The development and feasibility of a Community Mental Health Education and Detection (CMED) Tool in the Amajuba district, KwaZulu-Natal, South Africa.

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Declaration

I declare that this thesis titled “The development and feasibility of a Community Mental Health Education and Detection (CMED) Tool in the Amajuba district, KwaZulu-Natal, South Africa” submitted to fulfil the requirements of the degree of Doctor of Philosophy at the University of KwaZulu-Natal represents my own original work written by me. Any assistance that I have received during the research has been duly acknowledged. All literature and information sources have been acknowledged in the thesis.

This thesis has not previously been submitted for a degree or any other qualifications to thisor any other institution.

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Date: 1 September 2022

Dedication

I dedicate this work to family; my parents (who are always in my corner) - your love and support have been instrumental to my education and to the person I am. To my husband, Bryan, and children, Alexandra and Ben, for all the weekends and nights I had to work - I could not have done this work without your acceptance and support of my journey.

Lastly, I dedicate this work to Community Health Workers - the unsung heroes of South Africa. The people who are witness to the hardships their communities' face every day, sometimes without much light but who choose to go on.

Acknowledgements

My PhD journey has provided me with a rich learning experience and I am privileged to have been part of such meaningful work, within such a supportive team.

I gratefully acknowledge the supportive mentorship of my supervisor, Professor Inge Petersen. I am extremely grateful for the learning and opportunities that you have provided from both a research and academic level - I could not have asked for a better mentor.

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Abstract

Background

Poor mental health literacy, misinformation about treatment and stigma result in low demand for mental health services in low-and middle-income countries. Community-based interventions that raise mental health awareness and facilitate detection of mental health conditions, are instrumental in increasing demand of available mental health services. The CMED tool was developed to provide psychoeducation on mental health conditions and identify people with potential mental health problems at a household level who may benefit from available mental health interventions.

Aims/Objectives

Objectives of the study were 1) To develop the CMED Tool for adults for use by Ward-based Primary Health Care Outreach Teams (WBPHCOTs) in South Africa aligned with their roles of health promotion, screening and linkage to care; 2) To assess the accuracy of the CMED in identifying patients with a mental health problem and 3) to assess the feasibility of the CMED for use by WBPHCOTs and community members.

Methods

The research was made up of three sub-studies 1) Formative study, 2) an Accuracy study 3) and a Feasibility study. The Formative study (Objective 1) involved engagement with the KwaZulu-Natal Department of Health (KZN DoH) to ensure co-creation of the CMED tool and alignment with routine WBPHCOT activities; adaptation of the CMED tool; review of the CMED vignettes and illustrations by a panel of local and international mental health care experts to establish contextual and cultural relevance; and process mapping and focus group discussions with WBPHCOTs in one district to establish cultural and contextual appropriateness as well as coherence and compatibility with existing community-based services. The Accuracy study (Objective 2) involved assessing the

accuracy of the newly developed CMED against the validated Brief Mental Health screening tool as the gold standard in identifying individuals in households with possible mental health conditions at a community level. The Feasibility study (Objective 3) was assessed using Bowen et al.'s (2009) framework which informed the study design, interview tools and analysis. The feasibility study involved four phases: (1) observations of the CMED consultation to evaluate the administration of the tool; (2) semi-structured interviews with household member/s after the CMED was administered to explore experiences of the visit; (3) follow-up interviews of household members referred using the CMED tool to assess uptake of referrals; (4) and weekly focus group discussions with the community health team to explore experiences of using the tool. Framework analysis was used to inform a priori themes and allow inductive themes to emerge from the data.

Results

The formative study resulted in a co-produced CMED tool consisting of five case vignettes and related illustrations to facilitate psychoeducation and detection of possible depression, anxiety, psychosis, harmful alcohol and drug use by WBPHCOTs. The tool was found to be culturally and contextually appropriate and aligned to the services provided by WBPHCOTs. The accuracy study found the CMED to perform at an acceptable level having a 79% sensitivity and 67% specificity. The feasibility study found the CMED to be acceptable to both community health teams and household members, demand for the tool was evident, implementation, practicality and integration within the existing health system were also indicated.

Conclusion

Collectively, the formative, accuracy and feasibility studies that make up this thesis, provide a valid and feasible tool that enables community health workers to perform their functions at a household level of health promotion, screening and linkage to care in relation to mental health. It enables mental health to be practically integrated at a community level as part of primary health care services through

a people-centered, task sharing approach. This approach is aligned to international guidelines (Sustainable Development Goals) and National policy (South African Mental Health Act and the National Mental Health Framework and Strategic Plan) which call for the integration of mental health into primary health care), as well as the South African District Health System model through the PHC re-engineering strategy and the community-oriented primary care model where care extends from primary health care facilities into the community.

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Acronyms

APC	Adult Primary Care
ART	Antiretroviral therapy
ATTC	South African HIV- Addiction Technology Transfer Centre
AUC	Area under the curve
AUDIT	Alcohol Use Disorders Identification Test
BREC	Biomedical Research Ethics Committee
BMH	Brief Mental Health screening tool
BREC	Biomedical Research Ethics Committee (BREC)
CMD	Common mental disorder
CMED	Community Mental Health Education and Detection Tool
CHW	Community Health Workers
CIDT	Community Informant Detection Tool
COPC	Community-oriented primary care
CQI	Continuous quality improvement
DALYs	Disability-adjusted life-years
DHS	District Health Care System
DHIS	District Health Information System
FGD	Focus group discussion
FN	False negative
FP	False positive
GAD	General Anxiety Scale
GDB	The Global Burden of Diseases, Injuries and Risk Factors Study
HIV	Human immunodeficiency virus
KZN	KwaZulu-Natal

KZN DoH	KwaZulu-Natal Department of Health
LMICs	Low- and middle-income countries
mhGap	Mental Health Gap Action Programme
mhGAP-IG	Mental Health Gap Action Programme Intervention Guide
MhINT	Mental health INTegration package
NDoH	National Department of Health
NHI	National Health Insurance
NPT	Normalisation Process Theory
NPV	Negative Predictive Value
MDGs	Millennium Development Goals
MHCA	Mental Health Care Act
OTL	Outreach Team Leader
PHQ	Patient Health Questionnaire
PHC	Primary health care
PI	Principal investigator
PPV	Positive Predictive Value
PRIME	Programme for Improving Mental Health Care
RA	Research Assistant
ROC	Receiver operating characteristics
SDGs	Sustainable Development Goals
SMhINT	Southern African Research Consortium for Mental health INTegration project
SASH	South African Stress and Health study
TN	True negative
TP	True positive
UKZN	University of Kwazulu-Natal

VISHRAM	Vidarbha Stress and Health Program
WBPHCOT	Ward-based primary health care outreach team
WHO	World Health Organisation
YLD	Years lived with disability

Chapter 1 : Introduction

1.1 Background

Despite increased global commitment to prioritise mental health, most countries continue to face a rising burden of mental health conditions (GDB 2019 Mental Disorders Collaborators, 2022). Low- and middle-income countries (LMICs) in particular face the challenge of combating communicable diseases as well as the rising tide of non-communicable diseases (NCDs) including common mental disorders (CMDs). Poverty, economic and social disparities, conflict and the recent COVID-19 pandemic have placed further strain on communities and health systems in LMICs (Vigo et al., 2020; World Health Organisation, 2022), with mental health systems further weakened through gaps in governance, resources, services and evidence-based information (World Health Organisation, 2022).

Additionally, in many countries mental health lacks integration in primary health care despite the extensive evidence that supports this approach, and it is often side-lined by other public health priority areas such as communicable and other non-communicable diseases, with countries spending less than two percent of their health budget on mental health (World Health Organisation, 2022).

Limited investment in public mental health in LMICs has led to an increasing gap between the services required to treat mental health conditions and the resources available for such a feat (Chisholm et al., 2016). There is an urgent need to close this treatment gap and support integrated primary mental health care through health systems strengthening that addresses both the supply of services at a PHC level and increasing the demand for mental health services in communities, particularly in LMICs (Saraceno et al., 2007).

In the context of high burden of mental health conditions and the scarcity of mental health care resources, many LMICs have responded by adopting policies that embrace task sharing (non-specialists delivering behavioural/pharmacological treatment under specialist supervision) as a means to integrate mental health into PHC (Dua et al., 2011; Patel et al., 2016). However, addressing supply of services alone is inadequate and increasing demand for services to encourage

communities to seek care for their mental health is also needed (Jordans, Luitel, Lund, & Kohrt, 2020; Saraceno et al., 2007). Even when services are available, utilisation particularly in less developed contexts is low (Wang et al., 2007). Barriers include low levels of mental health literacy, lack of information about available mental health services and stigma (Subba, Luitel, Kohrt, & Jordans, 2017). There is a need to extend integration of mental health care to a community level in order to increase a demand for mental health services and to facilitate access to care (Brenman, Luitel, Mall, & Jordans, 2014). Whilst barriers that impact demand for mental health care have been extensively documented, interventions that increase demand at a community level are required (Brenman et al., 2014; Subba et al., 2017).

This study explores the development, accuracy and feasibility of a community mental health education and detection tool for use by community health workers (CHWs) in households in South Africa to assist in the detection of mental health conditions as well as to promote awareness in community understanding of mental health to increase the demand for care.

1.2 Overview of the PhD study

This study formed part of the Southern African Research Consortium for Mental health INTegration (SMhINT) project that has been evaluating the scale-up of a collaborative care package for the integration of mental health into the care provided for chronic care patients at a PHC level in collaboration with the KwaZulu-Natal Department of Health (KZN DoH) using a learning health system approach (Petersen, Kemp, et al., 2021). The study is a National Institutes of Health funded research and capacity-building consortium in Southern Africa that aims to use implementation science to strengthen regional mental health integration into primary health care in under-resourced areas of eastern South Africa, central Mozambique and southern Tanzania. Our consortium partners in SMhINT include the South African Department of Health, University of Washington, Mozambican Ministry of Health and Muhimbili University of Health and Allied Sciences in Tanzania.

The Scale-Up Study is one component of the overall SMhINT study that aimed to examine multi-level influences on the uptake, implementation, effectiveness and sustainability of a collaborative care package for depression, which was the primary research focus of the SMhINT Project (Petersen, Kemp, et al., 2021).

This collaborative care package – known as the Mental health INTegration (MhINT) package used training, support tools/materials, and continuous quality improvement (CQI) (Institute for Healthcare Improvement, 2003; O'Neill et al., 2011) as strategies to implement and scale-up the collaborative care package. The collaborative care model adopted by MhINT [Figure 1] involves a cross-cutting health systems strengthening approach that includes technical intervention to improve the quality of care for chronic patients as well as the development of structures to enhance the functioning of the health system as a whole including district and sub-district level advocacy, supervision and mentorship. Key aspects of the initial MhINT implementation package that has been tested in KwaZulu-Natal include strengthening of professional nurse capacity to identify chronic care patients with comorbid CMDs presenting at PHC facilities; and strengthening of referral pathways, depending on symptom severity to facility-based counsellors for counselling and/or doctors for initiation of psychotropic medication and/or mental health specialists. The facility-based counsellors, identified by the KZN DoH have either been existing HIV counsellors, undergoing training to become auxiliary social workers, or enrolled nurses. These counsellors have been trained in a manualized depression and adherence counselling intervention using a task sharing approach as part of the MhINT package. Continuous quality improvement (CQI) (Institute for Healthcare Improvement, 2003; O'Neill et al., 2011) has been used as the vehicle to improve implementation and to facilitate scale-up. CQI has been used successfully in a South African context to improve management and supervision of health programmes (Horwood et al., 2017; Webster et al., 2012; Youngleson et al., 2010). MhINT was implemented in the Amajuba District in KwaZulu-Natal since September 2017. From September 2017 to September 2019, nurses in PHC identified and initiated up to 3260 patients into the depression and adherence counselling

psychosocial intervention. Of these, more than 80% have comorbid HIV and are enrolled on the ART programme.

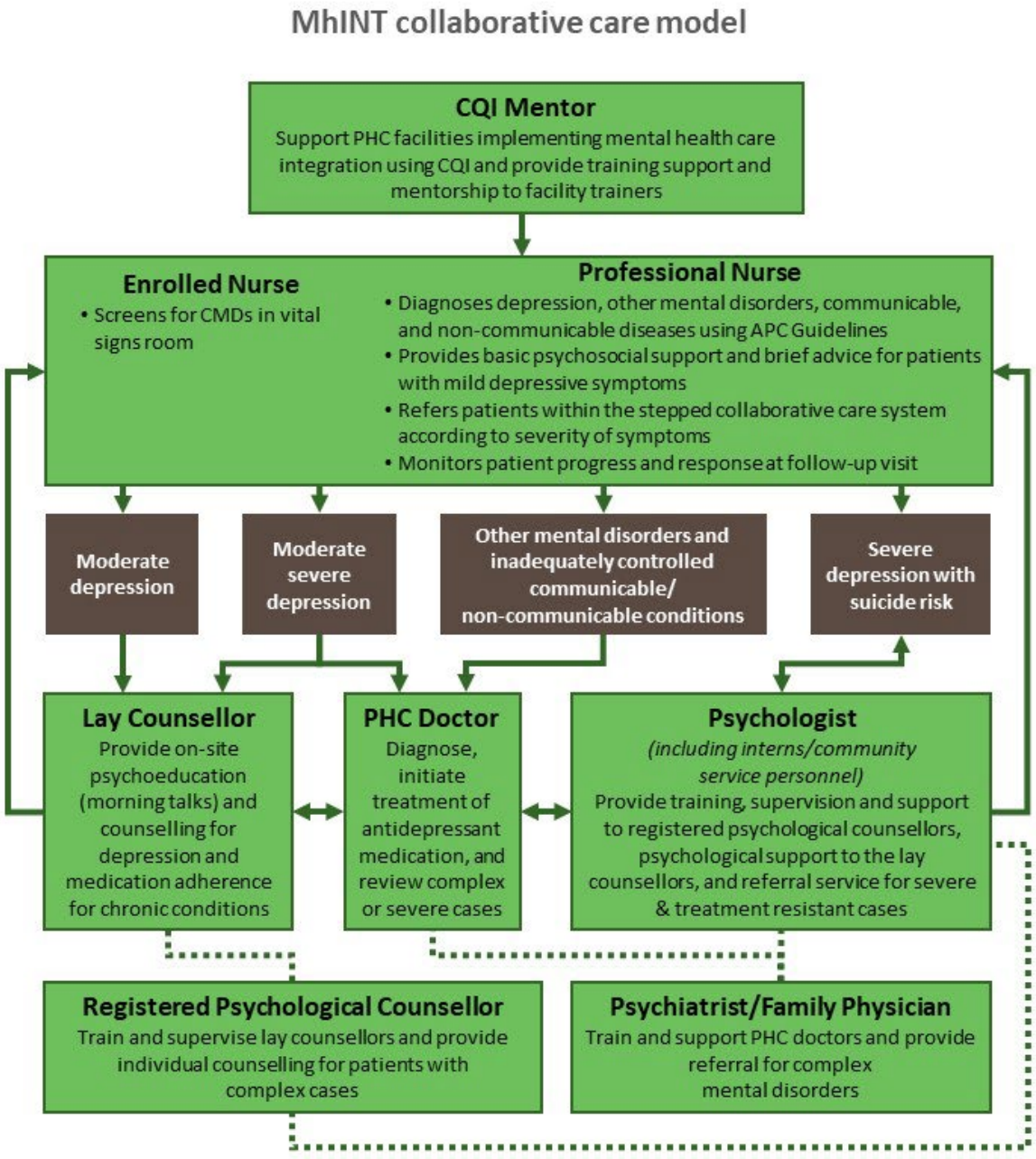


Figure 1: MhINT Collaborative Care Model

SMhINT builds on years of investment into several rigorous research programs focused on integrating mental health care into primary health care systems in sub-Saharan Africa, including the Programme for Improving Mental Health Care [PRIME] (Petersen et al., 2019; Petersen et al., 2018; Petersen et al., 2016; Petersen, Fairall, et al., 2021), which focused on the development, implementation and evaluation of a collaborative care model for integrated depression care with chronic care in the PHC system. SMhINT leverages the ongoing scale-up of the PRIME model for mental health integration through the MhINT collaborative care package, by layering a research program on the MhINT scale-up, and using implementation science within a learning health system approach to iteratively evaluate and strengthen the ongoing scale-up (Petersen, Kemp, et al., 2021).

Through this learning health system approach, the need for an intervention to strengthen identification of CMDs at a community level and improve mental health literacy in households was identified as a gap in the original MhINT model by the first stage evaluation of the original package (Kemp et al., 2021), and supported by the KZN DoH. The KZN DoH thus requested the SMhINT team to strengthen the MhINT package to include resources for ward based PHC outreach teams (WBPHCOTs) to identify community members with possible mental health conditions during their routine household visits. This led to the development of the Community Mental Health Education and Detection (CMED) tool for use by community health workers at a household level in 2019. Given the low levels of mental health literacy in South African communities as well as the screening and health promotion role of CHWs (Andersson et al., 2013; Ganasen et al., 2008; Hugo, Boshoff, Traut, Zungu-Dirwayi, & Stein, 2003), it was agreed that psychoeducation be included as part of this tool to raise mental health awareness. This was deemed important to improve demand for services, with the MhINT intervention having focused largely on improving the supply side of services. The strengthened MhINT intervention is outlined in Figure 1.

At the time of the study there was no standardized community mental health psychoeducation and detection tool available in South Africa, hence the need to develop and assess the accuracy and feasibility of such a tool.

1.3 Aim and objectives

The aim of this study was to develop and assess the accuracy and feasibility of a Community Mental Health Education and Detection (CMED) Tool in screening for mental health conditions for adults at a community level in the Amajuba district, KwaZulu-Natal, South Africa. The research aimed to contribute towards the body of evidence of how mental health can be included at a community level of care within an existing health system.

The study was divided into three phases 1) Formative study 2) Accuracy study and 3) Feasibility study, with related objectives for each phase (Table 1).

Table 1: Study objectives

Formative Study	Accuracy Study	Feasibility Study
Objective 1: To develop and review the Community Mental Health Education and Detection (CMED) Tool.	Objective 2: To assess the accuracy of the CMED in identifying patients with a positive mental health condition.	Objective 3: To assess the feasibility of the CMED to health workers and community members.

1.3.1 Formative Study

Objective 1: To develop and review the Community Mental Health Education and Detection (CMED) Tool.

Publication: The development of a Community Mental Health Education and Detection (CMED) Tool in South Africa.

Authors: Merridy Grant, Zamasomi Luvuno, Arvin Bhana, Ntokozo Mntambo, Sithabisile Gigaba, Ellen Ntswe and Inge Petersen.

Edited version published in Social Science and Medicine Mental Health, 2021

https://doi.org/10.1016/j.ssmmh.2021.100023.

The formative study is linked to objective one and is described in detail in the publication titled 'The development of a Community Mental Health Education and Detection (CMED) Tool in South Africa' in Chapter Four. The Formative Study gives an in-depth account of the CMED development and review. Four processes are outlined including the co-creation of the CMED tool with the KZN DoH, the adaption of the Community Informant Detection Tool (CIDT) used to promote help-seeking of people with mental health problems in Nepal, expert panel review of the CMED, and in-depth review of the tool by Ward Based Primary Health Care Outreach Teams (WBPHCOTs). The final CMED tool is included in Chapter Five.

1.3.2 Accuracy Study

Objective Two: To assess the accuracy of the CMED in identifying patients with a positive mental health condition.

Manuscript: Accuracy of a Community Mental Health Education and Detection (CMED) Tool for Common Mental Disorders in KwaZulu-Natal, South Africa.

Authors: Merridy Grant, Inge Petersen, Londiwe Mthethwa, Zamasomi Luvuno, Arvin Bhana.

Edited version published in the International Journal for Mental Health Systems, 2022

https://ijmhs.biomedcentral.com/articles/10.1186/s13033-022-00554-7

The accuracy study is linked to objective two and is described in detail in Chapter Five. The accuracy study is an evaluation of the accuracy of the CMED tool in identifying mental health conditions. The CMED was compared against the validated BMH tool in order to determine accuracy.

1.3.3 Feasibility study

Objective Three: To assess the feasibility of the CMED to health workers and community members.

Manuscript: The feasibility of a Community Mental Health Education and Detection (CMED) Tool in South Africa.

Authors: Merridy Grant, Arvin Bhana, Tasneem Kathree, Nonkululeko Khuzwayo, André J van Rensburg, Londiwe Mthethwa, Sithabisile Gigaba, Ellen Ntswe, Zamasomi Luvuno, Inge Petersen.

Submitted for consideration to Social Science and Medicine Mental Health, 2022.

The feasibility study is linked to objective three and is described in Chapter Six. The feasibility of using the CMED in households including the acceptability of the tool to household members at WBPHCOTs, demand for the tool by household members, as well as assessing the implementation and practicality of the tool and the integration of the tool within the existing health system.

Chapter 2 : Literature Review

2.1 Background

The past decade has seen a global commitment to prioritise mental health through the adoption of international frameworks to improve mental health outcomes placing mental health on the global agenda (World Health Organisation, 2022). The most notable of these being the inclusion and endorsement of mental health in the United Nations Sustainable Development Goals (SDGs) in 2015. Mental health falls under Good Health and Wellbeing (Goal 3) and emphasises the need for mental health care in achieving universal health coverage (Lund et al., 2018). Universal health coverage refers to the right of all people to access health care without experiencing financial hardship (Robertson, Chiliza, Janse van Rensburg, & Talala, 2018). The inclusion of mental health was a historic step given that mental health had been absent from the Millennium Development Goals (MDGs) which preceded the SDGs, despite evidence of the global impact on human suffering and economic burden due to mental illness (Votruba & Thornicroft, 2016). Through the endorsement of mental health in the SDGs the United Nations member states formally acknowledged the burden of disease of mental illness, suggesting increased commitment by governments to prioritise the prevention and treatment of mental health (Moitra et al., 2022; Votruba & Thornicroft, 2016). Additionally, many countries have also developed their own national mental health policies and programmes to address mental health needs at a country level (World Health Organisation, 2022).

Mental health conditions are one of the most significant public health challenges given their impact on the global burden of disease (Patel et al., 2018). Burden of disease research estimates how much disease affects (burdens) the life of a population and is used to assess the global burden of disease by calculating years lived with disability (YLD) and disability-adjusted life-years (DALYs). DALYs combine in one consistent metric the burden from mortality (years of life lost due to premature death due to disease) and morbidity (years of life lived adversely affected by disease e.g. disability) [Figure 2 (Nuffield Trust, 2019)].

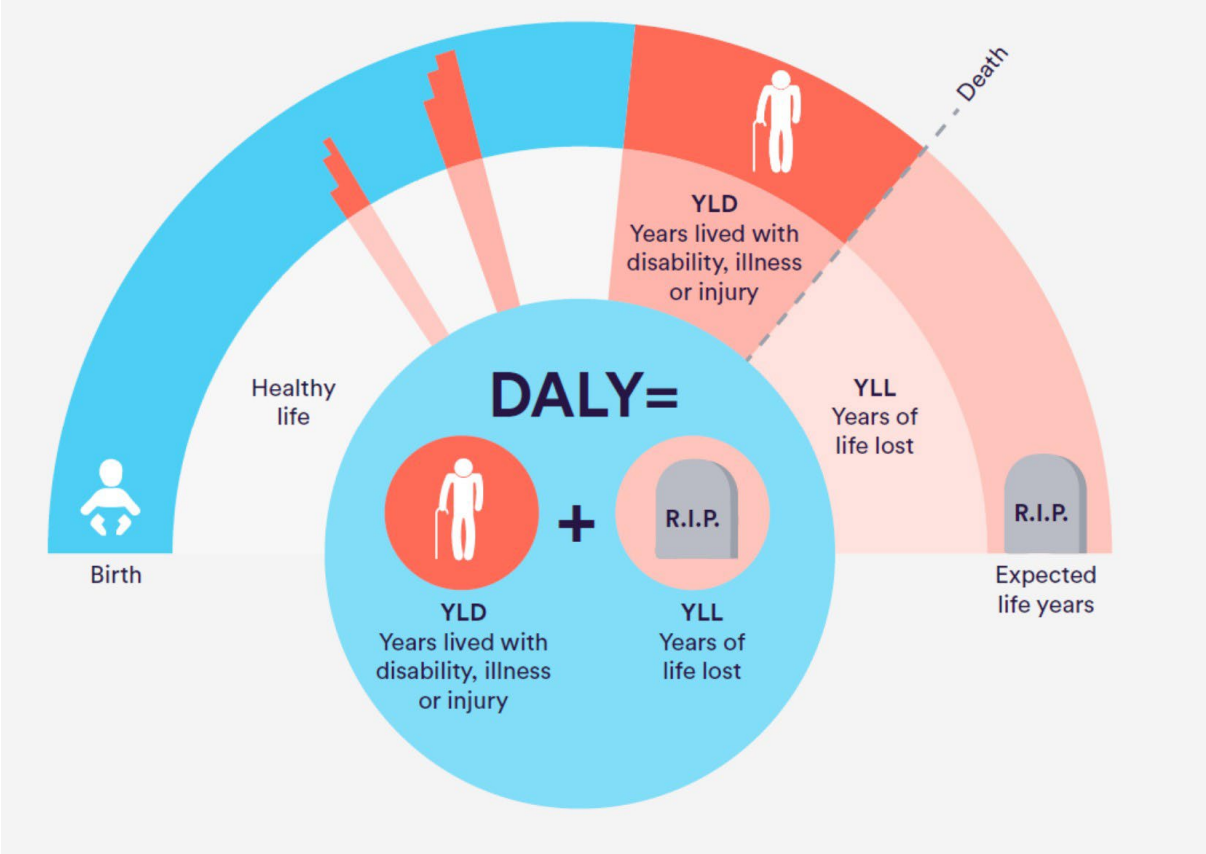


Figure 2: DALY measurement (Source: Public Health England (2015) as cited in Nuffield Trust (2019). Reproduced under Open Government Licence.

