely (1. knowledge of mental health disorders and diagnosis (item 1-15); 2. Knowledge of available resources (items 16-19); and 3. Stigma (items 20-35). For knowledge of available resources we found that participants had a mean of 44 out of a possibility score of 60, indicating that participants had significant information on the types of disorders, possible symptoms, and treatment options available (Table 3). Participants also displayed low levels of stigma, with a mean of 31 for this category out of a possible 40 points (Table 4). It is, however, important to note that the lowest score for this was 13, indicating that some participants might still display high levels of stigma. Although participants displayed low levels of stigma when asked if whether they would seek help from a mental health practitioner if they experienced mental distress most noted that they would not seek help (n=61) (Figure 4) and also that they would not tell anyone if they had a mental illness (n=54)(Figure 4). Participants displayed an adequate level of knowledge on resources to seek help should one experience mental health challenges, with a mean of 15.18 out of a possible score of 20 (Table 5). Notably most participants noted that they were confident about using a computer or a telephone to seek information about mental health (n=56) as noted in figure 5.

Figure 3: *Confidence Using Digital Applications*

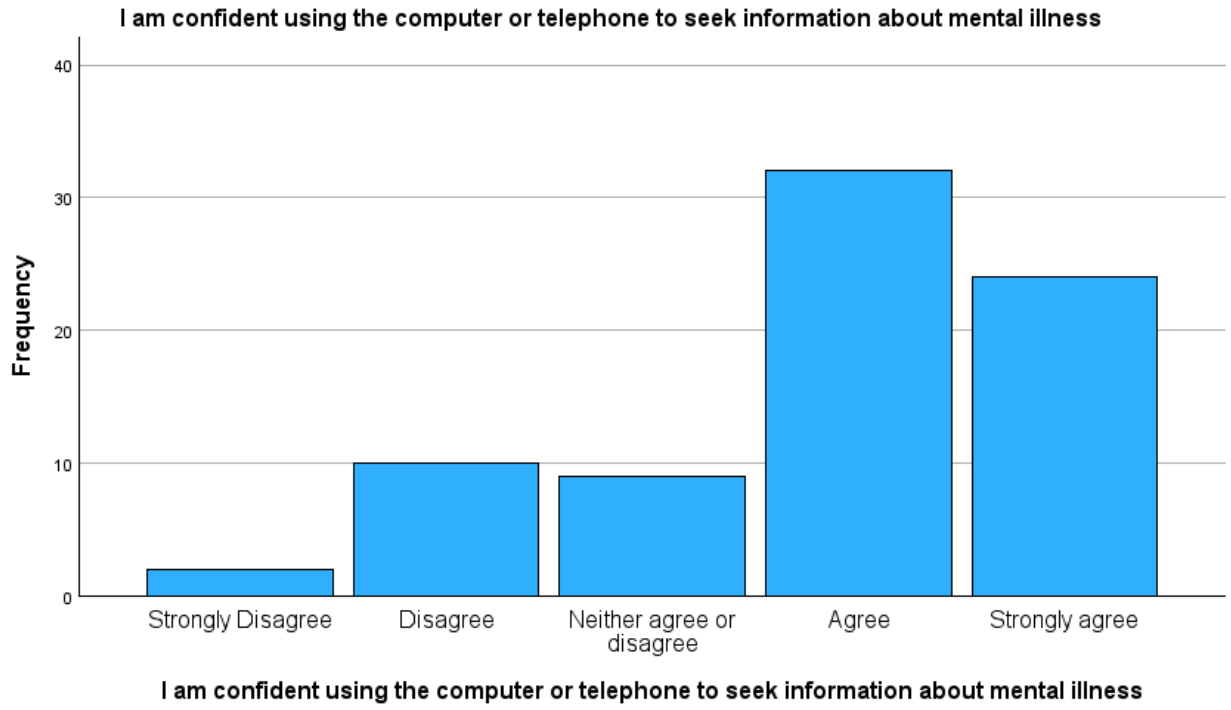


Figure 4: *Willingness to Disclose Information on Mental Health Illness*

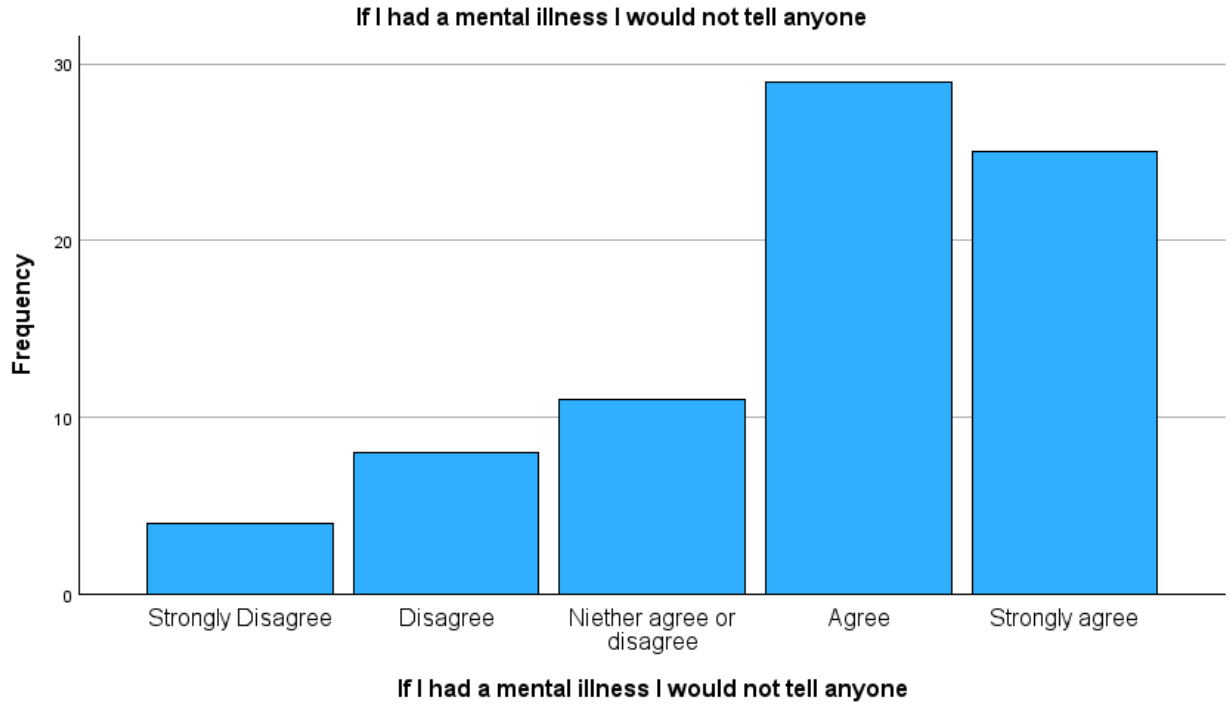


Figure 5: *Help Seeking Behaviour*

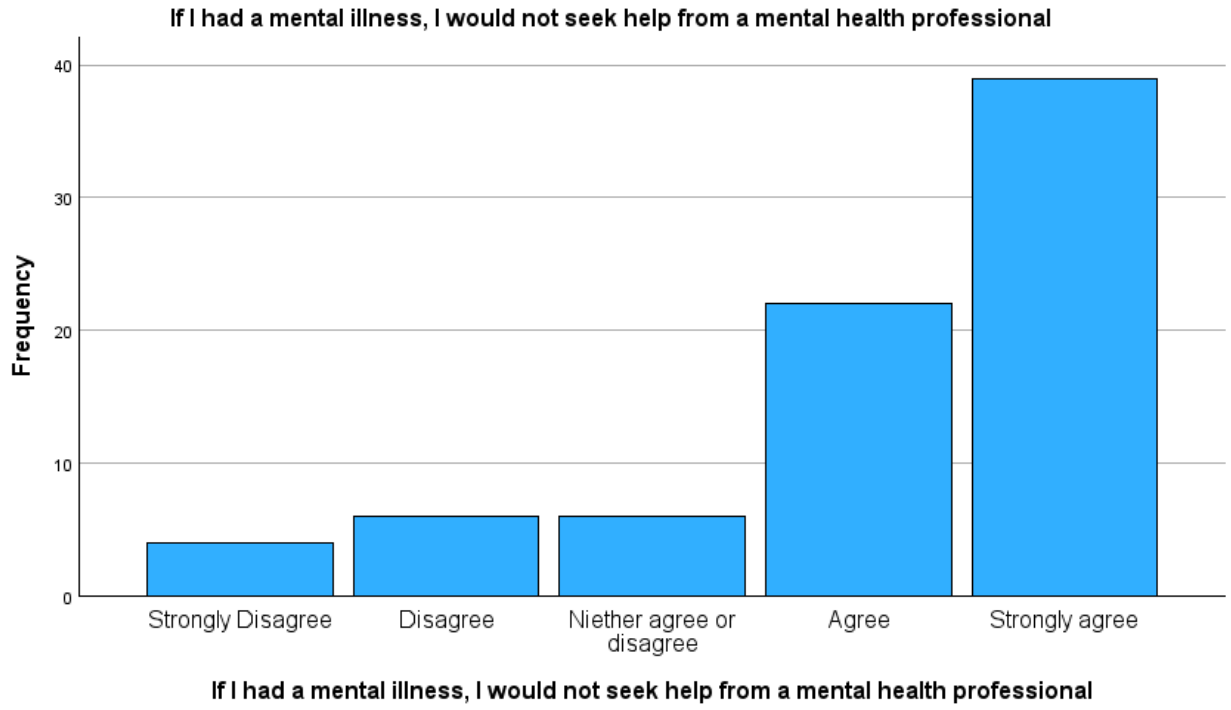


Table 3: *Computed Mental Health Literacy Scale Score*

Mean	**Std. Error Mean**	**Mode**	**Std. Deviation**	**Min**	**Max**
119.529	2.19	108.00	18.04	70	148.00

Table 4: *Mental Health Literacy Scale and Sex*

	What is your sex?	n	Mean	Std. Deviation	Std. Error Mean
MHLS	Female	41	123.3659	16.16131	2.52397
	Male	17	112.4706	16.31762	3.95760

Table 5: *Correlation MHLS and Age*

		What is your age (in years)	MHLS Score
MHLS	Pearson Correlation	1	.256*
	Sig.(2-tailed)		.038
	n	68	66
Age	Pearson Correlation	.256*	1
	Sig.(2-tailed)	.038	
	n	66	75

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

4.3 Young People Attitudes to Digital Health Interventions

4.3.1 Knowledge of Existing Mental Health interventions

Majority of the participants had no prior knowledge of any digital interventions (82.4%) as shown in Figure 6. Most of the respondents reported being familiar with SADAG (*n*=46) and Lifeline (*n*=38) as noted in Figure 7 but had limited knowledge of the other existing digital mental health interventions available.

Figure 6: *Knowledge of Digital Mental Health Interventions*

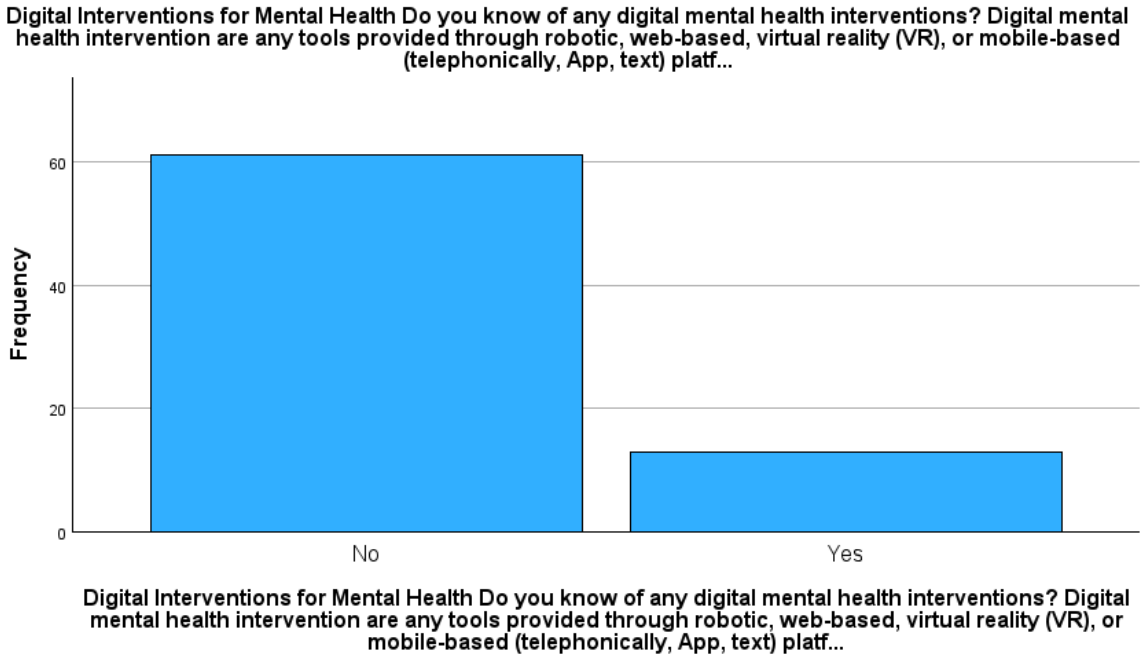
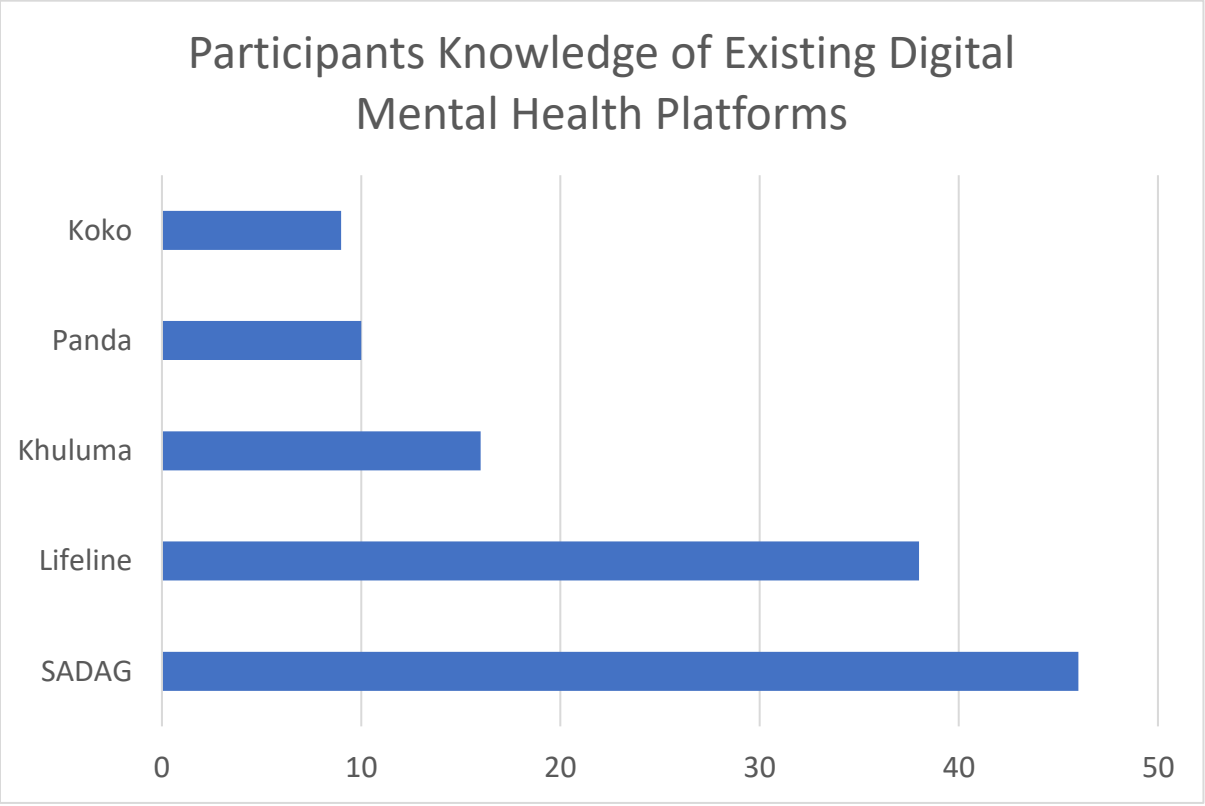


Figure 6: *Knowledge of Existing Digital Health Interventions.*



4.3.2 Attitudes to Digital Mental Health Platforms

Across all groups participants showed interest in digital mental health interventions (mean score = 33.51). Young people showed interest especially in Digital games that help you learn skills and strategies for mental health and wellbeing (Extremely Interested n=27), Using websites to learn about mental health and well-being (Extremely Interested n=26) and Using text chat to talk to a mental health practitioner about mental health and well-being (Extremely Interested n=24). In contrast, 5.5% showed preference for receiving mental health services through online platforms and 27.4% preferred to receive mental health services through their school, college and/or university. Further analysis showed that there is also a significant positive relationship between mental health knowledge and attitudes to digital mental health interventions. This result highlights that participants who scored high on the Mental Health Literacy Scale were most likely to be more open to using digital mental health interventions.

Table 6: *Preference for Mental Health Access*

	n	**%**
In-person healthcare facility (Clinic, consultation rooms or practice)	16	25.8
School/College/University	17	27.4
Online Platforms	22	35.5
Other	7	11.3

Table 7: *Attitudes Towards Digital Mental Health Participants*

Mean(n)	**SD**	**Min (n)**	**Maximum (n)**
33.51	8.99	9	45

Figure 7: *Interest in Digital Mental Health Interventions (Smartphone)*

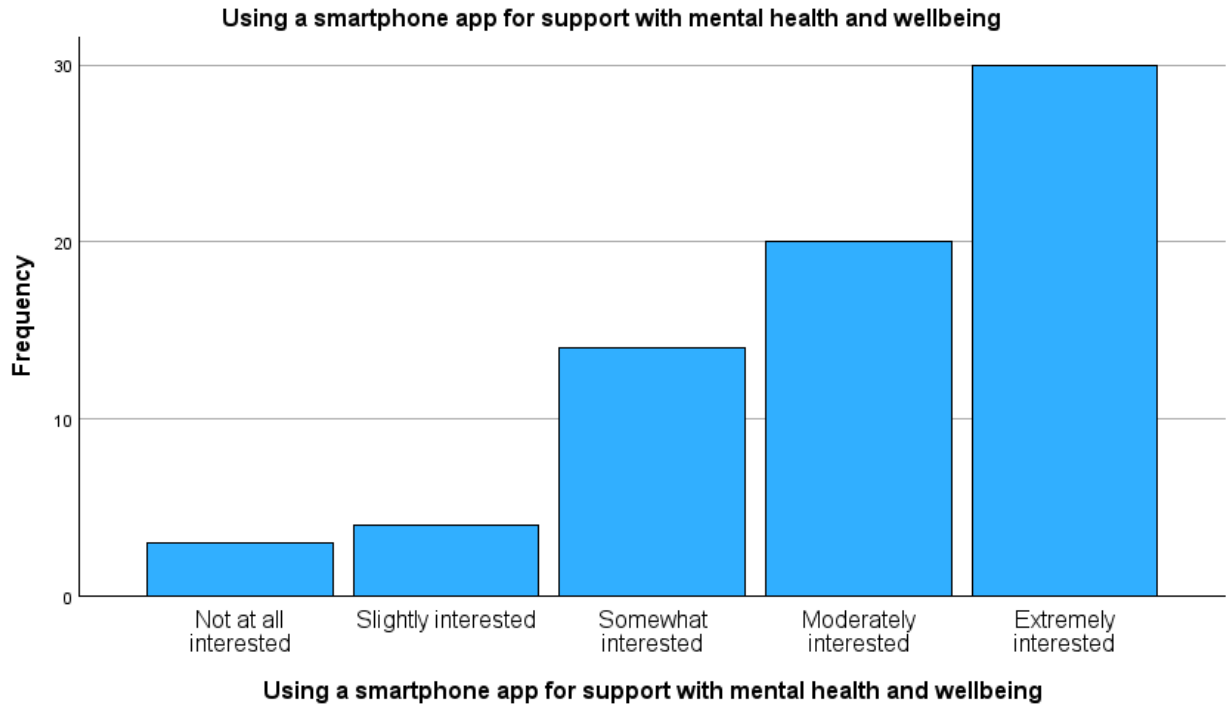


Figure 8: *Interest in Digital Mental Health Interventions (App)*

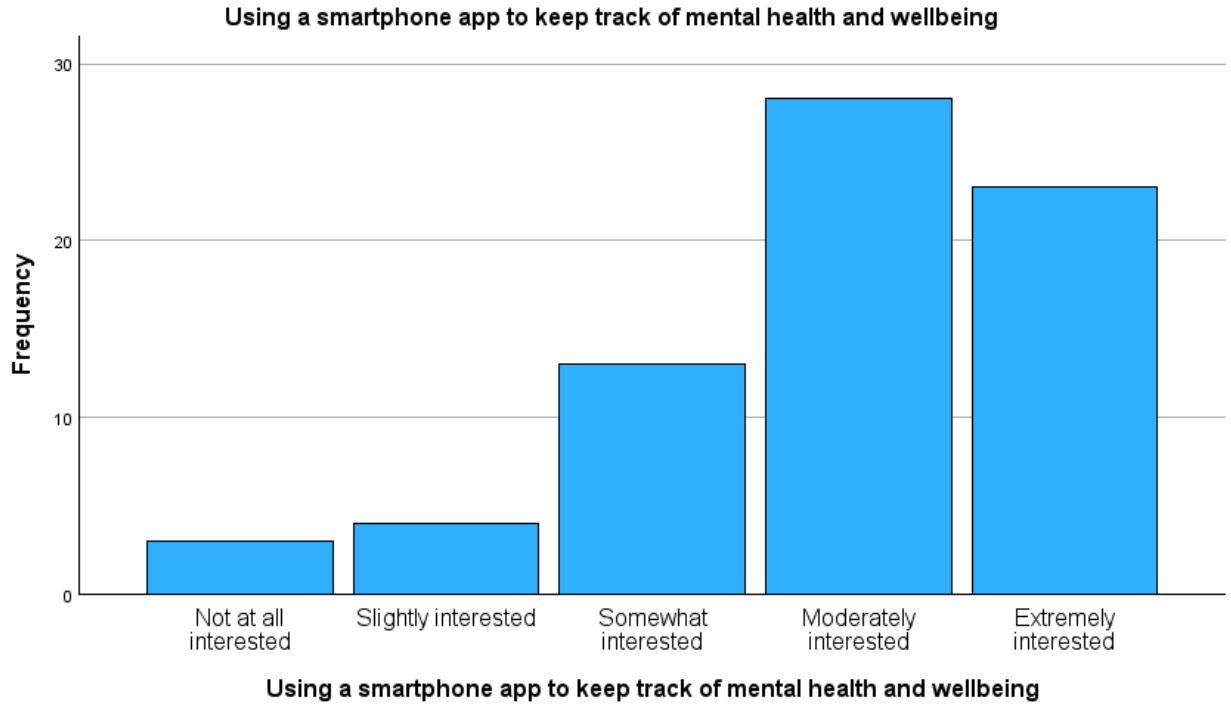


Figure 9: *Interest in Digital Mental Health Interventions (Sharing Information Online)*