The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019 is a comprehensive international effort that includes the measurement of the burden of mental health conditions. However, the approach used by the GBD Group to calculate DALYs underestimates the burden of mental illness as its classification of mental illness is problematic, for example, mortality due to mental illness is not included at all in the calculations (Vigo, Jones, Atun, & Thornicroft, 2022) . Vigo et al. (2022) reanalysed the DALYs using an alternate framework and found that, overall, mental health conditions (mental, neurological, substance use disorders and suicide) account for 13% of the total disease burden rather than the much lower percentage of 4.9% reported by the GBD collaborators. The burden of mental health is, thus, similar to that of cardiovascular disorders (15.5%), and more than cancer (9.9%) and respiratory disorders [4.15, See Figure 3] (Vigo et al., 2022) and should be prioritised. Depression and anxiety fall in the top ten causes of YLDs [with

depression falling in second place](World Health Organisation, 2022). There has also been no evidence of global reduction in the mental health disease burden since 1990 (GDB 2019 Mental Disorders Collaborators, 2022). This data is important because DALYs are used by decision makers to plan health system strengthening interventions and to allocate budgets to priority disease areas. Mental health has historically and consistently been underfinanced and poorly managed globally and these findings highlight the importance of the prioritisation of mental health and the need for quality information to guide implementation (Vigo et al., 2022).

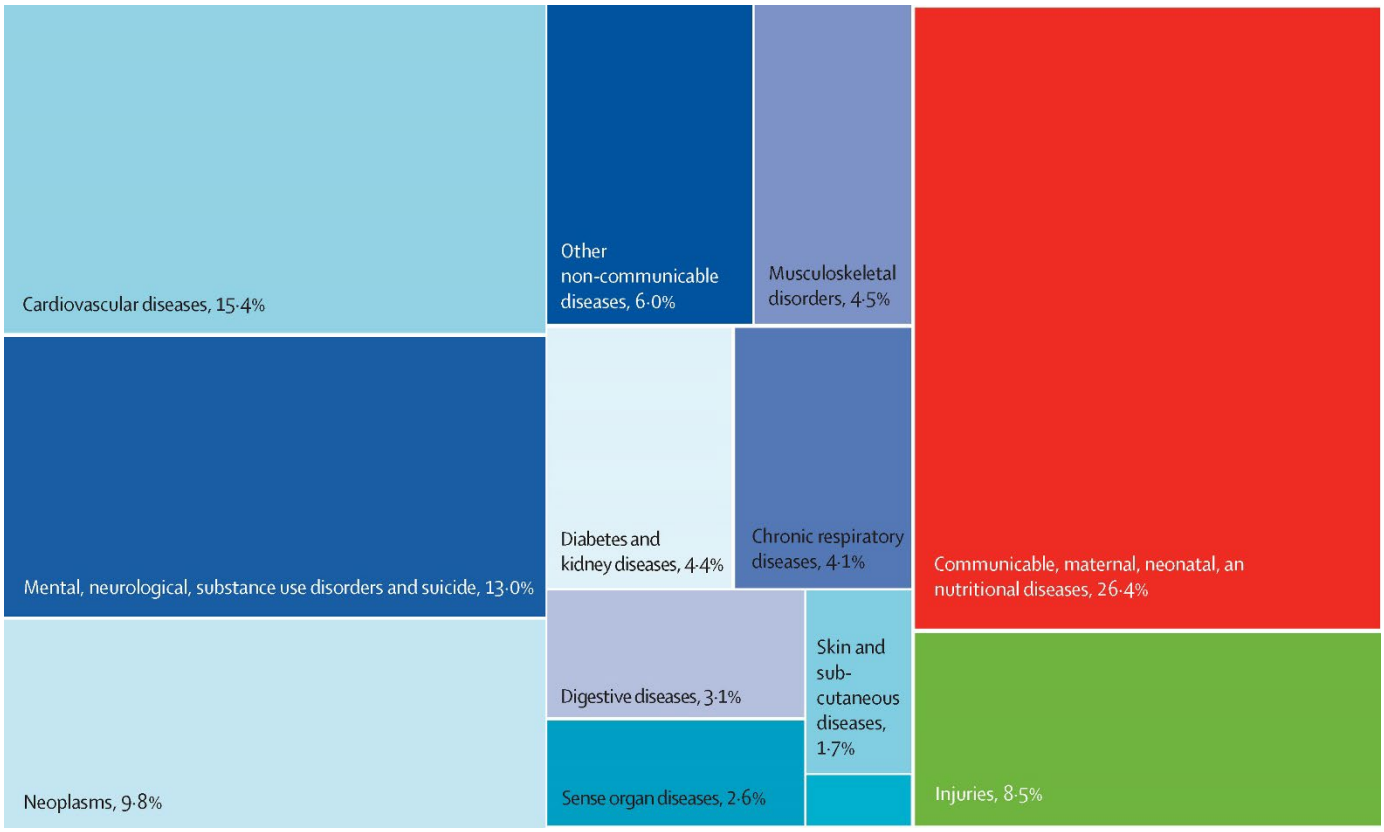


Figure 3: Disease Burden: re-estimation of DALYs (Vigo et al. 2022, p. 99)

It is also projected that the disability burden from mental health conditions will increase by 130% in the next 40 years (Charlson, Diminic, Lund, Degenhardt, & Whiteford, 2014). Untreated mental health conditions also have a far-reaching economic impact on society, costing the global economy US $2.5 trillion in 2010, with the majority of this cost due to lost productivity and unemployment with health care costs just taking up a third of this amount (Bloom et al., 2012). Projections for

2030 estimate that the cost of untreated mental health conditions to double; this is more than the cost of cancer, diabetes and chronic respiratory diseases combined (Bloom et al., 2012).

The high comorbidity of CMDs with chronic medical conditions also threatens to compromise the huge global investment in chronic health care through interference of CMDs with adherence and self-care (Gonzalez, Batchelder, Psaros, & Safren, 2011; Leserman, 2008; Prince et al., 2007). Results from surveys in 60 countries revealed that patients with NCDs were three times more likely to suffer from comorbid depression and co-existing depression resulted in greater health decrements than when only one condition was present (Moussavi et al., 2007). Mental health conditions have a mutually reinforcing relationship with NCDs, compromising both prevention and treatment through exacerbating modifiable risk factors and compromising adherence and self-care respectively (Prince et al., 2007). HIV is associated with a twofold increased risk for major depressive disorder compared to being HIV negative (Ciesla & Roberts, 2001). Comorbid depression in people living with HIV reduces adherence to antiretroviral treatment (ART) twofold (Gonzalez et al., 2011; Nakimuli-Mpungu et al., 2012). There is also a higher prevalence of alcohol misuse among people living with HIV and alcohol use detrimentally affects ART adherence and also accelerates disease progression through a direct effect on CD4+ cells (Fisher, Bang, & Kapiga, 2007; Neuman, Schneider, Nanau, & Parry, 2012). With respect to tuberculosis (TB), there is strong evidence of the relationship between alcohol use and TB, with alcohol use being associated with poorer outcomes as a result of treatment irregularity (Rehm et al., 2009). With regard to TB and depression, a review of cross-sectional studies in LMICs reveals a high prevalence of comorbid depression, ranging from 10% to 52% (Ambaw, Mayston, Hanlon, & Alem, 2015). Comorbid TB and depression are also associated with treatment irregularity, higher morbidity and mortality, and antibiotic drug resistance (Sweetland, Oquendo, Wickramaratne, Weissman, & Wainberg, 2014).

Despite mounting evidence that mental health affects all countries and has high costs if left untreated, and despite the prioritisation of mental health in theory (through the commitment to SDGs and mental health policy), in practice countries on average, spend less than two percent of their health budget on the treatment and prevention of mental health (World Health Organisation, 2022).

According to the WHO (World Health Organisation, 2022) political will includes three types of commitment 1) **Expressed commitment:** how widely decision-makers publicly support the issue; 2) **Institutional commitment:** the development of policies, plans and programmes to implement the stated intent and 3) **Budgetary commitment:** the funds allocated to the issue. Mental health systems particularly in LMICs are negatively impacted by:

- poor governance through a lack of institutional commitment particularly the absence of mental health on the policy agenda
- lack of public mental health leadership (expressed and institutional)
- lack of allocation of resources and services for mental health (human, infrastructure, medication) [Budgetary Commitment]
- poor quality information: lack of routinely collected mental health data needed to inform health systems strengthening and budgeting [Institutional commitment] (World Health Organisation, 2022).

As a result, a major discrepancy exists between the number of people needing treatment for mental health conditions and the number receiving treatment. This is known as the mental health treatment gap and it represents a significant barrier to public health and reaching the goal of universal health coverage (Evans-Lacko et al., 2018). The treatment gap is particularly a challenge in LMICs where it is estimated to be up to 90% in less-developed countries (Moitra et al., 2022; Vigo et al., 2020).

2.1.1 Addressing supply of mental health care services

The treatment gap is compounded by severe shortages of mental health professionals in LMICs that have fewer than one mental health worker of any kind per 100 000 population compared to 60 per 100 000 in high income countries, with the global average being 13 per 100 000 (World Health Organisation, 2022). Mental health conditions place immense pressure on LMIC health systems, which already face significant challenges associated with poverty, conflict and communicable diseases (World Health Organisation, 2022). A summary of barriers to supply of mental health services are included in Box 1:

- High burden of disease (World Health Organisation, 2022)
- Lack of political will and mental health leadership (World Health Organisation, 2022)
- Under-resourced health facilities (staff, infrastructure and medication)(World Health Organisation, 2022)
- Health professionals lack mental health knowledge (World Health Organisation, 2022)
- Pressured PHC services where health professionals have multiple tasks, high patient loads, limited support and mentorship (Kemp et al., 2021)
- Limited mental health workers (counsellors, psychologists, psychiatrists) (World Health Organisation, 2022)
- Lack of appropriate mental health screening tools (Subba et al., 2017)

Box 1: Summary of barriers to supply of mental health services at a PHC level

Mental health conditions share many commonalities with other chronic diseases in terms of their determinants, they frequently co-occur, can be a precursor or consequence of a physical chronic disease, interact to exacerbate co-existing conditions, and consequently escalate negative public health, social and economic impacts (World Health Organisation, 2014). Following the World Health Organisation's (WHO) Global Mental Health Action Plan (World Health Organisation, 2013) call for integrated health care systems, catering for people's overall health care needs, as an

efficient way of preventing and managing mental health conditions and other chronic diseases, different models of integrated care have been adopted (van Rensburg & Fourie, 2016).

In the context of limited availability of mental health specialists, many LMICs, including South Africa, have responded by adopting policies that embrace task sharing (non-specialists delivering behavioural/pharmacological treatment under specialist supervision) as a means to integrate mental health into PHCs. There is ample evidence of the effectiveness and cost efficiency of a task-sharing approach to managing mental health care in LMICs (Patel et al., 2016; Patel et al., 2018).
In task sharing approaches, diverse providers adopt different but complementary roles in the provision of mental health services, using resources in a cost effective way to provide mental health care services to the population (Figure 4). In this model mental health specialists need to diversify their skills in supporting and upskilling general health workers at a primary health care level, and PHC workers in turn need to learn new mental health skills and embrace the inclusion of mental health services into their routine package of services at a PHC level (Ryan, 2019; World Health Organisation, 2022). The PHC system serves the majority of the public and a task sharing approach to mental health, such as non-specialist counselling, is required particularly in LMICs where specialist resources are scarce (Ryan, 2019) (World Health Organisation, 2003). At this level costs remain relatively low and CMDs such as depression, anxiety and substance use disorders can be effectively managed without moving to a costly specialist level of care (Ryan, 2019; World Health Organisation, 2022). The next level of care includes community workers (community health workers, social workers, lay counsellors) who also need to include mental health services into their community package of services to ensure the delivery of mental health care (screening, promotion and prevention of mental health conditions) at a community level (World Health Organisation, 2022). This is important as many people do not seek care at health facilities for their mental health and thus interventions are required at a community and household level in order to increase mental awareness, detection and referral for care. The last level of care refers to individuals (with or

without mental health conditions) and everyday management of stress through self-care and self-identification of mental health problems as they arise (Ryan, 2019; World Health Organisation, 2022).

This tiered model of task sharing is imperative for the realisation of SDG 3 which calls for the prioritisation of the prevention and treatment of mental health conditions towards achieving universal health coverage in LMICs (World Health Organisation, 2022).

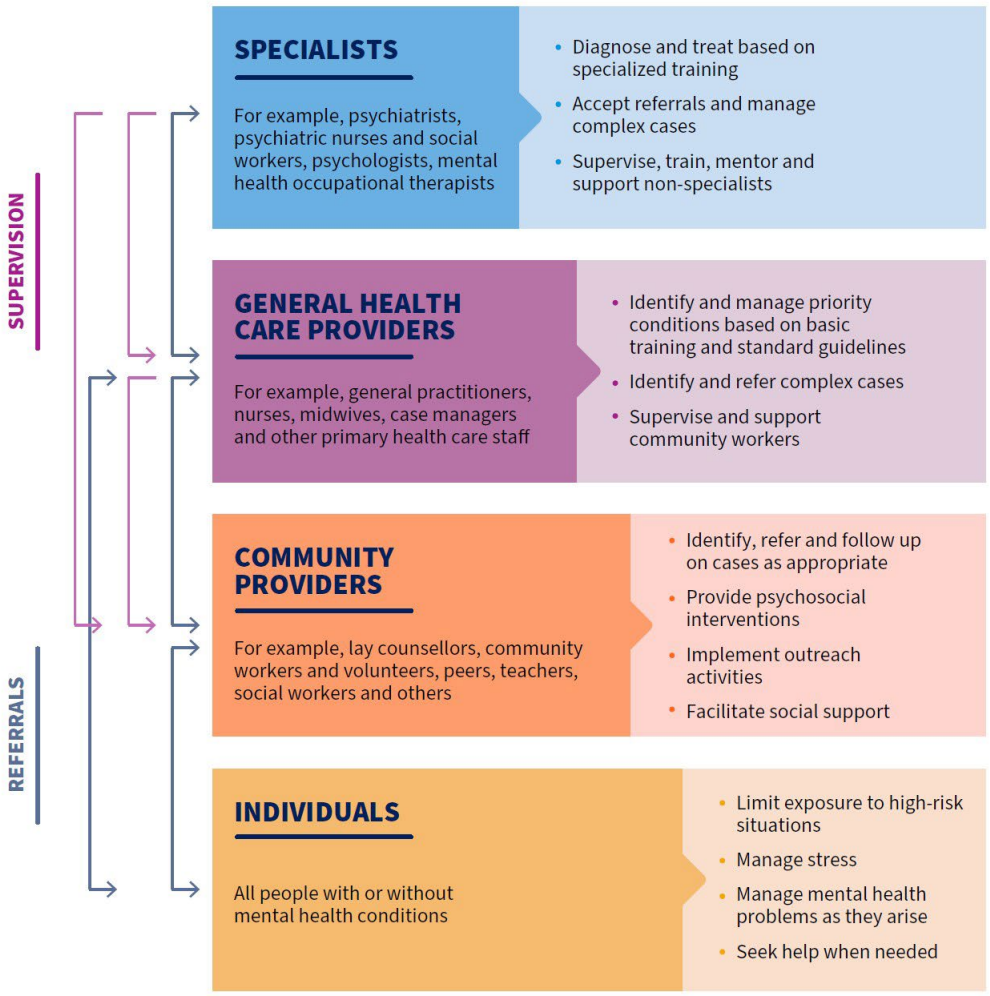


Figure 4: Tiered system of mental health care (Source World Health Organisation, 2022, p. 134)

The WHO optimal mix of mental health services developed in 2003 (Figure 5) is also helpful in guiding countries on how best to organise mental health services in health systems (World Health

Organisation, 2003). The pyramid shows that the majority of mental health care can be addressed through informal services at a low cost through individually managed self-care strategies and informal community care networks (community groups, religious groups, schools). This is because most people experience time limited distress and can benefit through self-care strategies and support from their family and community (Ryan, 2019).

If people require formal mental health support, the next level of care is the provision of mental health care services through the PHC system where the majority of CMDs can be effectively treated as described above in the tiered approach to care. The WHO considers community mental health services available through PHC facilities as part of the PHC level of care [e.g. CHWS linked to PHC facilities] (World Health Organisation, 2022). The next level of care includes community mental health services and psychiatric hospital services. Community care in this sense relates to services that support the integration of people discharged from specialist care back into their communities such as community mental health centres, psychosocial rehabilitation programmes and small scale residential facilities etc. (World Health Organisation, 2003, 2022). Specialist services form the tip of the pyramid and are the most costly service and serve a small group of people in need of specialist care for severe mental disorders (World Health Organisation, 2003).

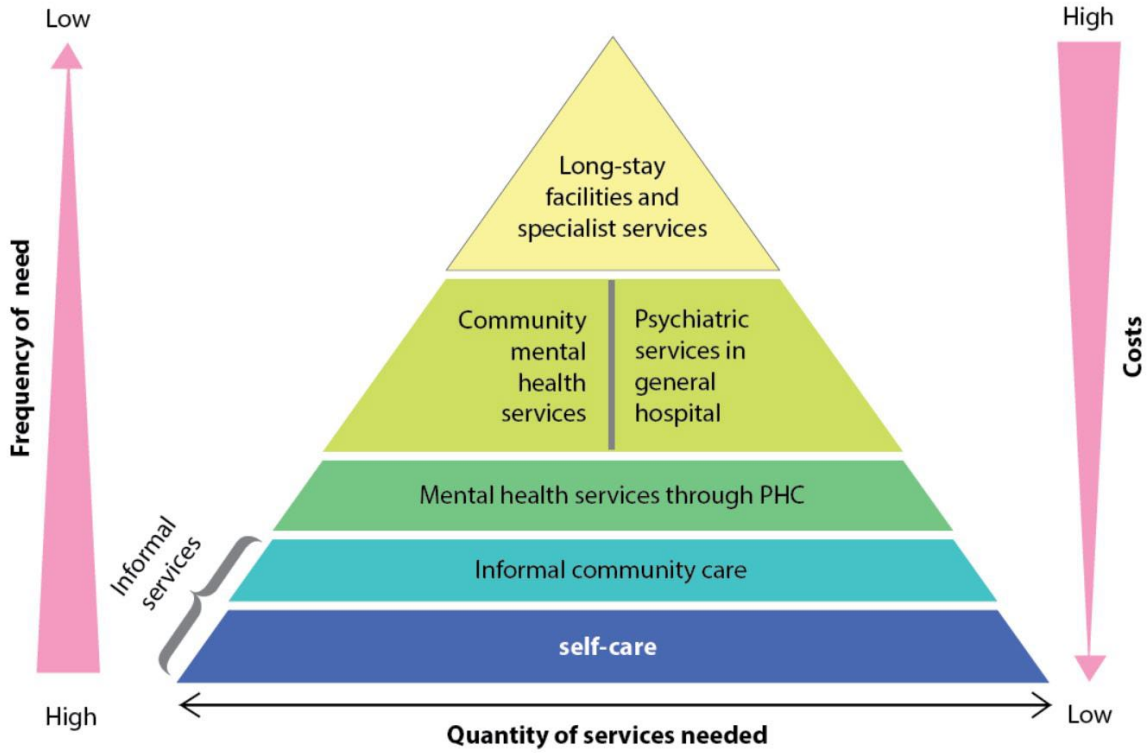


Figure 5: WHO optimal mix of services pyramid (WHO, 2003, p. 1)

2.1.2 Barriers to demand for care

In addition to addressing the availability (supply) of mental health services, there is also a need to strengthen uptake (demand) for services to address the treatment gap (Jordans, Kohrt, Luitel, Komproe, & Lund, 2015; Shidhaye et al., 2017; Subba et al., 2017). Many people with mental health conditions do not seek care due to poor mental health literacy, which includes a lack of information and knowledge about the signs and symptoms of mental health problems, a lack of awareness of service availability, stigma and misinformation about treatment (Egbe et al., 2014; Ganasen et al., 2008; Patel, 2007; Saraceno et al., 2007; Shidhaye et al., 2017; World Health Organisation, 2022).

Supply

In LMICs the lack of good quality mental health services, particularly at a primary health care level, supresses the demand for services (World Health Organisation, 2022). Barriers such as geographic

location, transport and treatment costs and available treatment for mental health conditions at the PHC facility level are all factors that impact on peoples' ability to access to care (World Health Organisation, 2022). Low quality mental health services also pose as barriers to demand for care as past negative experiences of mental health services, distrust of health workers' ability to keep information confidential and distrust in treatment for mental health all impact a person's willingness to seek care and disclose their mental health problem (Shidhaye et al., 2017; World Health Organisation, 2022).

Mental health literacy

The term 'Mental Health Literacy' was first used by Jorm et al. (1997) to describe knowledge and beliefs about mental health conditions which assist in their prevention, identification and treatment (Jorm et al., 1997). While Jorm et al.'s (1997) research is located in high income contexts, Ganasen et al.'s (2008) work in LMICs expands this definition by arguing that mental health illiteracy is not only about a lack of knowledge of mental health conditions and treatments but "may also mean that the knowledge and beliefs held may be derived from other sources, such as superstitions or cultural and personal beliefs" (2008, p. 23). In a review of mental health literacy in developing contexts it was found that public knowledge of mental health as a medical condition was poorly understood and commonly attributed to life stressors or supernatural causes, with little understanding of the biological basis of some conditions and treatment options (Ganasen et al., 2008; Wellcome Trust, 2020).

A lack of mental health knowledge impacts uptake of available treatment and increases the disease burden in communities (Dang, Lam, Dao, & Weiss, 2021; Ganasen et al., 2008; Shidhaye et al., 2017). Evidence from LMICs indicate that mental health awareness interventions at a community level do contribute to increased demand for mental health services at a health facility level (Shidhaye et al., 2017). The Vidarbha Stress and Health Program (VISHRAM), a community-based mental health programme in rural India targeting risk factors (depression and substance

abuse) for suicide found that raising mental health awareness at a community level led to significant improvements in mental health literacy and an increased demand for mental health services at a facility level (Shidhaye et al., 2017).

Innovative interventions that consider context (including family and cultural belief systems/understandings) and build on existing knowledge are required in order to increase mental health literacy so communities are better equipped to prevent, recognise and seek treatment for mental health conditions (Dang et al., 2021; Ganasen et al., 2008; Shidhaye et al., 2017).

Strengthening skills in self-care is also an important component of helping people manage their mental health as most people experience some kind of distress in their lifetime and benefit from self-care strategies and support from their community (World Health Organisation, 2022). This is reflected in the tiered system for mental health care (Figure 4) and the WHO's optimal mix of mental health services (Figure 5), and provides a foundation for mental health care. It is thus important that mental health interventions promote self-care strategies (what people can do at home for their mental health) at a community level (World Health Organisation, 2003, 2022).

Stigma

Goffman (1963), in his classic definition, refers to stigma as "an attribute that is deeply discrediting" (p. 3) where an individual is disqualified from full social acceptance and is reduced "from a whole and usual person to a tainted, discounted one" (p. 9) (Goffman, 1963). Further, stigma includes the knowledge, negative attitudes and behaviours toward or by (self-stigma) an individual or group deemed as unacceptably different (Clay, Eaton, Gronholm, Semrau, & Votruba, 2020; Henderson & Thornicroft, 2009).

Globally, mental health stigma is widespread (Pescosolido, Medina, Martin, & Long, 2013), with the negative impact on people living with mental health conditions well documented in the literature (Clay et al., 2020). Stigmatising misconceptions about mental health are common with people living with mental health conditions often labelled as lazy, difficult, violent or crazy; these

misconceptions are often excerbated by the media where people with mental health conditions are portrayed as dangerous or irresponsible (Corrigan & Watson, 2002; World Health Organisation, 2022), when in fact people with mental health conditions are more at risk of being harmed or self-harming (Thornicroft, 2013). A study on stigma and discrimination experienced by service users in South Africa found that stigma is perpetuated by family, friends, community members and health workers and is often caused by misconceptions about mental illness leading to delays in accessing care, worsening symptoms and delays in recovery (Egbe et al., 2014).

The extent of stigma is far reaching and in some cases people living with mental health conditions find the stigma associated with their condition more difficult to deal with than the disorder itself (Henderson & Thornicroft, 2009), choosing to deal with the distress of their condition rather than to seek treatment and risk discrimination (World Health Organisation, 2022). As a result, stigma poses a significant barrier to the demand for mental health care services (Clay et al., 2020; World Health Organisation, 2022), and interventions targeted at raising mental health awareness in communities are imperative in addressing stigma (Egbe et al., 2014).

2.1.3 Community-level detection of mental health problems

Evidence suggests that detection and treatment initiation of mental health conditions can be improved through improving demand for services. Through improving communities understanding of mental health problems, community identification and awareness of service availability, help seeking and service utilization can be improved (Jordans et al., 2020; Shidhaye et al., 2017) .

Validated screening tools for depression and other CMDs are indicated to improve detection of CMDs in PHC (O'Connor, Whitlock, Beil, & Gaynes, 2009), and have been shown to improve detection of CMDs at a community level and are an important first step along the treatment cascade to reduce the treatment gap (Jordans et al., 2020; Shidhaye et al., 2017). It is important that screening tools developed are culturally appropriate (Bass, Bolton, & Murray, 2007) particularly

when used at a community level (Subba et al., 2017). Checklist based screening tools are mostly developed in high income contexts and often lack cultural sensitivity (Bass et al., 2007).

Detection at a community level by lay workers using an alternative prototype matching approach has been found to promote mental health service use in developing contexts (Jordans et al., 2015; Jordans et al., 2020; Shidhaye et al., 2017). In Nepal a community informant detection tool (CIDT) was validated to assess how accurate the CIDT procedure was in identifying people with CMDs. Sixty-four percent of community members that the community workers identified as probable cases for a mental health problem using the CIDT were actually positive cases based on clinical interviews, and community workers were accurately able to identify 93% of people as negative cases (Jordans et al., 2015). Furthermore, a randomised pragmatic control trial of the CIDT showed that it increased service utilisation and initiation on treatment for mental health by 47% (Jordans et al., 2020). The VISHRAM program in India combined detection of CMDs at a household level using a tool adapted from the Nepal CIDT along with a mental health awareness campaign where mental health information was disseminated in groups in the community and at household level with families (Shidhaye et al., 2017).