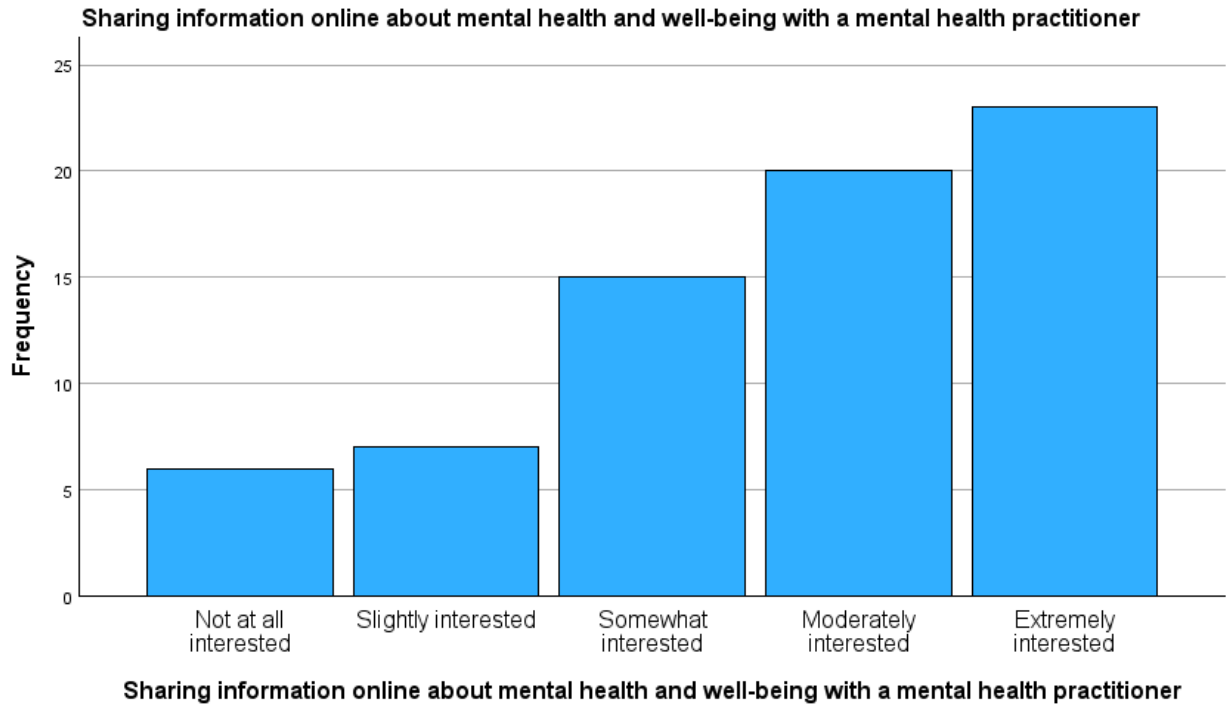


Figure 10: *Interest in Digital Mental Health Interventions (Video Chat)*

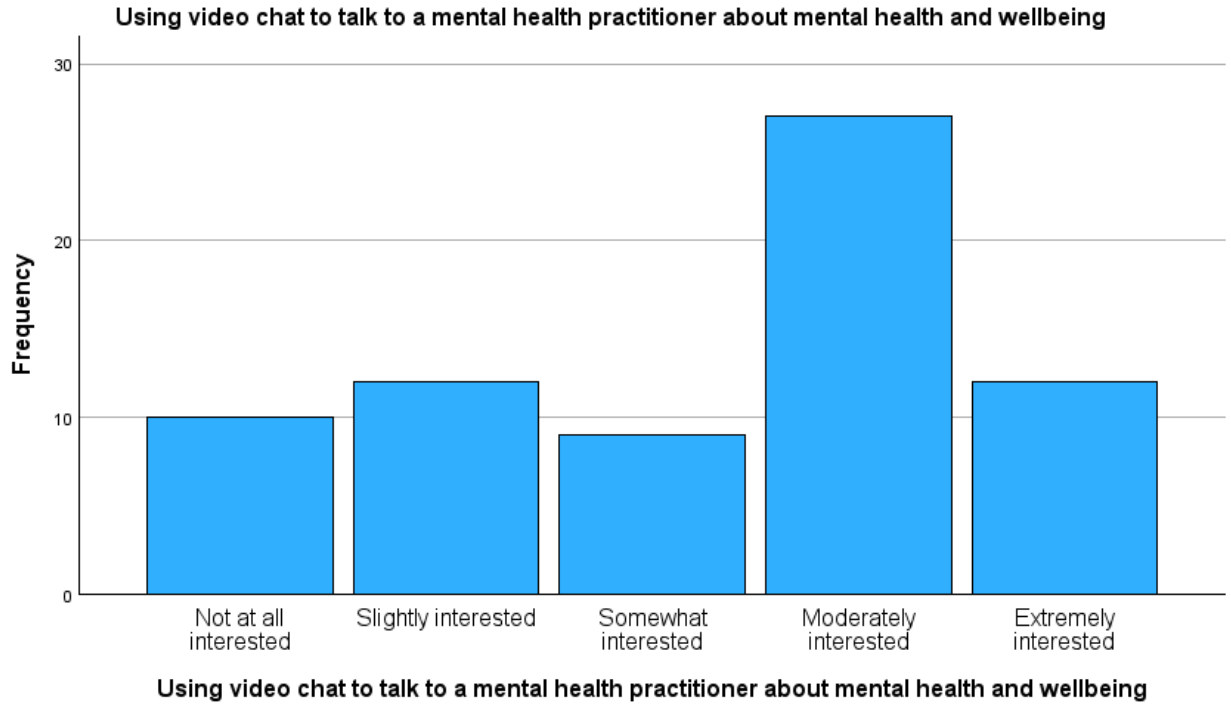


Figure 11: *Interest in Digital Mental Health Interventions (Text Chat)*

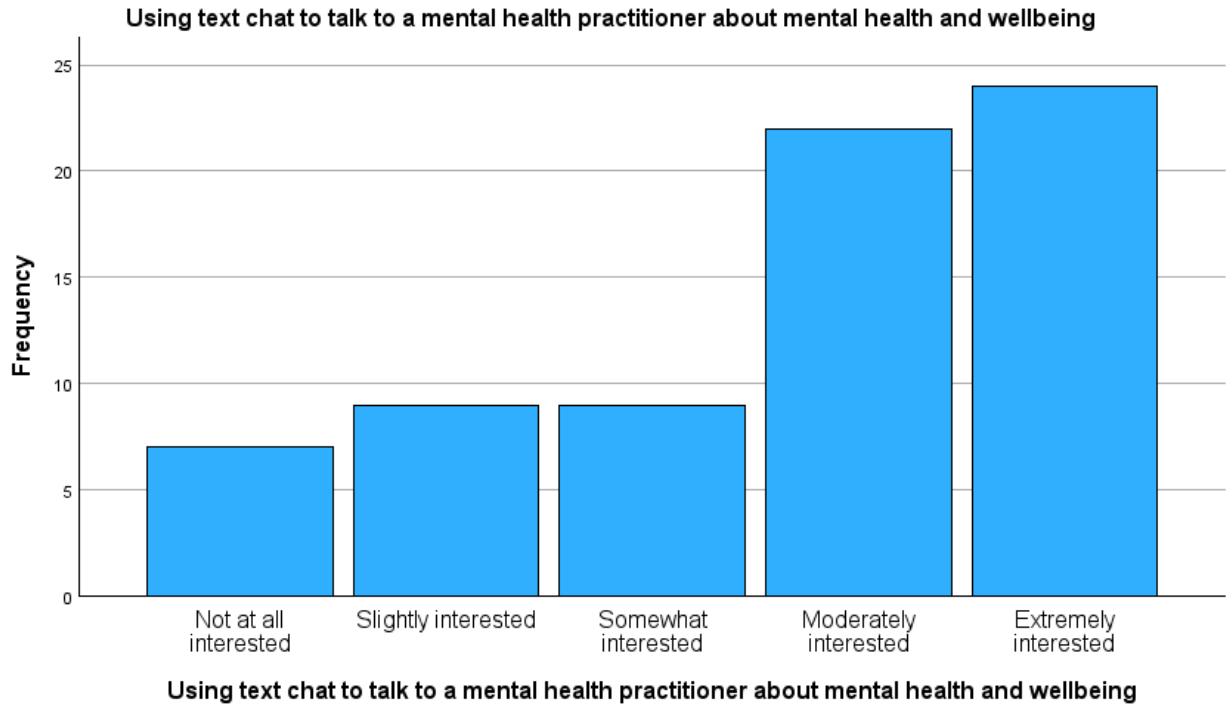


Figure 12: *Interest in Digital Mental Health Interventions (Social Media)*

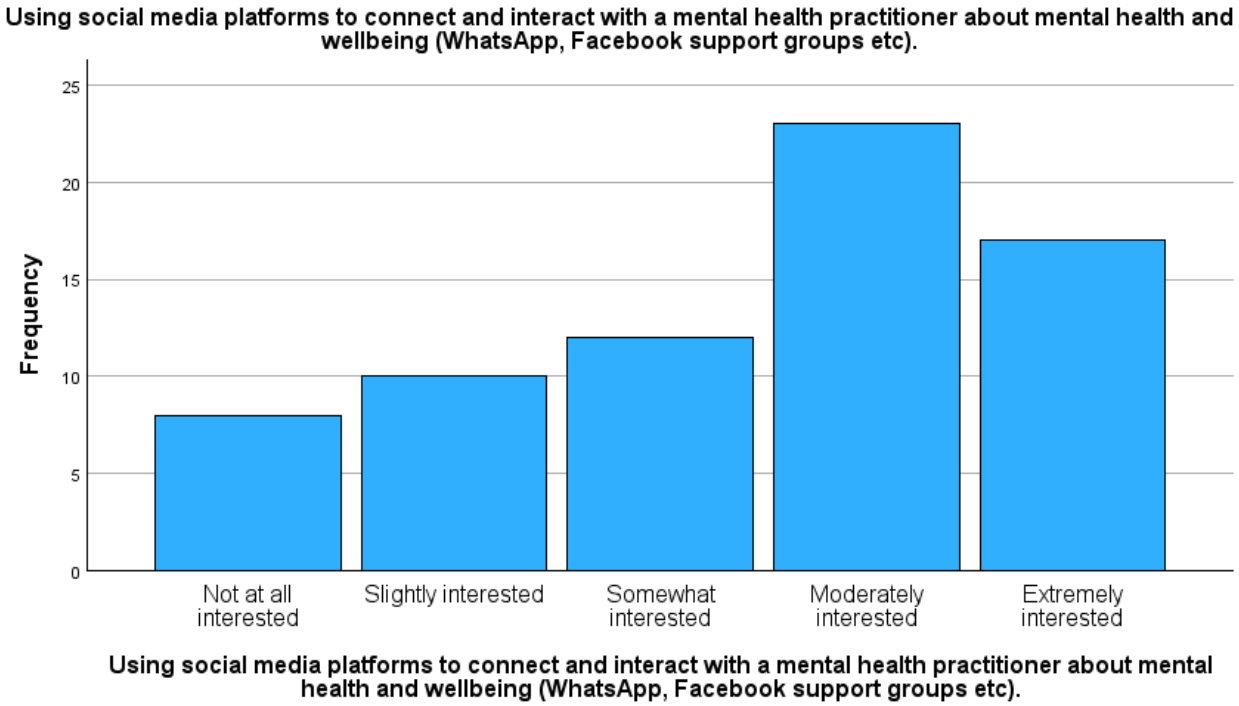


Figure 13: *Interest in Digital Mental Health Interventions (Connect with other Young People)*

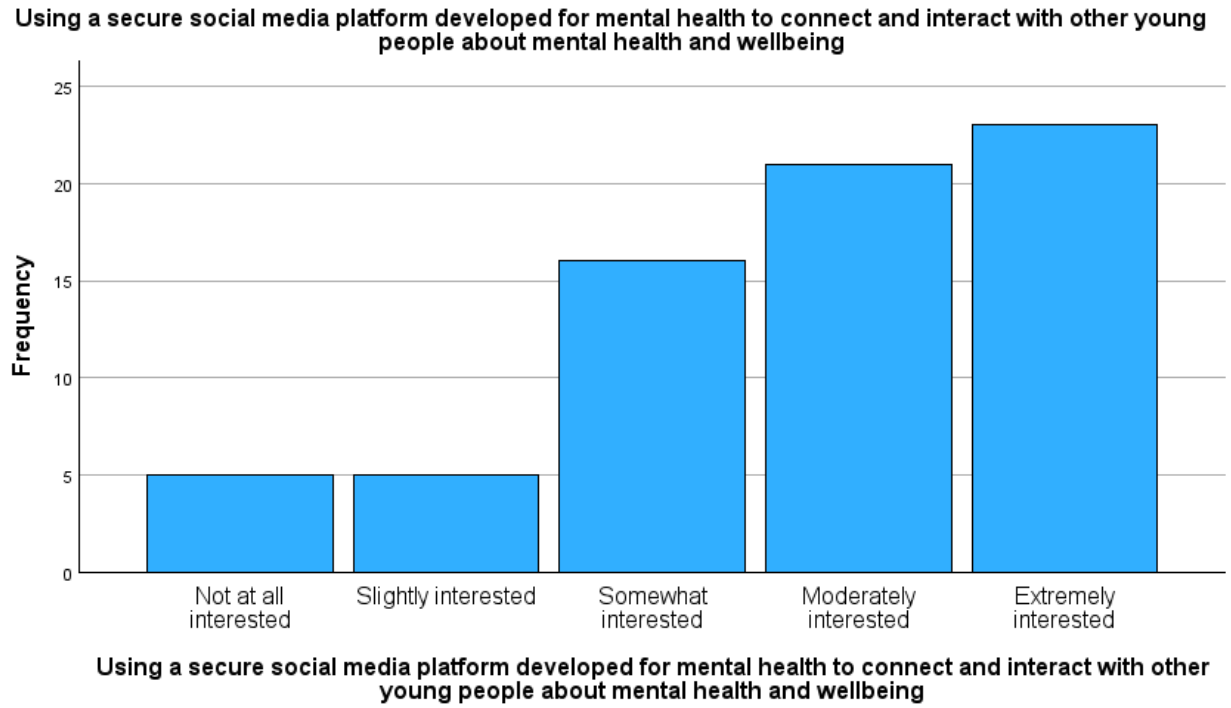


Figure 14: *Interest in Digital Mental Health Interventions (Website)*

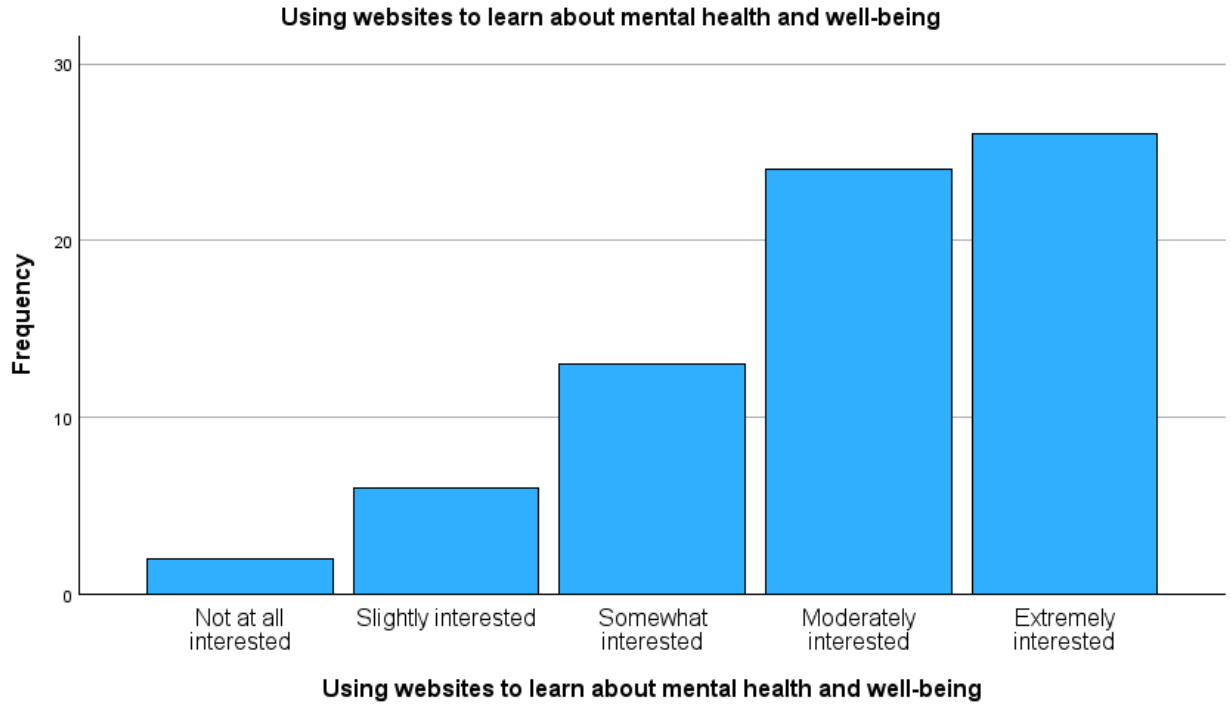


Figure 15: *Interest in Digital Mental Health Interventions (Digital Games)*

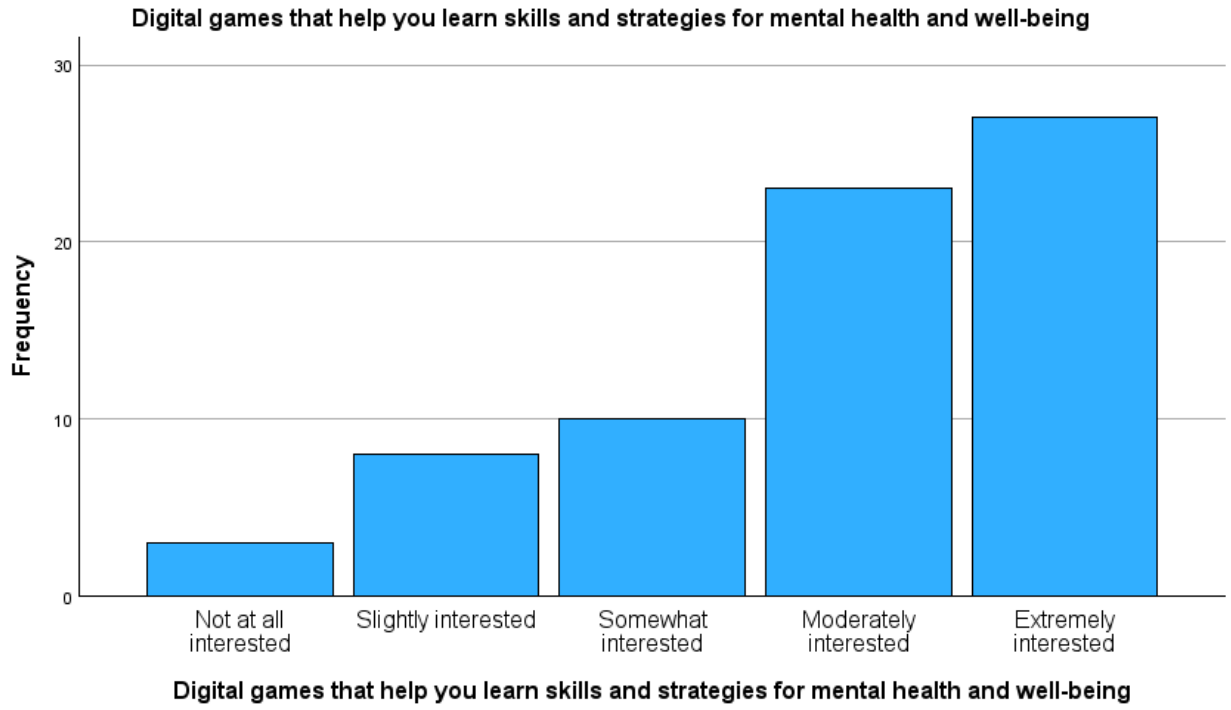
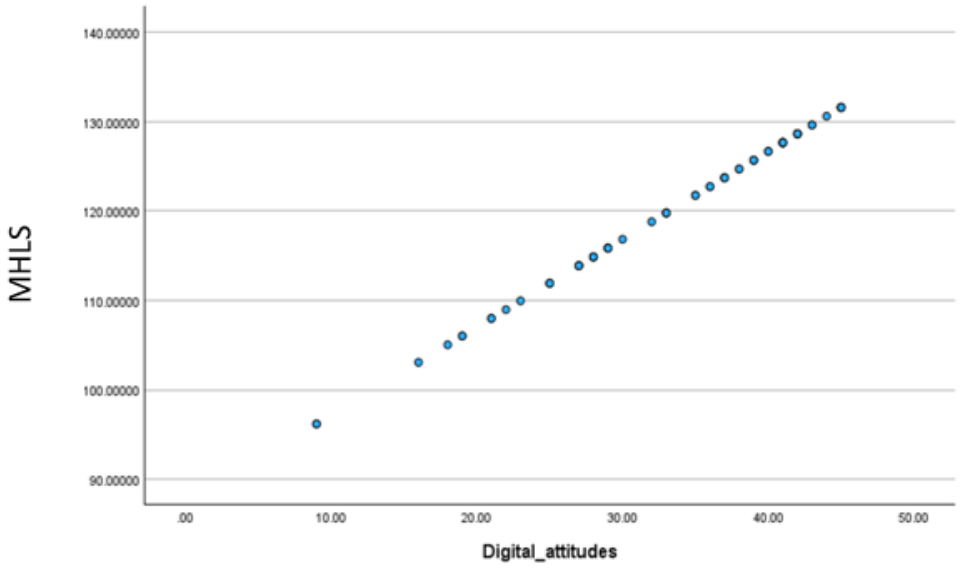


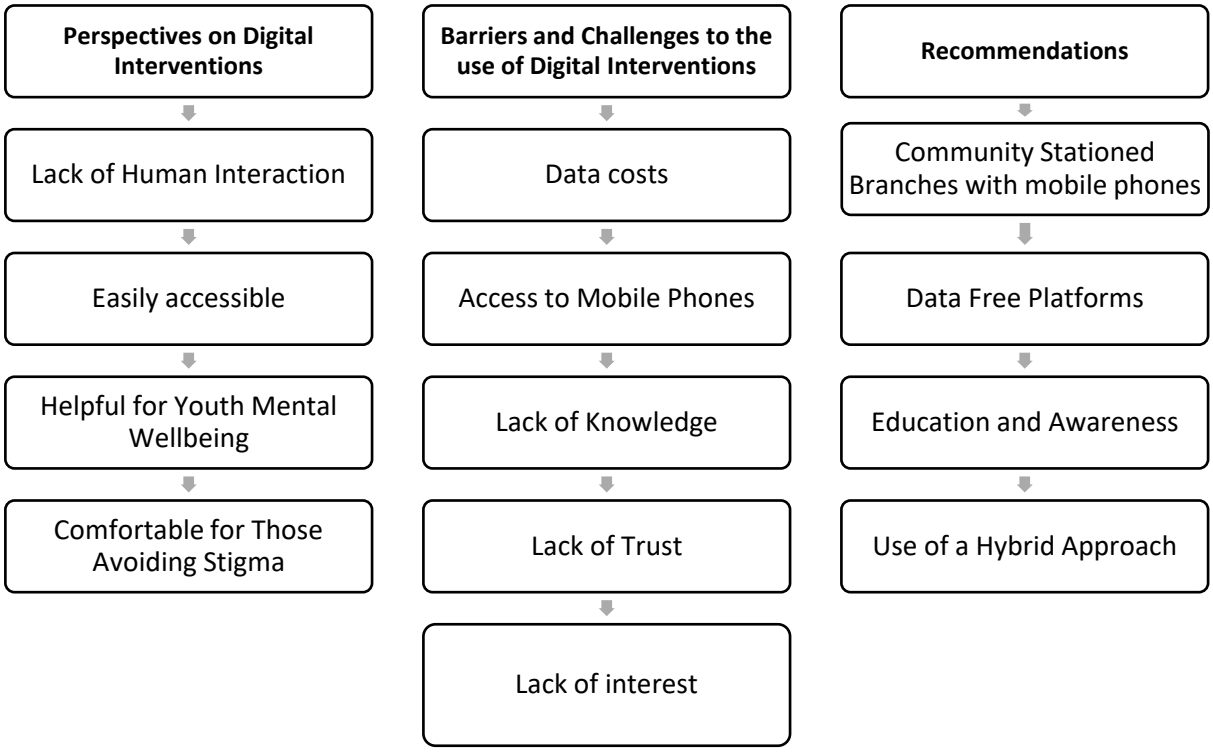
Figure 17: Correlation between MHLS score and Digital Attitudes



4.4 Qualitative Results

The qualitative results were structured according to three themes (Figure 17): (1) Youth Perspectives on the use of digital mental health interventions in Soweto, which details accounts of participants' views on the usefulness of these types of interventions. (2) Perceived Barriers and Challenges to Use of Digital Mental Health Interventions, which details accounts of potential barriers and challenges to the use of digital interventions in Soweto. (3) Recommendations, which details recommendations from the youth in Soweto on how to improve acceptance of digital health intervention and platforms in Soweto.

Figure 18: *Qualitative Themes Organization*



There were mixed ideas on the use of digital mental health intervention in Soweto. Some youth were generally optimistic about this approach, noting that it would help youth fill the knowledge gap by providing easily accessible information on mental health disorders and treatments and other coping mechanisms. Youth believed that this type of intervention would be especially helpful for youth who are intimidated by face-to-face consultations and those who might have

responsibilities (such as work or school) that make it difficult for them to secure appointments. They noted that these interventions might help reduce the suicide statistics in the country. Some of the participants, however, noted that the lack of human interaction might cause these interventions to not work well in the community. They also highlighted that despite the availability of some resources, the youth continue to be mainly concerned with using social media for entertainment reasons, and this type of intervention would not be effective.