This approach of combining mental health education with detection in communities is important as it facilitates community member engagement in their care starting with an understanding of why they have received a referral and the care options available. This is aligned with the WHO's calls for greater service user engagement in their care where service users take responsibility and become co-producers of their health and wellbeing as part of a person-centred approach to care where people are informed and empowered in promoting and protecting their own health (World Health Organisation, 2007, 2016b). Patient engagement refers to the "facilitation and strengthening of the role of those using services as co-producers of health, and health care policy and practice" (World Health Organization, 2016, p. 3) and in LMICs patient and family engagement begins with

educating and empowering people to understand and recognise their health needs and to seek health care in a timely manner as part of a person-centred approach to care (World Health Organisation, 2016b). Engaged patients are better able to make informed decisions about their care options and resources are better utilized if they are aligned with patients' priorities (World Health Organisation, 2016b).

2.2 The South African Context

The legacy of Apartheid meant that the post-apartheid Government inherited a highly fragmented health system, characterised by discriminatory health service provision depriving black South African's of equitable health care (Ntsaluba & Pillay, 1998). Infrastructure and services were better resourced for white patients compared to black patients, rural health care was under resourced as compared to urban health care, and tertiary health services were prioritised over primary health care services (Mayosi & Benatar, 2014; Ntsaluba & Pillay, 1998). The end of apartheid in 1994 put health care reform high on the country's development agenda, with a significant departure from the centralised, discriminatory health care system favoured by the Apartheid Government to a decentralised national health care system based on the District Health System model, with the aim of promoting accessible and affordable primary health care to all South Africans (Burger & Christian, 2020; Mayosi & Benatar, 2014). These reforms were aligned to the 1996 South African Constitution enacted after the end of Apartheid, with the universal right to access to care provided for in Section 27 of the Constitution (Republic of South Africa, 1996).

The health disparities during Apartheid have significantly impacted the current health care situation in South Africa (Ataguba, Akazili, & McIntyre, 2011; Burger & Christian, 2020; Mayosi & Benatar, 2014). Despite considerable progress in addressing past inequities most South African's are impacted by "the burden of infectious and non-communicable diseases, persisting social disparities, and inadequate human resources to provide care for a growing population with a rising tide of refugees and economic migrants" (Mayosi & Benatar, 2014, p.1344).

South Africa has a two-tiered and highly unequal health care system made up of a public and private health system (Robertson et al., 2018). The public health system is state-funded and caters to the majority of the population (85%) whilst the smaller private health system serves the affluent minority, with the majority of South Africans unable to afford the high cost of private care (Docrat, Besada, Cleary, Daviaud, & Lund, 2019). When combining the public and private health sector budgets, despite the public health system serving the majority of South Africans, only 40 % of this total amount falls within the public health sector portion and is vastly underfunded to meet health care needs (Docrat et al., 2019). South Africa also has one of the highest rates of HIV/AIDS and TB in the world (Abdool Karim, Churchyard, Karim, & Lawn, 2009), contributing further to the overburdened and under-resourced health system.

The public health sector is made up of primary, secondary and tertiary level services that are managed at a District and Provincial level, falling under the overall governance of the National Department of Health (Malakoane, Heunis, Chikobvu, Kigozi, & Kruger, 2020). The District health care system (DHS) is guided by the 1978 Alma Ata Declaration on PHC and forms the vehicle for delivery of health services to the public using a PHC approach (KwaZulu-Natal Department of Health, 2019). The DHS model is underpinned by public health and community-oriented primary care (COPC) principles and is guided by the PHC re-engineering strategy, where PHC extends from PHC facilities to community wards and households through health promotion and prevention services with the goal of achieving optimal health for all communities (KwaZulu-Natal Department of Health, 2019). The PHC re-engineering strategy involves a shift from vertical to horizontal programming to bring about integrated care.

The PHC level of care includes a large network of PHC facilities that are principally nurse-led, supported by PHC doctors, with WBPHCOTs delivering health promotion and screening at a community level. There is a high coverage of both professional and specialist nurses in South

Africa; 80 per 100 000 and 27.3 per 100 000, respectively, and they are well placed to deliver mental health services given the extreme shortages of mental health workers [0.31 public sector psychiatrists per 100 000 and 0.97 public sector psychologists per 100 000] (Docrat et al., 2019) and public health sector doctors [25 per 100 000] people (Academy of Science of South Africa, 2021) in South Africa.

South Africa faces a severe mental health burden with over 30% of South African's experiencing a CMD (depression, anxiety or substance use) in their lifetime (Herman et al., 2009). South Africa is plagued by socio-economic inequities (Gordon, Booysen, & Mbonigaba, 2020) and poverty part of which is due to the legacy of apartheid (Fransman & Yu, 2019). This is compounded by high rates of crime, with a murder rate of 32.2 per 100,000 in 2013/2014 (5 times higher than the global average) and one of the highest sexual violence rates in the world (Bantjes, Kagee, McGowan, & Steel, 2016). A study conducted with university students in South Africa found that ninety percent of university students reported at least one traumatic event in their lifetime (McGowan & Kagee, 2013). These social determinants of mental health (social and economic circumstances), have a direct impact on the occurrence and severity of mental health problems (Lund et al., 2018). The public health sector serves the majority of people living with a mental illness (Robertson et al., 2018), but has severe shortages of mental health professionals (Docrat et al., 2019).

The treatment gap for CMDs in South Africa, is estimated to be 92% with only only 7.5 percent of the uninsured South African population who require care receiving outpatient mental health care (Docrat et al., 2019). South Africa's expenditure on mental health makes up 5% of the total health budget, with 85% of expenditure going towards inpatient care, with 45% of this amount allocated to tertiary psychiatric care (Docrat et al., 2019). In order to match the most comprehensive mental health systems in the world, it is estimated that countries would need to spend 10% and a minimum of 5% of their health budgets on mental health (Chisholm, Saxena, & Van Ommeren, 2006 cited in Docrat, 2019). Although South Africa does fall in the lower expectation, the budget allocation is

inequitably distributed with most of the budget spent on in-patient and tertiary level care, with very little spent at a PHC level (Docrat et al., 2019). CMDs like depression and anxiety have the highest prevalence in South Africa and can be detected and treated effectively using a relatively low cost, task sharing approach at a PHC level, and budget should be allocated accordingly to promote health system strengthening at this level.

South Africa has taken important steps to strengthen its mental health system and address the treatment gap through:

- The updating of the Mental Health Care Act (MHCA) 2002, replacing the outdated Act of 1973, with a patient centred approach to care (Szabo & Kaliski, 2017). The updated MHCA outlines that mental health should be integrated into PHC and that mental health is the responsibility of all health professionals and not only mental health specialists. Additionally, the Act states that people with mental health conditions have a right to be treated in their communities (Szabo & Kaliski, 2017).
- The development of the South African National Mental Health Policy Framework and Strategic Plan 2013-2020, which provided a blueprint for the integration of mental health into PHCs embracing a task-sharing approach whereby specialist tasks are shared with general health care providers in primary health care facilities (South African National Department of Health, 2013a). The Framework and Strategic Plan maps out an approach to reduce the treatment gap through the provision of quality mental health services through a task sharing approach that are accessible to patients within their communities (M. Schneider et al., 2016) and is closely aligned to the WHO's tiered system for mental healthcare (Figure 4) and the optimal mix of services pyramid (Figure 5).
- The PHC-re-engineering approach, with its move from vertical to horizontal care, provides a more enabling environment for the integration of mental health into primary health care services.

- The development of the National Development Plan in 2013 with the goal of achieving equity in health services provision by 2030, in pursuit of Universal Health Coverage (South African National Department of Health, 2013b). This plan prompted the adoption of the National Health Insurance policy in 2017 to promote equity in health care with the aim of universal health coverage (South African National Department of Health, 2017a).
- Efforts have also been made to increase the supply of mental health services through scale up of mental health care services to achieve adequate treatment coverage through the integration of the WHO Mental Health Gap Action Programme Intervention Guide WHO's [mhGAP-IG] (World Health Organisation, 2016a) within the Adult Primary Care (APC) guidelines used at a PHC level in South Africa. APC is a clinical decision-making tool that is intended for use by professional nurses working at primary care level covering communicable and non-communicable diseases, mental health conditions and women's health (South African Department of Health, 2020). In the context where professional nurses are not authorised to initiate psychotropic medication and do not have the time to provide psychological counselling, there role has been largely limited to detecting mental health conditions during routine care, offering brief psycho-education, and onward referral for appropriate treatment (Academy of Science of South Africa, 2021).

2.2.1 Ward-based primary health care outreach teams (WBPHCOTs)

Despite the introduction of many health policies and programmes in South Africa in the past two decades, and substantial investment in public health infrastructure, the progress made towards achieving the health improvements required by the former MDGs and current SDGs has been inadequate. As a result, the South African National Department of Health (NDoH) initiated a programme of health system reform known as Primary Health Care (PHC) Re-engineering in 2010 (South African National Department of Health, 2010) guided by principles of the COPC model [see Box 2] (KwaZulu-Natal Department of Health, 2019), and more recently in an effort to reach

universal health care through the NHI. The focus of the PHC re-engineering model is to realize a population-orientation to health care as prescribed by COPC, based on a well-functioning district health system focused on meeting priority health needs through PHC teams (Moosa, Derese, & Peersman, 2017).

Community-Oriented Primary Care (COPC)

COPC has its roots in KwaZulu-Natal, South Africa through the work of family physicians, Sidney and Emily Kark, who successfully established the first community health centre in Pholela, South Africa in the 1940s using the COPC approach to address the health needs of the community (KwaZulu-Natal Department of Health, 2019). This approach was piloted and extended to establish a further 40 community health centres but was abandoned during the Apartheid years, but gained popularity internationally (Gofin & Gofin, 2005; Mullan & Epstein, 2002). Whilst the 1990's saw an increase in community health workers (CHWs) working in communities through non-governmental and community-based organisations with the rise of HIV and TB in South Africa, it was not until 2010 that COPC was revitalised in South Africa as part of the larger strategy to re-engineer primary health care through the establishment of ward based PHC outreach teams (WBPHCOTs) which are an extension of the PHC facility into the community (KwaZulu-Natal Department of Health, 2019). COPC encompasses a whole community approach to care, moving beyond the provision of care to the individual to gaining an understanding of the health needs of the local community where health workers in collaboration with community leaders, conduct community surveys including area mapping, gaining understanding of socioeconomic and cultural determinants of health and identifying prevalent health needs, to better serve the health care needs of local communities (Gofin & Gofin, 2005). The COPC approach is grounded in the assumption that people's health is impacted by their social environment and COPC looks to address individual needs in the collective context of family and

community (Marcus, 2018). The COPC approach provides a platform for communities to engage in decisions about their own health care, in line with a people-centered approach to care, health promotion and prevention is brought to a household level through ward-based PHC outreach teams (WBPHCOTs) visits to homes (KwaZulu-Natal Department of Health, 2019).

Box 2: Community-Oriented Primary Care (COPC)

The PHC re-engineering strategy includes a four-stream approach, underpinned by COPC principles, including 1) a ward based PHC outreach team for each electoral ward; 2) strengthening of school health services; 3) district-based clinical specialist teams that provide support to health workers at a PHC level; and the inclusion of contracted general practitioners funded by NHI to support PHC facilities and hospitals [Figure 6] (Moosa et al., 2017; South African National Department of Health, 2010, 2015).

Figure 6: Model of PHC re-engineering

The PHC re-engineering strategy includes WBPHCOTs linked to PHC facilities (South African National Department of Health, 2017b) that function in households and community venues in designated municipal wards (Assegaai & Schneider, 2019), with the goal of extending PHC services into the community to reduce the disease burden as well as to improve integrated service delivery, increase health literacy, social capabilities and to facilitate individual, family and collective empowerment (Marcus, 2018).

Outreach Team Leaders (OTLs), who are higher-level (professional) or mid-level (enrolled) nurses appointed in local PHC facilities, supervise the CHWs who are responsible for day-to-day household visits for a defined number of households in their wards (H. Schneider, Besada, Sanders, Daviaud, & Rhode, 2018).

Community health workers (CHWs) provide an important link between communities and PHC facilities and have been found effective in detection and linkage to care for physical (Bhutta, Lassi, Pariyo, & Huicho, 2010; Naidoo et al., 2018; Zulu, Kinsman, Michelo, & Hurtig, 2014) (Horwood et al., 2017) and mental health conditions in LMICs (Jordans et al., 2020; Shidhaye et al., 2017). CHWs minimum required level of formal education is a school level grade 10 supplemented with basic training (10 day courses followed by practicums of up to a year of study with a focus on the health system, priority health areas, and social support (H. Schneider et al., 2018). Although mental health is a part of the CHW health promotion manual a comprehensive focus on mental health was not included in their training at the time of the study.

CHWs typically live in the communities they serve, and their roles include health promotion and education in communities, screening and identifying individuals and families at risk of ill-health, tracing defaulters and facilitating onward referral for relevant care (Assegaai & Schneider, 2019). Their focus, to date, has been primarily on physical health conditions with key areas including maternal and child health, HIV and TB.

The District Health Information System (DHIS) was established in 1996/97 as a routine system for tracking health service delivery in the public health sector, and is an important tool for tracking essential data for health service planning, monitoring and reporting (South African National Department of Health, 2011). Routine monitoring of WBPHCOT activities was included into the existing DHIS, and in 2017 only 3 275 of the 7800 WBPHCOTs were submitting information through the DHIS (H. Schneider et al., 2018). One of the most pressing challenges WBPHCOTs face is insufficient supervision with over-stretched or absent team leaders (H. Schneider et al., 2018). In KwaZulu-Natal, where this study is based, the KZN DoH had a renewed focus on community services within a COPC framework and has prioritized COPC as a strategic objective for improving health outcomes through preventative, promotive, curative and rehabilitative care through the implementation of an integrated community-based model. In 2017, a COPC learning site was reinstated by the KZN DoH at the original Pholela site and following this several steps have been taken to streamline community level of care including the implementation of a model targeting specific intervention areas required for strengthening community based services which include co-ordination of community based health services, capacity building, supportive supervision, provision of resources and population-based information services (KwaZulu-Natal Department of Health, 2019).

The focus of the community based package of services delivered by WBPHCOTs has predominantly been on physical priority areas (HIV, TB and maternal and child health) and despite being extended to include non-communicable diseases (H. Schneider et al., 2018), mental health has largely been excluded. A mental health checklist was considered as a means to screen for mental health at a community level but was deemed inappropriate for the context by the KZN DoH given the low levels of mental health literacy in South African communities, (Egbe et al., 2014) and the possibility that labelling, associated with checklist approaches, could lead to stigmatisation of

people who screened positive for a possible mental health condition at a community level. The KZN DoH along with the SMhINT team agreed that because of this psychoeducation should be included as part of the community screening tool to raise mental health awareness and improve demand for services.

The KZN DoH thus requested the SMhINT team to include a resource for WBPHCOTs that would help to strengthen mental health literacy as well as to identify community members with possible mental health conditions during household visits as part of the strengthened MhINT package (as described in Chapter One). This request led to the development and assessment of the Community Mental Health Education and Detection (CMED) tool for both strengthening mental health literacy as well as screening for mental health conditions for adults at a community level in the Amajuba district, KwaZulu-Natal, South Africa and is described in this study.

Chapter 3 : Methodology

3.1 Research process

The research study was made up of three sub-studies: 1) Formative study 2) Accuracy study and 3) a Feasibility study, each linked to one of the three objectives (Table 2). **The formative study** (Objective 1) included the development of the tool, review of the CMED by an expert panel, and process mapping and review of the CMED by WBPHCOTs. **The accuracy study** (Objective 2) included the training of WBPHCOTs on mental health and use of the CMED tool, the administration of the CMED by CHWs, and the comparison of the CMED result (either positive or negative for possible mental health symptoms) against the validated Brief Mental Health (BMH) screening tool outcome to assess the accuracy of the CMED. **The feasibility study** (Objective 3) included observations of the administration of the CMED tool in households, interviews with household members following the CMED administration, follow-up interviews with household members that were found positive for mental health systems using CMED and referred for care, as well as FDGs with WBPHCOTs to explore understandings and experiences of using the tool. Continuous quality improvement and engagement with the KZN DoH was embedded across this entire process.

Table 2: Research process

Formative Study	Accuracy Study	Feasibility Study
Objective 1: To develop and review the Community Mental Health Education and Detection (CMED) Tool.	Objective 2: To assess the accuracy of the CMED in identifying patients with a positive mental health condition.	Objective 3: To assess the feasibility of the CMED to health workers and community members.
Engagement and co-production of the tool with the DoH	Training of WBPHCOTs	Observations of administration of the tool
Development of the tool	Record CMED result (+ve, -ve)	Interviews with household members
Review by Expert Panel	Administer BMH	Follow-up visits with referred household members
Review by WBPHCOTs (FGDs)	Compare BMH against CMED outcome	FGDs with WBPHCOTs
CQI embedded across the process & ongoing engagement/co-production with the DoH		

This chapter describes the research design and methodology used, including the research questions, objectives, sampling and data collection methods, as well as addressing concepts of validity and reliability, trustworthiness and rigor, and ethical considerations.

3.1.1 Research design

Pragmatism is a paradigm that moves away from the traditional positivist and constructivist ontological and epistemological assumptions that underpin the nature of reality and knowledge that have historically shaped how research problems are understood and addressed [Table 3] (Grey, 2018). Pragmatism is based on the assumption that researchers should use the philosophical or methodological approach that is best suited to answer the research question and supports the use of mixed methods as well as mixed methods of analysis (Kaushik & Walsh, 2019). Although it

originated in the late 19th century, it has recently gained popularity as it provides epistemological justification for mixed-methods approaches which are increasingly used in applied research (Grey, 2018). However, in order to appreciate the value of Pragmatism as a philosophy for social research, the 'how to' or practicality of pragmatism in the use of mixed methods in research needs to be acknowledged as only one aspect of the paradigm (Morgan, 2014).

Pragmatism moves away from the commitment to an abstract set of philosophical beliefs in the study of human behaviour, with a focus on beliefs that are connected to actions (Dewey, 1960). The ontological premise is that reality is actively created as individuals act in the world, it is ever changing, it is based on human experience, and oriented towards solving practical problems (Norman K. Denzin, 2012; Dewey, 1960). As Denzin outlines:

> *Classic pragmatism is not a methodology per se. It is a doctrine of meaning, a theory of truth. It rests on the argument that the meaning of an event cannot be given in advance of experience. The focus is on the consequences and meanings of an action or event in a social situation. This concern goes beyond any given methodology or any problem-solving activity.* (2012, p. 81)

Table 3: Research paradigms

Paradigm	**Ontology** What is reality?	**Epistemology** How can reality be known?	**Theoretical perspective** Theoretical approach used to understand the reality	**Methodology** Best means to gain knowledge about the reality	**Method** Research techniques used to access knowledge
Positivist	Single reality/truth	Reality can be measured	Positivism Post-positivism	Focus is on reliable and valid measures that are representative of the population. Objective and context free. Deductive. Experimental/survey research.	Quantitative methods: surveys, structured questionnaires
Interpretive	Reality is subjective and multiple social realities	Reality can be understood through interpretation	Interpretivism: Phenomenology, Grounded theory	Focus is on subjective understanding Inductive Context matters	Qualitative methods Interviews, focus groups, observations

Constructivist	Multiple, socially constructed realities	Reality can be constructed	Critical inquiry Social constructivism	Focus on socially constructed realities. Context matters	Qualitative methods Interviews, focus groups,
Pragmatic	Reality is actively created as individuals act in the world, it is ever changing, based on human experience, and oriented towards solving practical problems.	Knowledge is always based on experience. Reality is renegotiated based on needs in solving a problem/answering the research question	Dewey's Classic Pragmatism (Dewey, 1960)	Mixed methodology dependent on specific questions and purposes of research	Mixed methods can be used as researcher works back and forth between various approaches

The concepts of experience and inquiry are central to pragmatism (Dewey, 1960). According to Dewey, experience is defined by two interlinking questions: What is the source of our beliefs? And, what is the meaning of our actions? (Morgan, 2014) The answers to these questions are iterative and cyclical, where the origins of our beliefs arise from past actions and the outcomes of our actions are embedded in our belief systems (Morgan, 2014). Meaning is, thus, created through our experience [the interlinked connection between beliefs and actions] (Kelly & Cordeiro, 2020; Morgan, 2014). Further, in Dewey's view all human experience involves a process of interpretation – knowledge and beliefs need to be interpreted to generate action and actions need to be interpreted and reflected upon to generate beliefs. Classical pragmatism outlines that many of our experiences occur through habit (which is automatic and ingrained based on individual or collective beliefs and past actions), whilst other experiences require inquiry [the process by which beliefs that are considered problematic are examined through reflective decision making and solved through action] (Dewey, 1960; Morgan, 2014). Classical pragmatists also acknowledge that experience and inquiry is embedded in and influenced by context (Kaushik & Walsh, 2019; Morgan, 2014).

Classical pragmatists argue that the process of interpretation, when examined thoughtfully and systematically, can lead to new ways of knowing and acting and has the potential to uncover social

realities more saliently than philosophical approaches that assume human behaviour and action exist separate to understanding (Kelly & Cordeiro, 2020). The pragmatist framework, thus, views social researchers as participants and experimenters in a community of inquiry where "agency is the key for understanding all aspects of human life, including human inquiry and knowledge" (Bernstein, 1971).

In social research pragmatists ask "How do researchers make choices about the way they do research? Why do they make the choices they do? And, what is the impact of making one set of choices rather than another?" (Morgan, 2014, p 1051). Although not new to the study of human behaviour, these questions have a central focus in the pragmatic paradigm, where not only is 'what researchers 'do' examined but also 'why they make the decisions they do' in studying human behaviour. Research is also context-bound, and so reflexivity is important in illuminating how a researcher's approach and understanding is influenced by ideological, historical, cultural, and political factors.

Pragmatism advocates that research should focus on producing actionable and useful knowledge, that is oriented towards solving practical problems in real world settings (Feilzer, 2009). In this research this was critically important given the alarming prognosis for the disability burden from mental health conditions (Charlson et al., 2014) and the need for producing evidence based interventions that increase both supply and demand for mental health care, and reduce the treatment gap (World Health Organisation, 2022). The emphasis on actionable knowledge is relevant to this study as the research agenda was anchored in participant experience and aligned to DoH needs to ensure that the research was of practical relevance. The recognition of the interconnectedness of experience, knowing and acting is central to the research design as I employed an approach of inquiry that explored the interconnectedness of experience through triangulation using different sources of data (consultation with DoH management, observations, interviews, FGDs) from different types of respondents (DoH management, CHWs and household members).

The pragmatic view of inquiry as an experiential process was also adopted in the iterative nature of the research as the CMED tool was continuously adapted based on feedback from participants. The development of the tool was also situated within a larger context of the health system and in the context of South African communities, and was designed to be relevant to both the health system and to community members.

The choice of a mixed methods research design is based on a number of considerations including the research questions and the purpose of the research (Kelly & Cordeiro, 2020). It involves a continuous cycle of reasoning relating to what practically works within a setting while being guided primarily by the researcher's desire to produce socially useful knowledge (Grey, 2018).

A key theme in the evaluation of complex interventions is the need for mixed methods research in understanding real world problems in real world settings (Craig et al., 2008) and is appropriate within the theoretical underpinning of this study, Normalisation Process Theory, that looks to understand factors that promote and inhibit routine incorporation of complex interventions (Murray et al., 2010). Additionally the methodological feasibility framework (Bowen et al., 2009) used to assess the feasibility of the CMED tool promotes the use of mixed methods in assessing the feasibility of interventions.

3.2 Theoretical premise

3.2.1 Normalisation Process Theory

Research translation can be defined as the process of generating knowledge and evidence for practice (Mitton, Adair, McKenzie, Patten, & Waye Perry, 2007). A consistent finding from health research is the failure to translate effective research into policy and practice in a timely manner (Kilbourne, Garrido, & Brown, 2022). As a result of this evidence-practice gap, patients fail to benefit from interventions that improve health outcomes (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012). One way of closing the gap between research and implementation is developing effective interventions that are responsive to the lived experiences of communities/users, while also taking

into account the importance of embedding research into health systems (Damschroder et al., 2021). This approach is aligned to the pragmatic view of inquiry where research focuses on producing actionable and useful knowledge embedded in experience, and oriented towards solving practical problems in real world settings (Feilzer, 2009).

Given the importance of knowledge translation, this study was informed by Normalisation Process Theory [NPT) (Murray et al., 2010), in order to elucidate the factors needed to ensure a culturally and contextually relevant tool that would ease integration into routine CHW services (normalised). Regardless of the success of an intervention, its long-term impact depends on its effectiveness in the real-world context and how widely it is implemented. Implementation and sustainability of interventions need to be considered from the outset and can be evaluated using NPT. NPT is relevant from the early implementation stages to when an intervention becomes a part of routine services (normalised).

The four main components of NPT include Coherence, Cognitive Participation, Collective Action and Reflexive Monitoring (Box 3). Components are not linear and they have a dynamic relationship with each other and with the wider context (organizational context, structures, social norms etc). NPT alerts researchers and implementers to important contextual factors and bottlenecks in the implementation of the intervention (Murray et al., 2010).

Coherence ❖ Meaning & sense making by users ❖ Clear purpose ❖ Benefits to users	**Cognitive Participation** ❖ Commitment and engagement of users ❖ Invest time and energy?
Collective action ❖ How does it affect the work of users?	**Reflexive Monitoring**

❖ Is it compatible to existing system? ❖ Promote or impede work?	❖ Formal and informal appraisal of benefits and costs of the intervention ❖ Participants reflect/appraise the intervention ❖ Is it useful?

Box 3: Normalisation Process Theory

Normalisation Process Theory, provided a conceptual framework for developing, understanding and evaluating the implementation of the CMED tool. The components of NPT (Box 3) are actions/ activities rather than theoretical constructs that facilitated inquiry in this study to better understand how the CMED tool could be routinely incorporated within the health system to promote research translation.

3.2.2 Framework for feasibility studies

Feasibility studies are important in helping determine whether an intervention should be recommended for efficacy testing (Bowen et al., 2009) and in the context of this study was important because there was no existing data in South Africa on the feasibility of a community mental health screening and psychoeducation tool (Bowen et al., 2009). Bowen et al. (2009) framework for feasibility studies includes eight focus areas (acceptability, demand, implementation, practicality, adaption, integration, expansion and limited efficacy testing) as well as a focus on the practical implementation and workability of an intervention in a real world setting (Bowen et al., 2009) (Table 4). Bowen et al. feasibility framework informed the design and methods of the Feasibility Study described in Chapter Three as well as the study results described in Chapter Six.