> "*It is needed in the community especially townships as people don't know where to go when they have mental health issues*
> *It will help the community, I struggled with my mental health when I was dealing with my sexuality and there was no place I knew off to assist until I was at work and saw a poster for SADAG. So the youth will benefit greatly from such interventions, they will bring change to the black community*"- R023

> "*Because it's something we're not used to and most people don't even have proper communication with their family I doubt they'd be interested in digital mental health interventions. With some having to be there for themselves it would be hard to trust or lean on someone they don't know especially digitally*" – R03

4.4.1 Barriers to the use of Digital Mental Health Interventions

Almost all participants (n=60) (Figure 18) noted that access to data and mobile phone might be a challenge in implementing these type of interventions in the community. They noted that due to the economic inequality in the community there might be a lot of youth who do not have access to adequate resources that would enable them to participate effectively. Some participants were also concerned with data safety when interacting on digital platforms noting that they would need a guarantee that their information would not be shared outside the constraints of the digital platform. There were also a few youth who noted that there was a general lack of interest amongst the youth around mental health issues and despite the availability of digital platforms youth might not use them at all. Many participants also noted that there is lack of knowledge,

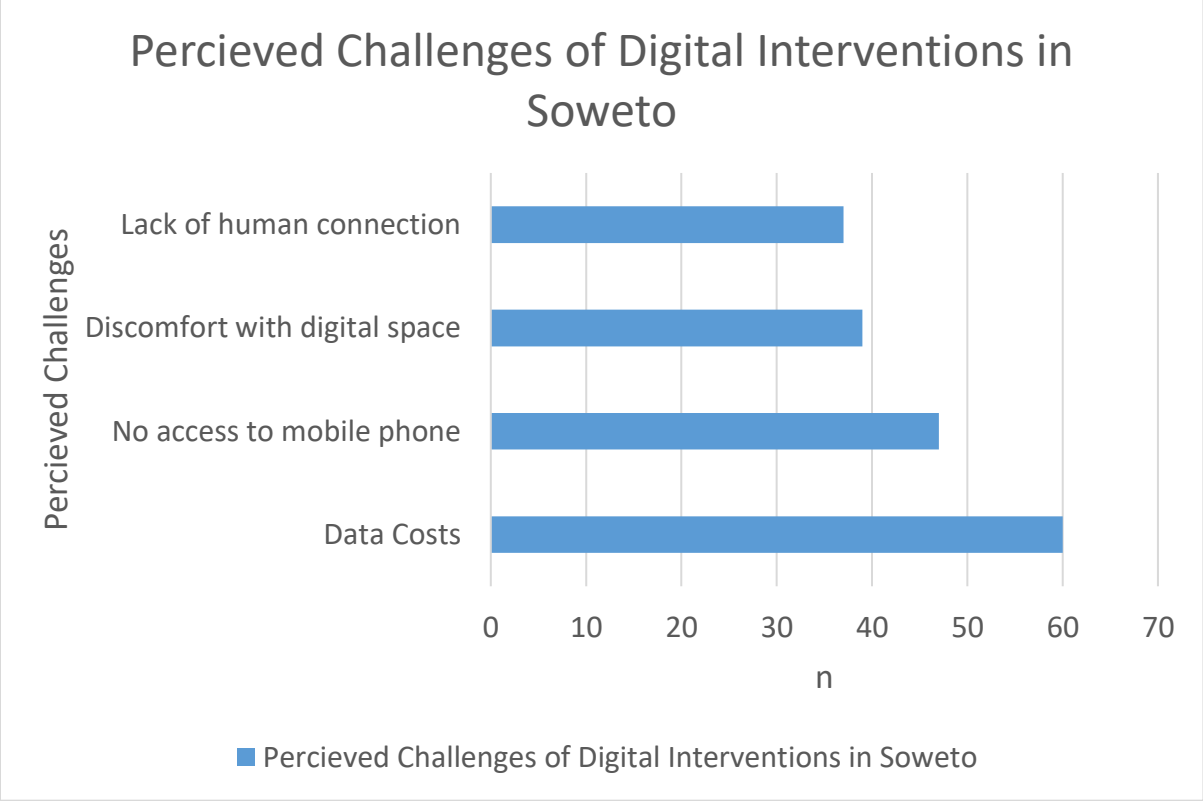
both of available digital interventions, and of how to use these interventions, as most youth have no experience using similar platforms. There was one participant who notably mentioned language as a barrier, noting that if digital platforms were available in other languages it might help them be more acceptable in settings such as Soweto.

"*Data and their fear of opening up about such a taboo subject*" –R_10

"*Lack of interest in digital interventions. We have so many online interventions, and most of them are not successful..... Because our youth uses Social platforms or online things for fun... not for their health hazards*" – R_08

"*We have no experience in using the tools" –R_70*

Figure 19: *Perceived Challenges of Digital Interventions in Soweto*



4.4.2 Participant Recommendations

Most Participants suggested that the creation of data free (zero-rated platforms) digital platforms would be helpful as it would help alleviate the financial burden for youth. They also noted that provision of smartphones might be useful ensure effectiveness of digital interventions. Additionally, youth noted that having community centres equipped with computers and mobile phones that allow youth to access the digital services in the event that they do not have personal devices would be helpful. Youth also suggested a hybrid approach to administering these intervention, noting that holding in-person group meetings in between might help to build rapport and encourage young people to be more comfortable and trust the digital platforms more. Lastly, participants suggested more robust education regarding available digital health interventions, mental health challenges and wellbeing in general, and also for training to be provided as most noted that they had no knowledge of how these digital platforms might work.

> "*Access to phones or computer for people who do not have a phone so they can access the mental health tools at clinics or hospital*" - R40

> "*Holding sessions prior before introducing the digital mental health tools. There had to be a human connection to gain trust... prior before introducing a digital intervention*" – R51

> "*Offer a service that doesn't require data*" -R12

4.5 Conclusion

This chapter presented the findings from the study highlighting mobile access and use amongst youth in Soweto and presenting the results for mental health literacy amongst youth in Soweto. Additionally this section presented the attitudes to digital health interventions amongst youth in Soweto while also highlighting some of the major barriers and challenges to the adoption of said interventions.

CHAPTER 5: Discussion

This chapter aims to focus on understanding the results from this study in context of other literature. Detailing how the results add to the existing body of knowledge.

5.1 Discussion

In our study we aimed to investigate the level of knowledge of mental health amongst young people in Soweto, South Africa, to explore youth attitudes towards using digital mental health interventions and to explore barriers and challenges that affect the use of digital mental health tools amongst young people in Soweto, South Africa. The results from the MHLS indicated that youth had good knowledge of mental health in general with an impressive overall score of 119.8. This is an important finding, as similar studies done in other LMICs have reported a slightly lower score on the Mental Health Literacy Scale (Zita, 2018 & Madlala et al., 2025) . Particularly, our results are aligned with a study conducted by Sartorius et al. (2020) on mental health knowledge amongst young people in South Africa, which found that young South Africans had moderate levels of mental health knowledge, with gaps in understanding mental health disorders and available treatment options. These findings are further corroborated by Dhurup et al. (2019), who observed similar trends in rural South African communities, where mental health awareness was found to be lower than in urban areas.

This research was carried out using the Health Belief Model as the primary theoretical framework to interpret health-seeking behaviour. The Health Belief Model operates on the premise that individuals are more inclined to act against a health threat when they perceive themselves to be at risk and regard the health issue as severe, as well as when they recognize the benefits of the intervention (Alyafei & Easton-Carr, 2024). The model comprises six components: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action, and self-efficacy, which were elaborated upon in Chapter 1 of this report. Perceived susceptibility and perceived severity were evaluated based on the participants' understanding of mental health, encompassing both the seriousness of mental health problems and their beliefs about who is at risk.

In this study, participants demonstrated moderate levels of awareness about various mental health conditions and their potential impacts, being mindful that our results mainly include descriptive and there are minimal studies that have used this scale in South Africa which makes comparison difficult. Previous research in both global and South African settings suggests young people's understanding of mental health can significantly shape their perceptions of both vulnerability to and the seriousness of mental health issues, (Jorm et al., 2006; Reavley et al., 2014 & Madlala et al, 2022). The high levels of mental health knowledge observed among participants in this study suggest that young people not only recognized the seriousness of mental health problems but also understood the broader implications for themselves and others.

In our study we found that there was a positive correlation between mental health literacy and the willingness to use digital mental health interventions, this aligns with the Health Belief Model, which suggest that individuals are more likely to take preventive actions or seek help when they perceive themselves as at risk to a health problem (perceived susceptibility), and when they recognize the seriousness of that problem (perceived severity) (Rosenstock, 1974). For example, studies by Arnett (2000) and Waller et al. (2013) have shown that adolescents who believe mental health issues are serious and who perceive themselves to be at risk are more likely to engage in behaviours such as seeking support from peers, family, or mental health services. A similar study by Hlongwane & Juby (2023) found similar results amongst a Christian community in South Africa. Some studies, though, indicate that young people may underestimate their own susceptibility to mental health issues, often believing that mental health struggles only affect others or that they are not personally vulnerable (Gulliver et al., 2012). Findings from a study by Choudhry et al (2016), found that individuals with a higher perception of mental health severity were more likely to engage in proactive measures such as seeking therapy or accessing resources. These findings underscore the critical role of mental health education in shaping young people's attitudes toward mental health, particularly in terms of recognizing the seriousness of these issues and identifying appropriate avenues for support.

Therefore the high levels of knowledge about mental health observed in this study suggest that young people might have a high understanding of the risks associated with mental health issues. Their awareness of both the severity and their own potential susceptibility highlights the importance of mental health education in promoting better outcomes and encouraging early

intervention. Moving forward, interventions that aim to reduce stigma and increase help-seeking behaviours among young people should consider the complex interplay between perceptions of susceptibility, severity, and the broader societal understanding of mental health.

While the original research questions did not explicitly include gender-based and age-based comparisons, an exploratory analysis was conducted to examine potential differences in mental health knowledge between male and female participants and participants in different age groups. This decision was informed by broader literature suggesting that gender and age can influence mental health literacy, help-seeking behaviour, and attitudes toward mental health (O'Connor & Casey, 2015; Furnham & Swami, 2018). Although not a primary aim of the study, this exploratory comparison adds value by identifying potential demographic differences that could inform targeted interventions.

Perceived benefits of the potential use of a digital mental health intervention were measured through both the Mental Health Literacy Scale and participants' attitudes towards digital mental health interventions. The results of this study revealed that young people recognized the importance of seeking help for mental health well-being. This was evident when asked about health seeking behaviours where most participants strongly believed that seeking help from a mental health practitioner would be a helpful step for someone suffering from mental health challenges, indicating a strong belief in the value of seeking help for mental health issues. However, it is notable that many participants reported that they would personally not seek help for mental health issues, their willingness to personally seek help may be influenced by multiple factors that were not explored in this study, such as prior experiences with mental health services, stigma reduction, or individual perceptions of their own mental health (Rickwood et al., 2016).

Participants also shared, through the open-ended responses that digital interventions could be particularly beneficial within their communities, where discussing mental health struggles openly could be challenging due to cultural or social stigmas. This finding is consistent with previous research highlighting that young people may prefer anonymous or less direct forms of seeking help, particularly when mental health is a sensitive topic (Gulliver et al., 2012; Rice et al., 2018). For example, a study by Farrer et al. (2013) found that young people were more likely to use

online mental health services when they felt it allowed them to maintain privacy and avoid face-to-face interactions, which could be perceived as stigmatizing. A study by Sharma-Misra et al (2023) in Kwa-Zulu Natal also highlighted the same sentiments.

Many participants in the study showed willingness to use digital interventions, this speaks to the growing recognition of the effectiveness of online mental health programs. Several studies have demonstrated that digital interventions can be as effective as in-person counselling for a variety of mental health issues, including depression and anxiety (Andersson & Titov, 2014). Furthermore, online interventions can offer scalability, making them more accessible to a larger population, especially for underserved youth who may not otherwise have access to adequate mental health services (Farrer et al., 2013). As one example, the "e-therapy" programs used in countries such as Australia have shown promising results in improving mental health outcomes among young people, offering an accessible and flexible alternative to traditional therapy (Rickwood & Thomas, 2013).

The findings of this study suggest that young people see the benefits in digital mental health interventions, particularly in terms of increased accessibility, privacy, and convenience. This is especially evident in existing literature that highlights the growing preference for digital solutions in addressing mental health concerns, especially in youth populations that may face barriers to traditional face-to-face services (Smith et al., 2023; Berardi et al., 2024; Mudau, Jithoo & Dietrich et al., 2024). However, further exploration is needed to understand the specific reasons behind young people's willingness to seek help, and how factors such as social stigma and personal experience may influence their help-seeking behaviours. Digital interventions, when designed thoughtfully, have the potential to increase engagement, and make mental health support more readily available to youth in diverse communities.

There are numerous perceived barriers to the uptake of digital interventions for mental health, with participants in this study highlighting factors such as data costs, access to mobile phones, trust, and lack of knowledge as significant challenges that could hinder engagement with digital mental health services. In terms of the Health Belief Model this can be understood in relation to the construct of perceived barriers. These barriers reflect broader trends observed in other regions, particularly in low-resource settings where access to technology and digital literacy

remains limited. In South Africa, for instance, studies have shown that data costs and access to affordable mobile phones are major barriers to engaging with online health interventions (Mokgatle, 2020; Tomaz et al., 2019). Data costs, in particular, have been identified as a key obstacle to the widespread adoption of digital health interventions, particularly among young people from low-income backgrounds. In a study by De Choudhury et al. (2021), participants from rural areas of South Africa expressed concern over the high costs of mobile data, which limited their ability to access online mental health resources.

Participants in this study also mentioned several "cues to action," primarily revolving around increased education around mental health issues and greater awareness of available digital interventions. This finding is consistent with other research conducted in South Africa, where initiatives aimed at improving mental health literacy have been shown to be effective in encouraging help-seeking behaviour and engagement with mental health services (Reddy et al., 2016). Studies have highlighted that when individuals, particularly youth, are educated about mental health conditions and the available resources, they are more likely to seek help and utilize mental health interventions. For example, a study by Ndhlovu and colleagues (2020) found that South African youth who participated in community-based mental health education programs were more likely to engage with digital mental health tools and support networks.

However, participants in the current study highlighted the importance of addressing perceptions of self-efficacy, especially the concerns about using digital interventions effectively within their communities. This sentiment aligns with findings from South African research, where a lack of digital literacy among young people has been identified as a significant barrier to the adoption of technology-based mental health interventions (Sundararajan & Kermode, 2017). In particular, participants in this current study expressed that they may not be equipped to use these interventions independently and would benefit from training or support in navigating digital platforms. This issue of digital literacy is critical, as studies have shown that young people in South Africa often struggle with the technical aspects of using digital health platforms, especially when those platforms require a certain level of technological proficiency (Maher et al., 2021). For example, in a study of mobile health interventions in rural South African communities, participants reported challenges in using smartphones effectively due to limited exposure to

technology and a lack of necessary skills to navigate apps and online resources (Sundararajan et al., 2018; Kehinde & Jere, 2022).

In response to these concerns, studies have suggested that digital interventions should include components that focus on building users' digital skills and confidence. This might include user-friendly designs, step-by-step guides, and the incorporation of training modules within digital platforms to help users build the skills needed to engage with mental health services effectively. Furthermore, as noted by Bhana et al. (2015), integrating digital interventions with face-to-face support from community health workers or peer educators could mitigate some of the challenges associated with low digital literacy and foster greater confidence in using online tools. This hybrid approach—blending digital and in-person support—has been shown to increase engagement and improve outcomes in digital mental health programs, particularly in contexts like South Africa where access to traditional mental health services is limited, and stigma remains a significant barrier to help-seeking behaviour (Tomaz et al., 2019).

While digital mental health interventions hold significant promise for improving access to mental health services (Condrad, 2024), particularly in underserved communities, the barriers identified in this study—such as data costs, digital access, and lack of digital literacy—must be addressed to ensure widespread adoption and effective use. As demonstrated in studies from South Africa and other contexts, addressing these barriers through education, training, and integrating digital solutions with in-person support can help young people gain the confidence and skills needed to engage with digital mental health tools, ultimately improving their mental well-being.

Our study contributes to the body of evidence, emphasizing the need for targeted interventions to improve mental health education and reduce stigma, particularly among younger populations. This point is also later emphasised in the qualitative results were many youth have noted the role of lack of information about mental health disorders on effectiveness of interventions. Although youth scored well on the overall MHLS, it is important to highlight that the overall score on the stigma portion of the scale produced low results - especially internalised stigma - with most participants noting that if they had a mental health illness, they would not seek help nor would they tell someone. However, participants were willing to move in next to someone with a mental

illness. This finding highlights the need to reduce stigma for mental health illness and how the stigma may affect health seeking behaviours.

Majority of young people in our study showed interest in the use of digital mental health interventions. This was evident across both the Digital Mental Health Interventions Interest Scale and the qualitative questions, where participants highlighted the potential benefits of using digital mental health interventions, including anonymity, accessibility, and convenience. These findings are consistent with previous research (Olwade et al., 2024; Naslund & Babalola, 2025), which shows that digital platforms hold significant promise in addressing mental health needs, particularly in populations with limited access to traditional face-to-face services. Similarly, Nyatsanza et al. (2021) found that youth in Soweto were more likely to seek mental health support through digital platforms rather than face-to-face interactions. Their study highlighted that the youth preferred digital options due to concerns about stigma, the long waiting times at healthcare facilities, negative attitudes from healthcare workers, and the challenges related to the availability and affordability of mental health professionals.

Furthermore, Lund et al. (2018) noted that digital mental health interventions could be a viable solution to overcome the shortage of mental health professionals in South Africa, especially in underserved areas. Their research emphasized that digital interventions could help bridge the accessibility gap by offering scalable and cost-effective solutions for individuals who might otherwise not have access to mental health care. Similarly, Peltzer et al. (2020) conducted a study in South Africa that demonstrated how digital health interventions, particularly those targeting youth, can effectively engage young people by providing them with easy-to-use platforms for mental health education, self-assessment, and support. These digital platforms are particularly effective in reducing the barriers of traditional mental health services, such as geographic distance and societal stigma, while also enabling greater privacy and convenience for users. In addition to this, Mindu et al. (2023) found that digital mental health interventions had strong potential for improving mental health awareness and literacy among South African youth, especially in rural and peri-urban areas. Their study suggests that digital platforms could play a significant role in increasing help-seeking behaviours and reducing mental health stigma by making mental health resources more readily available and accessible to a broader audience. Our study highlights that digital mental health interventions are not only feasible but also preferred by

young (35% noted when asked about preferences for receiving mental health support preferred online platforms) people as an alternative to traditional mental health services. Given the mental health service challenges, particularly in rural areas and low-resource settings, digital platforms can offer a promising avenue for improving mental health outcomes among young people.

Although most young people who participated in this study had access to a mobile phone, this was still highlighted as a barrier to the implementation of digital interventions in the community. This is consistent with research by Dietrich et al. (2019) on the access and use of mobile phones among youth in Soweto, which found that while mobile phone ownership was high, limitations such as network coverage and the cost of data were significant barriers to utilizing digital health interventions. Their study noted that even though smartphones were widely owned, many young people in low-income urban areas struggled to access the internet due to financial constraints, especially when it came to data costs. This can be explained by factors, such as the use of shared phones with family members, limiting privacy and ability to engage with interventions regularly. Secondly, there may be concerns about device functionality, such as outdated phones or limited storage space, further restricting the feasibility of engaging with digital platforms, particularly in lower-income households. These factors together suggest that device ownership alone does not equate to meaningful or sustained access to digital interventions.

Additionally, Michaels et al. (2020) highlighted that while mobile phones are common among South African youth, disparities in internet access and data affordability significantly impacted the ability to effectively engage with digital platforms for health-related purposes. Most young people enrolled in our study, relied on prepaid data to access the internet, further exacerbating the challenge of using digital interventions regularly. The high cost of data remains one of the primary barriers to accessing online health resources in South Africa, with some individuals reporting that they could not afford the data necessary to participate in online health education or support platforms. Smith et al. (2021) also found that mobile health interventions in South Africa faced significant challenges related to internet connectivity, particularly in rural and underserved areas. The study showed that while mobile health interventions have the potential to reach a wide audience, addressing data affordability and network infrastructure is crucial for ensuring equitable access to these services, especially among young people who may already face financial difficulties.

Participants also raised important considerations for future work in designing and implementing digital interventions, such as the adoption of a hybrid approach. They highlighted that although digital platforms are useful, human interaction should not be completely replaced to foster trust and rapport, especially for mental health treatment, where individuals are expected to discuss personal details. A study by Peltzer et al. (2020) supports these recommendations made by young people, noting that a combination of digital and face-to-face interventions could help mitigate the challenges of impersonal communication often faced on digital platforms.

Similarly, Van der Merwe et al. (2018) discussed the importance of integrating in-person support with digital tools in order to enhance engagement, particularly among individuals from marginalized communities in South Africa. They argued that while digital interventions can provide immediate access to information, they may not be sufficient for creating long-lasting behavioural change or addressing the emotional needs of individuals. The study found that a hybrid model, where digital platforms are used to provide initial access to mental health resources and in-person sessions are available for deeper engagement, might improve outcomes, particularly in rural or underserved areas (Munyoka, 2022). On the other hand, Dhurup et al. (2019) conducted a study in rural South Africa and suggested that digital platforms alone might be sufficient for mental health interventions, particularly when designed with cultural sensitivities in mind. They argued that the use of smartphones and other digital tools has the potential to overcome the barriers to mental health care caused by the shortage of professionals in rural areas. While acknowledging the importance of human interaction, they suggested that digital platforms could be a more sustainable model to reach populations with limited access to in-person services, provided that they are user-friendly and culturally appropriate.

A contrasting viewpoint is presented in the work of Sartorius et al. (2020), which examined the mental health care preferences of South African youth. Their findings indicated that while digital interventions were appreciated for their convenience and anonymity, many participants expressed a preference for human-centered care. They noted that the youth felt more comfortable discussing sensitive issues with a trained professional in person, rather than relying solely on digital platforms, which they felt could be too impersonal or potentially stigmatizing, despite the anonymity offered by online services. Our study adds to the debate about the ideal model for delivering mental health care, particularly for young people in South Africa. While digital

platforms offer significant advantages in terms of accessibility and cost, our findings, in line with Peltzer et al. (2020) and Van der Merwe et al. (2018), suggest that a hybrid approach—incorporating both digital and in-person elements—may be more effective in ensuring engagement, building trust, and delivering comprehensive mental health care.

To promote digital equity, it is essential that both government and non-governmental organizations expand efforts to subsidize data costs for mental health platforms, making them more accessible to youth from low-income communities. In addition, partnerships should be explored with mobile network providers to zero-rate youth-focused mental health content, ensuring that data costs do not become a barrier to access. Investment in community-based digital hubs is also critical—these spaces can provide free access to devices, stable internet connections, and a safe environment where young people can engage with digital tools for mental health support. Additionally, digital mental health initiatives should also be integrated within existing national eHealth and youth policy frameworks, ensuring they are sustainably supported

To address the current gaps in awareness and literacy, targeted public campaigns are needed to destigmatize mental health and raise awareness of available digital tools. Alongside this, there must be a concerted effort to provide training in both digital literacy and mental health literacy, not only for youth but also for their families and caregivers, who often play a critical role in support-seeking and technology use.

Ensuring contextual and cultural relevance is another key consideration. Interventions should be designed to reflect the local languages, cultural norms, and lived experiences of young people in communities like Soweto. This includes actively involving youth in the co-design and development of digital mental health tools, ensuring solutions are relatable, user-friendly, and trusted. Finally, effective implementation will require cross-sector collaboration. Policymakers should encourage joint efforts between the health, education, ICT, and youth development sectors to align strategies and resources.

CHAPTER 6: Conclusion

This chapter aims to look at overall recommendations from the study. In this chapter we will present any concluding remarks, limitations and considerations for future research.

6.1 Conclusion

Our study highlights the growing interest among young people in South Africa for digital mental health interventions, particularly in light of the accessibility and convenience these platforms offer. However, our findings also underscore the importance of addressing key barriers, such as the cost of data and limited access to reliable internet, which continue to hinder the widespread implementation of digital interventions in low-resource communities. While most participants in this study had access to mobile phones, the financial constraints associated with prepaid data plans remain a significant challenge for consistent engagement with digital mental health platforms. Furthermore, the preference for a hybrid model—integrating both digital and in-person interventions—was a recurring theme in the data especially the need for human interaction to foster trust and rapport, particularly in the context of mental health care, where sensitive personal details are often discussed. While digital platforms offer the advantage of anonymity and flexibility, many youth still prefer the comfort and support provided by face-to-face interactions with mental health professionals, especially in a cultural context where stigma around mental health is still prevalent.

Our study contributes to the growing body of evidence suggesting that digital mental health interventions hold significant promise as tools for improving mental health literacy and increasing access to care in South Africa, particularly among the youth. With the rise of digital platforms and the increasing reliance on technology, such interventions have the potential to reach a wide demographic, especially in areas where traditional mental health services are scarce or difficult to access. Digital tools, such as mental health apps, online counselling, and educational resources, offer the convenience of reaching young people who may otherwise face barriers to in-person care due to geographic, financial, or social constraints. These platforms can also help to normalize mental health discussions, reduce stigma, and empower youth with the knowledge they need to better understand and manage their mental health. Overall, the findings

suggest that young people in Soweto hold a generally positive attitude toward the use of digital mental health interventions and were mostly aware of one or two digital mental health platforms. This openness reflects growing familiarity with technology among youth, as well as a desire for accessible, private, and non-judgmental options for mental health support. Digital platforms offer a promising opportunity to bridge gaps in mental health service access, particularly in low-resource settings where formal services are limited. However, the success of such interventions depends on careful cultural and contextual adaptation, ensuring that digital tools are inclusive, linguistically appropriate, and responsive to the unique needs of young people. Intervention development will require addressing barriers related to digital access, gender norms, and mental health stigma. By prioritising the voices and lived experiences of youth, digital mental health strategies in Soweto can become a vital component of a broader, more equitable approach to mental well-being.

However, for these digital platforms to be truly effective in South Africa, several critical challenges must be addressed. One of the primary concerns is the digital divide, which refers to the disparities in access to reliable internet, smartphones, and other digital tools across different regions and communities. In many underserved areas, particularly rural or low-income communities, the cost of data and the lack of access to necessary devices can be prohibitive. As a result, many young people are unable to fully benefit from the potential advantages that digital mental health interventions offer. To ensure the success and equitable reach of these platforms, it will be essential for stakeholders to develop solutions that address this divide. This might include offering data-free access to mental health resources, providing low-cost or subsidized devices, or partnering with telecommunications companies to reduce data costs for users of digital mental health services.

In addition to bridging the digital divide, another important consideration is the potential limitations of relying solely on digital platforms for mental health care. While digital interventions can offer convenience and scalability, they may lack the personal touch and trust-building elements that in-person interactions provide. For young people, particularly those from marginalized communities, establishing trust with mental health professionals or support systems is crucial to effective care. A hybrid approach that combines the accessibility and convenience of digital platforms with the personal connection of in-person interactions could offer the most

comprehensive solution. This approach might include online counselling sessions that are complemented by periodic in-person check-ins, community-based outreach, or support groups that build a sense of belonging and understanding. By integrating both digital and traditional approaches, mental health care could become more inclusive, engaging, and effective for young people.

It will be important for policymakers, health organizations, and technology developers to consider these results when creating digital mental health initiatives that are not only effective but also equitable, accessible, and culturally sensitive. This means designing platforms that reflect the diverse needs and experiences of South African youth, considering factors such as language, socio-economic status, and cultural nuances. Additionally, efforts should be made to ensure that these platforms are sustainable and adaptable to the rapidly changing technological landscape. Policymakers must also ensure that appropriate regulations and protections are in place to safeguard users' privacy and ensure the quality and accuracy of mental health information provided. By addressing these key factors, future digital mental health interventions can have a meaningful, lasting impact on youth mental health in South Africa, contributing to a healthier, more informed generation.

6.2 Limitations and Future Considerations

Due to the constraints of the project timeline, this study employed a relatively small sample size, which limits the ability to generalize the results to all youth in Soweto, South Africa. As a result, the findings may not be fully representative of the broader youth population in the area. This limitation also presents challenges in identifying significant relationships between the various variables being studied. The study was conducted in Soweto, a semi-urban area with a unique blend of rural and urban regions, which further impacts on the ability to apply the results to other contexts within South Africa or other regions with similar socio-economic, cultural, and infrastructural environments.

Although individuals in the 18–24 range are generally considered part of the same developmental stage, there are notable differences in cognitive, emotional, and social maturity that may affect how participants interpret mental health concepts and engage with digital interventions.

Furthermore, while this age group is often seen as digitally literate, disparities in access to smartphones, data, and internet connectivity persist in low-income settings, which may limit participants' ability to fully engage with digital platforms. Additionally, young adults may face particular barriers to help-seeking behaviour, including stigma, dependence on family members, and uncertainty about where and how to access mental health services—factors that may have affected the study outcomes.

Gender-related limitations are also significant. Cultural and social norms in may discourage young men from acknowledging mental health issues or seeking help, which could result in underreporting or reduced participation. The MHLS, while widely used, may not fully account for these gendered differences in mental health experiences or in how individuals understand and seek help for mental health concerns.

The Mental Health Literacy Scale was originally developed in a high-income, Western context and may lack cultural validity in a South African township setting. The concepts and terminology used in the MHLS may not resonate with how mental health is expressed and understood locally. Moreover, some items on the MHLS may not reflect the realities of mental health care in Soweto, where access to formal services is limited, potentially reducing the relevance of certain knowledge-based questions. Response bias is another concern, as participants may provide socially desirable answers due to stigma or discomfort discussing mental health topics.

Finally, broader contextual factors may also limit the study. Infrastructure challenges such as unreliable electricity, poor internet connectivity, and high data costs may disrupt participation in digital interventions. High levels of youth unemployment, mobility, and educational dropout in the area could further affect participant retention and engagement over time. Additionally, the findings from this study may not be generalizable to other low-income settings or older populations, given the specific socio-cultural and economic dynamics of Soweto.

For future research it is recommended that the MHLS be culturally adapted through cognitive interviews and pilot testing, incorporating gender-sensitive analyses. Finally, complementing quantitative data with qualitative methods such as focus groups or in-depth interviews would enhance contextual understanding and provide a richer interpretation of the findings.

For future research with a longer timeline, it would be highly beneficial to collect data from a larger sample to improve the generalizability of the findings and increase the statistical power of the analyses. Expanding the sample size would allow for a more robust exploration of relationships between variables, therefore strengthening the reliability of the results. Additionally, future studies could benefit from incorporating more qualitative methods, such as in-depth interviews or focus group discussions, to explore the barriers to digital mental health interventions in greater detail. Qualitative data could provide deeper insights into the lived experiences of youth in these communities and reveal additional challenges or opportunities that may not be captured through quantitative surveys alone.

For future research, especially longitudinal studies would be beneficial, as they could offer a more comprehensive understanding of the impact of digital mental health interventions over time. Long-term studies would allow researchers to track changes in mental health outcomes and assess the sustainability and effectiveness of interventions. Furthermore, these studies could include an intervention component, where youth are actively involved in the co-design process, by engaging youth in the design and development of digital mental health tools, researchers can ensure that these interventions are more tailored to their specific needs, preferences, and cultural contexts, thereby enhancing their relevance and effectiveness.

An important takeaway from this study is the recognition that while youth from resource-strained communities may express interest in using digital mental health interventions, access to reliable internet is a significant barrier that must be addressed. Many young people in South Africa, particularly those in under-resourced areas, face challenges such as limited access to affordable data, inconsistent internet connectivity, and insufficient technological infrastructure. When designing digital mental health interventions, it is essential to consider data-free or low-data alternatives that allow for more equitable access to these tools. Ensuring that these interventions are accessible to as many young people as possible—regardless of their internet access—will help to bridge the digital divide and make a meaningful impact on youth mental health.

As the world moves into the Fourth Industrial Revolution, where technology and digital platforms are increasingly prioritized, it is crucial to acknowledge that some rural regions may not be prepared for this technological transition. In these areas, infrastructure limitations and

digital illiteracy may further hinder access to digital health solutions. Therefore, when co-designing interventions for these regions, it is vital to consider the specific challenges faced by these communities, such as lack of stable electricity, internet access, or familiarity with technology. Interventions must be adaptable to the local context, ensuring that they are both feasible and effective for youth in rural and underserved areas. By addressing these challenges, there is potential to work towards more inclusive, equitable, and impactful mental health interventions for young people across South Africa.

References

Abraham, Charles & Sheeran, Paschal. (2015). *The Health Belief Model*.

Adjei, N. K., Schlüter, D. K., Straatmann, V. S., Melis, G., Fleming, K. M., McGovern, R., Howard, L. M., Kaner, E., Wolfe, I., Taylor-Robinson, D. C., & ORACLE consortium (2021). Impact of poverty and family adversity on adolescent health: a multi-trajectory analysis using the UK Millennium Cohort Study. *The Lancet regional health. Europe*, *13*, 100279. https://doi.org/10.1016/j.lanepe.2021.100279

Afşar, F., Özkan, A. (2023). The Health Literacy and Health-seeking Behavior of Patients with a Chronic Disease Requiring Hospitalization. Cam & Sakura Medical Journal, 3(1), 19-26. doi:10.4274/csmedj.galenos.2022.2022-11-13.

Ahad, A. A., Sanchez-Gonzalez, M., & Junquera, P. (2023). Understanding and Addressing Mental Health Stigma Acrossacross Cultures for Improving Psychiatric Care: A Narrative Review. *Cureus*, *15*(5), e39549. https://doi.org/10.7759/cureus.39549

Ahmed, Sirwan. (2024). The pillars of trustworthiness in qualitative research. 10.31219/osf.io/se58y.

Ahmedani B. K. (2011). Mental Health Stigma: Society, Individuals, and the Profession. *Journal of social work values and ethics*, *8*(2), 41–416.

Alao, M. A., Ibrahim, O. R., Iloh, K. K., Ayuk, A. C., Diala, U. M., Briggs, D. C., Imam, Z. O., Yekini, S. A., Sotimehin, S. A., Musa, A. Z., Famutimi, E. O., Idris, A. A., Odimegwu, C. L., Imam, Z. K., Medupin, P. F., Adeyemi, A. T., Nnamani, K. O., & Tongo, O. O. (2023). Factors associated with common mental disorders among breastfeeding mothers in tertiary hospital nurseries in Nigeria. *PloS one*, *18*(3), e0281704. https://doi.org/10.1371/journal.pone.0281704

Albikawi Z. F. (2023). *Anxiety, Depression, Self-Esteem, Internet Addiction and Predictors of Cyberbullying and Cybervictimization among Female Nursing University Students: A Cross*

Sectional Study. International journal of environmental research and public health, 20(5), 4293. https://doi.org/10.3390/ijerph20054293

Ali, P., & Younas, A. (2021). Understanding and interpreting regression analysis. *Evidence-based nursing*, *24*(4), 116–118. https://doi.org/10.1136/ebnurs-2021-103425

Alyafei, A., & Easton-Carr, R. (2024). The Health Belief Model of Behavior Change. In *StatPearls*. StatPearls Publishing.

Alyafei, A., & Easton-Carr, R. (2024). The Health Belief Model of Behavior Change. In *StatPearls*. StatPearls Publishing.

Alyafei, A., & Easton-Carr, R. (2024). The Health Belief Model of Behavior Change. In *StatPearls*. StatPearls Publishing.

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Andersson, G. and Titov, N. (2014) Advantages and Limitations of Internet-Based Interventions for Common Mental Disorders. World Psychiatry, 13, 4-11. https://doi.org/10.1002/wps.20083

Andersson, G., Cuijpers, P., Carlbring, P., Riper, H. and Hedman, E. (2014), Guided Internet-based vs. face-to-face cognitive behaviorbehaviour therapy for psychiatric and somatic disorders: a systematic review and meta-analysis. -, 13: 288-295. https://doi.org/10.1002/wps.20151

Apuke, Oberiri. (2017). Quantitative Research Methods :Methods: A Synopsis Approach. Arabian Journal of Business and Management Review (kuwaitKuwait Chapter)... 6. 40-47. 10.12816/0040336.

Aruleba, K & Jere, N. (2022). Exploring Digital Transforming Challenges in Rural Areas of South Africa through a Systematic Review of Empirical Studies. Scientific African. 16. e01190. 10.1016/j.sciaf.2022.e01190.

Barry, E. (2025, January, 15). *Online Therapy Boom Has Mainly Benefited Privileged Groups, Studies Find.* New York Times. Retrieved from: https://www.nytimes.com/2025/01/15/health/teletherapy-online-therapy.html

Barry, M., Clarke, A., & Jenkins, R. (2013). A systematic review of the effectiveness of mental health promotion interventions for young people in low and middle income countries. *BMC Public Health ,Health, 13*, 831. doi:https://doi.org/10.1186/1471-2458-13-835

Bashi, N., Fatehi, F., Mosadeghi-Nik, M., Askari, M. S., & Karunanithi, M. (2020). Digital health interventions for chronic diseases: a scoping review of evaluation frameworks. *BMJ health & care informatics*, *27*(1), e100066. https://doi.org/10.1136/bmjhci-2019-100066

Bashshur, R. L., Reardon, T. G., & Shannon, G. W. (2000). Telemedicine: a new health care delivery system. *Annual review of public health*, *21*, 613–637. https://doi.org/10.1146/annurev.publhealth.21.1.613

Bauer, U. E., Briss, P. A., Goodman, R. A., & Bowman, B. A. (2014). Prevention of chronic disease in the 21st century: elimination of the leading preventable causes of premature death and disability in the USA. *Lancet (London, England)*, *384*(9937), 45–52. https://doi.org/10.1016/S0140-6736(14)60648-6

Bell, I. H., Nicholas, J., Broomhall, A., Bailey, E., Bendall, S., Boland, A., Robinson, J., Adams, S., McGorry, P., & Thompson, A. (2023). The impact of COVID-19 on youth mental health: A mixed methods survey. *Psychiatry research*, *321*, 115082. https://doi.org/10.1016/j.psychres.2023.115082

Berardi, C., Antonini, M., Jordan, Z., Wechtler, H., Paolucci, F., & Hinwood, M. (2024). Barriers and facilitators to the implementation of digital technologies in mental health systems: a qualitative systematic review to inform a policy framework. *BMC health services research*, *24*(1), 243. https://doi.org/10.1186/s12913-023-10536-1

Bhana, A., Mellins, C. A., Petersen, I., Alicea, S., Myeza, N., Holst, H., Abrams, E., John, S., Chhagan, M., Nestadt, D. F., Leu, C. S., & McKay, M. (2014). The VUKA family program: piloting a family-based psychosocial intervention to promote health and mental health among

HIV infected early adolescents in South Africa. *AIDS care*, *26*(1), 1–11. https://doi.org/10.1080/09540121.2013.806770

Bhana, Deevia. (2014). When caring is not enough: The limits of teachers' support for South African primary school-girls in the context of sexual violence. International Journal of Educational Development. 41. 10.1016/j.ijedudev.2014.08.003.

Booysen, D., Mahe-Poyo, P., & Grant, R. (2021). The experiences and perceptions of mental health service provision at a primary health centre in the Eastern Cape. *The South African journal of psychiatry: SAJP :SAJP: the journal of the Society of Psychiatrists, 27*, 1641. doi:https://doi.org/10.4102/sajpsychiatry.v27i0.1641

Borghouts, J., Eikey, E., Mark, G., De Leon, C., Schueller, S. M., Schneider, M., Stadnick, N., Zheng, K., Mukamel, D., & Sorkin, D. H. (2021). Barriers to and Facilitators of User Engagement Withwith Digital Mental Health Interventions: Systematic Review. *Journal of medical Internet research*, *23*(3), e24387. https://doi.org/10.2196/24387

Brannon, L., Feist, L., & Updegraff, J. (2013). Health Psychology: An introduction to behaviour and health. Boston, MA, USA: Cenage Learning.

Cardenas, D., Lattimore, F., Steinberg, D., Reynolds, K. (2022). Youth well-being predicts later academic success. Scientific Reports. 12. 10.1038/s41598-022-05780-0.

Carter CR, Maki J, Ackermann N, Waters EA. (2023). Inclusive Recruitment Strategies to Maximize Sociodemographic Diversity among Participants: A St. Louis Case Study. *MDM Policy & Practice*. 8(1). doi:10.1177/23814683231183646

Carter, H., Araya, R., Anjur, K., Deng, D., & Naslund, J. A. (2021). The emergence of digital mental health in low-income and middle-income countries: A review of recent advances and implications for the treatment and prevention of mental disorders. *Journal of psychiatric research*, *133*, 223–246. https://doi.org/10.1016/j.jpsychires.2020.12.016

Cattan, M., & Tilford, S. (2006). *Mental health promotion: a lifespan approach.* New York, NY, USA: McGraw-Hill International.

Center for Disease Control and Prevention. (2024, April 25). *Mental Health*. Retrieved May 01, 2023, from: https://www.cdc.gov/mentalhealth/learn/index.htm.

Centers for Disease Control and Prevention. (2022). *Mental Health: Poor Mental Health is a Problem for Adolescents.* Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/healthyyouth/mental-health/index.htm

Centers for Disease control and prevention. (2022). *Youth Risk Behaviour Survey: Data Summary and Trends Report.* Division of Adolescent and School Health. Retrieved from https://www.cdc.gov/healthyyouth/data/yrbs/pdf/YRBS_Data-SummaryTrends_Report2023_508.pdf

Chakrabarti S. (2024). Digital psychiatry in low-and-middle-income countries: New developments and the way forward. *World journal of psychiatry*, *14*(3), 350–361. https://doi.org/10.5498/wjp.v14.i3.350

Chakraverty, A. (2023). Intergenerational Trauma Studies in Diasporic Writers: Unveiling the Literary Narratives of Inherited Wounds. International Journal of Humanities Social Science and Management (IJHSSM), 3(3), 323-328.

Chan, A. H. Y., Foot, H., Pearce, C. J., Horne, R., Foster, J. M., & Harrison, J. (2022). Effect of electronic adherence monitoring on adherence and outcomes in chronic conditions: A systematic review and meta-analysis. *PloS one*, *17*(3), e0265715. https://doi.org/10.1371/journal.pone.0265715.

Cheng-Min, C., & Tai-Kuei, Y. (2017). Associations among Different Internet Access Time, Gender and Cyberbullying BehaviorsBehaviours. *Frontiers in Psychology, 8*. Retrieved from https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01104

Chi, P., Lan, V., Ngan, N., & Linh, N. (2020). Online time, experience of cyber bullying and practices to cope with it among high school students in Hanoi. *Health psychology open, 7*(1). Retrieved from https://doi.org/10.1177/2055102920935747

Choudhry, F. R., Mani, V., Ming, L. C., & Khan, T. M. (2016). Beliefs and perception about mental health issues: a meta-synthesis. *Neuropsychiatric disease and treatment*, *12*, 2807–2818. https://doi.org/10.2147/NDT.S111543

Clarke, M. (2022). *Democratic Alliance*. Retrieved from https://www.da.org.za/2022/06/sa-can-onlyhelp-0-3-of-people-with-mental-health-issues.

Coetzee, J; Buckley, J; Otwombe, K; Milovanovic, M; Gray, G & Jewkes, R. (2018). Depression and Post Traumatic Stress amongst female sex workers in Soweto, South Africa: A cross sectional, respondent driven sample. PLOS ONE. 13. e0196759. 10.1371/journal.pone.0196759.

Coetzer, J., Bold, A., van der Mark, E., (2022). *Exploring mental health interventions for youth in Southern Africa: A rapid review*, Acta Psychologica, 229, https://doi.org/10.1016/j.actpsy.2022.103699.

Cohen, Z. D., & Schueller, S. M. (2023). Expanding, improving, and understanding behaviour research and therapy through digital mental health. *Behaviour research and therapy*, *167*, 104358. https://doi.org/10.1016/j.brat.2023.104358

Colizzi, M., Lasalvia, A., & Ruggeri, M. (2020). Prevention and early intervention in youth mental health: is it time for a multidisciplinary and trans-diagnostic model for care? *International Journal Mental Health Systems, 14*(23). doi:https://doi.org/10.1186/s13033-020-00356-9

Commission for Gender Equality. (2024). *ANNUAL REPORT 2023/2024*. Retrieved from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://cge.org.za/wp-content/uploads/2024/10/CGE-ANNUAL-REPORT-202324.pdf.

Conrad, J. A. (2024). Digitization and its discontents: The promise and limitations of digital mental health interventions. *Journal of Contemporary Psychotherapy: On the Cutting Edge of Modern Developments in Psychotherapy, 54*(3), 209–215. https://doi.org/10.1007/s10879-024-09620-2

Creswell, J. W., & Creswell, J. D. (2022). Research design: Qualitative, quantitative, and mixed methods approaches (6th ed.). SAGE Publications.

Davis, R., Gardner, J., & Schnall, R. (2020). A Review of Usability Evaluation Methods and Their Use for Testing eHealth HIV Interventions. *Current HIV/AIDS reports*, *17*(3), 203–218. https://doi.org/10.1007/s11904-020-00493-3

de Villiers, K. Bridging the health inequality gap: an examination of South Africa's social innovation in health landscape. *Infect Dis Poverty* **10**, 19 (2021). https://doi.org/10.1186/s40249-021-00804-9

Department of Statistics, Republic of South Africa. (2022). *City of Johannesburg.* Retrieved from: *https://www.statssa.gov.za/?page_id=4286&id=11317*

Department of Statistics, Republic of South Africa. (2024). Stats in brief. Retrieved from: chromeextension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.statssa.gov.za/publications/StatsInBrief/StatsInBrief2024.pdf.

Department of Statistics, Republic of South Africa. (2024). *Youth Unemployment and Labour Market Challenges.* Retrieved from: https://www.statssa.gov.za/?p=18083#:~:text=Youth%20unemployment%20%E2%80%93%20the%20percentage%20of,Cape%20where%20the%20rate%20decreased.

Dhurumraj, Thasmai & Ramaila, Sam. (2023). Alleviation of social injustices in STEM education: Harnessing pedagogical affordances of virtual and augmented reality applications through open learning. African Journal of Teacher Education. 12. 210-227.

Dietrich, J. J., Hornschuh, S., Khunwane, M., Makhale, L. M., Otwombe, K., Morgan, C., Huang, Y., Lemos, M., Lazarus, E., Kublin, J. G., Gray, G. E., Laher, F., Andrasik, M., & HVTN 915 team (2020). A mixed methods investigation of implementation barriers and facilitators to a daily mobile phone sexual risk assessment for young women in Soweto, South Africa. *PloS one*, *15*(4), e0231086. https://doi.org/10.1371/journal.pone.0231086

Diko, D. (2023). Gender-Based Violence (GBV) in South Africa: An Interdisciplinary Discourse of One Selected isiZulu and One Selected isiXhosa Literary Text. African Journal of Inter-Multidisciplinary Studies. 5. 10.51415/ajims.v5i1.1147.

Dlamini LP, Mahanya S, Dlamini SD, Shongwe MC. (2019). Prevalence and factors associated with postpartum depression at a primary healthcare facility in Eswatini. S Afr J Psychiat, 25(0), a1404. https://doi.org/10.4102/sajpsychiatry.v25i0.1404

Dobias, M. L., Sugarman, M. B., Mullarkey, M. C., & Schleider, J. L. (2022). Predicting Mental Health Treatment Access Among Adolescents Withwith Elevated Depressive Symptoms: Machine Learning Approaches. *Administration and policy in mental health*, *49*(1), 88–103. https://doi.org/10.1007/s10488-021-01146-2

Docrat, S., Besada, D., Cleary, S., Daviaud, E., & Lund, C. (2019). Mental health system costs, resources and constraints in South Africa: a national survey. *Health Policy and Planning, 34*(9), 706-719.

Draper, C., Lund, C., Kleintjes, S., Funk, S., Omar, M., Flisher, A.F., & the MHaPP Research Programme Consortium. (2009). *Mental health policy in South Africa: development process and content*, Health Policy and Planning, 24(5) Pages 342-356, https://doi.org/10.1093/heapol/czp027.

Draper, C.E., Cook, C.J., Ankrah, E.A. *et al.* Young Children's Mental Well-Being in Low-Income South African Settings: A Qualitative Study. *J Child Fam Stud* **33**, 3455–3471 (2024). https://doi.org/10.1007/s10826-024-02929-5

Drolet, M., Bénard, É., Boily, M. C., Ali, H., Baandrup, L., Bauer, H., Beddows, S., Brisson, J., Brotherton, J. M., Cummings, T., Donovan, B., Fairley, C. K., Flagg, E. W., Johnson, A. M., Kahn, J. A., Kavanagh, K., Kjaer, S. K., Kliewer, E. V., Lemieux-Mellouki, P., Markowitz, L., … Brisson, M. (2015). Population-level impact and herd effects following human papillomavirus vaccination programmes: a systematic review and meta-analysis. *The Lancet. Infectious diseases*, *15*(5), 565–580. https://doi.org/10.1016/S1473-3099(14)71073-4

Engel G. L. (1977). The need for a new medical model: a challenge for biomedicine. *Science (New York, N.Y.)*, *196*(4286), 129–136. https://doi.org/10.1126/science.847460

Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics, 5, 1-4.

https://www.researchgate.net/publication/304339244_Comparison_of_Convenience_Sampling_and_Purposive_Sampling https://doi.org/10.11648/j.ajtas.20160501.11

Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics. 5. 1. 10.11648/j.ajtas.20160501.11.