Table 4: Bowen et al (2009) feasibility framework

Feasibility Focus Areas	The feasibility study asks…
Acceptability	To what extent is the new process judged as suitable, satisfying, or attractive to program deliverers? To program recipients?
Demand	To what extent is the new process likely to be used/how much demand is likely to exist?
Implementation	To what extent can the new process be successfully delivered to intended participants in some defined, but not fully controlled context?
Practicality	To what extent can the new process be carried out with participants using existing means, resources, and circumstances without outside intervention?
Adaption	To what extent can the new process perform when changes are made for a new format or with a different population?
Integration	To what extent can a new process be integrated within an existing system?
Expansion	To what extent can a previously tested process be expanded to provide a new program or service?
Limited efficacy	Does the new process show promise of being successful with the intended population even in a highly controlled setting?

This study required both qualitative and quantitative methods (Table 4) in order to answer the overall research question and to gain a comprehensive understanding of the workability of the CMED tool within a real world context as informed by the Pragmatic paradigm. Mixed methods were used to meet the three objectives of the study which included a qualitative review of WBPHCOT's understanding of the CMED Tool through FGDs and process mapping as well as to analyse the expert panel review of the tool (objective 1), and to gain an in-depth account of WBPHCOT and household member experiences of the tool through in-depth interviews, observations and FGDs (objective 3). In addition, quantitative methods were required to assess the

accuracy of the tool in identifying possible mental health problems (objective 2).

3.3 Setting

The study was conducted in the Amajuba District in the KwaZulu-Natal province, South Africa. Amajuba is made up of three sub-districts including Newcastle, Dannhauser and Emadlangeni (Figure 7). The profile for the Amajuba District is included in Table 5.

Newcastle sub-district, where this study was based, comprises 34 mostly urban and peri-urban community wards (Newcastle Local Municipality, 2018), and is the most populous of the three sub-districts in Amajuba, making up 389 117 of the total population of 531 327 in 2016 (Statistics South Africa, 2016), with more than half of the population living in poverty (Petersen, Kemp, et al., 2021). It is serviced by a district and provincial hospital, a specialised maternal and child hospital and 14 PHC facilities. A limited referral mental health specialist service is located at the district hospital level (Petersen, Kemp, et al., 2021). Amajuba District is one of the National Health Insurance (NHI) pilot districts. In the first NHI evaluation during the period 2013-2017, Amajuba reported more outreach visits than any other pilot site (Genesis Analytics, 2019).

At the time of the study Amajuba included 12 community health teams with five teams located in Newcastle (Petersen, Kemp, et al., 2021). The community health teams provide PHC services at a ward based level in line with the PHC re-engineering approach with a target of each CHW visiting between 150 and 250 households a month depending on distance between households, demographic structure and the burden of disease of the local population (H. Schneider et al., 2018); however more community health teams are required to cover every ward and not all community health workers are linked to an Outreach Team Leader (KwaZulu-Natal Department of Health, 2016).

Table 5: Profile of the Amajuba District

District	Amajuba, KwaZulu-Natal Province
Population	531 327
Literacy Rate	60%
Administrative Structure	3 Sub-districts (Newcastle, Emadlangeni, Dannhauser)
Administrative Health Structure	District Director; Clinical and Programmes Manager; Mental Health Coordinator; Sub-district MH coordinator at Madadeni Hospital; 2 Psychiatric nurses
Health Care Services	3 Hospitals, 1 Community Health Centre, 19 Government PHC Clinics, 3 Gateway Clinics, 2 Municipal Mobile Clinics
WBPHCOTs	12 teams
Mental Health Services	Psychologists hospital based and visit 3 PHC facilities, service Department of Basic Education, Rehabilitation Centre and Umzinyathi District hospital; all repeat prescriptions received from hospital; essential medicines available in district
Mental Health Professionals	0 Psychiatrists, 4 Psychologists,128 psychiatric nurses
Mental Health Data Collected	Mental health under 18; mental health 18 and older; mental health total; mental health screened; mental health treated; screened for substance abuse and other drugs; para-suicide admissions

One WBPHCOT attached to a PHC facility was targeted for the study. The team was selected because it was comprised of the necessary formal structures (it had a team of CHWs linked to OTLs) in place to guide activities in the community and PHC facility, as required by the pilot testing of the CMED. The PHC facility is located in one of the largest townships in Newcastle and had a catchment population of 34 377 in 2019. The community health team is linked to five community wards with a catchment of 10 157 households (Newcastle Local Municipality, 2018) with each of the 17 CHWs expected to visit 150 households a month.

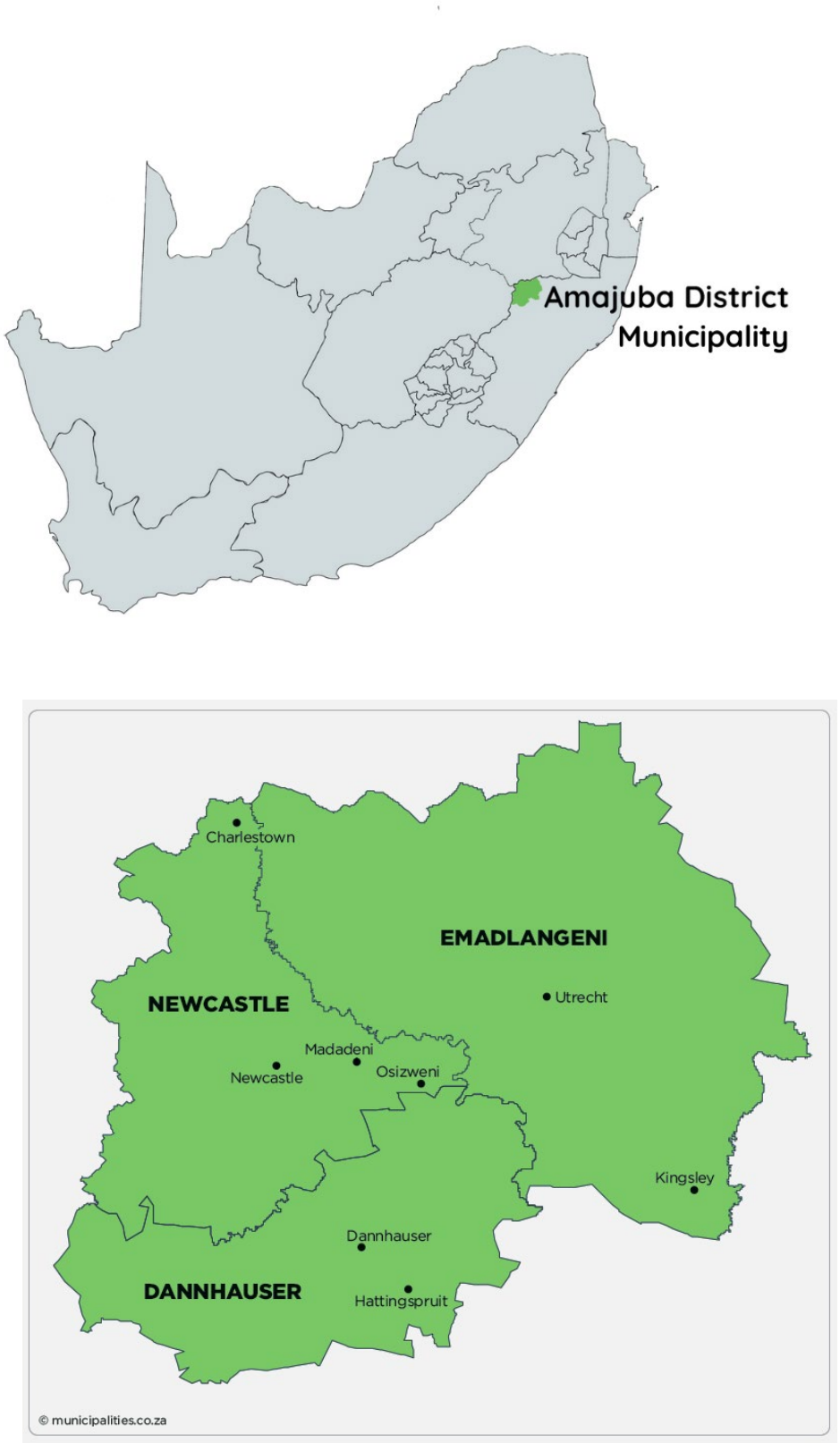


Figure 7: Map of the Amajuba District

3.4 Ethical considerations

Ethical approval was obtained from the University of KwaZulu-Natal (UKZN) Biomedical Research Ethics Committee (BREC) [BF190/17] and the KwaZulu-Natal Department of Health [KZ_2017RP15_388].

Ethical principals were adhered to at all stages of the study including the voluntary participation, informed consent, anonymity and confidentiality, and secure storage of data.

Participation in the study was voluntary and this was emphasised to all potential participants in both the informed consent leaflet (Appendix 3a, 4a) and in the discussion that accompanied the informed consent. The voluntary nature of participation was explained to household members and to the service providers (WBPHCOTs) and it was emphasised that participation in the study was their choice and no negative consequences would result in refusal to participate including patient care (household members) and implications in the workplace (WBPHCOTs).

Information leaflets and consent forms (Appendix 3a, 4a) for both household members and WBPHCOTs were translated and back translated by a Psychologist into the local isiZulu language and were available for use in both English and isiZulu, in order to ensure that participants had a comprehensive and clear understanding of the research process and what was expected of them. Participants received a copy of the information leaflet and consent document for their records. The information leaflet and consent form were read and explained to each participant by the study staff, and participants were also given the opportunity to read the documents on their own and ask questions for clarity. Where participants were unable to sign their consent form due to being unable to read or write, they were able to indicate their consent to participate with an X and this was witnessed by a person independent of the research team.

Qualitative interviews were audio recorded with the participants' consent and translated and transcribed into English where necessary. Participants are not identifiable through any analysis, but the research site and clinic could possibly be identified in the publication process through inference and identification of the broad research site. This was highlighted in the consent forms. Confidentiality was a key principle upon which all procedures were based, and the research team ensured participant confidentiality at every step of the process.

Only the investigators and specifically identified research staff (Data Manager) had access to the data which were securely stored on the UKZN server. The server and the devices on which the data can be accessed are all secure and password protected. Stored questionnaires were e-protected with passwords. All identifying data and personal information were de-linked from the interviews and participants were assigned codes to identify them with. The codes which link to their interviews were stored separately. Data will be stored for 5 years in a locked access controlled storage space (access will be only to the PI and Data Manager) at UKZN. It will be destroyed 5 years after publication.

The methods used in each sub-study 1) Formative Study 2) Accuracy Study 3) and the Feasibility Study are described below:

3.5 Formative study

3.5.1 Procedure

The formative research involved four processes to inform the development of the CMED tool. These included:

1) Ongoing engagement and collaboration with the KZN DoH to ensure co-creation of the CMED tool

2) Development of the CMED tool and associated materials
3) Review of the CMED by an expert panel
4) Process mapping and FGDs with WBPHCOTs in the Newcastle sub-district to inform a standard operating procedure for use in routine household visits.

3.5.1.1 Process One: Engagement with the Department of Health

Evidence-based research can take up to 17 years to become integrated within a health care system and interventions need to be less inert and more responsive to the needs on the ground, learning from practice much faster than they currently do (Budrionis & Bellika, 2016). One such way to facilitate this process is through collaboration with stakeholders about needs (coherence), co-production of intervention design and learning together through implementation (cognitive participation, collective action), adjustment to fit the needs of the system (collective action) and continuous dissemination (Greene, Reid, & Larson, 2012).

Ongoing engagement with the DoH was a key process in the formative study and was underpinned by all four of the NPT domains including coherence (how it is understood by users), cognitive participation (engagement by users), collective action (integration of the CMED into routine care) and reflexive monitoring [formal/informal appraisal of the tool] (Murray et al., 2010). The tool needed to be aligned with the KZN DoH strategic vision, their needs, and priority areas with respect to the WBPHCOTs functions and services provided for other conditions in order to maximise coherence, cognitive participation at the level of the DoH management as well as at a PHC (facility and community) level. The engagement and co-production of the tool was also essential for collective action to ensure the integration of the tool within the existing system.

To this end a total of ten meetings were conducted with the KZN DoH at various levels (Provincial and District) as well as regular email communication throughout the research process. This included meetings at the very beginning of the project where the DoH requested the development of the tool and outlines their needs and priorities, as well as meetings to discuss progress and share insights

and feedback on the development of the tool and how it could be improved so as to have "goodness of fit" with the health system. "Goodness of fit" relates to how well the CMED intervention is aligned to the DoH routine policies and practices at a community level of care.

Meetings were conducted with key DoH stakeholders including:

- Operational management at the clinic to which the WBPHCOT was linked
- Amajuba District Management Team
- Provincial KZN Mental Health Directorate
- Provincial KZN District Services Community Task Team

This engagement was iterative in nature and informed the training and different versions of the CMED tool. This iterative process included reflexive monitoring through DoH appraisal of the development of the tool.

Relevant DoH documents were also reviewed to ensure that the development of the CMED was aligned to the needs of the Department of Health as well as to routine care, and that the scope of practice of WBPHCOTs was adhered to, to maximise integration (collective action) of the CMED into the existing health system.

The DoH policy documents reviewed included:

- ❖ Policy Framework and Strategy for Ward Based Primary Health Care (South African National Department of Health, 2017b),
- ❖ The National Mental Health Policy Framework and Strategic Plan (South African National Department of Health, 2013a)
- ❖ Existing community health worker curriculum and the community package of services.

3.5.1.2 Process Two: Adaptation and development of vignettes and illustrations for the CMED tool

The DoH requested a tool that could be used by CHWs at a household level to screen for common mental health conditions. A review of the literature resulted in the identification of the Community Informant Detection Tool (CIDT) [Figure 8, Subba et al. 2017], that was used to promote detection of people with mental health problems in Nepal as part of the Programme for Improving Mental Health Care [PRIME] (Jordans et al., 2015; Subba et al., 2017), as a relevant tool from which a community mental health tool for a South African context could be adapted. The CIDT had a good fit with what we were looking for as it had been used at a household level by community informants (lay workers) to detect possible mental health problems. In addition, it had shown promising results with two-thirds of community members being accurately identified for a mental health problem when compared against a validated mental health screening tool (Jordans et al., 2015).

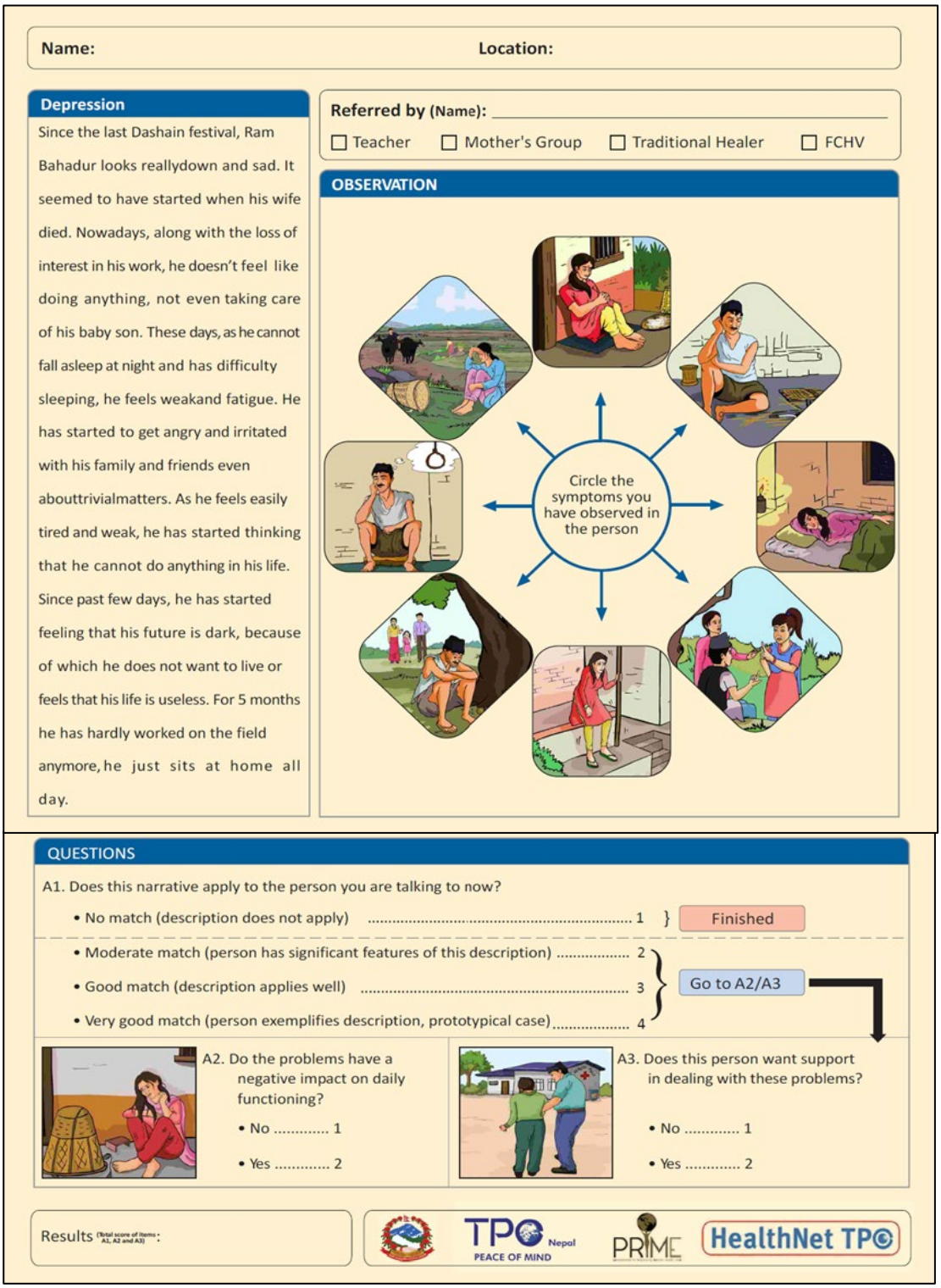


Figure 8: Nepal CIDT from which the CMED was adapted

The CMED tool was adapted from the Community Informant Detection Tool (CIDT) for the South African context.

The CMED, like the CIDT, is based on a prototype matching approach (Subba et al., 2017). Prototype matching is where a diagnosis is made by matching a patient's presenting symptoms with a paragraph-length description of the mental health condition (Westen, 2012). It has been found to have several advantages relating to clinical utility over the traditional method of counting symptoms to diagnose patients (Westen, 2012). The advantages of the prototype matching approach is that it better fits the way people naturally think and categorise things and it has been rated in many different studies as being more clinically useful than checklist approaches from utility of communicating to other mental health providers to ease of use (Westen, 2012). Prototype matching has been used successfully in clinical settings in the United States (Westen, 2012) and more recently in a community setting in a LMIC in the PRIME Nepal study using the CIDT (Subba et al., 2017). The ease of use was particularly of importance as CHWs are lay health workers without prior mental health training. This process speaks to the NPT construct of coherence; we wanted the tool to be easily understood and to be user friendly in order to maximise participation/use of the tool in communities.

The format of the CMED and Nepalese CIDT consists of vignettes (prototype paragraph) and illustrations for five mental health conditions. Each vignette (in the CMED and CIDT) is followed by three structured questions (Table 6) that aid the health worker in matching symptoms with the prototype vignette and determines if the household member requires a referral for further care. The mental health conditions in the CMED tool include depression, anxiety, harmful alcohol and drug use, and psychosis. These mental health conditions were informed by the South African Stress and Health (SASH) study which is a large-scale population-based study of mental health conditions in the country (Herman et al., 2009). The most common and high burden mental and substance use disorders in South Africa as identified in the SASH study were included (Herman et al., 2009).

Table 6: Comparison of structured questions in the CIDT and CMED

CIDT Structured Questions	CMED Tool Structured Questions
1. Does the narrative apply to the person you are talking to now? (four-point scale: no match, moderate match, good match, very good match)	1. Does this story remind you of anyone in the household? Yes/No
2. Do the problems have an impact on daily functioning?	2. Do the problems have a negative impact on daily activities? Yes/No
3. Does the person want support in dealing with these problems?	3. Refer family member and provide healthy lifestyle information

As in the CIDT tool (Subba et al., 2017), although the symptoms of these mental health conditions were drawn from the WHO mhGAP intervention guide (World Health Organisation, 2016a), cultural understandings of mental health using local idioms and descriptions was an important factor when developing the vignettes. As with the CIDT local idioms of mental health problems were incorporated into the development of the vignettes drawing on the literature (Campbell et al., 2017; Davies, Schneider, Nyatsanza, & Lund, 2016; den Hertog, de Jong, van der Ham, Hinton, & Reis, 2016; den Hertog, Maassen, de Jong, & Reis, 2020; Petersen, Hanass-Hancock, Bhana, & Govender, 2013; Sibeko, 2016; Swartz, 1998) and the everyday rhetoric of the local context. Local idioms of distress refer to ways of expressing distress that may not involve specific symptoms or syndromes, but provide collective ways of experiencing and talking about distress in local contexts (Nichter, 2010). Idioms are often shared understandings that are rooted in symbols, behaviors, language or meanings that are used by people to express distress and suffering (Hollan, 2004). Studies conducted on cultural understandings of mental health in South Africa highlight that meaning is often situated in participants' life problems with a focus on stressors relating to financial insecurity, stressful life events (interpersonal conflict, violence) and lack of social support (Davies et al., 2016; Kathree, Selohilwe, Bhana, & Petersen, 2014; Petersen et al., 2013; Swartz, 1998). Davies et al (2016) found that symptoms of depression in their sample in South Africa were similar

to international criteria but that local descriptions of symptoms were context specific. This process of ensuring the CMED was culturally relevant was essential to developing a tool that would be meaningful for communities and speaks to NPTs domain of coherence.

The development of the vignettes was undertaken by a team of clinical, counselling and research psychologists from the Centre for Rural Health, University of KwaZulu-Natal, and psychologists/mental health practitioners from the South Africa HIV- Addiction Technology Transfer Centre (ATTC) at the University of Cape Town who have developed a mental health training for CHWs (Sibeko, 2016). A graphic artist was employed to illustrate the key symptoms of the protagonist with the mental health condition in each story. The graphic artist worked closely with team to graphically illustrate the symptoms in each vignette. The development of the tool was an iterative process where the team met regularly to review the vignettes and illustrations.

Translational research methods (Flaherty et al., 1988) were used to ensure that the meaning and purpose of the tool was retained in the process described above when adapted for cultural relevance. Flaherty et al. (1988), describe five forms of equivalence that are described in Table 7 as applied to the development of the CMED tool.

Table 7: Flaherty's steps for translational equivalence as applied to CMED

Steps for translational equivalence (Flaherty et al. (1998, p. 258)		How this was achieved in CMED
1) Content equivalence	The content of each item of the instrument is relevant to the phenomena of each culture being studied.	The focus of both the CIDT and the CMED was on detection of mental health problems at a community level. Understandings of mental health using local idioms and descriptions was an important factor for both studies. Vignettes were localised to a South African context using local idioms and descriptions.
2) Semantic equivalence	The meaning of each item is the same in each culture after translation into the language and idiom (written or oral) of each culture.	Overall meaning of the tool is retained with a focus on detection of mental health problems. Symptoms for mental health conditions are similar as guided by the literature but are localised to the South African context.
3) Technical equivalence	The method of assessment (e.g. pencil and paper, interview) is comparable in each culture with respect to the data that it yields.	The method of assessment in the CMED as compared to the CIDT is retained in the design and administration of the structured questions and interpretation of the CMED
4) Criterion equivalence	The interpretation of the measurement of the variable remains the same when compared with the norm of each culture studied.	Steps used to develop CMED are aligned to the process used in the development of the CIDT.
5) Conceptual equivalence	The instrument is measuring the same theoretical construct in each culture.	Shared theoretical construct for both CIDT and CMED; positive screen for a mental health problem is in need of referral and negative screen where no action is needed.

Standard translation and back-translation procedures were used to provide an isiZulu version of the CMED tool. The translation process was conducted by two bilingual clinical psychologists and a bilingual research psychologist who had an in-depth knowledge of local terms and idioms used by people when discussing and defining mental health. Appropriate translation was a critical step in ensuring the fidelity and cross-cultural adaptation of the CMED tool. The *isiZulu* language lacks equivalent terms for mental health conditions such as "depression" or "psychosis", and the clinical psychologists were skilled in using local language that was appropriate to explain the different mental health conditions in a non-stigmatising manner. This was of particular importance as incorrect translation can lead to the use of stigmatising language that may be commonly used in everyday rhetoric when referring to mental health.

3.5.1.3 Process Three: Review by expert panel (Establishing criterion-related validity of the CMED tool)

The resulting CMED tool was then reviewed by an expert mental health panel to assess prioritisation of key symptoms and the appropriateness of the vignettes and illustrations to the South African context. This approach was modelled on the process used to inform the development of the CIDT (Subba et al., 2017), ensuring conceptual, criterion, and semantic equivalence (Flaherty et al., 1988). This step also ensured the coherence of the tool in ensuring that the symptoms of each condition were in fact commonly experienced by people with a particular mental health condition thereby maximising the chances of the descriptions being relevant and easily understood by CHWs and household members.

The expert panel was selectively targeted because of their particular expertise in working with local populations and we wanted the panel to reflect the range of mental health workers in South Africa.

The panel included a mix of health professionals working in the public health sector including psychiatrists, psychologists, psychiatric nurses, social workers and registered counsellors. The panel also included government representatives from the KZN DoH including the KZN Mental Health Directorate and the KZN District Services Community Task Team, as well as academic mental

health specialists. The vast majority of the expert panel was local. The international expert included was part of the team that developed the CIDT. These insights were valuable given that we were adapting the CIDT and wanted to ensure that Flaherty's conceptual, criterion and semantic equivalence was retained through the adaptations. We also wanted insights from the CIDT team as they had already tested their tool in a LMIC.

The question about relevance of symptoms was modelled on the three-point scale (high relevance, low relevance, no relevance) used in the CIDT. We adapted the questions (3-point scale) used in the CIDT and posed these as three different questions to the panel. The expert panel in the CMED were asked to review each vignette using the following guiding questions:

1) "The vignette includes symptoms commonly found among people with this condition." With the response options being a) Yes or b). If No, what are the problems and what changes would you recommend?
2) The second question to the panel was "Are the graphics used appropriate in depicting some of the symptoms of the mental health condition? With the response options being a) Yes or b). If No, what changes would you recommend?
3) Additionally, experts were asked an open-ended question regarding additional comments or suggestions including the cultural appropriateness of each vignette to the South African context. Local experts were asked to review the relevance of the description of symptoms in the vignettes and to comment on the relevance of the characters, the stories, graphics, and language used to the South African context.

Box 4 : Expert panel guiding questions

All responses were collated in an excel document. "No" responses and associated problems/ suggestions were discussed by the research team and amendments were then made to the vignettes and graphics. The open-ended nature of the panel questions allowed the experts to provide detail on how the vignettes should be improved.

Additionally, the understanding of the vignettes was also assessed in Process Four with CHWs as they were asked what their understanding of each vignette was. Through this process we wanted to ensure that the mental health conditions included in the vignettes were easily understood by the

CHWs, who are lay workers with a school leaving certificate and minimal mental health knowledge. This step also relates to NPTs construct of coherence ensuring that the CMED was culturally relevant and easily understood by users. It must be noted that the South African population is diverse, and the tool

3.5.1.4 Process Four: Process mapping and focus group discussions with community health teams

Process mapping of community health team day-to-day roles and activities

Process mapping is part of the Continuous Quality Improvement (CQI) toolkit (Institute for Healthcare Improvement, 2003; O'Neill et al., 2011) that enables an in-depth understanding of complex systems and adoption of improvement interventions to local contexts (Antonacci, Reed, Lennox, & Barlow, 2018). Process maps are particularly useful when designing new interventions or programs to help understand the current processes and thus think through the most effective and efficient ways of embedding new innovations within existing systems; in this case, the CMED tool. Information from different sources, including both interviews and direct observations, are helpful in validating process maps given the multiple methods used (Antonacci et al., 2018).

A CQI process mapping workshop was conducted with 54 community health team members (44 CHWs, 10 OTLs/supervisors) from five PHC facilities (all CHWs belonged to formal community health teams) in the Newcastle sub-district at a central location to gain an in-depth understanding of the roles and activities of community health teams including planning, home visits, linking patients for referral, follow-up, and administration. This understanding was necessary to ensure coherence and compatibility of the CMED with the existing activities of the community health teams. For the process mapping exercise, the 54 participants were divided into six groups: two OTL/supervisor groups and four CHW groups to ensure that diverse perspectives were captured from people with different roles within the community health teams in the generation of the process maps (Antonacci et al., 2018).

The community health teams were asked to create a visual map of their daily activities from the start to the end of the week (Box 5).

WBPHCOT Process Map (Instructions)

We would like to understand your work.

Please describe a typical week as a WBPHCOT (CHW or OTL)?

- What happens first? (Write down first step)
- What happens next? (Continue for all steps and draw arrows connecting steps)
- Note: How long does each step take?
- Include who is responsible for each step and if/how it is documented
- Remember to include what is actually happening rather than what is supposed to happen

Box 5: Process mapping instructions

In addition to the process mapping workshop, observations of household visits were also conducted in three community wards to directly observe community health team activities, to better understand their daily work and how the CMED tool could be integrated into the current community package of services. The same steps were employed as described in Box 5, where CQI mentors shadowed community health teams during their household visits.

Focus group discussions

FGDs were conducted with 54 community health team members divided into six groups (the same groups that were involved in the process mapping workshop) to explore if the purpose of the proposed CMED tool was understandable, relevant to their context (including if vignettes and illustrations were culturally appropriate/realistic, and if the language used was acceptable) as well as their perceptions of the feasibility of administering the tool at a household level. We also asked the groups what their understanding of each vignette was to ensure that the meaning of each condition was clearly conveyed and understood in the way we intended. Five groups were conducted in isiZulu and one group was conducted in English. Hard copies of the CMED tool were

given to the groups in both English and isiZulu. Each group was given one vignette from the CMED tool to discuss so that each vignette could be explored in depth. Recommended changes to the tool were also discussed.

3.5.2 Data Analysis

All twelve audio-recordings of the process mapping and FGDs were transcribed and isiZulu transcripts were then translated into English. Framework analysis (Gale, Heath, Cameron, Rashid, & Redwood, 2013; Ritchie & Spencer, 1994) was used to analyse the data using qualitative software (NVivo version 12). The framework analysis method is described in greater detail in 3.7. Qualitative Data Analysis.

3.6 Accuracy Study

3.6.1 Establishing Accuracy of the CMED

To establish the accuracy of the CMED in identifying patients with a positive mental health problem it needed to be compared against a 'gold standard'. A gold standard is the test/combination of tests that is considered the best method of screening/ diagnosing a particular condition (Parikh, Mathai, Parikh, Chandra Sekhar, & Thomas, 2008). In order to establish the accuracy of the CMED several factors were considered:

1) The CMED needed to be comparable to recognised screening tools, locally and internationally.
2) The measure needed to be validated on the population of interest.
3) The validation tool needed to form part of routine screening for mental health by the DoH at a PHC level.

As a consequence the Brief Mental Health (BMH) screening tool (Bhana et al., 2019), which was validated in PHC facilities in the Amajuba district, was considered the most appropriate tool as it was in use by the DoH as the next screening tool used at PHC facility level as part of the screening cascade at the PHC level at the time of this study. The BMH (Figure 9) is a 7-item screening tool comprised of brief versions of the Alcohol Use Disorders Identification Test (AUDIT), the Patient Health Questionnaire (PHQ-9) and the General Anxiety Scale (GAD-7), and was validated for use within PHC facilities (Bhana et al., 2019). The "gold standard" against which the BMH was validated was a professional nurse diagnosis using Adult Primary Care which is a nationally adopted integrated set of chronic care guidelines used by PHC nurses in South Africa and informed by the WHO Mental Health Gap Action Programme [mhGAP] (Fairall, Cornick, & Bateman, 2018). The mhGAP is closely aligned to the WHO's International Classification of Diseases (ICD-11), which is a diagnostic tool designed to understand and classify mental disorders and serves as a primary means for identifying individuals in need of services (Clark, Cuthbert, Lewis-Fernández, Narrow, & Reed, 2017).

While the BMH only focuses on CMDs (depression and anxiety symptoms and harmful substance use characteristics), it was deemed to be suitable as the CMED broadly screens for mental health problems. Further, the BMH screening tool is used in first stage screening of all patients arriving at a PHC facility level before a more comprehensive assessment is done using the Adult Primary Care tool [against which the BMH screening tool was validated] (Bhana et al., 2019). While a differentiated cut point is suggested for women and men and is the ideal, the cut points for the BMH were tailored to enhance specificity (to avoid overburdening health care staff), a cut point of ≥4 (82% specificity) met this criterion but also indicated a similarly high sensitivity (82%). In addition, a single reference point was deemed appropriate for ease of administration and to avoid confusion in scoring at busy health facilities.

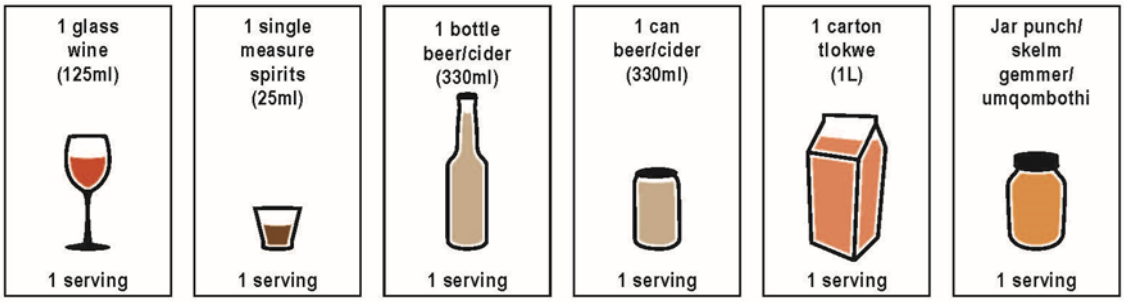
Patient name and surname:					
Date of screening:					
1. DEPRESSION: Patient Health Questionnaire - 2					
Over the last 2 weeks, how often have you been bothered by the following problems? Kulamasonto amabili edlule, kukangaki ube nalezizinkinga ezilandelayo?					
Little interest or pleasure in doing things / Uzizwa engathi awufuni ukwenza lutho futhi ayikho nento ekujabulisayo	0 days	0	0	0	0
	1-7 days	1	1	1	1
	8-11 days	2	2	2	2
	12-14 days	3	3	3	3
Feeling down, depressed or hopeless / Uzizwa sengathi umoya wakho uphansi,unengcindezi noma ulahlekelwe ithemba	0 days	0	0	0	0
	1-7 days	1	1	1	1
	8-11 days	2	2	2	2
	12-14 days	3	3	3	3
A score of 3 or more is screen positive for depression:	TOTAL	/6	/6	/6	/6
2. ANXIETY: Generalized Anxiety Disorder - 2					
Over the last 2 weeks, how often have you been bothered by the following problems? Kulamasonto amabili edlule, kukangaki ube nalezizinkinga ezilandelayo?					
Feeling nervous, anxious or on edge / Uzizwa engathi ushaywa uvalo noma uzizwa wethukile ngaphandle kwesizathu	0 days	0	0	0	0
	1-7 days	1	1	1	1
	8-11 days	2	2	2	2
	12-14 days	3	3	3	3
Not being able to stop or control worrying / Uzizwa ukhathazekile ngaso sonke isikhathi futhi awukwazi nokuyeka ukukhathazeka	0 days	0	0	0	0
	1-7 days	1	1	1	1
	8-11 days	2	2	2	2
	12-14 days	3	3	3	3
A score of 3 or more is screen positive for anxiety:	TOTAL	/6	/6	/6	/6
3. ALCOHOL: Alcohol Use Disorders Identification Test (AUD-C)					
I am going to ask you some questions about your use of alcoholic beverages Ngizokubuza imibuzo mayelana nokusebenzisa iziphuzo ezidakayo					
How often do you have a drink containing alcohol? / Ujwayele kangakanani ukuphuza amanzi amponjwana?	Never	0	0	0	0
	Monthly or less	1	1	1	1
	2-4 times a month	2	2	2	2
	2-3 times a week	3	3	3	3
	4 or more times per week	4	4	4	4
How many drinks containing alcohol do you have on a typical day when you are drinking? / Uma uphuza, ujwayele uphuza iziphuzo ezingaki?	1 or 2	0	0	0	0
	3 or 4	1	1	1	1
	5 or 6	2	2	2	2
	7 to 9	3	3	3	3
	10 or more	4	4	4	4
How often do you have six or more drinks in one session? / Kwenzeka kangaki ukuthi uphuze iziphuzo eziwu-6 kuyaphezulu ngesikhathi esisodwa?	Never	0	0	0	0
	Less than monthly	1	1	1	1
	Monthly	2	2	2	2
	Weekly	3	3	3	3
	Daily or almost daily	4	4	4	4
A score of 4 or more is screen positive for harmful substance use:	TOTAL	/12	/12	/12	/12
Administered by:					
Signature:					

Brief Mental Health (BMH) Screening Tool

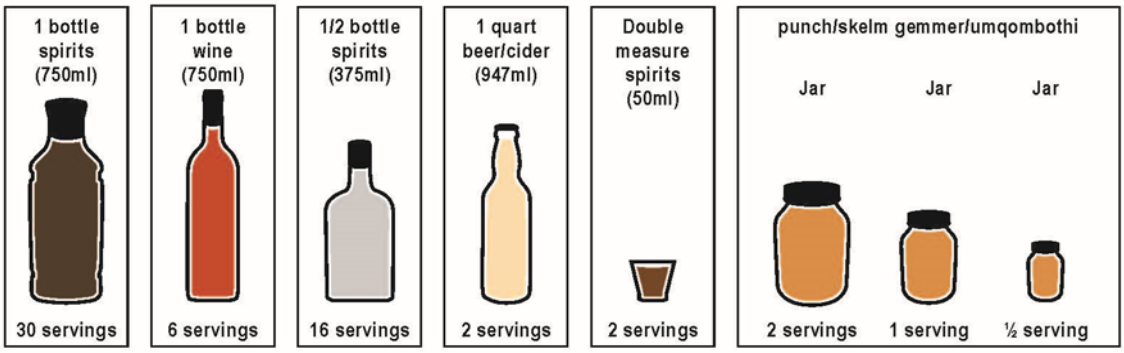
KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Chart for Standard Alcohol Drinks

1 serving = ONE standard drink



The number of standard drinks in commonly purchased quantities of alcohol



Source: Schoeman JH, Parry CD, Lombard CJ, Klopper HJ. Assessment of alcohol-screening instruments in tuberculosis patients. Tuber Lung Dis. 1994;75(5):371-376. doi:10.1016/0962-8479(94)90084-1
Graphics: South Africa - HIV Addiction Technology Transfer Centre (https://attcnetwork.org/centers/south-africa-hiv-attc/home)

How to score

Depression	
Score	What and how to record
2 or less	NAD (No Abnormality Detected) in the Mental Health section of the Clinical Management Page in the patient file
3 or more	Write as a fraction i.e. 3/6, 4/6, 5/6 or 6/6 so that the CNP can use their Adult Primary Care Guideline to conduct further assessment

Anxiety	
Score	What and how to record
2 or less	NAD (No Abnormality Detected) in the Mental Health section of the Clinical Management Page in the patient file
3 or more	Write as a fraction i.e. 3/6, 4/6, 5/6 or 6/6 so that the CNP can use their Adult Primary Care Guideline to conduct further assessment

Alcohol	
Score	What and how to record
3 or less	NAD (No Abnormality Detected) in the Mental Health section of the Clinical Management Page in the patient file
4 or more	Write as a fraction i.e. 4/12, 5/12, 6/12, 7/12, 8/12, 9/12, 10/12, 11/12 or 12/12 so that the CNP can use their Adult Primary Care Guideline to conduct further assessment

Figure 9: Brief mental health (BMH) screening tool

3.6.2 Training

One WBPHCOT, including 3 OTLs (one professional nurse and two enrolled nurses) and 17 CHWs, was selected as it was a fully functioning team comprised of OTLs and CHWs, and received a 4-day training workshop on the basic concepts of psychosocial and mental health conditions, self-care and on how to use the CMED tool. The training agenda is included in Appendix 9. Confidentiality and encouraging but never imposing health seeking was covered in the training. OTLs and CHWs were encouraged to refer patients as per existing DoH guidelines using routinely used referral forms. The development of the training material and the training itself was a collaboration between the Centre for Rural Health, UKZN and the South Africa-HIV Addiction Technology Transfer Centre Network for the KZN DoH (Appendix 10). The South Africa-HIV Addiction Technology Transfer Centre Network have extensive experience in conducting mental health training for CHWs, with their training found successful in improving knowledge, confidence and attitudes amongst trained CHWs (Sibeko et al., 2018).

Following the training, the WBPHCOTs administered the CMED tool over three weeks in their communities, and the accuracy of the tool was assessed.

3.6.3 Field Work Procedures

A project Research Assistant (RA), with a professional background in mental health, accompanied the CHWs on all household visits. The CHW first introduced the RA to the family and explained the purpose of the visit. The research assistant then had a discussion with the family about the study and willing family members consented using written informed consent. The RA observed the administration of the CMED by the CHW and recorded the household member/s responses to the algorithmic structured questions relating to the vignettes (Appendix 11). Immediately following the delivery of the CMED, the research assistant administered the validated BMH to the household

members (Appendix 11). The research assistant recorded whether the CMED identified the same household member as a positive [in need of referral] or negative case.

A positive score on the CMED results from positive responses to (a) a family member identifying with a vignette (reminds them of self/others in the household) and (b) if this has a negative impact on daily activities. Based on the following cut-off scores established for the BMH subscales through the BMH validation study, a positive score was generated if any individual scored above the cut-offs of ≥ 4 on the AUD_C or ≥3 on the PHQ2 or ≥3 on the GAD2 subscales (Bhana et al., 2019).

3.6.4 Sample

Using a prevalence rate of 17% based on a 12-month CMD prevalence estimate of 16.5%, established by the large-scale population-based study of CMDs in South Africa called the South African Stress and Health (SASH) study (Herman et al., 2009), with sensitivity set at 0.9, specificity at 0.85, and a confidence interval of 0.1, a sample of 203 participants was required (Table 9). It must be noted that the SASH study was published 14 years ago and data may be dated, however at the time of writing, it was the only large-scale study of the descriptive epidemiology of mental health in South Africa, and thus, it was deemed appropriate in informing the CMD prevalence rate.

Table 8: Sample calculations

Sensitivity	**Prevalence Rate**	**CI**	**Sample Size (rounded)**
90%	18%	10%	192
90%	**17%**	**10%**	**203**
90%	16%	10%	216
90%	16.5%	10%	209
90%	Avg: 10.8+16.5-13.65%	10%	250
85%	17%	10%	
Specificity	**Prevalence Rate**	**CI**	**Sample Size (rounded)**
85%	17%	10%	49

All family members 18 years and older visited by CHWs in households as part of routine care over three weeks were invited to participate in the study. Any family member unable to give written consent was excluded. A total of 202 participants were sampled.

3.6.5 Validity and reliability

Reliability refers to the consistency of a measure (whether the results can be replicated under the same conditions) and validity refers to the accuracy of a measure [whether the results really do represent what they intend to measure] (Terre Blanche, Durrheim, & Painter, 2006); Validity in the accuracy study is measured by sensitivity and specificity. The information obtained by comparing a new test (CMED) with the gold standard (BMH) is summarized in a two-by-two table in Table 10 (Parikh et al., 2008):

Table 9: Sensitivity and specificity explained

TEST	+ Has mental health problem	− Does not have mental health problem
+	a) Has mental health problem - IDENTIFIED TRUE POSITIVE (TP)	b) Does Not have mental health problem - FALSE POSITIVE (FP)
−	c) Has mental health problem – NOT IDENTIFIED FALSE NEGATIVE (FN)	d) Does not have mental health problem - TRUE NEGATIVE (TN)
	Total with MH problem	Total without MH problem

For any mental health screening tool to have value it must be able to identify those who have mental health problems and those who do not have a mental health problem.

In cell ′a′ we enter those in whom the test in question (CMED) correctly identified a person who has a mental health problem as actually having a mental health problem (as determined by the gold standard BMH). In other words, the CMED test is positive, as is the gold standard (BMH). These are the true positives (TP).

In cell ′b′ we enter those who have positive results for the CMED but do not have a mental health problem according to the "gold standard" BMH. In this case the CMED has wrongly screened the condition: These are false positives (FP).

In cell ′c′ we enter those who have a mental health problem on the "gold standard test" BMH but have negative results using the new test (CMED). In this case the CMED has wrongly labelled a person with a mental health problem as not having a mental health problem: These are false negatives (FN).

In cell ′d′ we enter those who have no mental health problem as determined by the "gold standard test" and are also negative with the new test (CMED). These are true negatives (TN).

Thus, when comparing the CMED against the BMH and determining the accuracy of the CMED (does it measure what it claims to measure) the two most important questions were:

1) Does a person who tests positive on the CMED also test positive on the BMH? The ability of a test to correctly identify an individual as 'diseased' or in this case as having a mental health problem is called the tests sensitivity [True positive] (Parikh et al., 2008).
2) Does a person who tests negative on the CMED also test negative on the BMH? The ability of a test to correctly classify an individual as disease-free or in this case to be without a mental health problem is called the test′s specificity [true negative] (Parikh et al., 2008).

The reliability and validity of the Accuracy Study where the CMED result is compared against the validated BMH screening tool are discussed in detail in Chapter Five.

3.6.6 Data Analysis

Sensitivity was prioritized over specificity as the intention was to identify any possible mental health condition. Simple descriptive analysis was used to describe the sample characteristics. Analysis of the performance of the CMED against the BMH was done using STATA 15.1 (StataCorp LLC, Texas, USA) to calculate receiver operating characteristics (ROC) tables and graphs.

3.7 Feasibility study

Feasibility studies determine whether an intervention, such as the CMED, should be recommended for efficacy testing and in the context of this study was important because there was no existing data in South Africa on the feasibility of a community mental health screening and psychoeducation tool.

Bowen et al.'s (2009) feasibility framework informed the study design, the interview tools as well as the analysis of the feasibility data. Not all eight focus areas were included as expansion, adaption and limited efficacy testing are part of the second stage of the CMED evaluation which is ongoing in the SMhINT study. Table 11 described how Bowen et al.'s (2009) Feasibility Framework was applied to the CMED Feasibility Study.

Table 10: Bowen et al.'s (2009) Feasibility Framework as applied to CMED

Feasibility Focus Areas	The CMED feasibility study asks…	Data informing the study: Can it work?
Acceptability	To what extent is the CMED judged as suitable, satisfying, or attractive to program deliverers (community health team) and recipients (household members)?	Observations Semi-structured interviews with households FGDs with community health team
Demand	To what extent is the CMED likely to be used (how much demand is likely to exist)	Semi-structured interviews with family members FGDs with community health team
Implementation	To what extent can the CMED be successfully delivered to intended	Observations

	recipients in some defined, but not fully controlled context? Is the intended purpose of the tool aligned to its use in practice in a real-world setting?	Semi-structured interview with households FGDs with community health team
Practicality	To what extent can the CMED be applied with participants using existing means, resources, and circumstances without outside intervention?	Observations Semi-structured interview with households FGDs with community health team
Integration	To what extent can the CMED be integrated within an existing system?	Observations Semi-structured interview with households FGDs with community health team

3.7.1 Sampling and recruitment

Following the four-day training of the community health team on mental health and the use of the CMED, the CHWs were asked to use the CMED as part of their daily routine for a period of three weeks. Full details of the training and informed consent procedures are described above in the Accuracy Study Methods. CHWs were asked to use their local knowledge and community profiles to identify homes where family members may have symptoms that match those covered in the vignettes. These households were then targeted to be included in the study. The planned sample for the Feasibility Study is described in Table 12.

3.7.2 Procedure

The feasibility research involved four phases: (1) observation of the administration of the CMED in households; (2) semi-structured interviews with household members after the CMED administration; (3) follow-up interviews with household members referred for care; and (4) focus group discussions (FGDs) with WBPHCOTs (see Table 2).

3.7.2.1 Observation of the administration of the CMED in households

Permission for the session to be observed was obtained from both CHWs and household members

within the informed consent process. The aim of the observations was to gain an in-depth understanding of how the CMED was administered in the household by CHWs, including fidelity, and how household members responded to the tool (Mack, Woodsong, MacQueen, Guest, & Namey, 2005). The RAs, described above in the accuracy study, accompanied each CHW on a minimum of three visits, where observations of the administration of the CMED tool were recorded with in-depth field notes, guided by a standardized template (Appendix 5). The latter assessed how the screening tool was received by the household, and how the tool was administered by the CHW, including how it was integrated into services normally provided by CHWs.

3.7.2.2 Semi structured interviews with household members

Following the CMED and BMH administration, the RA then conducted semi-structured in-depth interviews with household member/s once the visit was completed to explore the experiences of the CMED consultation and recommendations on how to improve the tool and the process (Appendix 6).

3.7.2.3 Follow-up interviews with household members referred for care

Household members who identified with the symptoms displayed by the main characters in the vignettes were identified as at risk of having a mental health condition and given a referral by the CHW to the PHC facility for further screening and assessment as per routine care. The RA asked for permission from all household members referred, to do a follow up interview. The RA contacted the household member to schedule an interview at least three weeks after the date of detection. Structured interviews (Appendix 7) were conducted in person or telephonically based on the household members' availability. Household members, who the RAs were able to reach and who already had provided consent to participate in the study, were asked whether they had visited a health-care facility in the past three weeks. Household members who visited a PHC facility for problems associated with a symptom description identified by the CMED were asked a number of semi-structured interview questions that included the following:

- Who/what determined whether they sought help (including referral through the tool as one of the options)?
- What problem did they seek help for?
- Was treatment initiated?

Participants who chose not to act on a referral were asked for reasons for their decision, in order to identify barriers to access to care for mental health.

3.7.2.4 FGDs and mentorship with community health teams

FGDs were held weekly with the WBPHCOT in the form of reflective sessions over a seven-week period. The purpose of these FGDs was to share experiences (successes and challenges) of using the tool, identify common bottlenecks and to share learnings within the team. The FGDs also provided an opportunity to identify gaps and to thereafter provide mentorship for the team.

Weekly mentorship sessions were led by a CQI expert, as part of the intervention, to build on information provided in the training and to address gaps in CHW understanding and in the delivery of the CMED. The mentorship was also structured to support OTLs in providing mentorship to their CHWs in the delivery of the CMED as well as promoting self-care within the team.
Two additional FGDs (Appendix 8) were conducted at the end of the process to reflect on the overall experiences and learnings. The FGDs were audio-recorded with participant permission.

All data collected through the audio-recordings of interviews and FGDs were transcribed in isiZulu and translated into English.

3.7.3 Sample

The targeted sample size is included in Table 12. Some interviews included one household member while at other times more than one household member was present. More follow-up interviews were planned but were disrupted by the onset of the COVID-19 pandemic, which could account for

the lower number attained.

Table 11: Targeted Sample

	Focus Group Discussions	Observations	Semi-structured interviews	Follow-up interviews
Targeted sample	18	98	98	55

3.8 Qualitative Analysis

Guided thematic analysis (Gale et al., 2013; Ritchie & Spencer, 1994) using NVivo was used to analyse the formative study and feasibility study data.

Bowen et al.'s (2009) feasibility framework was used to develop the overarching a priori themes, while allowing for inductive themes to emerge per the framework analysis method (Gale et al., 2013). Triangulation was carried out by using different data collection methods (semi-structured interviews, structured follow-up interviews, FGDs and observations) and accessing information from diverse sources (household members and CHWs).

Observations were collated into an excel document.