Farrer, L., Gulliver, A., Chan, Chan, J., Batterham, P., Reynolds, J., Calear, A., Tait, R., Bennett, K & Griffiths, Kathleen. (2013). Technology-Based Interventions for Mental Health in Tertiary Students: Systematic Review. Journal of medical Internet research. 15. e101. 10.2196/jmir.2639.

Field, Sally, Abrahams, Zulfa, & Honikman, Simone. (2020). Adolescent mothers: A qualitative study on barriers and facilitators to mental health in a low-resource setting in Cape Town, South Africa. *African Journal of Primary Health Care & Family Medicine* , *12*(1), 1-9. https://doi.org/10.4102/phcfm.v12i1.2279

Fitzgerald, J. T., Funnell, M. M., Anderson, R. M., Nwankwo, R., Stansfield, R. B., & Piatt, G. A. (2016). Validation of the Revised Brief Diabetes Knowledge Test (DKT2). *The Diabetes educator*, *42*(2), 178–187. https://doi.org/10.1177/0145721715624968

Flesch, R. (1948). A new readability yardstick. Journal of Applied Psychology, 32(3), 221–233. https://doi.org/10.1037/h0057532

Flisher, A. J., Dawes, A., Kafaar, Z., Lund, C., Sorsdahl, K., Myers, B., Thom, R., & Seedat, S. (2012). Child and adolescent mental health in South Africa. *Journal of child and adolescent mental health*, *24*(2), 149–161. https://doi.org/10.2989/17280583.2012.735505

Frydenberg, E., Deans, J., & Liang, R. (2019). Parents and Children's Coping: Building Resilience and Wellbeing in the Early Years. *Social Indicators Research*, *145*(2), 629–640. https://www.jstor.org/stable/48704801

Fuhrer, R., & Keyes, K. (2019). Population Mental Health in the 21st Century: Time to Act. . *American journal of public health, 109*(S3), S152-S153. doi:https://doi.org/10.2105/AJPH.2019.305200.

Furnham, A., & Swami, V. (2018). Mental health literacy: A review of what it is and why it matters. International Perspectives in Psychology: Research, Practice, Consultation, 7(4), 240–257. https://doi.org/10.1037/ipp0000094

Furnham, A., & Swami, V. (2018). Mental health literacy: A review of what it is and why it matters. International Perspectives in Psychology: Research, Practice, Consultation, 7(4), 240–257. https://doi.org/10.1037/ipp0000094

Furukawa, T. A., Suganuma, A., Ostinelli, E. G., Andersson, G., Beevers, C. G., Shumake, J., Berger, T., Boele, F. W., Buntrock, C., Carlbring, P., Choi, I., Christensen, H., Mackinnon, A., Dahne, J., Huibers, M. J. H., Ebert, D. D., Farrer, L., Forand, N. R., Strunk, D. R., Ezawa, I. D., … Cuijpers, P. (2021). Dismantling, optimising, and personalising internet cognitive behavioural therapy for depression: a systematic review and component network meta-analysis using individual participant data. *The lancet. Psychiatry*, *8*(6), 500–511. https://doi.org/10.1016/S2215-0366(21)00077-8

Fusar-Poli, P., Salazar de Pablo, G., De Micheli, A., Nieman, D. H., Correll, C. U., Kessing, L. V., Pfennig, A., Bechdolf, A., Borgwardt, S., Arango, C., & van Amelsvoort, T. (2020). What is good mental health? A scoping review. *European neuropsychopharmacology : the journal of the European College of Neuropsychopharmacology*, *31*, 33–46. https://doi.org/10.1016/j.euroneuro.2019.12.105

Galderisi, S., Heinz, A., Kastrup, M., Beezhold, J., & Sartorius, N. (2015). Toward a new definition of mental health. *World psychiatry :psychiatry: official journal of the World Psychiatric Association (WPA)*, *14*(2), 231–233. https://doi.org/10.1002/wps.20231

Gega, L., Jankovic, D., Saramago, P., Marshall, D., Dawson, S., Brabyn, S., Nikolaidis, G. F., Melton, H., Churchill, R., & Bojke, L. (2022). Digital interventions in mental health: evidence syntheses and economic modelling. *Health technology assessment (Winchester, England)*, *26*(1), 1–182. https://doi.org/10.3310/RCTI6942

Gega, L., Jankovic, D., Saramago, P., Marshall, D., Dawson, S., Brabyn, S., Nikolaidis, G. F., Melton, H., Churchill, R., & Bojke, L. (2022). Digital interventions in mental health:

evidence syntheses and economic modelling. *Health technology assessment (Winchester, England)*, *26*(1), 1–182. https://doi.org/10.3310/RCTI6942

Gentili, A., Failla, G., Melnyk, A., Puleo, V., Tanna, G. L. D., Ricciardi, W., & Cascini, F. (2022). The cost-effectiveness of digital health interventions: A systematic review of the literature. *Frontiers in public health*, *10*, 787135. https://doi.org/10.3389/fpubh.2022.787135

Gentili, A., Failla, G., Melnyk, A., Puleo, V., Tanna, G. L. D., Ricciardi, W., & Cascini, F. (2022). The cost-effectiveness of digital health interventions: A systematic review of the literature. *Frontiers in public health*, *10*, 787135. https://doi.org/10.3389/fpubh.2022.787135

Geraldine, R., McDermott, C.D., Nicho, C. (2024). Cyberbullying on Social Media: Definitions, Prevalence, and Impact Challenges, *Journal of Cybersecurity*, 10(1), 2024, tyae026, https://doi.org/10.1093/cybsec/tyae026

Giebel, C., Gabbay, M., Shrestha, N. *(2024).* Community-based mental health interventions in low- and middle-income countries: a qualitative study with international experts. *Int J Equity Health* **23**(19). https://doi.org/10.1186/s12939-024-02106-6.

Girleffect. (2021). *Girl Effect*. Retrieved from https://girleffect.org/.

Golzar, J; Tajik, O; Noor, S. (2022). Convenience Sampling. 1. 72-77. 10.22034/ijels.2022.162981.

Grant, M., Luvuno, Z., Bhana, A., Mntambo, N., Gigaba, S., Ntswe, E., & Petersen, I. (2021). The development of a Community Mental Health Education and Detection (CMED) tool in South Africa. *SSM-Mental Health, 1*, 100023. doi:https://doi.org/10.1016/j.ssmmh.2021.100023

Green, E., Murphy, E., Kristina, G., Sweeny, K., Megan, R., & Cohen, L. (2020). *The Health Belief Model*. 211-214. 10.1002/9781119057840.ch68.

Guest, Greg & Fleming, Paul. (2015). Mixed Methods Research. 10.4135/9781483398839.n19.

Gulliver, A., Griffiths, K. M., & Christensen, H. (2012). Barriers and facilitators to mental health help-seeking for young elite athletes: a qualitative study. *BMC psychiatry*, *12*, 157. https://doi.org/10.1186/1471-244X-12-157

Gulliver, A., Griffiths, K. M., & Christensen, H. (2012). Barriers and facilitators to mental health help-seeking for young elite athletes: a qualitative study. *BMC psychiatry*, *12*, 157. https://doi.org/10.1186/1471-244X-12-157

Gurupur, V. P., & Wan, T. T. H. (2017). Challenges in implementing mHealth interventions: a technical perspective. *mHealth*, *3*, 32. https://doi.org/10.21037/mhealth.2017.07.05

Haleem, A., Javaid, M., Singh, R. P., & Suman, R. (2021). Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors international*, *2*, 100117. https://doi.org/10.1016/j.sintl.2021.100117

Hammer C. S. (2011). The importance of participant demographics. *American journal of speech-language pathology*, *20*(4), 261. https://doi.org/10.1044/1058-0360(2011/ed-04)

Hawke, L. D., Hayes, E., Darnay, K., & Henderson, J. (2021). Mental health among transgender and gender diverse youth: An exploration of effects during the COVID-19 pandemic. *Psychology of Sexual Orientation and Gender Diversity, 8*(2), 180–187. https://doi.org/10.1037/sgd0000467

Häyrinen, K., Saranto, K., & Nykänen, P. (2008). Definition, structure, content, use and impacts of electronic health records: a review of the research literature. *International journal of medical informatics*, *77*(5), 291–304. https://doi.org/10.1016/j.ijmedinf.2007.09.001

Herman, A. A., Stein, D. J., Seedat, S., Heeringa, S. G., Moomal, H., & Williams, D. R. (2009). The South African Stress and Health (SASH) study: 12-month and lifetime prevalence of common mental disorders. *South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde*, *99*(5 Pt 2), 339–344.

Hernández-Torrano, D., Ibrayeva, L., Sparks, J., Lim, N., Clementi, A., Almukhambetova, A., Nurtayev, Y., & Muratkyzy, A. (2020). Mental Health and Well-Being of University Students: A Bibliometric Mapping of the Literature. *Frontiers in psychology*, *11*, 1226. https://doi.org/10.3389/fpsyg.2020.01226

Hevel, D., Reifsteck, D., & Drollette, E. (2021). Physical activity is positively associated with college students' positive affect regardless of stressful life events during the COVID-19

pandemic. Psychology of Sport and Exercise. 52. 101826. 10.1016/j.psychsport.2020.101826.

Hofmann, S. G., Asnaani, A., Vonk, I. J., Sawyer, A. T., & Fang, A. (2012). The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. *Cognitive therapy and research*, *36*(5), 427–440. https://doi.org/10.1007/s10608-012-9476-1

Hollis, C., Falconer, C. J., Martin, J. L., Whittington, C., Stockton, S., Glazebrook, C., & Davies,E. B. (2017). Annual Research Review: Digital health interventions for children and young people with mental health problems–a systematic and meta-review. Journal of Child Psychology and Psychiatry, 58(4), 474-503.

Hugo, C. &. (2004). Community attitudes toward knowledge of mental illness in South Africa. Social psychiatry and psychiatric epidemiology. *Social psychiatry and psychiatric epidemiology, 38*, 715-719. doi:10.1007/s00127-003-0695-3.

IBM Corp. Released 2023. IBM SPSS Statistics for Windows, Version 29.0.2.0 Armonk, NY: IBM Corp

Jack, H., Wagner, R. G., Petersen, I., Thom, R., Newton, C. R., Stein, A., Kahn, K., Tollman, S., & Hofman, K. J. (2014). Closing the mental health treatment gap in South Africa: a review of costs and cost-effectiveness. *Global health action*, *7*, 23431. https://doi.org/10.3402/gha.v7.23431.

Janse van Rensburg, Christine & Surujlal, J & Dhurup, M. (2011). Exploring wellness practices and barriers: A qualitative study of university student-athletes. African Journal for Physical, Health Education, Recreation and Dance. 17. 10.4314/ajpherd.v17i2.67664.

Jones, C. L., Jensen, J. D., Scherr, C. L., Brown, N. R., Christy, K., & Weaver, J. (2015). The Health Belief Model as an explanatory framework in communication research: exploring parallel, serial, and moderated mediation. *Health communication*, *30*(6), 566–576. https://doi.org/10.1080/10410236.2013.873363.

Jorm, A. F. (2012). Mental health literacy: Empowering the community to take action for better mental health. *American Psychologist, 67*(3), 231-243. doi:https://doi.org/10.1037/a0025957.

Julius, B., Putteeraj, M., & Somanah, J. (2024). A systematic review of university students' mental health in sub-Saharan Africa. *Transformation in Higher Education, 9*, 10 pages. doi:**https://doi.org/10.4102/the.v9i0.316**

Jumbe, S., Nyali, J., Simbeye, M., Zakeyu, N., Motshewa, G., & Pulapa, S. (2022). 'We do not talk about it': Engaging youth in Malawi to inform adaptation of a mental health literacy intervention. Plos ONE, 17(3), e0265530. doi:https://doi.org/10.1371/journal.pone.0265530

Kakuma, R., Kleintjes, S., Lund, C., Drew, N., Green, A., Flisher, A. J., & MHAPP Research Programme Consortium (2010). *Mental health stigma: what is being done to raise awareness and reduce stigma in South Africa?.?* African journal of psychiatry, *13*(2), 116–124. https://doi.org/10.4314/ajpsy.v13i2.54357.

Kaufman, D. (2020). Expulsion: A type of forced mobility experienced by homeless people in Canada. *Urban Geography*, *43*(3), 321–343. https://doi.org/10.1080/02723638.2020.1853919

Kaunda-Khangamwa, B. N., Maposa, I., Phiri, M., Malisita, K., Mtagalume, E., Chigaru, L., Munthali, A., Chipeta, E., Phiri, S., & Manderson, L. (2021). Service Use and Resilience among Adolescents Living with HIV in Blantyre, Malawi. *International journal of integrated care*, *21*(4), 11. https://doi.org/10.5334/ijic.5538

Khuluma . Khuluma. (2020). *mykhuluma . mykhuluma.* Retrieved from https://www.mykhuluma.org/.

Kiarie, C., & Muindi, B. (2020). *Students' experiences and perceptions of online collaborative learning in two Kenyan universities.* Scholarship of Teaching and Learning in the South (SOTL) in the South, 4(2), 138-159.

Kim, A. W., Mohamed, R., Norris, S. A., Richter, L. M., & Kuzawa, C. W. (2023). Psychological legacies of intergenerational trauma under South African apartheid: Prenatal stress predicts greater vulnerability to the psychological impacts of future stress exposure during late adolescence and early adulthood in Soweto, South Africa. *Journal of child psychology and psychiatry, and allied disciplines*, *64*(1), 110–124. https://doi.org/10.1111/jcpp.13672

Kincaid, J. P., Fishburne, R. P., Rogers, R. L., & Chissom, B. S. (1975). Derivation of new readability formulas (automated readability index, fog count and Flesch reading ease formula) for Navy enlisted personnel. Research Branch Report 8-75. Naval Technical Training Command. Retrieved from https://apps.dtic.mil/sti/citations/ADA006655

Kirkbride, J. B., Anglin, D. M., Colman, I., Dykxhoorn, J., Jones, P. B., Patalay, P., Pitman, A., Soneson, E., Steare, T., Wright, T., & Griffiths, S. L. (2024). The social determinants of mental health and disorder: evidence, prevention and recommendations. *World psychiatry :psychiatry: official journal of the World Psychiatric Association (WPA)*, *23*(1), 58–90. https://doi.org/10.1002/wps.21160

Kleinheksel, A. J., Rockich-Winston, N., Tawfik, H., & Wyatt, T. R. (2020). Demystifying Content Analysis. *American journal of pharmaceutical education*, *84*(1), 7113. https://doi.org/10.5688/ajpe7113

Korhonen, J., Axelin, A., Stein, D.
J, Seedat, S., Mwape, L., Jansen, R., Groen, G., Grobler, G., Jörns-
Presentati, A., Katajisto, J., & Lahti, M. (2022). Mental health literacy among primary healthcare workers in South Africa and Zambia. *Brain and Behavior*, 12, e2807. https://doi.org/10.1002/brb3.2807

Kruse, C., Betancourt, J., Ortiz, S., Valdes Luna, S. M., Bamrah, I. K., & Segovia, N. (2019). Barriers to the Use of Mobile Health in Improving Health Outcomes in Developing Countries: Systematic Review. *Journal of medical Internet research*, *21*(10), e13263. https://doi.org/10.2196/13263

LaMorte, W. (2022, November 3). *Behavioural Change Theories*. Retrieved April 08, 2023, from Boston University School of Public Health: https://sphweb.bumc.bu.edu/otlt/mphmodules/sb/behavioralchangetheories/behavioralchangetheories2.html.

Lehtimaki, S., Martic, J., Wahl, B., Foster, K. T., & Schwalbe, N. (2021). Evidence on digital mental health interventions for adolescents and young people: systematic overview. JMIR mental health, 8(4), e25847.

Lifeline Johannesburg. (2012). *lifelinejhb.org*. Retrieved May 06, 2023, from https://www.lifelinejhb.org.za/index.ashx

Love Life. (2023). Love Life. Retrieved from https://lovelife.org.za/.

Lund, Crick & Flisher, Alan. (2002). *Staff-population ratios in South African public sector mental health services*. South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde. 92. 161-4.

Madlala, D. P., Joubert, P., & Mokoena, O. P. (2025). Mental health literacy among secondary school learners in Tshwane region 1: A quantitative study. The South African journal of psychiatry : SAJP : the journal of the Society of Psychiatrists of South Africa, 31, 2349. https://doi.org/10.4102/sajpsychiatry.v31i0.2349

Madlala, D., Joubert, P. M., & Masenge, A. (2022). Community mental health literacy in Tshwane region 1: A quantitative study. *The South African journal of psychiatry :psychiatry: SAJP : the journal of the Society of Psychiatrists of South Africa*, *28*, 1661. https://doi.org/10.4102/sajpsychiatry.v28i0.1661

Madlala, D., Joubert, P., & Masenge, A. (2022). Community mental health literacy in Tshwane region 1: A quantitative study. *South African Journal of Psychiatry, 28*(0), a1661. doi:https://doi.org/10.4102/sajpsychiatry.v28i0.1661.

Mago, Stephen. (2019). Urban Youth Unemployment in South Africa: Socio-Economic and Political Problems. Commonwealth Youth and Development. 16. 10.25159/2663-6549/1996

Mahmoodi, S., M, A.-A., Eslami, M., Kahnamoui, Y., & Rasoulian, M. (2022). Mental Health Literacy and Mental Health Information-Seeking Behavior in Iranian University Students. *Frontiers in Psychiatry, 13*. doi:10.3389/fpsyt.2022.893534.

Makuyana, A., Mbulayi, S.P., Kangethe, S.M. (2020). Psychosocial deficits underpinning child headed households (CHHs) in Mabvuku and Tafara suburbs of Harare, Zimbabwe, Children and Youth Services Review, 115, https://doi.org/10.1016/j.childyouth.2020.105093.

Makwana, D; Engineer, P; Dabhi, A; Chudasama, H. (2023). Sampling Methods in Research: A Review. 7. 762-768.

Malatjie, T & Mamokhere, J. (2024). The Intricacies and Prevalence of Gender-Based Violence in South Africa: Forms, Causes and Mitigation Measures. E-Journal of Humanities, Arts and Social Sciences. 1059-1070. 10.38159/ehass.2024571.

Manjunatha, D. (2019). "Descriptive Research", International Journal of Emerging Technologies and Innovative Research (www.jetir.org | UGC and issn Approved), ISSN:2349-5162, Vol.6, Issue 6, page no. pp863-867, Available at : http://www.jetir.org/papers/JETIR1908597.pdf

Marlow, M., Skeen, S., Grieve, C M., Carvajal, L., Åhs, J W. et al. (2023) Detecting Depression and Anxiety Among Adolescents in South Africa: Validity of the isiXhosa Patient Health Questionnaire-9 and Generalized Anxiety Disorder-7. Journal of Adolescent Health, 72(S1): S52-S60 https://doi.org/10.1016/j.jadohealth.2022.09.013

Masombuka, D. (2019). The State of Mental Health. Faculty of Health Sciences, University of Pretoria. Retrieved from https://www.up.ac.za/faculty-of-health-sciences/news/post_2846861-the-state-of-mental-health

McCool, J., Dobson, R., Whittaker, R., & Paton, C. (2022). Mobile Health (mHealth) in Low- and Middle-Income Countries. *Annual review of public health*, *43*, 525–539. https://doi.org/10.1146/annurev-publhealth-052620-093850

McCrone, P., Knapp, M., Proudfoot, J., Ryden, C., Cavanagh, K., Shapiro, D. A., Ilson, S., Gray, J. A., Goldberg, D., Mann, A., Marks, I., Everitt, B., & Tylee, A. (2004). Cost-effectiveness of computerised cognitive-behavioural therapy for anxiety and depression in primary care: randomised controlled trial. *The British journal of psychiatry :psychiatry: the journal of mental science*, *185*, 55–62. https://doi.org/10.1192/bjp.185.1.55

McCurdy, B. H., Scozzafava, M. D., Bradley, T., Matlow, R., Weems, C. F., & Carrion, V. G. (2022). Impact of anxiety and depression on academic achievement among underserved school children: evidence of suppressor effects. *Current psychology (New Brunswick, N.J.)*, 1–9. Advance online publication. https://doi.org/10.1007/s12144-022-03801-9

MEGA. (2020). *MEGA*. Retrieved May 01, 2023, from https://mega.turkuamk.fi/arkisto/index.html.

Microsoft. (n.d.). Test your document's readability. Microsoft Support. Accessible from: https://support.microsoft.com/en-us/office/test-your-document-s-readability-0adc0e9a-b3fb-4bde-85f4-c9e88926c6aa

Mindu, T., Mutero, I. T., Ngcobo, W. B., Musesengwa, R., & Chimbari, M. J. (2023). *Digital Mental Health Interventions for Young People in Rural South Africa: Prospects and Challenges for Implementation*. International Journal of Evironmental Research and Public Health. Retrieved from https://doi.org/10.3390/ijerph20021453.

Mkhwanazi, S & Gibbs, S. (2021). Risk factors for generalized anxiety disorder among young women and men in informal settlements in South Africa: A cross-sectional study, SSM - Mental Health,1, 1, https://doi.org/10.1016/j.ssmmh.2021.100010.

Mkwananzi, S., & Nathane-Taulela, M. (2024). Gender-based violence and femicide interventions-perspectives from community members and activists in South Africa. *Frontiers in global women's health*, *5*, 1199743. https://doi.org/10.3389/fgwh.2024.1199743

Mngoma, N. F., & Ayonrinde, O. A. (2023). Mental distress and substance use among rural Black South African youth who are not in employment, education or training (NEET). The International journal of social psychiatry, 69(3), 532–542. https://doi.org/10.1177/00207640221114252

Mngoma, N., & Ayonrinde, O. (2022). Mental distress and substance use among rural Black South African youth who are not in employment, education or training. *International Journal of Social Psychiatry ,Psychiatry, 69*(3), 532-542.

Mokitimi, S., Schneider, M., & de Vries, P. J. (2018). Child and adolescent mental health policy in South Africa: history, current policy development and implementation, and policy analysis. *International journal of mental health systems*, *12*, 36. https://doi.org/10.1186/s13033-018-0213-3.

Mokitimi, S., Schneider, M., & de Vries, P. J. (2018). Child and adolescent mental health policy in South Africa: history, current policy development and implementation, and policy

analysis. *International journal of mental health systems*, *12*, 36. https://doi.org/10.1186/s13033-018-0213-3

Mokona, H., Yohannes, K., & Ayano, G. (2020). Youth unemployment and mental health: prevalence and associated factors of depression among unemployed young adults in Gedeo zone, Southern Ethiopia. *International Journal of Mental Health System ,System, 14*(61). Retrieved from https://doi.org/10.1186/s13033-020-00395-2

Mokwena, K. E., & Madiga, M. C. (2023). Prevalence and severity of anxiety symptoms among family members of nyaope users in Tshwane, South Africa. *Health SA = SA Gesondheid*, *28*, 2083. https://doi.org/10.4102/hsag.v28i0.2083.

Monnapula-Mazabane, P., & Petersen, I. (2022). Feasibility and acceptability of a mental health stigma intervention for low-income South African caregivers: A qualitative investigation. *The South African journal of psychiatry :psychiatry: SAJP : the journal of the Society of Psychiatrists of South Africa*, *28*, 1824. https://doi.org/10.4102/sajpsychiatry.v28i0.1824

Morales, D. A., Barksdale, C. L., & Beckel-Mitchener, A. C. (2020). A call to action to address rural mental health disparities. *Journal of clinical and translational science*, *4*(5), 463–467. https://doi.org/10.1017/cts.2020.42

Mouton, Nelda & Louw, G.P. & Strydom, G.. G. (2012). Critical Challenges Ofof Thethe South African School System. International Business & Economics Research Journal (IBER). 12. 31. 10.19030/iber.v12i1.7510.

Moyo, D & Munoriyarwa, A. (2021). 'Data must fall': mobile data pricing, regulatory paralysis and citizen action in South Africa 'Data must fall': mobile data pricing, regulatory paralysis and citizen action in South Africa. Information Communication and Society. 24. 10.1080/1369118X.2020.1864003.

Mseleku, Z. (2021). Youth high unemployment/unemployability in South Africa: the unemployed graduates' perspectives. Higher Education, Skills and Work-Based Learning. ahead-of-print. 10.1108/HESWBL-06-2021-0114.

Mudau T, Jithoo V, Dietrich J. (2024). Exploring the demand, practicality, and acceptability of a mental health application intervention for students at a South African university. South African Journal of Psychology ;54Psychology; 54(2):171-184. doi:10.1177/00812463241249100

Munyoka, W. (2022). Inclusive Digital Innovation in South Africa: Perspectives from Disadvantaged and Marginalized Communities. *Sustainability*, *14*(9), 5372. https://doi.org/10.3390/su14095372

Murphy, Sharon. (2013). Assessing Text Difficulty for Students.

Myer, L., Stien, D., Jackson, P., Herman, A., Seedat, S., & Williams, D. (2009). Impact of common mental disorders during childhood and adolescence on secondary school completion. *South African Medical Journal, 99*(5), 354-356.

Naslund, J. A., Aschbrenner, K. A., Araya, R., Marsch, L. A., Unützer, J., Patel, V., & Bartels, S. J. (2017). Digital technology for treating and preventing mental disorders in low-income and middle-income countries: a narrative review of the literature. *The lancet. Psychiatry*, *4*(6), 486–500. https://doi.org/10.1016/S2215-0366(17)30096-2

Naslund, John & Bondre, Ameya & Torous, John & Aschbrenner, Kelly. (2020). Social Media and Mental Health: Benefits, Risks, and Opportunities for Research and Practice. Journal of Technology in Behavioral Science. 5. 10.1007/s41347-020-00134-x.

National Department of Health. (2023). *National Mental Health Policy Framework and Strategic Plan. Accessible from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.health.gov.za/wp-content/uploads/2024/02/National-Mental-Health-Policy-framework-and-strategic-Plan-2023-2030.pdf*

National Institute of Mental Health. (2023, April). *National Institute of Mental Health*. Retrieved May 06, 2023, from Mental Health Information: https://www.nimh.nih.gov/health/topics/depression

Ndlovu, S., Ross, A., & Mulondo, M. (2023). Interventions to improve young men's utilisation of HIV-testing services in KwaZulu-Natal, South Africa: perspectives of young men and health care providers. *African journal of AIDS research :research: AJAR*, *22*(4), 316–326. https://doi.org/10.2989/16085906.2023.2276897

Nelda & Strydom, 2012; Christian, D., & Stambach, A. (2024). Inequalities in the Cape Flats: Principals' perspectives on children's schooling. *South African Journal of Childhood Education, 14*(1), 9 pages. doi:**https://doi.org/10.4102/sajce.v14i1.1527**

Nicholas, J., Bell, I. H., Thompson, A., Valentine, L., Simsir, P., Sheppard, H., & Adams, S. (2021). Implementation lessons from the transition to telehealth during COVID-19: a survey of clinicians and young people from youth mental health services. *Psychiatry research*, *299*, 113848. https://doi.org/10.1016/j.psychres.2021.113848

Nwaogu, J. M., Chan, A. P. C., Naslund, J. A., Hon, C. K. H., Belonwu, C., & Yang, J. (2021). Exploring the Barriers to and Motivators for Using Digital Mental Health Interventions Amongamong Construction Personnel in Nigeria: Qualitative Study. *JMIR formative research*, *5*(11), e18969. https://doi.org/10.2196/18969

Nyatsanza, M., Schneider, M., Davies, T. *(2016).* Filling the treatment gap: developing a task sharing counselling intervention for perinatal depression in Khayelitsha, South Africa. *BMC Psychiatry* **16**, 164, https://doi.org/10.1186/s12888-016-0873-y

O'Connor, M., & Casey, L. (2015). The Mental Health Literacy Scale (MHLS): A new scale-based measure of mental health literacy. *Psychiatry research*, *229*(1-2), 511–516. https://doi.org/10.1016/j.psychres.2015.05.064

Ogundele M. O. (2018). Behavioural and emotional disorders in childhood: A brief overview for paediatricians. *World journal of clinical pediatricspaediatrics*, *7*(1), 9–26. https://doi.org/10.5409/wjcp.v7.i1.9

Olumide, A., Adams, P., Amodu, O. (2015). *Prevalence and correlates of the perpetration of cyberbullying among in-school adolescents in Oyo State, Nigeria.* International journal of adolescent medicine and health. 28. 10.1515/ijamh-2015-0009.

Onukwugha, F. I., Smith, L., Kaseje, D., Wafula, C., Kaseje, M., Orton, B., Hayter, M., & Magadi, M. (2022). The effectiveness and characteristics of mHealth interventions to increase adolescent's use of Sexual and Reproductive Health services in Sub-Saharan Africa: A systematic review. *PloS one*, *17*(1), e0261973. https://doi.org/10.1371/journal.pone.0261973.

Panda. (2023). joinpanda.com. Retrieved May 06, 2023, from https://www.joinpanda.com/.

Paruk, M. E., & Nassen, R. (2022). *Cyberbullying perpetration and victimisation amongst adolescent psychiatric patients at Lentegeur Hospital, South Africa.* The South African journal of psychiatry :psychiatry: SAJP :SAJP: the journal of the Society of Psychiatrists of South Africa, 28, 1755. https://doi.org/10.4102/sajpsychiatry.v28i0.1755

Parvaneh, P., Humbulani, N., & Maluleke, C. (2019). *Emotional and academic effects of cyberbullying on students in a rural high school in the Limpopo province, South Africa*. South African Journal of Information Management(Management (1560-683x), 1-8. Retrieved from https://journals.co.za/doi/abs/10.4102/sajim.v21i1.925

Patel, V., Saxena, S., Lund, C., Thornicroft, G., Baingana, F., Bolton, P., Chisholm, D., Collins, P., Cooper, J., Eaton, J., Herrman, H., Herzallah, M., Huang, Y., Jordans, M., Kleinman, A., Medina-Mora, M., Morgan, E., Niaz, U., Omigbodun, O., Unützer, J. (2018). The Lancet Commission on global mental health and sustainable development. The Lancet. 392. 10.1016/S0140-6736(18)31612-X.

Peltzer, K., Pengpid, S., & Tiembre, I. (2013). Mental health, childhood abuse and HIV sexual risk behaviour among university students in Ivory Coast. *Annals of general psychiatry*, *12*(1), 18. https://doi.org/10.1186/1744-859X-12-18

Peltzer, S., Müller, H., Köstler, U., Schulz-Nieswandt, F., Jessen, F., Albus, C., & CoRe-Net study group (2020). Detection and treatment of mental disorders in patients with coronary heart disease (MenDis-CHD): A cross-sectional study. *PloS one*, *15*(12), e0243800. https://doi.org/10.1371/journal.pone.0243800

Petersen, R. C., Roberts, R. O., Knopman, D. S., Boeve, B. F., Geda, Y. E., Ivnik, R. J., Smith, G. E., & Jack, C. R., Jr (2009). *Mild cognitive impairment: ten years later*. Archives of neurology, *66*(12), 1447–1455. https://doi.org/10.1001/archneurol.2009.266.

Pillay, L., Pillay, B., & Sibanda, W. (2024). Youth exposure to violence and victimization in a South African community sample. South African Journal of Psychiatry, 30, 8 pages. doi:https://doi.org/10.4102/sajpsychiatry.v30i0.2311

Pinfold, V., Toulmin, H., Thornicroft, G., Huxley, P., Farmer, P., & Graham, T. (2003). Reducing psychiatric stigma and discrimination: evaluation of educational interventions in UK secondary schools. *The British journal of psychiatry: the journal of mental science*, *182*, 342–346. https://doi.org/10.1192/bjp.182.4.342

Ponto J. (2015). Understanding and Evaluating Survey Research. *Journal of the advanced practitioner in oncology*, *6*(2), 168–171.

Pretorius, C., & Coyle, D. (2021). Young People's Use of Digital Tools to Support Their Mental Health Duringduring Covid-19 Restrictions. *Frontiers in digital health*, *3*, 763876. https://doi.org/10.3389/fdgth.2021.763876

Quach, S., Thaichon, P., Martin, K.D. (2022). Digital technologies: tensions in privacy and data. *J. of the Acad. Mark. Sci.* **50**, 1299–1323. https://doi.org/10.1007/s11747-022-00845-y

R Richards, K. A., Washburn, N. S., & Hemphill, M. A. (2017). Exploring the influence of perceived mattering, role stress, and emotional exhaustion on physical education teacher/coach job satisfaction. *European Physical Education Review*, *25*(2), 389-408. https://doi.org/10.1177/1356336X17741402

Radell, L., Abo ,Abo, Eid G., Daghustani, W.H., Perveen, A., Moustafa, A. (2021). The Impact of Different Types of Abuse on Depression, *Depression Research and Treatment*, 6654503, 12, https://doi.org/10.1155/2021/6654503

Ramanadhan, S., Mendez, S.R., Rao, M. *(2013).* Social media use by community-based organizations conducting health promotion: a content analysis. *BMC Public Health* **13**, 1129 (2013). https://doi.org/10.1186/1471-2458-13-1129

Reavley NJ, Jorm AF. (2014). Associations between beliefs about the causes of mental disorders and stigmatising attitudes: Results of a national survey of the Australian public. Australian & New Zealand Journal of Psychiatry. 48(8):764-771. doi:10.1177/0004867414528054

Reddy, Purshottama. (2016). Thethe politics of service delivery in South Africa: The local government sphere in context. The Journal for Transdisciplinary Research in Southern Africa. 12. 10.4102/td.v12i1.337.

Republic of South Africa. (2012). *National Mental Health Policy Framework and Strategic Plan 2013-2020.* Retrieved April 2, 2023, from http://www.safmh.org/wp-content/uploads/2020/09/National-Mental-Health-Policy-Framework-2013-2020.pdf.

Republic of South Africa: Department of Health . Health. (2019). *National Digital Health Strategy for South Africa: 2019-2024.* Department of Health . Health. Pretoria :Pretoria: the National Department of Health Republic of South Africa. Retrieved from https://www.health.gov.za/wpcontent/uploads/2020/11/national-digital-strategy-for-south-africa-2019-2024-b.pdf

Rice, S. M., Parker, A. G., Rosenbaum, S., Bailey, A., Mawren, D., & Purcell, R. (2018). Sport-Related Concussion and Mental Health Outcomes in Elite Athletes: A Systematic Review. *Sports medicine (Auckland, N.Z.)*, *48*(2), 447–465. https://doi.org/10.1007/s40279-017-0810-3

Richter, L. M., & Desmond, C. (2008). Targeting AIDS orphans and child-headed households? A perspective from national surveys in South Africa, 1995-2005. *AIDS care*, *20*(9), 1019–1028. https://doi.org/10.1080/09540120701842738

Rickwood, D., Deane, F. P., Wilson, C. J., & Ciarrochi, J. (2005). Young people's help-seeking for mental health problems. Australian e-Journal for the Advancement of Mental Health, 4(3), 218–251. https://doi.org/10.5172/jamh.4.3.218

Rickwood, D., Webb, M., Kennedy, V., & Telford, N. (2016). Who Are the Young People Choosing Web-based Mental Health Support? Findings Fromfrom the Implementation of Australia's

National Web-based Youth Mental Health Service, eheadspace. *JMIR mental health*, *3*(3), e40. https://doi.org/10.2196/mental.5988

Ronquillo, Y., Meyers, A., & Korvek, S. (2022). *Digital Health.* Treasure Island, FL: StatPearls Publishing

Rothbaum, B. O., Price, M., Jovanovic, T., Norrholm, S. D., Gerardi, M., Dunlop, B., Davis, M., Bradley, B., Duncan, E. J., Rizzo, A., & Ressler, K. J. (2014). A randomized, double-blind evaluation of D-cycloserine or alprazolam combined with virtual reality exposure therapy for posttraumatic stress disorder in Iraq and Afghanistan War veterans. *The American journal of psychiatry*, *171*(6), 640–648. https://doi.org/10.1176/appi.ajp.2014.13121625

SADAG. (2022). *Sadag.org*. Retrieved May 06, 2023, from About: https://www.sadag.org/index.php?option=com_content&view=article&id=2022&Itemid=13

SADAG. (2022). *Sadag.org*. Retrieved May 06, 2023, from: https://www.sadag.org/index.php?option=com_content&view=article&id=2022&Itemid=138

Sambuli, N. (2016). Challenges and opportunities for advancing Internet access in developing countries while upholding net neutrality. *Journal of Cyber Policy*, *1*(1), 61–74. https://doi.org/10.1080/23738871.2016.1165715

Sartorius N. (2007). Stigma and mental health. *Lancet (London, England)*, *370*(9590), 810–811. https://doi.org/10.1016/S0140-6736(07)61245-8

Sebola E, Ntuli B, Madiba S.(. (2020). Maternal AIDS Orphans and the Burden of Parenting in Youth-headed Households; Implications for Food Security in Impoverished Areas of South Africa . Africa. Open Public Health J,13http://dx.doi.org/10.2174/1874944502013010144

Semrau, M., Gronholm, P. C., Eaton, J., Maulik, P. K., Ayele, B., Bakolis, I., Mendon, G. B., Bhattarai, K., Brohan, E., Cherian, A. V., Daniel, M., Girma, E., Gurung, D., Hailemariam, A., Hanlon, C., Healey, A., Kallakuri, S., Li, J., Loganathan, S., Ma, N., … Votruba, N. (2023). Reducing stigma and improving access to care for people with mental health conditions in the community: protocol for a multi-site feasibility intervention study (Indigo-Local). *Research square*, rs.3.rs-3237562. https://doi.org/10.21203/rs.3.rs-3237562/v1

Sequeira, M., Singh, S., Fernandes, L., Gaikwad, L., Gupta, D., Chibanda, D., & Nadkarni, A. (2022). Adolescent Health Series: The status of adolescent mental health research, practice and policy in sub-Saharan Africa: A narrative review. *Tropical medicine & international health :health: TM & IH*, *27*(9), 758–766. https://doi.org/10.1111/tmi.1380

Sharma-Misra, S., Maru, M., Tomita, A., & Paruk, S. (2023). Access and use of digital technology by patients with psychosis at a hospital in South Africa. *The South African journal of psychiatry :psychiatry: SAJP :SAJP: the journal of the Society of Psychiatrists of South Africa*, *29*, 2151. https://doi.org/10.4102/sajpsychiatry.v29i0.2151

Sharma-Misra, S., Maru, M., Tomita, A., & Paruk, S. (2023). Access and use of digital technology by patients with psychosis at a hospital in South Africa. The South African journal of psychiatry : SAJP : the journal of the Society of Psychiatrists of South Africa, 29, 2151. https://doi.org/10.4102/sajpsychiatry.v29i0.2151

Shaw, S., Wherton, J., Vijayaraghavan, S., Morris, J., Bhattacharya, S., Hanson, P., Campbell-Richards, D., Ramoutar, S., Collard, A., Hodkinson, I., & Greenhalgh, T. (2018). *Advantages and limitations of virtual online consultations in a NHS acute trust: the VOCAL mixed-methods study*. NIHR Journals Library.

Sheikh, A., Creswell, K., A, W., & Botes, D. (Eds.). (2018). *Key advances in clinical informatics: Transforming health care through health information and technology.* Academic Press.

Shisana, O., Stein, D. J., Zungu, N. P., & Wolvaardt, G. (2024). The rationale for South Africa to prioritise mental health care as a critical aspect of overall health care. *Comprehensive psychiatry*, *130*, 152458. https://doi.org/10.1016/j.comppsych.2024.152458

Signé, N. N. (2020). *The Fourth Industrial Revolution and digitization will transform Africa into a global powerhouse.* Retrieved May, 10 2023 from: https://www.brookings.edu/wpcontent/uploads/2020/01/ForesightAfrica2020_Chapter5_20200110.pdf.

Smahel, D., Elavsky, S., & Machackova, H. (2019). *Functions of mHealth applications: A user's perspective*. Health informatics journal, *25*(3), 1065–1075. https://doi.org/10.1177/1460458217740725.

Smith, K. A., Blease, C., Faurholt-Jepsen, M., Firth, J., Van Daele, T., Moreno, C., Carlbring, P., Ebner-Priemer, U. W., Koutsouleris, N., Riper, H., Mouchabac, S., Torous, J., & Cipriani, A. (2023). Digital mental health: challenges and next steps. *BMJ mental health*, *26*(1), e300670. https://doi.org/10.1136/bmjment-2023-300670

Smith, P., Morrow, R., & Ross, D. (2015). Types of intervention and their development. In *Field Trials of Health Interventions: A Toolbox* (Vol. 3rd Edition)Edition). Oxford: OUP Oxford. Retrieved from Available from: https://www.ncbi.nlm.nih.gov/books/NBK305514/

Sorsdahl, K., van der Westhuizen, C., Neuman, M., Weiss, H.A & Myers, B. (2021). *Addressing the mental health needs of adolescents in South African communities: a protocol for a feasibility randomized controlled trial.* Pilot Feasibility StudStudy, 7 (69) https://doi.org/10.1186/s40814-021-00803-5.

South African Department of Basic Education. (2024). Psychosocial Support Programmes for learner and teacher wellbeing. Retrieved from :from: https://www.education.gov.za/ArchivedDocuments/ArchivedArticles/Psychosocial-Support-Programmes-for-learner-and-teacher-wellbeing-1223.aspx.

Statista. (2024). AR & VR - South Africa. AvailbleAvailable from https://www.statista.com/outlook/amo/ar-vr/south-africa

Statista. (2024). Unemployment rate by population group in South Africa. Retrieved from https://www.statista.com/statistics/1129481/unemployment-rate-by-population-group-in-south-africa/

Statista. (2024, 10, November). *South Africa: Unemployment rate from 2004 to 2023.* Retrieved from: *https://www.google.com/search?q=apa+referencing+format+7th+edition&sca_esv=f731f35a248a5872&rlz=1C1CHBD_enZA1006ZA1006&sxsrf=AHTn8zrcoCIR75SHQ7kehrEnHphk*

kPsk4Q%3A1743018694059&ei=xlrkZ8-wA6-phbIPtZmKwA8&oq=APA+Referencing+form&gs_lp=Egxnd3Mtd2l6LXNlcnAiFEFQQSBSZWZlcmVuY2luZyBmb3JtKgIIATIFEAAYgAQyBRAAGIAEMgUQABiABDIFEAAYgAQyBRAAGIAEMgUQABiABDIGEAAYFhgeMgYQABgWGB4yBhAAGBYYHjIGEAAYFhgeSMYrUABY-RJwAHgAkAEBmAG1BKABrxKqAQkyLTIuMi4wLjK4AQHIAQD4AQGYAgWgArUOwgIEECMYJ8ICChAAGIAEGEMYigXCAgsQABiABBixAxiDAZgDAJIHBzItMS4zLjGgB-YrsgcHMi0xLjMuMbgHtQ4&sclient=gws-wiz-serp.

Statistics SA. (2023). *Sustainable Development Goals: Country Report 2023*. Accessible from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.statssa.gov.za/MDG/SDG_Country_report.pdf

Stein, M. B., & Stein, D. J. (2008). Social anxiety disorder. *Lancet (London, England)*, *371*(9618), 1115–1125. https://doi.org/10.1016/S0140-6736(08)60488-2

Strand, M., Gammon, D., Eng, L. S., & Ruland, C. (2017). Exploring Working Relationships in Mental Health Care via an E-Recovery Portal: Qualitative Study on the Experiences of Service Users and Health Providers. *JMIR mental health*, *4*(4), e54. https://doi.org/10.2196/mental.8491

Stuart H. (2016). Reducing the stigma of mental illness. *Global mental health (Cambridge, England)*, *3*, e17. https://doi.org/10.1017/gmh.2016.11

Substance Abuse and Mental Health Services Administration. (2016). Impact of the DSM-IV to DSM-5 Changes on the National Survey on Drug Use and Health [Internet]. Rockville (MD): Substance Abuse and Mental Health Services Administration (US); Available from: https://www.ncbi.nlm.nih.gov/books/NBK519697/

Sui, X., Massar, K., Kessels, L. T. E., Reddy, P. S., Ruiter, R. A. C., & Sanders-Phillips, K. (2021). Violence Exposure in South African Adolescents: Differential and Cumulative Effects on Psychological Functioning. *Journal of interpersonal violence*, *36*(9-10), 4084–4110. https://doi.org/10.1177/0886260518788363

Swartz, Alison & Lefevre, Amnesty & Perera, Shehani & Kinney, Mary. (2021). Multiplemultiple pathways to scaling up and sustainability: an exploration of digital health solutions in South Africa. Globalization and Health. 17. 10.1186/s12992-021-00716-1.

Taylor, C. B., Ruzek, J. I., Fitzsimmons-Craft, E. E., Sadeh-Sharvit, S., Topooco, N., Weissman, R. S., Eisenberg, D., Mohr, D., Graham, A., Jacobi, C., & Oldenburg, B. (2020). Using Digital Technology to Reduce the Prevalence of Mental Health Disorders in Populations: Time for a New Approach. *Journal of medical Internet research*, *22*(7), e17493. https://doi.org/10.2196/17493.

Tesfaye, Y., Agenagnew, L., Anand, S., Tucho, G.T., Birhanu, Z., Ahmed, G., Genet, M & Yitbarek, K. (2021). Knowledge of the community regarding mental health problems: a cross-sectional study. *BMC Psychol,* **9**(106), https://doi.org/10.1186/s40359-021-00607-5

Thomas, K. A., & Rickwood, D. (2013). Clinical and cost-effectiveness of acute and subacute residential mental health services: a systematic review. *Psychiatric services (Washington, D.C.)*, *64*(11), 1140–1149. https://doi.org/10.1176/appi.ps.201200427

Thornicroft, G., Mehta, N., Clement, S., Evans-Lacko, S., Doherty, M., Rose, D., Koschorke, M., Shidhaye, R., O'Reilly, C., & Henderson, C. (2016). Evidence for effective interventions to reduce mental-health-related stigma and discrimination. *Lancet (London, England)*, *387*(10023), 1123–1132. https://doi.org/10.1016/S0140-6736(15)00298-6.

Titi, Neziswa & Tomlinson, Mark & Mathews, Shanaaz & Jamieson, Lucy & Kaminer, Debbie & Seedat, Soraya & Lake, Lori & Merwe, Amelia. (2022). Violence and child and adolescent mental health: A whole-of-society response.

Trading Economics. (2024). South Africa Youth Unemployment Rate. Retrieved from https://tradingeconomics.com/south-africa/youth-unemployment-rate

UNICEF South Africa. (2022). 60% of youth needed mental health support over past year – U-Report poll. Retrieved from https://www.unicef.org/southafrica/press-releases/60-cent-youth-needed-mental-health-support-over-past-year-u-report

UNICEF. (2021). *Growing Up in a Connected World: Understanding Children's Risks and Opportunities in a Digital Age*. Retrieved May 07, 2023, from https://www.unicef-irc.org/growing-upconnected

UNICEF. (2022, October 31). *UNICEF*. Retrieved May 06, 2023, from https://www.unicef.org/southafrica/press-releases/73-cent-youth-needed-mental-healthsupport-over-past

United Nations South Africa. (2025). *Sustainable Development Goals*. Accessible from: https://southafrica.un.org/en/sdgs?afd_azwaf_tok=eyJhbGciOiJSUzI1NiJ9.eyJhdWQiOiJzb3V0aGFmcmljYS51bi5vcmciLCJleHAiOjE3NDcxNjQ5NDcsImlhdCI6MTc0NzE2NDkzNywiaXNzIjoidGllcjEtODQ3Yjg5ZmM0OS1iN3E3OCIsInN1YiI6IjQxLjEzLjAuNzkiLCJkYXRhIjp7InR5cGUiOiJpc3N1ZWQiLCJyZWYiOiIyMDI1MDUxM1QxOTM1MzdaLTE4NDdiODlmYzQ5YjdxNzhoQzFKTkJyYnRuMDAwMDAwMGFjZzAwMDAwMDAwZnJ4OSIsImIiOiJOSEtxcWpKZ01tbThxMWJxcDZwMGRIN21EdGFtZVZnRXlNMjZCZnBnYlVzIiwiaCI6Ikl0NFZsVUxSdE1EdFFQZTFyLWJMSUpybS1FQ3MwdHY2RlJaNTVyUnBGUHcifX0.CJewpY70WOyYFMttp9da29DEEEtZC4wto1nQ5tXzODh7_rMcTczFozwAk8IS7S6RhJSDMr8cOvAAM7NaVV5s0KcktUhdJjZlEqPlvX8XXpNjMx6Rgp7Qf0EoAJlit2v0PqFb5X9hZSti_nZRvAeNlBqqqmCTfeAzGfSbgnTjgcwI-BdPtv3oKdSKGGSvL-bOJPnDoQmKhkFPWjp_9p-XWMDelLsM2VC0iT1BW9FMx6T0GdSTiIDLNvN5LvVRTBwEGi8wyyWlbSCQPmrIGkmqVZC89vdTYDJuXqn6Lo4Bmn0Q2H_AmiP09sXUK2yKPMty0KqLNHctu4MYjM3Szg_w1Q.WF3obl2IDtqgvMFRqVdYkD5s

United Nations. (n.d). Youth. Available from: https://www.un.org/en/global-issues/youth#:~:text=Who%20Are%20the%20Youth%3F,of%2015%20and%2024%20years.