Textual data [interviews, FGDs] from both the formative and feasibility studies were coded and analysed using the five stages of thematic framework analysis by two qualitative analysts MG (author) and NK [research assistant]). The stages include familiarisation; identifying a thematic framework; systematically applying the framework to the data (indexing); creating a summarised matrix for each theme (charting); and interpretation. Transcripts and observation field notes were entered into qualitative data analysis software (NVivo version 12). After reading ten transcripts (familiarization) a thematic framework was developed based on a priori themes using the eight focus areas of feasibility studies as well as new themes emerging from the data(Bowen et al., 2009) (Bowen et al., 2009). MG and NK coded the first 10 transcripts independently, using inductive and

deductive methods to verify and ensure reliability of the coding process. Coding comparisons were applied in NVivo to ensure a Kappa score of greater than 0.4. Coding structures were iteratively compared; the analysts met weekly to discuss theme development and resolve any interpretation discrepancies in the analysis process (Lacey & Luff, 2001). Discrepancies that could not be resolved were reviewed by the project Principal Investigator. The analysts repeated the process applying the thematic framework to the data until all the remaining data were coded, including additional generation of codes, memos, and interview summaries. A summarized matrix for each theme (charting) was developed in Microsoft Excel which allowed for structured mapping and interpretation of data.

3.9 Trustworthiness and rigour

Various steps were taken in the qualitative research process to ensure rigour and trustworthiness with a focus on credibility, transferability, dependability and confirmability of the research (N.K. Denzin & Lincoln, 1994; Mays & Pope, 2000; Patton, 2002).

Credibility refers to whether or not the representation of data credibly reflects the views of the participants studied. In this study credibility was obtained through analyst triangulation, attention to negative cases, member checks, and use of verbatim quotes in the analysis (Patton, 2002).

Analyst triangulation was ensured through multiple analysts reviewing the data. Two qualitative analysts analysed the data to ensure inter-rater reliability, and the framework analysis excel document was further reviewed by the overall SMhINT Principal Investigator. Coding comparisons were applied in NVivo (Version 12) to ensure Kappa scores were acceptable. Although rare, discrepancies that could not be resolved were discussed and reviewed by the project Principal Investigator. The analysts also enhanced credibility through engaging in a systematic search for alternative themes, divergent patterns and rival explanations (Mays & Pope, 2000; Patton, 2002) in the data to ensure that the findings were true to the data. Failure to find strong evidence for

alternative explanations strengthened the findings generated and demonstrated credibility in the findings of this study.

The researcher also kept track of the process of identifying and testing alternative explanations in the data analysis. Attention to negative cases where elements in the data contradicted the main explanation provided were explored in order to refine the analysis and to ensure findings were credible (Mays & Pope, 2000).

Respondent validation or member check was conducted within the interviews whereby the Research Assistants were trained to constantly check the participants understanding of the phenomenon by utilizing techniques such as paraphrasing and summarisation for clarification. The same process was used in the FGDs with WBPHCOTs and analysis findings were also shared with the WBPHCOT team to ensure that the findings accurately captured their experiences.

Transferability evaluates whether research findings are transferable to other specific settings (Patton, 2002). In this research transferability was sought through the clear description of study participants and the study context as well as providing rich, thick descriptions of the data included in Chapter Four and Chapter Six.

Dependability refers to whether the process of research is logical, traceable and clearly documented, particularly on the methods chosen and the decisions made by the researchers (Patton, 2002). Techniques to ensure dependability in this study included clear documentation of data collection and analysis methods, triangulation of data collection methods, analyst triangulation and researcher reflexivity (Dowling, 2006; Jootun, McGhee, & Marland, 2009; Patton, 2002; Watt, 2007).

Triangulation was carried out by using different data collection methods and accessing information

from diverse sources as explained in the Formative study (Chapter Four) and Feasibility study (Chapter Six). In the Formative Study different sources of data were used including the expert panel review data, DoH meetings and policy documents, as well as FGDs with WBPHCOTs to inform the development of the tool to ensure that it comprehensively met the needs of the DoH. In the Feasibility Study triangulation was achieved through the use of different data collection methods including semi-structured interviews, structured follow-up interviews, FGDs and observations as well as accessing information from both household members and WBPHCOTs.

Reflexivity refers to the analytic attention of the researcher to critically reflect on their role in the research process including their biases, assumptions and beliefs (Patton, 2002). The study adopted a pragmatic view of inquiry, and this necessitated a reflexive stance in all stages of research as the participant perspectives as well as my own perspectives were shaped by the inquiry process itself. During the research process, I had different roles in the process including developer/implementer as well as researcher and student. In addition I am a privileged, white, middle class female and it was important to acknowledge how I impacted on the research context and how it impacted on me. Self-examination was important in ensuring that I acknowledged my particular frame of reference and how this impacts on the research process. I am fortunate to belong to a dynamic and diverse [different races, ages, cultures, religions, professional backgrounds] team at the Centre for Rural Health, where different viewpoints are raised and debated (sometimes intensely), and decisions made collectively. This environment has been invaluable to my own reflexive journey and has often confronted my own entrenched views, helping me to deliberate on a better way forward or to feel comfortable with original view points, and has shaped how I approach research.

Patton's (2014) guiding questions provided a framework for engaging in reflexivity in this study (Box 6). Given my role as a developer of the CMED tool I needed to constantly be aware of my invested interest in the success of the tool. This position was sometimes difficult to align with my

role as a researcher, and my supervisor and the overall project PI, was helpful in reminding me that this intervention was embedded within a learning health system approach and that the lessons learned, both successes and challenges, were important for improving the utility and chances of integration (NPT collective action) of the CMED within the system.

Guiding questions

- What do I know?
- How do I know what I know?
- What has shaped my perspective?
- With what voice do I share my perspective?
- What do I do with what I have found?"

Box 6: Questions guiding reflexivity in CMED (Patton 2014)

The process of reflexivity was particularly important in the analysis process. I made sure to track my thoughts using the memo function in NVivo. I also had regular discussions with my co-analyst and supervisor about the meaning of the data. This process was helpful as it was able to confirm meaning when we were aligned in our approach or to offer different perspectives when we differed in the meaning of the data. This prompted reflection on what had shaped my perspective of the data and from what position I viewed the data; 'does my position predispose me to believe that the data suggest a certain conclusion?' This process also prompted me to think about the data from other positions, for example that of the CHWs, the DoH management, and what the conclusion may mean for them.

Confirmability evaluates the extent to which the findings are qualitatively confirmable. Techniques to ensure the analysis was grounded in the data included debriefing, examination of the audit trail and researcher reflexivity (Dowling, 2006; Jootun et al., 2009; Patton, 2002; Watt, 2007). In addition, prolonged engagement in the field (Creswell & Miller, 2000) also contributed to trustworthiness as the research team had developed a relationship with the Department of Health

through the MhINT intervention and SMhINT study for a period of over five years. This also allowed for an in-depth understanding of the health system and the research context. This process was also facilitated through the continuous quality improvement process which fosters quality relationships with stakeholders.

Chapter 4 : Formative Study

The development of a Community Mental Health Education and Detection (CMED) Tool in South Africa.

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4.1 Abstract

Background: Low demand for mental health services in sub-Saharan Africa is driven by poor mental health literacy, stigma, and poor service availability.

Objective: To develop a Community Mental Health Education and Detection (CMED) Tool for adults for use by community health teams in South Africa aligned with their roles of health promotion, screening and linkage to care.

Methods: Formative evaluation methods involving four processes: (1) Ongoing engagement with the KwaZulu-Natal Department of Health (KZN DoH) to ensure co-creation of the CMED tool and alignment with routine community health team activities; (2) Adaptation of the CMED tool from the Community Informant Detection Tool (CIDT), used to promote help-seeking of people with mental health problems in Nepal; (3) Review of the CMED vignettes and illustrations by a panel of local and international mental health care experts to establish accuracy and contextual and cultural relevance; (4) Process mapping and focus group discussions with community health teams in one district to establish cultural and contextual appropriateness as well as coherence and compatibility with existing community-based services.

Results: The resulting CMED tool consists of five case vignettes and related illustrations to facilitate psychoeducation and the detection of possible depression, anxiety, psychosis, harmful alcohol use, and drug use by community health teams. Based on prototype matching, it includes two structured questions to guide the community health teams in the detection and referral process. The tool was acceptable, culturally and contextually appropriate, and helpful for the services provided by community health teams. Challenges of working in households and the importance of self-care were highlighted as considerations when developing training content and piloting the tool.

Conclusion: Extensive consultation with the KZN DoH, community health teams, and the expert mental health panel resulted in developing a tool that was perceived as culturally sensitive and relevant to the community package of services.

Keywords: Mental Health, Screening, Psychoeducation, Community Health Workers, Low- and middle-income countries

4.2 Introduction

Sub-Saharan Africa faces an increasing burden of mental health conditions, with projections that the disability burden from these conditions will increase by 130% in the next 40 years (Charlson et al., 2014). There is thus an urgent need to close the treatment gap that is estimated to be between 76.3% to 85.4% in less-developed countries (Demyttenaere et al., 2004). In South Africa, thirty percent of the population experience a CMD in their life time (Herman et al., 2009) and only 7.5 percent of the uninsured population receive mental health treatment of any kind (Docrat et al., 2019). In order to address the treatment gap in South Africa, an increased supply of mental health services has been encouraged through integration into the existing primary health care (PHC) platforms using a task-sharing approach (South African National Department of Health, 2013a). There is ample evidence of the effectiveness and cost efficiency of this approach in low- and middle-income countries [LMICs] (Patel et al., 2016; Patel et al., 2018). However, there is also a need to strengthen the demand for services to address the treatment gap (Jordans et al., 2015; Shidhaye et al., 2017). Many people with mental health conditions do not seek care due to poor mental health literacy, which includes a lack of information and knowledge about the signs and symptoms of mental health problems, a lack of awareness of service availability, stigma, and misinformation about treatment (Egbe et al., 2014; Ganasen et al., 2008; Patel, 2007; Saraceno et al., 2007; Shidhaye et al., 2017). A study on stigma and discrimination experienced by service users in South Africa found that stigma is perpetuated by family, friends, community members and health workers and is often caused by misconceptions about mental illness leading to delays in accessing care, worsening symptoms and delays in recovery (Egbe et al., 2014). Developing interventions targeted at raising mental health awareness in communities was recommended in addressing stigma (Egbe et al., 2014).

While community case detection by lay workers has been found to improve help-seeking for mental health problems in other developing contexts (Jordans et al., 2015; Jordans et al., 2020; Shidhaye et al., 2017), the need for interventions to increase mental health literacy in LMICs are also indicated (Dang et al., 2021; Ganasen et al., 2008; Shidhaye et al., 2017). These interventions do, however, need to consider the context (including family and cultural belief systems/understandings) and build on existing knowledge (Ganasen et al., 2008). Evidence from LMICs indicates that such interventions at a community level contribute to increased demand for mental health services at a health facility level (Shidhaye et al., 2017).

Community Health Workers (CHWs) have been shown to contribute significantly to increasing coverage of key interventions in communities, particularly those in LMICs with human resource constraints (Bhutta et al., 2010; Shidhaye et al., 2017; Zulu et al., 2014). South Africa has embarked on a PHC re-engineering strategy that includes community health teams formally known as ward-based primary health care outreach teams linked to PHC facilities (South African National Department of Health, 2017b) that function in households and community venues in designated municipal wards (Assegaai & Schneider, 2019). Outreach Team Leaders (OTLs), who are higher-level (professional) or mid-level (enrolled) nurses appointed in local PHC facilities, supervise the CHWs who are responsible for day-to-day household visits for a defined number of households in their wards (H. Schneider et al., 2018). CHWs minimum required level of formal education is a school level grade 10 supplemented with basic training (10 day courses followed by practicums of up to a year of study with a focus on the health system, priority health areas, and social support (H. Schneider et al., 2018). Although mental health is a part of the CHW health promotion manual a comprehensive focus on mental health was not included in their training at the time of the study. CHWs typically live in the communities they serve, and their roles include health promotion and education in communities, screening and identifying individuals and families at risk of ill-health, tracing defaulters and facilitating onward referral for relevant care (Assegaai & Schneider, 2019).

Their focus, to date, has been primarily on physical health conditions with key areas including maternal and child health, HIV and TB.

This study is part of the Southern African Research Consortium for Mental health INTegration (SMhINT) project that has been evaluating the scale-up of a collaborative care package for the integration of mental health into the care provided for chronic care patients at a PHC level in collaboration with the KwaZulu-Natal Department of Health (KZN DoH) using a learning health system approach (Petersen, Kemp, et al., 2021). The collaborative care package – known as the Mental health INTegration (MhINT) package uses training, support tools/materials, and continuous quality improvement (CQI) (Institute for Healthcare Improvement, 2003; O'Neill et al., 2011) as strategies to implement and scale-up the collaborative care package. Through this learning health system approach, the need to increase identification of CMDs, including depression, anxiety, and substance misuse, at a PHC level was identified. This led, *inter alia*, to the development and validation of the Brief Mental Health Screening Tool (BMH) (Bhana et al., 2019) designed to be used by enrolled nurses at a PHC facility level.

In the context where the South African DoH was undergoing a PHC reengineering process in line with community oriented PHC, the lack of a standardised screening tool for mental health conditions at a community level was identified as a gap in the battery of screening tools used by CHWs. The possibility of using the BMH at the community level was deliberated on by the South African and KZN DoH, but excluded because of its symptom checklist approach. It was felt that in the context of poor mental health literacy, it could potentially lead to labelling and stigmatisation of people who screened positive at a community level. These risks were mitigated at a PHC facility level where the BMH is administered, as confidentiality and the rights of patients were protected by professional ethical codes of conduct. The South African DoH and the KZN DoH thus requested the SMhINT team to develop and validate a mental health tool that could be used at the community level by community health teams to identify community members with possible mental health

conditions during their routine household visits. Given the low levels of mental health literacy in South African communities as well as the screening and health promotion role of community health teams (Andersson et al., 2013; Ganasen et al., 2008; Hugo et al., 2003), it was agreed that psychoeducation is included as part of this tool to raise mental health awareness.

The Community Mental Health Education and Detection (CMED) tool was thus developed to provide psychoeducation on mental health conditions and identify people with potential mental health problems at a household level who may benefit from available mental health interventions. This paper aims to report on the formative research processes informing the development of the CMED tool.

4.3 Methods

4.3.1 Theory

A mixed-methods approach informed by Normalisation Process Theory [NPT] (Murray et al., 2010) was adopted as a broad framework to elucidate the factors needed to ensure a culturally and contextually relevant tool that would ease integration into routine CHW services (normalised). Regardless of the success of an intervention, its long-term impact depends on its effectiveness in the real-world context and how widely it is implemented. Implementation and sustainability of interventions need to be considered from the outset and can be evaluated using NPT. NPT is relevant in the early implementation stages to when an intervention becomes a part of routine services (normalised). The four components of NPT include i) coherence (meaning and sense-making by users), ii) cognitive participation (engagement), iii) collective action (work needed to ensure adoption, compatibility with the existing system), and iv) reflexive monitoring (benefits/costs of the intervention).

4.3.2 Setting

The study was conducted in the Amajuba District of KwaZulu-Natal province of South Africa, where the larger SMhINT study was being conducted. It is made up of three sub-districts – Newcastle (urban), Emadlangeni (rural), and Dannhauser (semi-urban). There are 53 community wards and, at the time of the study, a total of 12 community health teams. The study was conducted in the Newcastle sub-district [population of 389 117] (Statistics South Africa, 2016). It comprises both urban and rural areas and is serviced by a district and provincial hospital with 14 PHC facilities and five fully formed (OTL and CHWs) community health teams.

4.3.3 Procedure

The formative research involved four processes: (1) Ongoing engagement and collaboration with the KZN DoH to ensure co-creation of the CMED tool; (2) Development of the CMED tool materials; (3) Review by an expert panel; and (4) Process mapping and focus group discussions with community health teams in the Newcastle sub-district to inform a standard operating procedure for use in routine household visits.

4.3.3.1 Process One: Engagement with the Department of Health

To ensure that the development of the CMED was aligned with the KZN DoH strategic vision, their needs, and priority areas with respect to the community health team roles, functions, and services provided for other conditions, we had ongoing engagements with the KZN DoH. To this end, a total of 10 joint meetings were held with the KZN DoH, as well as email communication. In tandem, we reviewed the current community health team guidelines (South African National Department of Health, 2017b), the national mental health policy (South African National Department of Health, 2013a), the existing community health worker curriculum and the community package of services.

4.3.3.2 Process Two: Adaptation and development of vignettes and illustrations for the CMED tool

The CMED tool was adapted from the Community Informant Detection Tool (CIDT) that was used to promote help-seeking of people with mental health problems in Nepal as part of the Programme for Improving Mental Health Care (PRIME) (Jordans et al., 2015; Subba et al., 2017). As with the CIDT (Subba et al., 2017), the CMED tool is based on the prototype matching approach. Prototype matching is where a diagnosis is made by matching a patient's presenting symptoms with a paragraph-length description of the condition (Westen, 2012). It has been found to have several advantages relating to clinical utility over the traditional method of counting symptoms to diagnose patients (Westen, 2012). The format of the CMED and Nepalese CIDT consists of vignettes (prototype paragraph) and illustrations for five mental health conditions. Each vignette (in the CMED and CIDT) is followed by three structured questions (Table 13) that aid the health worker in matching symptoms with the prototype vignette and determines if the family member requires a referral for further care. The mental health conditions included in the CMED tool were depression, anxiety, harmful alcohol and drug use, and psychosis. These mental health conditions were chosen on the basis of being the most common and high burden mental and substance use disorders in South Africa (Herman et al., 2009).

Table 12: Comparison of structured questions in the CIDT and CMED

CIDT Structured Questions	CMED Tool Structured Questions
1. Does the narrative apply to the person you are talking to now? (four-point scale: no match, moderate match, good match, very good match)	1. Does this story remind you of anyone in the household? Yes/No
2. Do the problems have an impact on daily functioning?	2. Do the problems have a negative impact on daily activities? Yes/No
3. Does the person want support in dealing with these problems?	3. Refer family member and provide healthy lifestyle information

As with the CIDT, although the symptoms of these mental health conditions were drawn from the WHO mhGAP intervention guide (World Health Organisation, 2016a), local idioms of mental health problems were incorporated into the development of the vignettes drawing on the literature (Campbell et al., 2017; Davies et al., 2016; den Hertog et al., 2016; den Hertog et al., 2020; Petersen et al., 2013; Sibeko, 2016; Swartz, 1998) and the everyday rhetoric of the local context. Local idioms of distress refer to ways of expressing distress that may not involve specific symptoms or syndromes, but provide collective ways of experiencing and talking about distress in local contexts (Nichter, 2010).

The development of the vignettes was undertaken by a team of clinical, counselling and research psychologists from the Centre for Rural Health, University of KwaZulu-Natal, and psychologists/mental health practitioners from the South Africa HIV- Addiction Technology Transfer Centre (ATTC) at the University of Cape Town who have developed a mental health training for CHWs (Sibeko, 2016). A graphic artist was employed to illustrate the key symptoms of the protagonist with the mental health condition in each story.

The process described above followed Flaherty's et al. (1988) translational research methods. These include ensuring content equivalence, that involved making sure that content was relevant to the phenomena being studied, in this case screening for mental health conditions in a South African context. Semantic and conceptual equivalence was also ensured. In this regard, although vignettes were different to those used in the CIDT, the overall meaning of the tool was retained and the same theoretical construct has been adopted (Flaherty et al., 1988).

Standard translation and back-translation procedures were used to provide an isiZulu version of the CMED tool. The translation process was conducted by two bilingual clinical psychologists and a bilingual research psychologist who had an in-depth knowledge of local terms and idioms used by people when discussing and defining mental health.

4.3.3.3 Process Three: Review by expert panel (Establishing criterion-related validity of the CMED tool)

The resulting CMED tool was then reviewed by an expert mental health panel to assess prioritisation of key symptoms and the appropriateness of the vignettes and illustrations to the South African context. This approach was modelled on the process used to inform the development of the CIDT (Subba et al., 2017), ensuring conceptual, criterion, and semantic equivalence (Flaherty et al., 1988).

The expert panel was selectively targeted because of their particular expertise in working with local populations and we wanted the panel to reflect the range of mental health workers in South Africa. The panel included a mix of health professionals working in the public health sector including psychiatrists, psychologists, psychiatric nurses, social workers and registered counsellors. The panel also included government representatives from the KZN DoH including the KZN Mental Health Directorate and the KZN District Services Community Task Team, as well as academic mental health specialists. The vast majority of the expert panel was local. The international expert included was part of the team that developed the CIDT. These insights were valuable given that we were adapting the CIDT and wanted to ensure that Flaherty's conceptual, criterion and semantic equivalence was retained through the adaptations. We also wanted insights from the CIDT team as they had already tested their tool in a LMIC.

The question about relevance of symptoms was modelled on the three-point scale (high relevance, low relevance, no relevance) used in the CIDT. We adapted the questions (3-point scale) used in the CIDT and posed these as three different questions to the panel. The expert panel in the CMED were asked to review each vignette using the following guiding questions:

1) "The vignette includes symptoms commonly found among people with this condition." With the response options being a) Yes or b) If No, what are the problems and what changes would you recommend?

2) The second question to the panel was “Are the graphics used appropriate in depicting some of the symptoms of the condition? With the response options being a) Yes or b) If No, what changes would you recommend?
3) Additionally, experts were asked an open-ended question regarding additional comments or suggestions including the cultural appropriateness of each vignette to the South African context. Local experts were asked to review the relevance of the description of symptoms in the vignettes and to comment on the relevance of the characters, the stories, graphics, and language used to the South African context.

All responses were collated in an excel document. “No” responses and associated problems/ suggestions were discussed by the research team and amendments were then made to the vignettes and graphics. The open-ended nature of the panel questions allowed the experts to provide detail on how the vignettes should be improved.

Additionally, the understanding of the vignettes was also assessed in Process Four with CHWs as they were asked what their understanding of each vignette was. Through this process we wanted to ensure that the mental health conditions included in the vignettes were easily understood by the CHWs, who are lay workers with a school leaving certificate and minimal mental health knowledge.

4.3.3.4 Process Four: Process mapping and focus group discussions with community health teams

Process mapping of community health team day-to-day roles and activities

Process mapping is part of the Continuous Quality Improvement (CQI) toolkit (Institute for Healthcare Improvement, 2003; O'Neill et al., 2011) that enables an in-depth understanding of complex systems and adoption of improvement interventions to local contexts (Antonacci et al., 2018). Process maps are particularly useful when designing new interventions or programs to help understand the current processes and thus think through the most effective and efficient ways of

embedding new innovations within existing systems; in this case, the CMED tool. Information from different sources, including both interviews and direct observations, are helpful in validating process maps given the multiple methods used (Antonacci et al., 2018).

A CQI process mapping workshop was conducted with 54 community health team members (44 CHWs, 10 OTLs/supervisors) from five PHC facilities (all CHWs belonged to formal community health teams) in the Newcastle sub-district at a central location to gain an in-depth understanding of the roles and activities of community health teams including planning, home visits, linking patients for referral, follow-up, and administration. This understanding was necessary to ensure coherence and compatibility of the CMED with the existing activities of the community health teams. For the process mapping exercise, the 54 participants were divided into six groups: two OTL/supervisor groups and four CHW groups to ensure that diverse perspectives were captured from people with different roles within the community health teams in the generation of the process maps (Antonacci et al., 2018).

The community health teams were asked to create a visual map of their daily activities from the start to the end of the week (Box 7).

WBPHCOT Process Map (Instructions)

We would like to understand your work.

Please describe a typical week as a WBPHCOT (CHW or OTL)?

- What happens first? (Write down first step)
- What happens next? (Continue for all steps and draw arrows connecting steps)
- Note: How long does each step take?
- Include who is responsible for each step and if/how it is documented
- Remember to include what is actually happening rather than what is supposed to happen

Box 7: WBPHCOT process mapping instructions

In addition to the process mapping workshop, observations of household visits were also conducted in three community wards to directly observe community health team activities, to better understand

their daily work and how the CMED tool could be integrated into the current community package of services. The same steps were employed as described in Box 7, where CQI mentors shadowed community health teams during their household visits.

Focus group discussions

FGDs were conducted with 54 community health team members divided into six groups (the same groups that were involved in the process mapping workshop) to explore if the purpose of the proposed CMED tool was understandable, relevant to their context (including if vignettes and illustrations were culturally appropriate/realistic, and if the language used was acceptable) as well as their perceptions of the feasibility of administering the tool at a household level. We also asked the groups what their understanding of each vignette was to ensure that the meaning of each condition was clearly conveyed and understood in the way we intended. Five groups were conducted in isiZulu and one group was conducted in English. Hard copies of the CMED tool were given to the groups in both English and isiZulu. Each group was given one vignette from the CMED tool to discuss so that each vignette could be explored in depth. Recommended changes to the tool were also discussed.

4.3.4 Data Analysis

All twelve audio-recordings of the process mapping and FGDs were transcribed and isiZulu transcripts were then translated into English. Framework analysis (Gale et al., 2013; Ritchie & Spencer, 1994) was used to analyse the data using qualitative software (NVivo version 12). The stages of analysis that were followed included familiarisation (immersion in data); identifying a thematic framework based on the interview questions and inductive themes generated from the data; systematically applying the framework to the data (indexing/coding); creating a summarised matrix for each theme (charting in Xcel); and interpretation(Gale et al., 2013; Ritchie & Spencer, 1994). The analysis was conducted by two qualitative analysts MG (author) and NK (research assistant), with regular discussion of the codes and latent patterns of meaning to deepen reflexive engagement

with the data(Braun & Clarke, 2019). The two analysts first read the first five transcripts (familiarisation) independently where notes were made on the transcripts identifying possible themes. A meeting was then held to develop the thematic framework. This was based on *a priori* interview topics and new themes generated from the data. The remaining transcripts were coded and analysed using the framework developed. Discrepancies were recorded and discussed until consensus on the framework was reached. Both semantic and latent meanings were captured in the analysis, allowing the inclusion of both descriptive and interpretative accounts of the data(Braun & Clarke, 2019).

4.3.5 Ethics

Ethical approval was obtained from the University of KwaZulu-Natal Biomedical Research Ethics Committee (BREC) (BREC Ref No: BF190/17) and the KwaZulu-Natal Department of Health. All participants provided written informed consent.

4.4 Results

4.4.1 Process One: Outcomes from Collaboration with and review by Department of Health

The KZN DoH reviewed and commented on the CMED tool in terms of the local relevance of the tool and congruence with routine DoH processes and referral pathways within the system. The KZN DoH team flagged low mental health literacy in their communities as a challenge in accessing care and raised the need to educate communities in understanding mental health conditions and treatment options (including self-help) if help is required. The team emphasised that the CMED tool should help families to self-identify leading to a referral rather than a process of labelling.

The KZN DoH team recommended an algorithm be added to the tool to help guide the CHWs in choosing which vignette to read at the household visit, and this was added accordingly (see Figure 1). Changes were also made to the structured questions found in each vignette. In the CIDT and the

first draft of the CMED tool, the family member was asked if they would like a referral (Question 3). On advice from the KZN District Services Community Task Team, this was modified to providing a referral as is the practice with existing tools that CHWs use for other health conditions. The rationale provided by the DoH management was when CHWs screen household members for physical conditions e.g. TB, the household member is not asked if they would like a referral but are provided with a referral slip. For this reason the third question was amended to "refer family member and provide healthy lifestyle information".

4.4.2 Process Two: Developing vignettes and illustrations

The revised CMED tool consists of five case vignettes and related illustrations to facilitate the detection of possible depression, anxiety, psychosis, harmful alcohol and drug use by CHWs. The CMED tool, unlike the CIDT, has an initial flowchart (Figure 11) which helps direct CHWs as to which vignette to read in a household. The vignettes are identified by character e.g. Nontobeko, and not by the associated mental health condition e.g. depression to obviate labelling or stigmatisation. Graphics of four key symptoms of each condition is shown to family members while the CHW reads the vignette. A calendar book format was used where family members are shown the illustrations and associated captions (Figure 12), while on the reverse side the CHW is guided by the vignette (Figure 13). The family is asked what has happened in the character's life, the main symptoms of the condition are summarised and further information about the condition is given by the CHW. The CMED differs from the CIDT in that after each vignette, an interactive psychoeducation discussion is introduced to promote an understanding of the symptoms of the different conditions.

The interactive psychoeducation component draws on our past work of training lay counsellors in mental health and includes the head, heart and feet model in each vignette to guide the CHW in encouraging the family to reflect on what the protagonist in each story is thinking including thoughts or cognitive disturbances that may be evident (head), what they are feeling/emotional

impact of the condition (heart) and how they are behaving (feet). This model draws on Cognitive Behavioural Therapy as a tool to develop healthy thinking skills and has been used in the training of the CHWs to aid reflection and internalisation of learning following adult education techniques (South Africa HIV Addiction Technology Transfer Centre, 2020). The CHW then goes onto provide further information on each condition (health promotion). Following the psychoeducation discussion, the family is then asked by the CHW whether someone in the household reminds them of the character in the vignette as contained in the pictures and the story. They are then asked the extent to which the family member matches the prototype vignette. In place of four-point scale used in the CIDT and where the person administering the tool would assess the match in which subtle differences are explained, the CMED tool asks the family members to assess the match using a binary format of "yes" and "no", that obviates the need for explanation. A positive match together with a positive response to whether the symptoms impact on the person's daily functioning leads to a referral to existing PHC mental health services (See Figure 13). It must be noted that the CMED is a first point of detection, referral leads to screening for a mental health condition at the primary health care facility by an enrolled nurse using the brief mental health (BMH) screening tool, following a positive screen they are then referred on for assessment, diagnosis and care by a professional nurse.

In the event that no family member is identified as matching any vignette, the CMED tool prompts the CHWs to use the healthy lifestyle page with related illustrations to provide families with information to support mental wellbeing at home, e.g. diet, adequate sleep, exercise, social support (Figure 14).

The method of assessment in the CMED tool (technical equivalence) as compared to the CIDT has been retained in the design and administration of the structured questions and interpretation of the

CMED tool as a positive screen for a mental health problem and in need of referral or negative screen where no action is needed (criterion equivalence) (Flaherty et al., 1988).

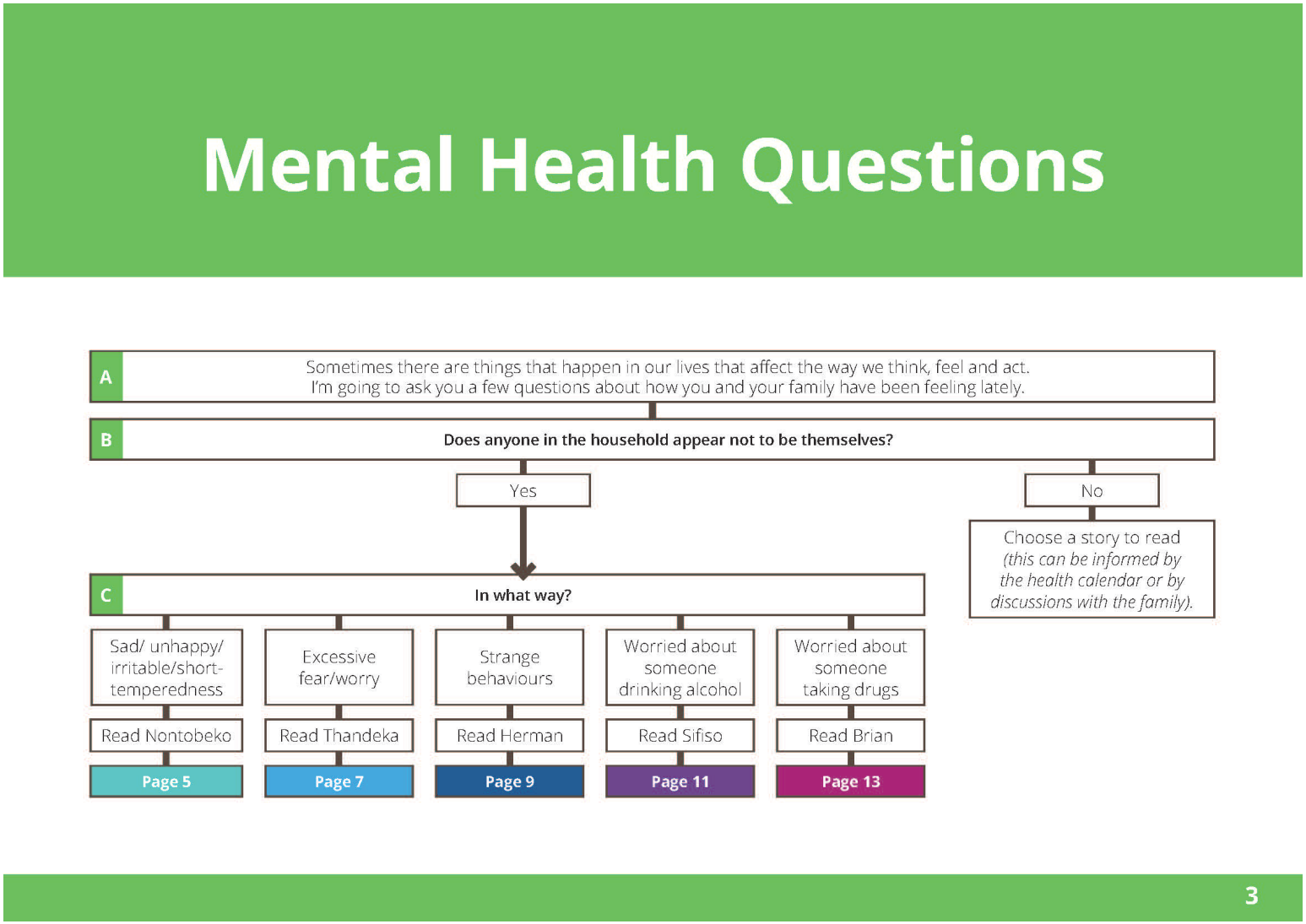

Figure 10: Mental health question flowchart

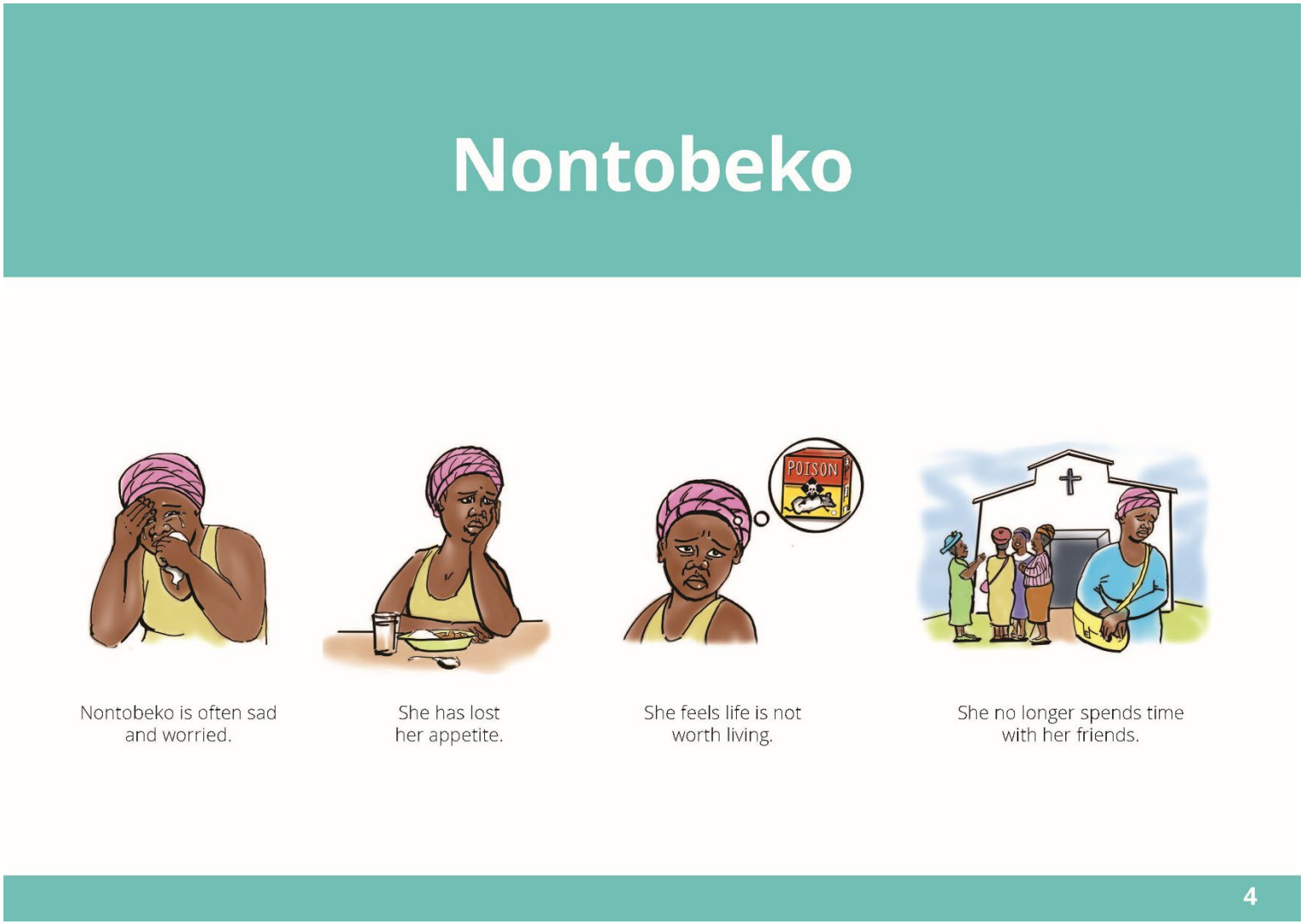

Figure 11: Vignette of Nontobeko (depression) as seen by household members

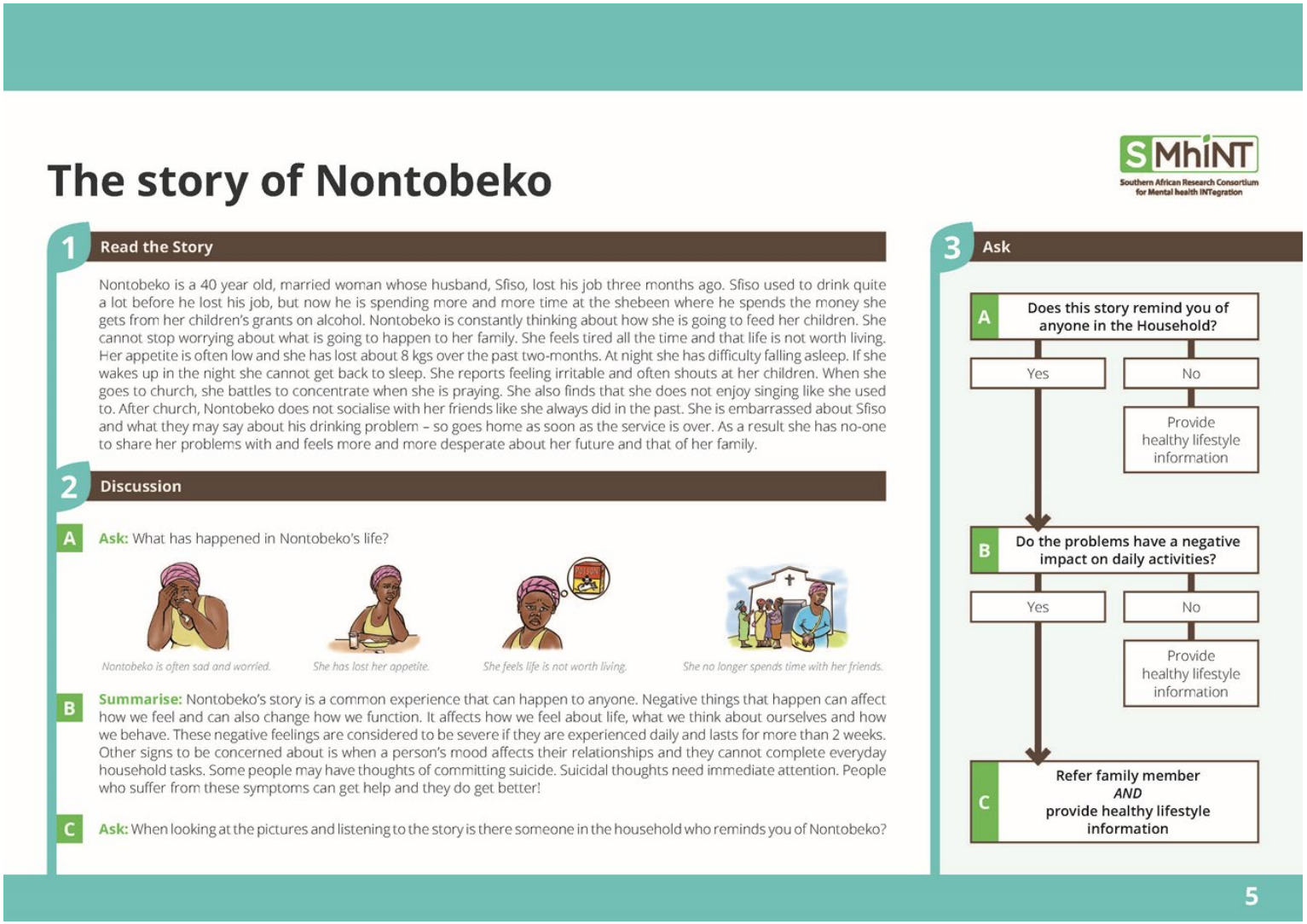

Figure 12: Vignette of Nontobeko (depression) to be read by the CHW

Advise the family member

SMhiNT
Southern African Research Consortium for Mental health INTegration

Things to know

- Lifestyle refers to the way in which a person lives and how they behave.
- Lifestyle can play an important part in how we deal with problems, and our lifestyles can also help us get better.
- People should be encouraged to continue with activities that were interesting or that previously brought them pleasure.

Things to do

Encourage family members to adjust their lifestyle activities to ensure:

Get enough sleep
Try to get eight hours of sleep a day. If you have difficulty sleeping, consult your clinic nurse.

Access support
Talk to a friend/ health worker/ someone you trust.

Get active
Regular exercise will help.

Take time to relax

- Participate in regular social activities.
- Spend time with supportive family/friends.
- Take part in activities you enjoy doing.

Avoid harmful use of substances
Alcohol should be taken in moderation. Limit alcohol to ≤ 2 drinks/day and avoid alcohol on at least 2 days/week.

Healthy eating habits

- Try to eat fresh fruit and vegetables every day.
- Try to cut back on junk food, salt and sugar.

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Figure 13: Healthy lifestyle advice

4.4.3 Process Three: Review by expert panel

Anxiety and harmful substance (drug) use required the most extensive changes. In relation to anxiety, the panel recommended that interpersonal trauma leading to anxiety was more prevalent in a South African context than the example of a taxi accident that was used in the first draft. The vignette was subsequently changed to a mugging incident. For substance use (drugs), the initial vignette included the character Brian, spending time at the local tavern drinking alcohol and smoking marijuana. The panel recommended that the focus should be taken away from alcohol with a clear focus on harmful drug use. The location where Brian spends time with his friends to smoke drugs was thus changed from a shebeen/tavern to a street corner. The drugs he uses in the vignette was also expanded to include "whoonga" (a heroin- based drug used in South Africa) as recommended by the panel. On recommendation from the panel a theme of money or household items going missing was also included. The illustrations were amended to match the changes in the text.

4.4.4 Process Four: Process Mapping and FGDs with community health teams

Both the process mapping workshop and the observation of household visits provided important contextual information about the routine care offered by community health teams at a household level and how the CMED tool could be most easily absorbed into their routine activities. The process map unpacked key activities, the relationship between the household and the clinic facility as well as gaps in processes, with the observations confirming the information generated from the process maps.

The CHWs' process maps indicated that when visiting a household for the first time, an in-depth registration is conducted, and this household profile is updated at each subsequent visit and recorded in the CHW diary. This information was identified as being helpful for identifying households with family members with potential mental health problems for targeted administration of the CMED tool. Routine services provided by CHWs within households included health

promotion and screening for physical health conditions such as TB, hypertension, and diabetes. People who screened positive were routinely referred to the PHC facilities for further screening, diagnosis and care. An exception was patients with a medical emergency who were referred to the district hospital, with an ambulance being requested where indicated. Understanding the CHW referral pathway was important in developing the CMED tool as it guided the researchers in developing the algorithm for referral for care, including emergencies in each vignette.

The OTLs indicated in their process mapping exercise that they routinely provide support and supervision to CHWs by providing regular in-service training and accompanying CHWs on bimonthly visits to households to assess where support and training is required. OTLs visit households flagged by CHWs as having difficult cases. This information was useful for informing the training and mentorship model that the CMED tool would need to follow as per routine care.

The following common themes emerged from the FGDs

Challenges of working in households

All groups indicated that they experienced threats to personal safety, violence in households and being chased by dogs on their daily visits. They also spoke of the desperate situation of many of their households with layers of stressors, including poverty, unemployment, substance use, violence, domestic violence, sexual abuse and health challenges.

> *P2: The mother knows because she says "who is going to feed me if I say that her father is raping the child? Who will come home carrying plastics [shopping bags of food] in this household? …who will buy us electricity in this household?" Its best I keep quiet …(CHW, FGD 5)*

All groups including the outreach team leaders spoke of the emotional labour that they experience when visiting households and felt they needed more training on managing their own mental health when visiting households. The need for structured debriefing sessions was also highlighted by

participants to process challenges experienced, focus on lessons learned and to develop a way forward for community health teams and households.

> *P4: … I feel bad because I may cry but I have to avoid that and not cry (mm). I must give them hope in life that this shall pass (CHW, FGD 4)*
>
> *P2: Where do we do our debriefing? As an OTL we encounter such problems that a visit to one household feels like a visit to 10 households…You keep thinking about what you discovered in that particular household…we wish that we could also have debriefing sessions. (OTL, FGD 5)*

More than half of the groups spoke of sharing similar challenges as their households making it difficult for them to contain their own emotions and be emotionally supportive for household members:

> *P4: I am crying because of this situation that there is someone [a household member] with a problem like mine. You shouldn't cry but it just happens then you cry. (CHW, FGD 2)*

Confidentiality

The importance of confidentiality in the work of the community health teams by households was raised as a key factor in being granted access to homes and in fostering trust in more than half of the group discussions. The challenge of being both a neighbour and a health worker was raised by the CHWs as households feared that their personal information would be shared through gossip in the community. This dynamic was often frustrating for CHWs as they were often aware that households needed help but were unable to provide support due to household reticence.

> *P 6: Sometimes you find that you don't get information because they are hiding it because you know them and they know you. They don't trust that you could be confidential with their information. (CHW, FGD 3)*

Additionally, one group of CHWs spoke of households mistrusting the information they provided as they were seen as community members rather than health workers. A dominant theme of this group discussion was the challenge that CHWs had in proving their worth as legitimate health workers.

> *P7:…So sometimes they doubt us but when we start giving them vitamins and talking about danger zones they get a bit confused because they see me as a normal member of their community. (CHW, FGD 1)*

Relevance of the CMED tool

All the groups indicated that the tool would be relevant to the work they were doing in households. Community health teams reported that the CMED tool would be useful for both health promotion in households and in the community and for screening purposes. The groups suggested the CMED tool include lifestyle advice on what families could do at home to improve their mental health which was then included (see Figure 2).

All the groups felt that a mental health screening tool was necessary and that it would fit into existing community health team roles as screening was an existing part of the package of care delivered to households:

> *P 10: From my side I think it [the CMED] can work because as we are used to using some screening tools…Even the family, I don't think they will mind because they are used to it [screening questions]… (CHW, FGD 2)*

All groups indicated that stories in the CMED tool were situations that were happening in the community:

> *P4: …I think stories that are similar to Thandeka (character in the CMED) are there in the community…(CHW, FGD 4)*

More than half of the groups reflected on how the CMED tool would enable them to link patients to care and spoke of how the tool provides them with something that is tangible that they can now use to help them to screen for mental health problems:

> *P2: …it (referring to the CMED tool) is better since we have something that tangible now (to use for referral to care). (CHW, FGD 4)*

Two CHW groups were able to relate to the symptoms of traumatic anxiety described in the story of Thandeka and recognised that patient life stories would not necessarily be the same as the vignettes but that symptoms will be common:

> *P6: Another thing …is that it won't always be stories of knifes (mm) and Thandeka. You will find that a person say's "my mother passed away" or "my child was raped" (FGD 4)*

Potential challenges in administering the tool

It was suggested by the majority of groups that that the administration of the CMED tool may require great sensitivity on the part of CHWs, especially with families that are experiencing harmful alcohol use and domestic violence. The need to contain emotions when discussing sensitive issues was also raised. In the extract below a CHW describes the complexity of discussing alcohol use and domestic violence with a family where these issues are present.

> *P 3: Uhm… It a fragile issue because now you have to talk in a way that won't make Sifiso [character in the CMED relating to alcohol misuse] hit Nontobeko [character in the CMED relating to depression] when you leave. (CHW, FGD 3)*

The majority of groups also raised practical issues relating to the tool. Measurements of homemade brews were raised as a challenge and more clarity was requested on this in relation to the harmful alcohol use vignette. Following the FGDs, a locally relevant alcohol chart (Figure 5) has since been added to the CMED tool.

Suggestions were also made to improve isiZulu translations, and these were amended accordingly.

The development of the CMED tool has been iterative in nature and based on feedback from the research in Processes One to Four the tool has undergone several amendments reflected in the 27 versions of the tool.

4.5 Discussion

The CMED tool was developed to improve demand for mental health services in South Africa through providing a psychoeducational and detection tool to strengthen mental health literacy as well as help CHWs identify possible cases requiring referral for further screening, assessment and diagnosis. The coherence of the CMED tool in terms of its meaning and relevance for CHWs and families in the local context (cognitive participation) was an important factor in the design of the CMED tool.

The prototype matching approach using vignettes was adopted given coherence with the oral storytelling culture within Africa society (Scheub, 1985), reducing the chances of labelling and providing a less threatening way of talking about sensitive topics, thereby assisting CHWs to initiate difficult conversations about mental health. The latter is of relevance given that mental illness is highly stigmatised in African contexts (Egbe et al., 2014). The prototype matching approach assists by providing distance from the topic at hand by allowing people to talk about their problems and those of their family members through the characters in the story, as well as enabling participants to define the situation in their own terms (Barter & Reynold, 1999; Petersen, Mason, Bhana, Bell, & McKay, 2006). It provides an elegant alternative to screening tools that use mental health checklists of symptoms. The latter have mostly been developed in high income contexts and lack cultural sensitivity which is especially important when discussing mental health (Bass et al., 2007; Subba et al., 2017). Checklist based screening tools also have the potential to promote labelling, which is a particular concern in contexts where there is low mental health literacy.

Through the four processes adopted in this formative study, the CMED tool was developed to optimise contextual and cultural sensitivity by using local idioms and illustrations in the vignettes and psychoeducation components and introducing new knowledge within a culturally relevant framework of everyday rhetoric. Further, the addition of the psychoeducation component in the CMED tool allows for the opportunity to raise awareness about mental health and in doing so reduce stigmatising beliefs about mental illness and increase demand for services.

Constituting an expert panel helped to ensure the clinical validity of the vignettes portrayal of mental health conditions while simultaneously being relatable through depicting experiences that commonly occur in the community (culturally relevant). In addition, focus group discussions were conducted with community health teams to ascertain their views on the whether the scenarios portrayed in the vignettes were relevant and commonly experienced in the community. These two processes assisted in establishing construct validity (Evans et al., 2015).

Process mapping, observations of community health team activities as well as FGDs were used to ensure congruence of the CMED tool with the functioning and routine services provided by community health teams. Overall the process mapping exercise and observations gave an in-depth understanding of the routine community health team services and functioning. The need for a tool such as the CMED to assist in promoting mental health literacy that would fit with their routine health promotion activities, as well as screening for mental health conditions that would fit with their other screening activities was affirmed as a meaningful activity. A number of lessons emerged from these three methods that helped inform the development of the tool, together with the accompanying standard operating procedures and training and support that needed to accompany the implementation of the tool. Firstly, in addition to the CMED being useful as a health promotion tool at any visit, CHWs could also use their in-depth local knowledge and community profiles of their households to specifically target households where they feel a family member may have a mental health condition. Secondly, clarification of referral pathways for other conditions, including

emergency referrals, helped ensure that that the referral pathways for people identified as having a potential mental health problem was aligned with existing referral pathways for other conditions. Thirdly, an understanding of the OTL's role in supervision, mentorship and CHW in-service training helped provide insights into how the CMED tool could be introduced into the system using OTLs to provide on-site training and mentorship in the use of the tool; as well as support CHWs when dealing with challenging home circumstances that the CMED tool may unearth. The need for supportive supervision and mentorship for community health teams cannot be understated, given the strong link to CHW programme performance (Assegaai & Schneider, 2019). Fourthly, the need for support of self-care and containing emotional experiences that they may encounter in households emerged as also being important. The CHW consultation in a home presents a different dynamic to a consultation in a clinic as the CHW has to directly contend with the layers of challenges that families face. CHWs typically live and work in the communities that they serve and so families are known to them and they are known to families. Hardships are thus not only relayed verbally but the community health teams get to know families and personally witnesses their hardships. Their unique role requires a focus on relationship building, and this is part of the reason why CHWs are effective but also brings an emotional burden as CHWs navigate the dual role of health worker and neighbour (Grant et al., 2017) putting CHWs at higher risk of burnout. The CMED provides the opportunity for CHWs to engage households about their mental health and to promote access to care for mental health at a community level, however, it also has the potential to overload CHWs with the emotional work required to intentionally discuss mental health in households. In addition the CMED requires the CHW to manage difficult dynamics that may arise in households such as domestic violence and substance use. If CHWs are not adequately supported, substantial emotional challenges could impede CHW use of the CMED tool in households.