University of Cape Town. (2020). Digital interventions to address maternal and child health challenges. University of Cape Town. Retrieved from https://science.uct.ac.za/articles/2020-09-07-digital-interventions-address-maternal-and-child-health-challenges

van der Merwe, L., Biggs, R., & Preiser, R. (2018). A framework for conceptualizing and assessing the resilience of essential services produced by socio-technical systems. Ecology & Society. 23. 12. 10.5751/ES-09623-230212.

Vehovar, V; Toepoel, V; Steinmetz, S. (2016). Non-probability sampling.

Wahid, S. S., Ottman, K., Hudhud, R., Gautam, K., Fisher, H. L., Kieling, C., Mondelli, V., & Kohrt, B. A. (2021). Identifying risk factors and detection strategies for adolescent depression in diverse global settings: A Delphi consensus study. *Journal of affective disorders*, *279*, 66–74. https://doi.org/10.1016/j.jad.2020.09.098

Wainberg, M. L., Scorza, P., Shultz, J. M., Helpman, L., Mootz, J. J., Johnson, K. A., Neria, Y., Bradford, J. E., Oquendo, M. A., & Arbuckle, M. R. (2017). Challenges and Opportunities in Global Mental Health: a Research-to-Practice Perspective. *Current psychiatry reports*, *19*(5), 28. https://doi.org/10.1007/s11920-017-0780-z

Wainberg, M., Scorza, P., Shultz, J. M., Helpman, L., Mootz, J. J., Johnson, K. A., Arbuckle, Arbuckle, M. R. (2017). Challenges and Opportunities in Global Mental Health: a Research-to-Practice Perspective. *Current psychiatry reports, 19(5),,, 19*(5), 28and 28. doi:https://doi.org/10.1007/s11920-017-0780-z.

Wei, Y., Hayden, J. A., Kutcher, S., Zygmunt, A., & McGrath, P. (2020). The effectiveness of school mental health literacy programs to address knowledge, attitudes and help-seeking among youth. Early Intervention in Psychiatry, 14(3), 286–292. https://doi.org/10.1111/eip.12801

White, S. J., Sin, J., Sweeney, A., Salisbury, T., Wahlich, C., Montesinos Guevara, C. M., Gillard, S., Brett, E., Allwright, L., Iqbal, N., Khan, A., Perot, C., Marks, J., & Mantovani, N. (2024). Global Prevalence and Mental Health Outcomes of Intimate Partner Violence Amongamong Women: A Systematic Review and Meta-Analysis. *Trauma, violence & abuse*, *25*(1), 494–511. https://doi.org/10.1177/15248380231155529

Wiedermann, C. J., Barbieri, V., Plagg, B., Marino, P., Piccoliori, G., & Engl, A. (2023). Fortifying the Foundations: A Comprehensive Approach to Enhancing Mental Health Support in

Educational Policies Amidstamidst Crises. *Healthcare (Basel, Switzerland)*, *11*(10), 1423. https://doi.org/10.3390/healthcare11101423

Winkler, P., Kunc, B., Guerrero, Z., Mohr, P., Schomerus, G., Mladá, K. (2024). Changes in stigma and population mental health literacy before and after the Covid-19 pandemic: Analyses of repeated cross-sectional studies, SSM - Mental Health,6, 6. 100369, https://doi.org/10.1016/j.ssmmh.2024.100369.

World Health Organization . Organization. (2020, August 31). *Mental Health Gap Action Programme*. Retrieved from World Health Organization : https://www.who.int/publications/i/item/9789240007666

World Health Organization . Organization. (2020, August 31). *Mental Health Gap Action Programme*. Retrieved from World Health Organization : https://www.who.int/publications/i/item/9789240007666

World Health Organization. (2020, August 31). *Mental Health Gap Action Programme*. Retrieved May 01, 2023, from, World Health Organization: https://www.who.int/publications/i/item/9789240007666.

World Health Organization. (2022, June 11). *Mental health*. Retrieved May 01, 2023, from https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response.

World Health Organization. (2023). World Health Organization. Retrieved April April , 2023, from https://www.who.int/southeastasia/health-topics/adolescent-health#:~:text=WHO%20defines%20'Adolescents'%20as%20individuals,age%20range%2010 %2D24%20years

World Health Organization. (2024, October 11). *Mental health of adolescents*. Retrieved January 01, 2024, from: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health#:~:text=Suicide%20is%20the%20third%20leading,lead%20fulfilling%20lives%20as%20adults.

World Health Organization. (n.d.). *Mental Health*. Retrieved from https://www.paho.org/en/topics/mental-

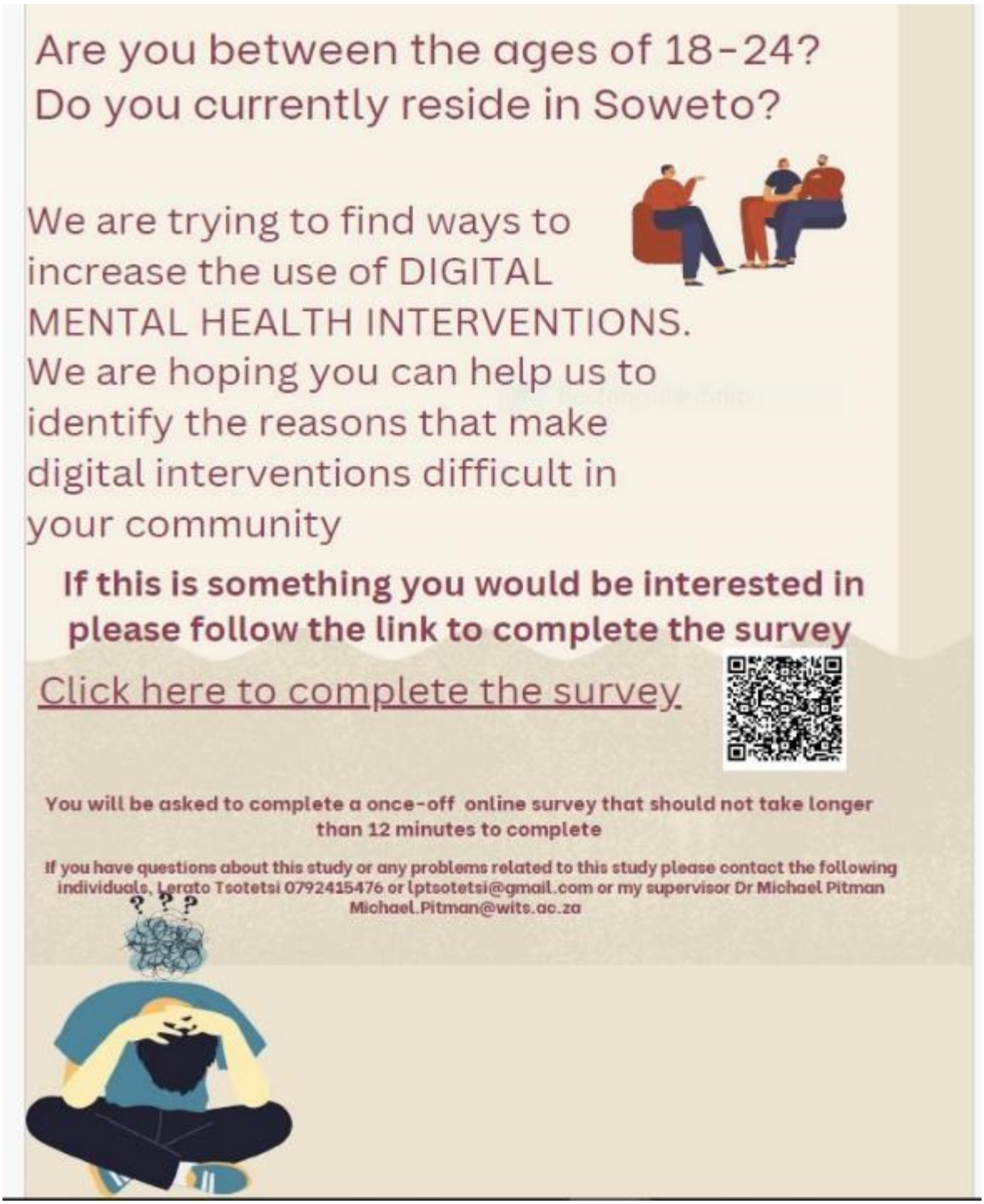
Writer, S. (2023). A rough start for hungry South Africans. Business Tech. Accessible from: https://businesstech.co.za/news/lifestyle/653981/rough-start-to-2023-for-hungry-south-africans/

Zeng, Z., Holtmaat, K., Sander L. (2024). Psychological care for cancer survivors: a 2 × 2 model of interpersonal emotion regulation by caregivers. Frontiers in Psychology, 15. DOI=10.3389/fpsyg.2024.1390692

Zita, C. (2018). *Mental health literacy of young people in South Africa: A study of university of KwaZulu Natal students*. University of Kwa-Zulu Natal*; Research Space*. https://researchspace.ukzn.ac.za/handle/10413/16676.

Zita, C.T. (2018). Mental health literacy of young people in South Africa: A study of University of KwaZulu-Natal students. University of KZN. https://researchspace.ukzn.ac.za/handle/10413/16676

6.3 Appendix 1: Invitation to Participation Poster



6.4 Appendix 2: Information Leaflet and Consent Form

INFORMATION LEAFLET AND INFORMED CONSENT FORM ONLINE SURVEY

Investigating knowledge, attitudes and challenges for digital mental health interventions among youth in Soweto, South Africa

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Dear Potential Participant

My name is Lerato Tsotetsi, I am a Master's student at the University of the Witwatersrand, in the Department of psychology. I am conducting a study to investigate the knowledge, attitudes and challenges for digital mental health interventions among youth in Soweto. I would like to invite you to participate in this research study.

The proposed research aims to investigate knowledge, attitudes and challenges for digital mental health interventions among youth in Soweto, South Africa. The proposed study will offer insight on youth attitudes on digital mental health tools and the unique challenges in an urban setting. This is important as it can offer valuable information on factors to consider when designing interventions and may improve engagement with digital mental health tools in a low-middle income setting.

Participation in this study is completely voluntary and you have the right to decline participation. Any questions that you are uncomfortable to answer may be left out.
You are welcome to take part in the study if you are at least 18 years of age.

If you agree to take part in the research study, you will be asked to complete a once-off online survey that should not take longer than about 15 minutes to complete. The online survey will ask you some questions about you (but not any information that could be used to identify you); mental health and access to mental health services; and digital mental health apps and services, including your knowledge of, access to, and attitudes towards these.

There are no direct benefits or risks to you for taking part in the study. However, your contribution to this research can assist in building our understanding of issues in mental health and mental health services among South African youth, and may contribute to future developments in the area of digital mental health support and services.
Depending on your background and experiences relating to mental health, it is possible that some of the questions in the survey could cause you some discomfort and/ or distress. Should you experience any level of psychological discomfort or distress during and after participation in the study, you can access free support by contacting: **The South African Depression and Anxiety Group (SADAG) on0800 567 567 (toll free number; SADAG provides free 24 hour telephonic counselling)**.

All information that you provide will be saved and stored in a secure and encrypted online database. We will not use any identifying data such as your name, and your data will be kept confidential. Your participation in this study is voluntary and you can decide to stop completion of the survey at any point before final submission. Please note that once your completed survey answers have been submitted, they cannot be withdrawn because they will not contain any information to link the survey submission back to you. Your anonymous responses may be used by the research team, shared with other researchers, or made available in an online data repository.

Remote (telephonic) or virtual (WhatsApp) support regarding the survey will be available from me, Lerato Tsotetsi, at 0792415476 lptsotetsi@gmail.com if you have any trouble completing the survey.

If you have questions about this study or any problems related to this study please contact the following individuals, Lerato Tsotetsi 0792415476 or lptsotetsi@gmail.com or my supervisor Dr Michael Pitman Michael.Pitman@wits.ac.za

This study protocol has been submitted to the University of the Witwatersrand, Human Research Ethics Committee (Wits HREC – Medical) and written approval has been granted by that Committee.
If you have any concern/s about your participant rights 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

Thank you for taking time to hear about my study.

Please read and complete the following section if you would like to participate in the study
I hereby confirm that I have been informed about the nature, conduct, benefits and risks of the study
□**YES** □**NO**
□ I have received, read and understood the above written information
□ I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study, I am free to speak to any of these contacts.
□ I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time

Are you 18 years or older?

☐ Yes

☐ No

Are you from Soweto, Johannesburg?

☐ Yes

☐ No

I hereby give my consent to take part in the study

☐ **Yes, continue to the survey**

☐ **No, Exit**

6.5 Appendix 4: Online Survey

Online Survey

Demographic Information

1. What is your age (in years)?

_____

2. What is your sex?

- ☐ Female
- ☐ Male
- ☐ Prefer not to say
- ☐ Other (please specify)

3. What is your home language? (please choose only one)

☐ Afrikaans	☐ isiZulu	☐ SiSwati
☐ English	☐ Northern Sotho	☐ Tshivenda
☐ Isi Ndebele	☐ Sesotho	☐ Xitsonga
☐ IsiXhosa	☐ Setswana	

Other (please specify) _____

4. If you had to classify yourself in a particular population group, what would you describe yourself as:

- ☐ Black/African
- ☐ Coloured
- ☐ White
- ☐ Indian
- ☐ Other, Specify

5. What is your highest level of formal education?

- ☐ Primary school
- ☐ High school grade
- ☐ Matric
- ☐ Undergraduate Degree
- ☐ Postgraduate Degree
- ☐ Diploma
- ☐ Other (please specify)

6. Which of the following best describes your employment situation status?

- ☐ Full time student
- ☐ Part time student
- ☐ Full-time worker in paid employment
- ☐ Part-time worker in paid employment
- ☐ Unpaid worker as a parent or carer
- ☐ Currently unemployed

7. Do you own a personal mobile phone?

- ☐ Yes
- ☐ No

8. Can you access the internet on your mobile phone?

- ☐ Yes
- ☐ No

9. What do you mostly use your mobile phone for? *(*please read list and choose top 3 options that apply*)*

- ☐ Text Messaging
- ☐ Phone calls
- ☐ Shopping
- ☐ Banking
- ☐ Exercising
- ☐ Social Networking (Facebook, WhatsApp)
- ☐ Access emails
- ☐ Entertainment (YouTube, Movies, Games)
- ☐ Other (please specify): _____

10. Which Social medial platforms do you mostly use?

- ☐ Twitter
- ☐ Instagram
- ☐ Facebook
- ☐ WeChat
- ☐ WhatsApp
- ☐ Moya
- ☐ TikTok
- ☐ Other: please specify

11. How do you mainly access the internet?

- ☐ Prepaid Cellular Data Connection
- ☐ Contract Cellular Data Connection
- ☐ Home Wi-Fi
- ☐ School/College/University Wi-Fi
- ☐ Work Wi-Fi
- ☐ Other: Please specify

Mental Health Literacy Scale

The purpose of this section is to gain an understanding of your knowledge of various aspects to do with mental health. When responding, we are interested in your degree of knowledge. Therefore when choosing your response, consider that:

Very unlikely = I am certain that it is NOT likely

Unlikely = I think it is unlikely but am not certain

Likely = I think it is likely but am not certain

Very Likely = I am certain that it IS very likely

1

If someone became extremely nervous or anxious in one or more situations with other people (e.g., a party) or performance situations (e.g., presenting at a meeting) in which they were afraid of being evaluated by others and that they would act in a way that was humiliating or feel embarrassed, then to what extent do you think it is likely they have Social Phobia?

Very unlikely Unlikely Likely Very Likely

2

If someone experienced excessive worry about a number of events or activities where this level of concern was not warranted, had difficulty controlling this worry and had physical symptoms such as having tense muscles and feeling fatigued then to what extent do you think it is likely they have **Generalised Anxiety Disorder ?**

Very unlikely Unlikely Likely Very Likely

3

If someone experienced a low mood for two or more weeks, had a loss of pleasure or interest in their normal activities and experienced changes in their appetite and sleep then to what extent do you think it is likely they have Major Depressive Disorder?

Very unlikely Unlikely Likely Very Likely

4

To what extent do you think it is likely that Personality Disorders are a category of mental illness?

Very unlikely Unlikely Likely Very Likely

5

To what extent do you think it is likely that Dysthymia is a disorder?

Very unlikely Unlikely Likely Very Likely

6

To what extent do you think it is likely that the diagnosis of Agoraphobia includes anxiety about situations where escape may be difficult or embarrassing?

Very unlikely Unlikely Likely Very Likely

7

To what extent do you think it is likely that the diagnosis of Bipolar Disorder includes experiencing periods of elevated (i.e., high) and periods of depressed (i.e., low) mood?

Very unlikely Unlikely Likely Very Likely

8

To what extent do you think it is likely that the diagnosis of Drug Dependence includes physical and psychological tolerance of the drug (i.e., require more of the drug to get the same effect)?

Very unlikely Unlikely Likely Very Likely

9

To what extent do you think it is likely that in general in South Africa women are MORE likely to experience a mental illness of any kind compared to men

Very unlikely Unlikely Likely Very Likely

10

To what extent do you think it is likely that in general, in South Africa, men are MORE likely to experience an anxiety disorder compared to women?

Very unlikely Unlikely Likely Very Likely

When choosing your response, consider that:

- Very Unhelpful = I am certain that it is NOT helpful
- Unhelpful = I think it is unhelpful but am not certain
- Helpful = I think it is helpful but am not certain
- Very Helpful = I am certain that it IS very helpful

11

To what extent do you think it would be helpful for someone to improve their quality of sleep if they were having difficulties managing their emotions (e.g., becoming very anxious or depressed)?

Very unhelpful Unhelpful Helpful Very helpful

12

To what extent do you think it would be helpful for someone to avoid all activities or situations that made them feel anxious if they were having difficulties managing their emotions?

Very unhelpful Unhelpful Helpful Very Unhelpful

When choosing your response, consider that:

- Very unlikely = I am certain that it is NOT likely
- Unlikely = I think it is unlikely but am not certain
- Likely = I think it is likely but am not certain
- Very Likely = I am certain that it IS very likely

13

To what extent do you think it is likely that Cognitive Behaviour Therapy (CBT) is a therapy based on challenging negative thoughts and increasing helpful behaviours?

Very unlikely Unlikely Likely Very Likely

14
Mental health professionals are bound by confidentiality; however there are certain conditions under which this does not apply.

To what extent do you think it is likely that each of the following is a condition that would allow a mental health professional to **break confidentiality**?

If you are at immediate risk of harm to yourself or others

Very unlikely Unlikely Likely Very Likely

15
If your problem is not life-threatening and they want to assist others to better support you

Very unlikely Unlikely Likely Very Likely

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
16. I am confident that I know where to seek information about mental illness					
17. I am confident using the computer or telephone to seek information about mental illness					
18. I am confident attending face to face appointments to seek information about mental illness (e.g., seeing a doctor					

19. I am confident I have access to resources (e.g., GP, internet, friends) that I can use to seek information about mental illness					

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
20. People with a mental illness could snap out if it if they wanted					
21. A mental illness is a sign of personal weakness					
22. A mental illness is not a real medical illness					
23. People with a mental illness are dangerous					
24. It is best to avoid people with a mental illness so that you don't develop this problem					
25. If I had a mental illness I would not tell anyone					
26. Seeing a mental health professional means you are not strong enough to manage your own difficulties					
27. If I had a mental illness, I would not seek help from a mental health professional					

28. I believe treatment for a mental illness, provided by a mental health professional, would not be effective					

Please indicate to what extent you agree with the following statements:

	Definitely unwilling	Probably unwilling	Neither unwilling or willing	Probably willing	Definitely willing
29. How willing would you be to move next door to someone with a mental illness?					
30. How willing would you be to spend an evening socialising with someone with a mental illness?					
31. How willing would you be to make friends with someone with a mental illness?					

	Definitely unwilling	Probably unwilling	Neither unwilling or willing	Probably willing	Definitely willing
32. How willing would you be to have someone with a mental illness start working closely with you on a job?					
33. How willing would you be to have someone with a mental illness marry into your family?					
34. How willing would you be to vote for a politician if you knew they had suffered a mental illness?					
35. How willing would you be to employ someone if you knew they had a mental illness?					

Digital interventions for Mental Health

1. **Do you know of any digital mental health interventions?**
   Digital mental health intervention are any tools provided through robotic, web-based, virtual reality (VR), or mobile-based (telephonically, App, text) platforms that offer support, counselling, or education.

   ☐ Yes
   ☐ No

   If yes, please provide name/s of the intervention/s

2. **Which of the following digital interventions do you know about? (Choose as many options as required)**

☐ Panda ☐ SADAG (South African Depression and Anxiety Group)
☐ Lifeline ☐ Other (Please specify)
☐ Koko Khuluma

3. **What is most your preferred platforms for accessing mental health services? (Choose one option)**

☐ In-person healthcare facility **(**Clinic, consultation rooms or practice)
☐ School/College/University
☐ Online Platforms
☐ Other, Please specify

4. **What is your level of interest in using the following technologies to support your mental health and wellbeing Please select for each response**

	Not at all interested	Slightly interested	Somewhat interested	Moderately interested	Extremely interested
1. Using a smartphone app for support with mental health and wellbeing					
2.Using a smartphone app to keep track of mental health and wellbeing					
3.Sharing information online about mental health and well-being with a mental health practitioner					

4.Using video chat to talk to a mental health practitioner about mental health and wellbeing					
5.Using text chat to talk to a mental health practitioner about mental health and wellbeing					
6. Using social media platforms to connect and interact with a mental health practitioner about mental health and wellbeing (WhatsApp, Facebook support groups etc.).					
7.Using a secure social media platform developed for mental health to connect and interact with other young people about mental health and wellbeing					
8.Using websites to learn about mental health and well-being					

9.Digital games that help you learn skills and strategies for mental health and well-being					
10.					

5. **What challenges do you think youth in South Africa will face when using digital interventions? (Choose as many as required)**

- ☐ Data Costs
- ☐ Lack of understanding
- ☐ No access to mobile phone
- ☐ Privacy concerns
- ☐ Discomfort with digital space
- ☐ Lack of trust
- ☐ Lack of human connection
- ☐ Other, please specify

6. What are your thoughts on the use of digital mental health interventions for you/ youth in your community?

7. In your community, what do you think would make it difficult for you/youth to use digital mental health tools?

8. What recommendations would you offer for introducing and using of digital mental health tools in your community?

The End!!!

Thank you so much for taking the time to fill out the survey!

If you require more information on how to access any of the apps or interventions mentioned please feel free to contact me – Lerato Tsotetsi lptsotetsi@gmail.com 0792415476

6.6 Appendix 5 Thank you Page



6.7 Appendix 6 Ethics Clearance

M230745 MED23-07-016

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

R14/49 Miss Lerato Tsotetsi

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M230745 MED23-07-016

NAME: (Principal Investigator)	Miss Lerato Tsotetsi
DEPARTMENT:	School of Human and Community Development Department of Psychology
PROJECT TITLE:	Investigating knowledge, attitudes and challenges for digital mental health interventions among youth in Soweto, South Africa
DATE CONSIDERED:	11/08/2023
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Dr Michael Pitman
APPROVED BY:	Prof P Ruff, Chairperson, HREC (Medical)
DATE OF APPROVAL:	09/10/2023 **EXPIRY DATE:** 09/10/2028

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report** in January each year until study is closed. Failure to submit annual report will result in ethics clearance certificate suspension. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in July and will therefore be due in the month of July each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical). Email signed copy of this ethics clearance certificate prior to commencing with the study hrec-medical.researchoffice@wits.ac.za

Tsotetsi 10/10/2023

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

6.8 Appendix 7: Mental Health Literacy scale

Mental Health Literacy Scale

The purpose of these questions is to gain an understanding of your knowledge of various aspects to do with mental health. When responding, we are interested in your degree of knowledge. Therefore when choosing your response, consider that:

Very unlikely = I am certain that it is NOT likely

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Likely = I think it is likely but am not certain

Very Likely = I am certain that it IS very likely

1

If someone became extremely nervous or anxious in one or more situations with other people (e.g., a party) or performance situations (e.g., presenting at a meeting) in which they were afraid of being evaluated by others and that they would act in a way that was humiliating or feel embarrassed, then to what extent do you think it is likely they have **Social Phobia**

Very unlikely Unlikely Likely Very Likely

2

If someone experienced excessive worry about a number of events or activities where this level of concern was not warranted, had difficulty controlling this worry and had physical symptoms such as having tense muscles and feeling fatigued then to what extent do you think it is likely they have **Generalised Anxiety Disorder**

Very unlikely Unlikely Likely Very Likely

3

If someone experienced a low mood for two or more weeks, had a loss of pleasure or interest in their normal activities and experienced changes in their appetite and sleep then to what extent do you think it is likely they have **Major Depressive Disorder**

Very unlikely Unlikely Likely Very Likely

4

To what extent do you think it is likely that **Personality Disorders** are a category of mental illness?

Very unlikely Unlikely Likely Very Likely

5

To what extent do you think it is likely that **Dysthymia** is a disorder?

Very unlikely Unlikely Likely Very Likely

6

To what extent do you think it is likely that the diagnosis of **Agoraphobia** includes anxiety about situations where escape may be difficult or embarrassing?

Very unlikely Unlikely Likely Very Likely

7

To what extent do you think it is likely that the diagnosis of **Bipolar Disorder** includes experiencing periods of elevated (i.e., high) and periods of depressed (i.e., low) mood

Very unlikely Unlikely Likely Very Likely

8

To what extent do you think it is likely that the diagnosis of **Drug Dependence** includes physical and psychological tolerance of the drug (i.e., require more of the drug to get the same effect)

Very unlikely Unlikely Likely Very Likely

9

To what extent do you think it is likely that in general in Australia, **women are MORE likely to experience a mental illness of any kind compared to men**

Very unlikely Unlikely Likely Very Likely

10

To what extent do you think it is likely that in general, in Australia**, men are MORE likely to experience an anxiety disorder compared to women**

Very unlikely Unlikely Likely Very Likely

When choosing your response, consider that:

- Very Unhelpful = I am certain that it is NOT helpful
- Unhelpful = I think it is unhelpful but am not certain
- Helpful = I think it is helpful but am not certain
- Very Helpful = I am certain that it IS very helpful

11

To what extent do you think it would be helpful for someone to **improve their quality of sleep** if they were having difficulties managing their emotions (e.g., becoming very anxious or depressed)

Very unhelpful Unhelpful Helpful Very helpful

12

To what extent do you think it would be helpful for someone to **avoid all activities or situations that made them feel anxious** if they were having difficulties managing their emotions

Very unhelpful Unhelpful Helpful Very helpful

When choosing your response, consider that:

- Very unlikely = I am certain that it is NOT likely
- Unlikely = I think it is unlikely but am not certain
- Likely = I think it is likely but am not certain
- Very Likely = I am certain that it IS very likely

13

To what extent do you think it is likely that **Cognitive Behaviour Therapy (CBT)** is a therapy based on challenging negative thoughts and increasing helpful behaviours

Very unlikely Unlikely Likely Very Likely

14

Mental health professionals are bound by confidentiality; however there are certain conditions under which this does not apply.

To what extent do you think it is likely that the following is a condition that would allow a mental health professional to **break confidentiality**?

If you are at immediate risk of harm to yourself or others

Very unlikely Unlikely Likely Very Likely

15

Mental health professionals are bound by confidentiality; however there are certain conditions under which this does not apply.

To what extent do you think it is likely that the following is a condition that would allow a mental health professional to **break confidentiality**?

If your problem is not life-threatening and they want to assist others to better support you

Very unlikely Unlikely Likely Very Likely

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
16. I am confident that I know where to seek information about mental illness					

17. I am confident using the computer or telephone to seek information about mental illness					
18. I am confident attending face to face appointments to seek information about mental illness (e.g., seeing the GP)					
19. I am confident I have access to resources (e.g., GP, internet, friends) that I can use to seek information about mental illness					

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
20. People with a mental illness could snap out if it if they wanted					
21. A mental illness is a sign of personal weakness					
22. A mental illness is not a real medical illness					
23. People with a mental illness are dangerous					
24. It is best to avoid people with a mental illness so that you don't develop this problem					

25. If I had a mental illness I would not tell anyone					
26. Seeing a mental health professional means you are not strong enough to manage your own difficulties					
27. If I had a mental illness, I would not seek help from a mental health professional					
28. I believe treatment for a mental illness, provided by a mental health professional, would not be effective					

Please indicate to what extent you agree with the following statements:

	Definitely unwilling	Probably unwilling	Neither unwilling or willing	Probably willing	Definitely willing
29. How willing would you be to move next door to someone with a mental illness?					
30. How willing would you be to spend an evening socialising with someone with a mental illness?					
31. How willing would you be to make friends with someone with a mental illness?					

	Definitely unwilling	Probably unwilling	Neither unwilling or willing	Probably willing	Definitely willing
32. How willing would you be to have someone with a mental illness start working closely with you on a job?					
33. How willing would you be to have someone with a mental illness marry into your family?					
34. How willing would you be to vote for a politician if you knew they had suffered a mental illness?					
35. How willing would you be to employ someone if you knew they had a mental illness?					

Scoring

Total score is produced by summing all items (see reverse scored items below). Questions with a

4-point scale are rated 1- very unlikely/unhelpful, 4 – very likely/helpful and for 5-point scale 1

– Strongly disagree/definitely unwilling, 5 – strongly agree/definitely willing

Reverse scored items: 10, 12, 15, 20-28

Maximum score – 160

Minimum score – 35

- **Reference**

O’Connor, M., & Casey, L. (2015). The mental health literacy scale (MHLS): A new scale-based measure of mental health literacy, *Psychiatry Research,* http://dx.doi.org/10.1016/j.psychres.2015.05.064

If you intend to use the MHLS, please contact Matt O'Connor at matt.f.oconnor@gmail.com

6.9 Appendix 8: Interest in digital mental health

The impact of Covid-19 on youth mental health services - STAFF

This survey forms an important part of our response to COVID-19. Staff are well aware that service delivery has changed dramatically as a result of COVID-19. It is important for us to understanding what impact this has had on young people and the quality of service we provide for them.

In this survey, we ask some questions about how changes due to COVID-19 have impacted service delivery and quality. Given the role that telehealth has played in the response to COVID-19, we are also interested in experiences with this technology and other ways that technology might be able to help.

The information you share will help us to make sure that we are doing our best to help young people who are a part of youth mental health services, including by informing policy, research and service improvement. Your information will be kept confidential. This survey will take about 10-15 minutes. We will aim to feedback the results of the survey soon after we finish collecting responses.

Impact of COVID19 on service delivery and quality

The following questions ask about how COVID-19 has impacted on the delivery and quality of services you provide to young people. Please answer as honestly as possible.

Where do you work? (Single select)

1. Orygen Specialist services YAT
2. Orygen Specialist services Community
3. Orygen Specialist services other
4. Orygen primary services Access
5. Orygen primary services other

In the last week, please estimate how many young people have you tried to assess/review? (Single select)

1. 0
2. 1-5
3. 6-10
4. 11-15
5. >15
6. Unknown

In the last week please estimate how many telephone reviews you have done? (Single select)

1. 0
2. 1-5
3. 6-10
4. 11-15
5. >15

6. Unknown

In the last week please estimate how many video conferences you have done? (Single select)

1. 0
2. 1-10
3. 11-20
4. 21-30
5. >30
6. Unknown

How many 'did not attends' did you have? (Dropdown number)

What impact, if any, has COVID-19 had on the following aspects of the mental health care you provide within services? (Likert)

	Very negative	Negative	Somewhat negative	None at all	Somewhat positive	Positive	Very positive
1. How well the care you provide meets the needs of your clients	☐1	☐2	☐3	☐4	☐5	☐6	☐7
2. How well the care you provide to your clients achieves what they want from it	☐1	☐2	☐3	☐4	☐5	☐6	☐7
3. How clinically effective the care is that you provide to your clients	☐1	☐2	☐3	☐4	☐5	☐6	☐7
4. How safe your client is with the care provided	☐1	☐2	☐3	☐4	☐5	☐6	☐7
5. How supported and respected your client is with the care provided	☐1	☐2	☐3	☐4	☐5	☐6	☐7
6. How well coordinated and continuous the care you provide is	☐1	☐2	☐3	☐4	☐5	☐6	☐7
7. Whether your clients receive the care they need at the right time and place	☐1	☐2	☐3	☐4	☐5	☐6	☐7
8. How accessible and relevant the care is that you provide for your clients	☐1	☐2	☐3	☐4	☐5	☐6	☐7
9. How efficient and well organized the care is that you provide for your clients	☐1	☐2	☐3	☐4	☐5	☐6	☐7

On telehealth did you feel able to assess risk adequately? (Single select)

1. Very well
2. Well
3. Hard to tell
4. Poorly
5. Very poorly

On telehealth did you feel able to provide clinical therapeutic work adequately? (Single select)

1. Very well

2. Well
3. Hard to tell
4. Poorly
5. Very poorly

Are there additional admin burdens to clinicians in setting up telehealth options? Please estimate additional time per clinician (single select)

1. No additional mins
2. 1 - 30 mins
3. 31 mins - 60 mins
4. 1-2hrs
5. >2 hours
6. unknown

Are there additional admin burdens to admin in setting up telehealth? Please estimate additional time per admin per person (single select)

1. No additional mins
2. 1 - 30 mins
3. 31 mins - 60 mins
4. 1-2hrs
5. >2 hours
6. unknown

Did you spend less time with young people on telehealth than you would have in person? (Single select)

1. Yes
2. Maybe
3. No

Please estimate the average amount of time per telephone call (single select)

1. Not applicable
2. 1-15 mins
3. 16-30 mins
4. 31-45 mins
5. 46-60 mins
6. >60 mins
7. unknown

Please estimate the average amount of time per video call (single select)

1. Not applicable
2. 1-15 mins
3. 16-30 mins
4. 31-45 mins
5. 46-60 mins
6. >60 mins
7. unknown

How many young people do you feel had difficulties as a result of telehealth? (Drop down number)

- If more 1 or more, what were these difficulties (open)

What impact, if any, have changes in service delivery due to COVID-19 affected your client's willingness or motivation to engagement with the service? (Single select)

1. Very negative
2. Negative
3. Somewhat negative
4. None at all
5. Somewhat positive
6. Positive
7. Very positive

What impact, if any, have the changes in service delivery due to COVID-19 affected your relationship with your client? (Single select)

1. Very negative
2. Negative
3. Somewhat negative
4. None at all
5. Somewhat positive
6. Positive
7. Very positive

How supported to you feel by senior staff to see a young person in person if indicated clinically? (Single select)

1. Very unsupported
2. Unsupported
3. Neither supported nor unsupported
4. Supported
5. Very supported

Once services return to usual practices post-COVID-19, how interested would you be to continue using telehealth to deliver mental health care to some of your clients? (Single select)

1. Not at all interested
2. Slightly interested
3. Somewhat interested
4. Moderately interested
5. Extremely interested

In considering whether you would offer telehealth to your clients in the future, what are the top four considerations you would have in making this decision? (Open text)

What are the top four factors that would make you decide against using telehealth in future with your clients? (Open text)

What advantages, if any, have you experienced as a result of changes in remote service delivery due to COVID19? (Open text)

What disadvantages, if any, have you experienced as a result of changes in remote service delivery due to COVID19? (Open text)

Use of technology for service delivery

6. These questions ask about technologies that you may have used during the service you provide to young people since the start of COVID19.

7. Which of the following technologies have you used to support the mental health of your clients or the care you have provided since the start of COVID19 (Monday 23 March, 2020)?

- Smartphone (a mobile device that can run apps and connect to the internet)
    a. If yes, then:
        i. Have you ever recommended or used a smartphone apps for your client's mental health (Y/N)
            1. If yes, then:
                a. What was the name of the app you recommended or used? You can list multiple (open text)
                b. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
    b. No
    c. Don't know
- Mobile phone (a mobile device that can make calls and send texts, but can't run apps or connect to the internet)
    a. If yes, then:
        i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
    b. No
    c. Don't know
- Internet (e.g. websites, online programs)
    a. If yes, then:
        i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
    b. No
    c. Don't know
- Tablet (e.g. iPad)
    a. If yes, then:
        i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)

b. No
c. Don't know

- Landline phone
  a. If yes, then:
     i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
     ii. Don't know
- Wearables (e.g. Fitbit, Apple Watch)
  a. If yes, then:
     i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
  b. No
  c. Don't know
- Virtual reality
  a. If yes, then:
     i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
  b. No
  c. Don't know
- Laptop computer
  a. If yes, then:
     i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
  b. No
  c. Don't know
- Desktop computer
  a. If yes, then:
     i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
  b. No
  c. Don't know
- Video chat (e.g. Skype, FaceTime, Zoom, WhatsApp)
  a. If yes, then:
     i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
  b. No
  c. Don't know
- Social media (e.g. Facebook, Instagram, Twitter)
  a. If yes, then:

i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)

b. No
c. Don't know

- Instant messenger (e.g. WhatsApp, Facebook Messenger, SnapChat)
  a. If yes, then:
     i. How helpful do you think this was for your client overall? (1 – not at all helpful, 2 – somewhat unhelpful, 3 – neither helpful nor unhelpful, 4 – helpful, to 5 – very helpful, 8 – unsure)
  b. No
  c. Don't know

Interest in digital mental health

Technology can be used in different ways to help people with their mental health and wellbeing. We are interested in understanding how interested you would be in using or recommending the following technologies to support the mental health of your clients within the service. These are the final questions for this survey.

What is your level of interest in using or recommending the following technologies to support the mental health and wellbeing of your clients within the service?

	Not at all interested	Slightly interested	Somewhat interested	Moderately interested	Extremely interested
1. Using a smartphone app for support with mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
2. Using a smartphone app to keep track of mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
3. Using a wearable device (e.g. Fitbit) to keep track of mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
4. Sharing information online about mental health and wellbeing with a clinician	☐1	☐2	☐3	☐4	☐5
5. Using video chat to talk to a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
6. Using voice chat (i.e. telephone) to talk to a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
7. Using text chat to talk to a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
8. Using social media to connect and interact with a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
9. Using technologies such as smartphone apps and computer programs in	☐1	☐2	☐3	☐4	☐5

combination with therapy sessions with a clinician					
10. Using a secure social media platform developed for mental health to connect and interact with other young people about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
11. Using websites to learn about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
12. Using an online therapy program to learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
13. Calling a telephone helpline (e.g. Lifeline, Beyond Blue) to talk to someone about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
14. Using structured online programs to learn skills and strategies for gaining work or enrolling in study	☐1	☐2	☐3	☐4	☐5
15. Speaking to a chatbot therapist (a computer application that engages in conversation via text) about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
16. Using virtual reality (wearing a headset to transport you to a virtual world) to learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
17. Using virtual reality to connect and interact with a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
18. Using augmented reality (projecting digital objects into the real world) to learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
19. Attending a psychosocial group if they were run through a private online virtual world platform (e.g. Second Life or The Sims)	☐1	☐2	☐3	☐4	☐5
20. Digital games that help you learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5

This is the end of the survey. Thank you for your time!

The impact of Covid-19 on youth mental health services – YOUNG PEOPLE

In this survey, we will ask some questions about some of the ways that COVID-19 may have impacted on your life, the quality of the service you receive from headspace, and some of the ways that technologies might be able to help. This survey will take about 15 minutes and your answers will help us to make sure that we are doing our best to help young people who are a part of headspace services.

Demographics and screening

How old are you? (Number drop down)

What is your gender? (Single select)

1. Male
2. Female
3. Transgender
4. Non-binary
5. Prefer not to say
6. Other, specify: _____
7. Unsure at this stage

Are you of Aboriginal or Torres Strait Islander background? (Single select)

1. No
2. Aboriginal
3. Torres Strait Islander
4. Aboriginal and Torres Strait Islander
5. Prefer not to say

Which of the following best describes your employment situation status? (Multi select)

1. Full time student
    a. If yes:
        i. Please indicate number of hours engaged in study per week: _____
2. Part time student
    a. If yes:
        i. Please indicate number of hours engaged in study per week: _____
3. Full-time worker in paid employment
    a. If yes:
        i. Please indicate number of hours engaged in work per week: _____
4. Part-time worker in paid employment If yes:
    a. If yes:
        i. Please indicate number of hours engaged in work per week: _____
5. Unpaid worker as a parent or carer
    a. If yes:
        i. Please indicate number of hours engaged in unpaid work per week: _____
6. Currently unemployed
    a. If yes:

i. Please indicate number of hours engaged in job seeking per week: _____

What is your living situation currently? (Single select)

1. Living with parents, caregivers, or siblings
2. Living with friends
3. Living with romantic partner
4. Living in shared accommodation
5. Living alone
6. Homeless or couch surfing

Impact from Covid-19

What impact, if any, has COVID-19 had on your study and/or employment/carers role? (Likert)

1. Very negative
2. Negative
3. Somewhat negative
4. None at all
5. Somewhat positive
6. Positive
7. Very positive

What impact, if any, has COVID-19 has on your non-work life? (Likert)

1. Very negative
2. Negative
3. Somewhat negative
4. None at all
5. Somewhat positive
6. Positive
7. Very positive

What impact, if any, has COVID-19 had on your mental health? (Likert)

1. Very negative
2. Negative
3. Somewhat negative
4. None at all
5. Somewhat positive
6. Positive
7. Very positive

In your own words, what have been the main *negative* impacts of COVID-19 on your mental health and wellbeing, if any? (Open response)

In your own words, what have been the main *positive* impacts of COVID-19 on your mental health and wellbeing, if any? (Open response)

Impact on services

What impact, if any, has COVID-19 had on the following aspects of the mental health care you receive from mental health services? (Likert)

	Very negative	Negative	Somewhat negative	None at all	Somewhat positive	Positive	Very positive
10. How well the care you receive meets your needs	☐1	☐2	☐3	☐4	☐5	☐6	☐7
11. How well the care achieved what you wanted from it	☐1	☐2	☐3	☐4	☐5	☐6	☐7
12. How safe you feel with the care provided	☐1	☐2	☐3	☐4	☐5	☐6	☐7
13. How supported and respected you feel when receiving care	☐1	☐2	☐3	☐4	☐5	☐6	☐7
14. How well coordinated and continuous your care is	☐1	☐2	☐3	☐4	☐5	☐6	☐7
15. Whether you receive the care you need at the right time and place	☐1	☐2	☐3	☐4	☐5	☐6	☐7
16. How accessible and relevant your care is when you need it	☐1	☐2	☐3	☐4	☐5	☐6	☐7
17. How efficient and well organized the care is	☐1	☐2	☐3	☐4	☐5	☐6	☐7

How many telephone consult sessions with your clinician have you had since COVID-19 started (Monday 23 March, 2020)? (Drop down number)

How many video consult sessions with your clinician have you had since COVID-19 started (Monday 23 March, 2020)? (Drop down number)

Have you experienced any technological difficulties during remote consult sessions with your clinician? (Single select)

1. Yes
2. No

- If yes, what difficulties did you have? (Open)

What impact, if any, have changes in service delivery due to COVID-19 affected your willingness or motivation to engage with the service? (Likert)

8. Very negative
9. Negative
10. Somewhat negative
11. None at all
12. Somewhat positive
13. Positive
14. Very positive

What impact, if any, have the changes in service delivery due to COVID-19 affected your relationship with your clinician? (Likert)

1. Very negative

2. Negative
3. Somewhat negative
4. None at all
5. Somewhat positive
6. Positive
7. Very positive

What advantages, if any, have you experienced as a result of the changes in service delivery due to COVID-19? (Open)

What disadvantages, if any, have you experienced as a result of the changes in service delivery due to COVID-19? (Open)

Technology ownership and access

This next section asks you about your use of different technologies.

1. Which of the following do you personally own or have private access to? (multi select)

- Smartphone (a mobile device that can run apps and connect to the internet)
    a. If yes, then:
        i. What type of smartphone to you have? (single select)
            1. Android
            2. iPhone
        ii. How often do you use this technology? (single select)
            1. Several times an hour
            2. Every hour/once an hour
            3. Once to several times a day
            4. Once to several times a week
            5. Less than once a week
        iii. Have you ever used a smartphone app for your mental health (Y/N)
            1. If yes, then:
                a. What was the name of the app you have used most often for your mental health? (open question)
                b. How helpful did you find the app? (1 – not at all helpful, to 5 – very helpful)
    b. No
    c. Don't know
- Mobile phone (a mobile device that can make calls and send texts, but can't run apps or connect to the internet)
    a. If yes, then:
        i. How often do you use this technology? (single select)
            1. Several times an hour
            2. Every hour/once an hour

3. Once to several times a day
4. Once to several times a week
5. Less than once a week

b. No
c. Don't know

- Internet
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No
  c. Don't know
- Tablet
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No
  c. Don't know
- Landline phone
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No
  c. Don't know
- Wearables (e.g. Fitbit, Apple Watch)
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No
  c. Don't know
- Virtual reality
  a. If yes, then:

i. How often do you use this technology? (single select)
1. Several times an hour
2. Every hour/once an hour
3. Once to several times a day
4. Once to several times a week
5. Less than once a week

b. No
c. Don't know

- Laptop computer
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No
  c. Don't know
- Desktop computer
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No
  c. Don't know
- Video chat (e.g. Skype, FaceTime, Zoom, WhatsApp)
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No
  c. Don't know
- Social media (e.g. Facebook, Instagram, Twitter)
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week
  b. No

c. Don’t know

- Instant messenger (e.g. WhatsApp, Facebook Messenger, SnapChat)
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week

  b. No
  c. Don’t know
- Gaming console (e.g. Xbox, Nintendo Switch, Comp... Yes Is Selected
  a. If yes, then:
     i. How often do you use this technology? (single select)
        1. Several times an hour
        2. Every hour/once an hour
        3. Once to several times a day
        4. Once to several times a week
        5. Less than once a week

  b. No
  c. Don’t know

Interest in digital mental health

Technology can be used in different ways to help people with their mental health and wellbeing. We are interested in understanding how young people feel about these different technologies.

1. What is your level of interest in using the following technologies for your mental health and wellbeing?

	Not at all interested	Slightly interested	Somewha interested	Moderately interested	Extremely interested
21. Using a smartphone app for support with mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
22. Using a smartphone app to keep track of mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
23. Using a wearable device (e.g. Fitbit) to keep track of mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
24. Sharing information online about mental health and wellbeing with a clinician	☐1	☐2	☐3	☐4	☐5
25. Using video chat to talk to a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5

26. Using voice chat (i.e. telephone) to talk to a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
27. Using text chat to talk to a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
28. Using social media to connect and interact with a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
29. Using technologies such as smartphone apps and computer programs in combination with therapy sessions with a clinician	☐1	☐2	☐3	☐4	☐5
30. Using a secure social media platform developed for mental health to connect and interact with other young people about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
31. Using websites to learn about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
32. Using an online therapy program to learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
33. Calling a telephone helpline (e.g. Lifeline, Beyond Blue) to talk to someone about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
34. Using structured online programs to learn skills and strategies for gaining work or enrolling in study	☐1	☐2	☐3	☐4	☐5
35. Speaking to a chatbot therapist (a computer application that engages in conversation via text) about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
36. Using virtual reality (wearing a headset to transport you to a virtual world) to learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
37. Using virtual reality to connect and interact with a clinician about mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
38. Using augmented reality (projecting digital objects into the real world) to learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5
39. Attending a psychosocial group if they were run through a private online virtual world platform (e.g. SecondLife or The Sims)	☐1	☐2	☐3	☐4	☐5

40. Digital games that help you learn skills and strategies for mental health and wellbeing	☐1	☐2	☐3	☐4	☐5

Mental health

Finally, we would like to know how you've been feeling over the past couple of weeks.

Over the last 2 weeks, how often have you been bothered by the following problems? (PHQ-4; screen depression and anxiety)

		Not at all	Several days	More than half the days	Nearly every day
1.	Feeling nervous, anxious or on edge	☐0	☐1	☐2	☐3
2.	Not being able to stop or control worrying	☐0	☐1	☐2	☐3
3.	Little interest or pleasure in doing things	☐0	☐1	☐2	☐3
4.	Feeling down, depressed or hopeless	☐0	☐1	☐2	☐3

The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by checking the appropriate box. Here is an example: How often do you feel happy? If you never felt happy, you would respond "never"; if you always feel happy, you would respond "always." (UCLA Loneliness Scale – Brief)

	Statement	Never	Rarely	Sometimes	Always
1.	I lack companionship	☐1	☐2	☐3	☐4
2.	There is no one I can turn to	☐1	☐2	☐3	☐4
3.	I am an outgoing person	☐1	☐2	☐3	☐4
4.	I feel left out	☐1	☐2	☐3	☐4
5.	I feel isolated from others	☐1	☐2	☐3	☐4
6.	I can find companionship when I want it	☐1	☐2	☐3	☐4
7.	I am unhappy being so withdrawn	☐1	☐2	☐3	☐4
8.	People are around me but not with me	☐1	☐2	☐3	☐4