Normalisation Process Theory was used as a broad framework for sensitising the researchers in this study to important concepts that need to be considered when designing the CMED tool. Defining the context is a key component when using NPT in guiding the design of an intervention (Murray

et al., 2010) and speaks to the coherence (meaning and benefits to users) of an intervention as well as cognitive participation/engagement from users.

The extensive consultation process with KZN DoH, the CQI process mapping, and FGDs with community health teams was undertaken to ensure the co-creation of a tool that would be relevant to the routine community package of care offered in households. This process also provided insights into the needs at a DoH management level as well as the needs of CHWs on the ground – which has been invaluable in understanding the context and informing the design of the CMED tool. Although the tool differs from other tools used by CHWs because of its prototype matching vignette format and interactive nature, the researchers took into account current community health team guidelines (South African National Department of Health, 2017b) and ensured that the CMED tool fell within the CHW scope of practice of screening and health promotion and careful consideration was given to designing a tool that would be compatible with the existing services provided. This process speaks to NPTs collective action where the impact of the CMED tool on CHWs work and the compatibility of the tool within the existing system is brought to the fore. The NPT process is also iterative in nature, and this is reflected in the continuous amendments that were made to the CMED tool based on feedback from the research process.

4.6 Strengths and limitations

While the CMED was modelled on the CIDT and followed the steps used in the formative evaluation of the CIDT, it was developed, in part, in response to the needs expressed by the KZN DoH. This demanded a more participatory co-production approach in the South African context, resulting in a lengthy iterative process that included DoH management and the community health teams in addition to academics and mental health experts in the co-production of the tool. While deviating slightly from the steps used in the development of the CIDT, this strengthened the appropriateness of the tool to the cultural systemic context where the tool was to be used.

The qualitative data allowed for exploration and a deeper understanding of the complexity CHWs face in working in communities, and how best to integrate mental health in the routine work of CHWs.

An earlier version of the CMED included a third structured question asking if the individual or family would like a referral to the PHC facility. On review, the DoH management felt that the tool needed to be aligned to routine screening tools in terms of the referral process e.g. CHW referral for TB. For this reason the third question was amended from "would you like a referral to the PHC facility" to "refer family member and provide healthy lifestyle information." Although the household member still has a choice of whether or not to act on a referral, by amending the third question the CMED no longer prompts the CHW to formally engage in a discussion with the household member about willingness to access care. This potentially removes the opportunity for a discussion of potential concerns and benefits related to receiving care and may result in the CMED not optimally achieving the goals of encouraging engagement with care and may lead to low uptake of services. The research team recognised the conflict between integrating the CMED tool into the routine referral system and engagement with the household member on willingness for referral, however, the decision was made to proceed with the change as adoption in the health system was identified as key to integrating mental health into primary health care services at a community level. The routine training of CHWs along with the CMED training material does include a section on engagement with community members regarding referrals including concerns for accessing care, and this should mitigate the risk of impacting uptake of services.

The mental health content and interactive nature of the CMED tool has the potential to burden CHWs with the emotional work required to listen to people's stories of hardship and to manage difficult situations related to domestic abuse and substance use that may arise after reading the

CMED vignettes. CHWs need to receive supportive mentorship in order to manage the substantial emotional challenges that could arise in administering the CMED tool. Lack of adequate support may compromise uptake of the use of the tool by CHWs in households.

The formative research was conducted in one local district in the KwaZulu-Natal Province in South Africa. There is a need for further studies to assess the applicability of the CMED tool in different contexts. The CMED includes vignettes for various mental health conditions. Although symptoms may be common, life stories may differ and it is important that CHWs are trained to acknowledge this with their patients.

4.7 Recommendations

The next steps include testing the CMED tool for accuracy and piloting the tool for feasibility with community health teams and family members. Once accuracy and feasibility are established it is important that the CMED tool be tested as part of routine care and integrated with the other routine community screening tools and health promotion activities of CHWs, as well as integrated in the training of CHWs inclusive of other conditions.

Chapter 5 : Accuracy Study

Accuracy of a Community Mental Health Education and Detection (CMED) Tool for Common Mental Disorders in KwaZulu-Natal, South Africa.

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5.1 Abstract

Background: Screening tools for mental health conditions improve detection at a primary health care (PHC) level. However, many people with mental health conditions do not seek care because of a lack of knowledge about mental health, stigma about mental illness and a lack of awareness of mental health services available at a PHC facility level. Interventions at a community level that raise awareness about mental health and improve detection of mental health conditions, are thus important in increasing demand and optimising the supply of available mental health services. This study sought to evaluate the accuracy of a Community Mental Health Education and Detection (CMED) Tool in identifying mental health conditions using pictorial vignettes.

Methods: Community Health Workers (CHWs) administered the CMED tool to 198 participants on routine visits to households. Consenting family members provided basic biographical information prior to the administration of the tool. To determine the accuracy of the CMED in identifying individuals in households with possible mental health conditions, we compared the number of individuals identified using the CMED vignettes to the validated Brief Mental Health (BMH) screening tool.

Results: The CMED performed at an acceptable level with an area under the curve (AUC) of 0.73 (95% CI 0.67 -0.79), identifying 79% (sensitivity) of participants as having a possible mental health problem and 67% (specificity) of participants as not having a mental health problem. Overall, the CMED positively identified 55.2% of household members relative to 49.5% on the BMH.

Conclusion: The CMED is acceptable as a mental health screening tool for use by CHWs at a household level.

Keywords: Mental health, community health workers, screening, Low- and middle-income countries

5.2 Introduction and Background

Thirty percent of South Africans experience a common mental health condition in their lifetime (Herman et al., 2009) and only 7,5% of the uninsured population access care for these conditions (Docrat et al., 2019). To address this gap, the South African Department of Health has adopted the integration of mental health care into routine services, including screening for mental health conditions, at a primary health care (PHC) level using a task sharing approach as a policy imperative (South African National Department of Health, 2013a). While this may increase service availability, a lack of perceived need or awareness of signs and symptoms and lack of awareness of service availability impacts demand for mental health services (Jordans et al., 2015; Jordans et al., 2020). Additionally, stigma and misinformation about mental health and treatment pose barriers to help seeking, particularly in African contexts where mental illness is highly stigmatised (Egbe et al., 2014). Furthermore, uptake of mental health services may also be impacted by the individual's preference for informal rather than formal support (Gulliver, Griffiths, Christensen, & Brewer, 2012; Oliver, Pearson, Coe, & Gunnell, 2005; Shumet et al., 2021).

Integration of mental health services at a community level is fundamental to strengthening health systems (Sheikh, George, & Gilson, 2014) including interventions that increase mental health literacy to improve help seeking for mental health conditions (Egbe et al., 2014; Shidhaye et al., 2017) and mental health screening to improve detection of mental health conditions at a community level (Jordans et al., 2020).

Screening tools for mental health have shown to improve detection of mental health conditions at a community level and are an important first step along the treatment cascade to reduce the treatment gap (Jordans et al., 2020; Shidhaye et al., 2017). It is important that screening tools developed are culturally appropriate (Bass et al., 2007) particularly when used at a community level (Subba et al., 2017). Checklist based screening tools are mostly developed in high income contexts and often lack cultural sensitivity (Bass et al., 2007). Detection at a community level by lay workers using an

alternative prototype matching approach has been found to promote mental health service use in developing contexts (Jordans et al., 2015; Jordans et al., 2020; Shidhaye et al., 2017). Prototype matching involves detecting a mental health condition by matching a patient's symptoms against a prototype paragraph-length description of the condition (Westen, 2012).

Community health workers (CHWs) provide an important link between communities and PHC facilities and have been found effective in detection and linkage to care for physical (Bhutta et al., 2010; Naidoo et al., 2018; Zulu et al., 2014) (Horwood et al., 2017) and mental health conditions in low- and middle-income countries [LMICs] (Jordans et al., 2020; Shidhaye et al., 2017). The South African Department of Health (DoH) has implemented a PHC re-engineering strategy which includes the development of PHC community health teams formally known as Ward based PHC outreach teams with a focus on health promotion and prevention at community level (South African National Department of Health, 2010). The teams are made up of CHWs supervised by an Outreach Team Leader (OTL), usually an enrolled or professional nurse, and are linked to PHC facilities (South African National Department of Health, 2017b). Their central role is health promotion, screening and linkage to care at a PHC facility level (H. Schneider et al., 2018). Up until now, they have mainly focused on physical health conditions.

This study is part of the Southern African Research Consortium for Mental health INTegration (SMhINT) project in collaboration with the KwaZulu-Natal Department of Health (KZN DoH), which has been using implementation science to evaluate the implementation of a collaborative care package for integrated primary mental health care (known as the Mental health INTegration [MhINT] package) for widespread scale-up using a learning health system approach (Petersen, Kemp, et al., 2021). The implementation strategies used in MhINT to implement and scale up the collaborative care package include training, supporting tools and materials, and the use of continuous quality improvement [CQI] (Institute for Healthcare Improvement, 2003; O'Neill et al., 2011).

The need to strengthen identification of CMDs at a PHC level was identified through the first stage evaluation of the original MhINT package (Kemp et al., 2020; Kemp et al., 2021). This prompted the development and validation of the Brief Mental Health Screening Tool [BMH] (Bhana et al., 2019) which has since been adopted by the KwaZulu-Natal DoH in the battery of screening tests offered at the PHC facility level as part of routine care. The BMH is a 7-item screening tool comprised of brief versions of the Alcohol Use Disorders Identification Test (AUDIT), the Patient Health Questionnaire (PHQ-9) and the General Anxiety Scale (GAD-7), and was validated for use within PHC facilities. In this regard the gold standard was professional nurse diagnosis using Adult Primary Care (APC) tool which is a nationally adopted integrated set of chronic care guidelines used by PHC nurses in South Africa (Fairall et al., 2018). The mental health component in the Adult Primary Care manual is based on the WHO Mental Health Gap Action Programme Intervention Guide [mhGAP-IG] (World Health Organisation, 2016a) . If screened positive on the BMH screening tool the patient is referred on for assessment to a professional nurse (fully registered nurse) who uses the Adult Primary Care manual as part of routine practice to assess and diagnose patients, offering brief psycho-education and onward referral for appropriate treatment.

A lack of a clear mental health pathway for care at a community level was also identified through the first stage evaluation of MhINT, and like the PHC context, no existing tools for identifying people with mental health problems were available in the community package of services that routinely include identification tools for physical health conditions such as TB, diabetes and HIV. Additionally, a need to expand detection of CMDs to a community level was identified by the DoH and a lack of a standardised screening tool for this purpose was noted. Initial consideration of the BMH tool was eschewed given that it focused on symptoms and commonly used psychiatric labels which was felt to be outside the scope of CHWs. Further, given low levels of mental health literacy in South African contexts (Egbe et al., 2014), the DoH was concerned that this approach could result in labelling and stigmatisation of people who screened positive for a CMD in the community. The risk of this outcome is lessened at a PHC facility level where the BMH is administered by a

nurse and confidentiality and patients' rights are regulated by legal and professional ethical codes of conduct. The South African DoH and the KZN DoH thus requested the SMhINT team to develop and validate a mental health tool for use by CHWs to identify household members with possible mental health problems during their routine household visits. This gave rise to the development of the Community Mental Health Education and Detection (CMED) Tool which was informed by the development of the Community Informant Detection Tool (CIDT) used to promote help-seeking among people with CMDs in Nepal as part of the Programme for Improving Mental Health Care (PRIME) (Subba et al., 2017). Apart from helping to identify individuals at a household level who may have mental health problems, the CMED was extended to include psychoeducation about these mental health problems as well as elements of a healthy lifestyle to educate households on what can be done to improve one's emotional health at home. The addition of mental health education reduces the potential to promote labelling in contexts where mental health literacy is poor.

Using a prototype matching approach, the CMED incorporates local idioms in five case vignettes (prototype paragraphs) and related illustrations to facilitate identification of individuals with possible characteristics associated with depression, anxiety, psychosis, harmful alcohol and drug use. The prototype paragraph avoids the use of labels and diagnostic categories using vignettes that describe functional impairment of some of the most CMDs in everyday language. Each vignette includes a story about a character and is labelled according to the protagonists' name e.g. Nontobeko is the protagonist in the story about a person with depression symptoms, the vignette is labelled as 'The story of Nontobeko' (Figure 1) and not by an associated mental health condition, e.g., depression to avoid labelling and possible stigmatisation. Following reading of the vignette, an interactive psychoeducation component has been added to raise mental health awareness about each condition. This is followed by two structured questions that guide the CHW in matching symptoms with the prototype vignette and determines if the family member requires a referral for further care (Figure 15). A flowchart assists the CHW in determining which vignette to read in the household (Figure 16).

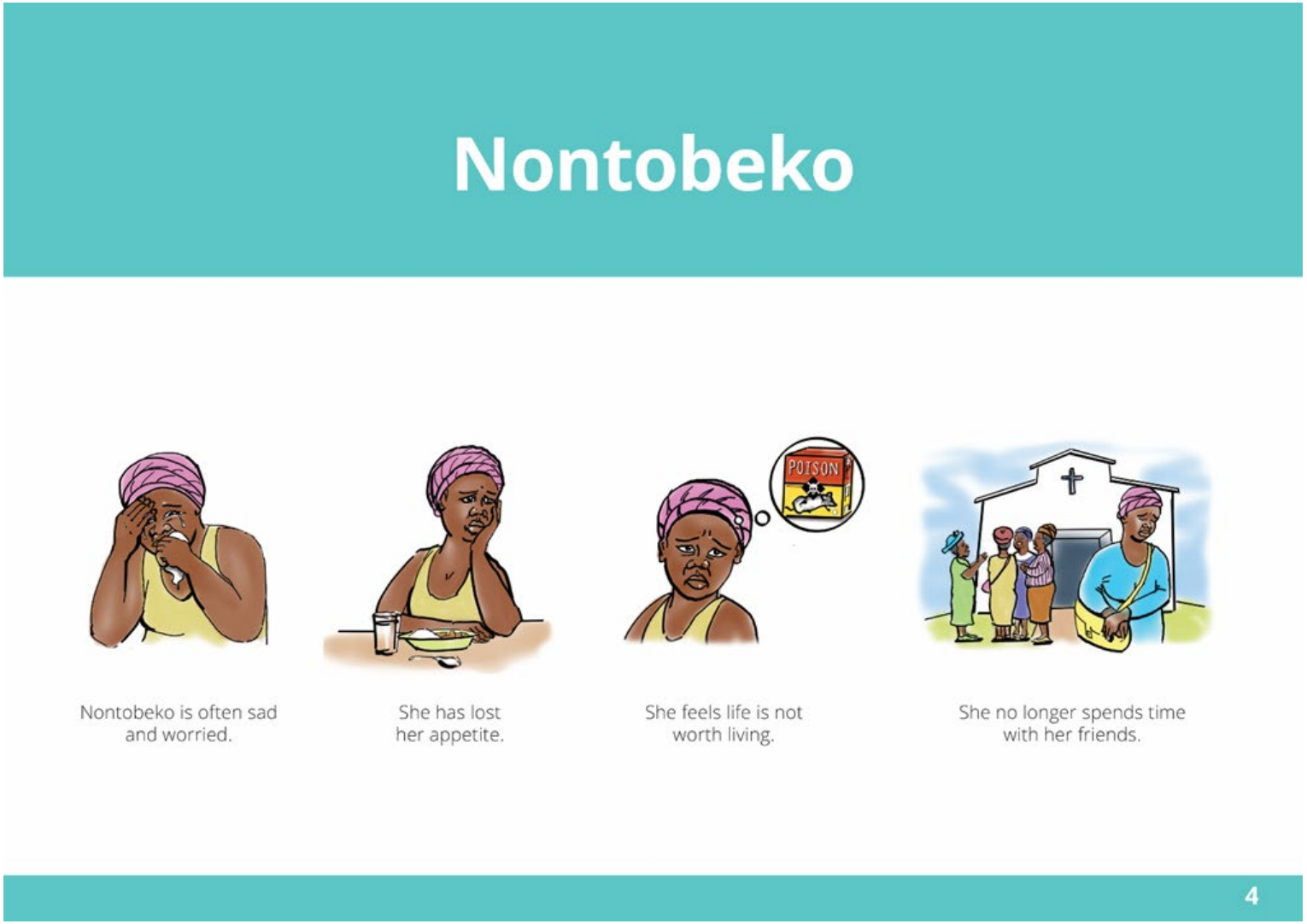

Figure 14: Vignette for depression (Nontobeko)

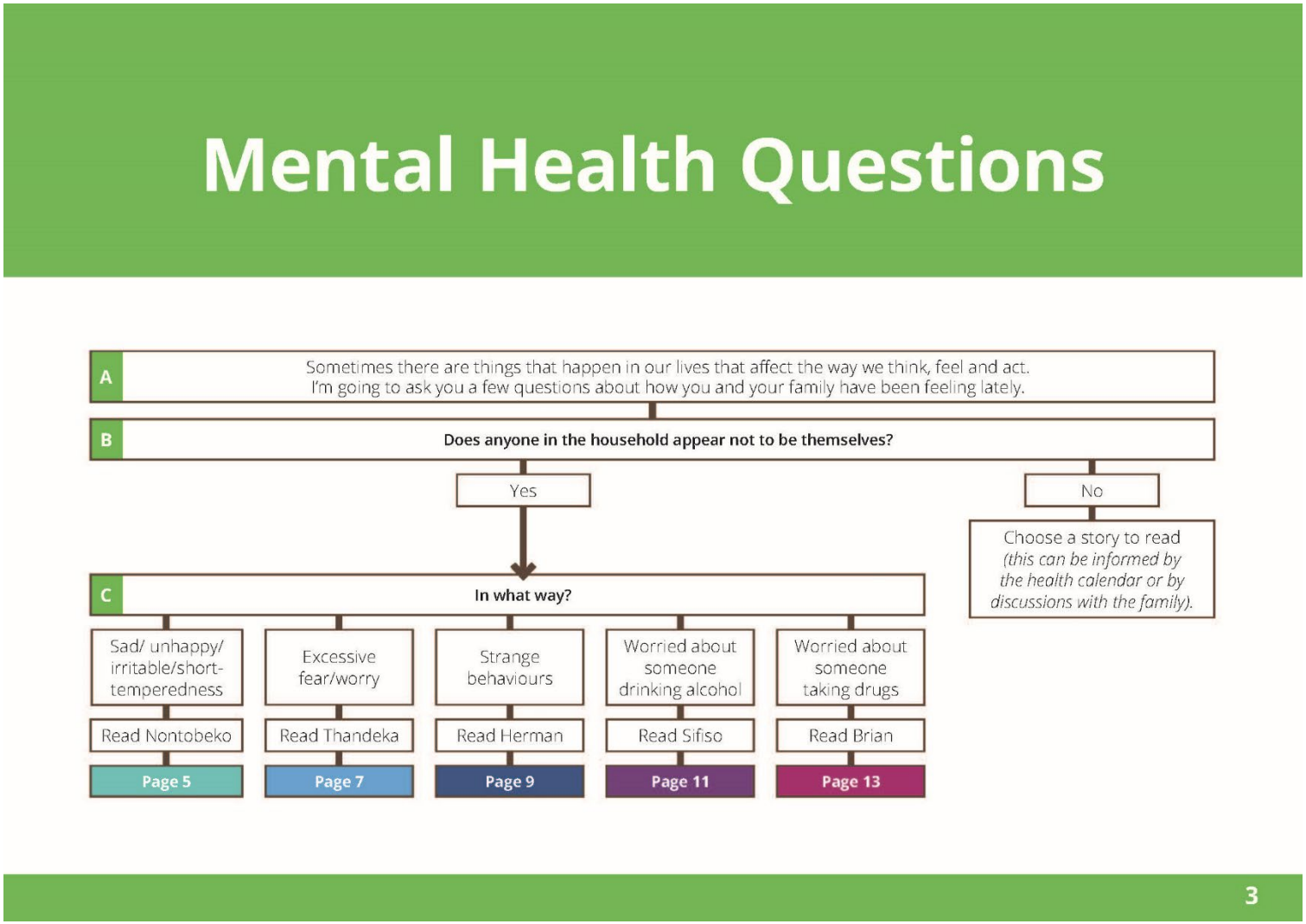

Figure 15: Mental health flowchart

The aim of the current study was to assess the accuracy of the newly developed Community Mental Health Education and Detection (CMED) Tool against the BMH which constituted the next level of screening in the system in identifying adult individuals with possible mental health problems in the household at a community level.

5.3 Methods

5.3.1 Setting

The accuracy study was conducted in the Newcastle sub-district of the Amajuba District of KwaZulu-Natal province of South Africa, as part of the larger SMhINT study. The Newcastle sub-district [population of 389 117] (Statistics South Africa, 2016) is comprised of both urban and rural areas and is serviced by a district and provincial hospital with fourteen PHC facilities and, at the time of the study, five community health teams.

5.3.2 Establishing Accuracy of the CMED

To establish the accuracy of the CMED relative to a "gold standard", several factors were considered. First, the CMED would need to be comparable to recognised screening tools, locally and internationally. Second, the measure should be validated on the population of interest. Third, the validation tool should form part of routine screening for mental health by the DoH at a PHC level. As a consequence the BMH screening tool (Bhana et al., 2019) which was validated in PHC facilities in the Amajuba district was considered the most appropriate tool as it was in use by the DoH as part of the screening cascade at the PHC level. While the BMH only focuses on CMDs (depression and anxiety symptoms and substance misuse characteristics), it was deemed to be suitable as the CMED broadly screens for mental health problems. Further, the BMH screening tool is used in first stage screening of all patients arriving at a PHC facility level before a more comprehensive assessment is done using the APC tool [against which the BMH screening tool was validated](Bhana et al., 2019).

5.3.3 Procedure

5.3.3.1 Training

One community health team, including 3 OTLs and 17 CHWs, selected through the learning health systems approach adopted in MhINT and described in the development of the CMED tool, received a 4-day training workshop on the basic concepts of psychosocial and mental health conditions, self-care and on how to use the CMED tool. Confidentiality and encouraging but never imposing health seeking was covered in the training. OTLs and CHWs were encouraged to refer patients as per existing DoH guidelines. The development of the training material and the training itself was a collaboration between the Centre for Rural Health, UKZN and the South Africa-HIV Addiction Technology Transfer Centre Network for the KZN DoH.

Following the training, the community health team administered the CMED tool over three weeks in their communities, and the accuracy of the tool was assessed.

5.3.3.2 Field Work Procedures

A project Research Assistant, with a mental health background, accompanied the CHWs on all household visits. The CHW first introduced the research assistant to the family and explained the purpose of the visit. The research assistant then had a discussion with the family about the study and willing family members consented using written informed consent. The research assistant observed the administration of the CMED by the CHW and recorded the household member/s responses to the algorithmic questions relating to the vignettes. Immediately following the delivery of the CMED, the research assistant administered the validated BMH to the household members. The research assistant recorded whether the CMED identified the same household member as a positive [in need of referral] or negative case.

A positive score on the CMED results from positive responses to (a) a family member identifying with a vignette (reminds them of self/others in the household) and (b) if this has a negative impact on daily activities. Based on the following cut-off scores established for the BMH subscales through

the BMH validation study, a positive score was generated if any individual scored above the cut-offs of ≥ 4 on the AUD_C or ≥3 on the PHQ2 or ≥3 on the GAD2 subscales (Bhana et al., 2019).

5.3.4 Sample

Using a prevalence rate of 10-20% (Buderer, 1996), a minimum sample of 200 cases is required at .05 level significance with 80% power (Bujang & Adnan, 2016). All family members 18 years and older visited by CHWs in households as part of routine care over three weeks were invited to participate in the study. Any family member unable to give written consent was excluded. A total of 202 participants were sampled.

5.3.5 Data Analysis

Sensitivity was prioritized over specificity as the intention was to identify any possible mental health condition. Simple descriptive analysis was used to describe the sample characteristics. Analysis of the performance of the CMED against the BMH was done using STATA 15.1 (StataCorp LLC, Texas, USA) to calculate receiver operating characteristics (ROC) tables and graphs.

5.4 Results

Of the 198 adult family members sampled, 79% were female with close to half of the participants (47%) falling into the 20-39 years age group. Some household visits comprised interviews with a single-family member while at other times, more than one family member was present. In both instances, interviews proceeded following a single or multiple consent process. Just over half (54.5%) of the CMED consultations took place with multiple family members and 45% were individual consultations (Table 14). Using the mental health flowchart (Figure 16) CHW's identified the story of Nontobeko (depression) to be relevant to 44 % of households making it the story that was most frequently read in households, while the story of Brian (harmful drug abuse) was deemed relevant to only 5%

Table 13: Sample characteristics (N=198)

Characteristic	Gender				OVERALL	
	M	%	F	%	n	Percent
Age						
17-19 years	9	22.5	5	3.2	14	7.1
20-29 years	14	35	38	24.4	52	26.5
30-39 years	7	17.5	34	21.8	41	20.9
40-49 years	3	14.3	18	11.5	21	10.7
50-59 years	1	2.5	18	11.5	19	9.7
60-69 years	2	5	28	17.9	30	15.3
70+ years	4	10	15	9.6	19	9.7
	N				Percent	
Gender						
Female	157				79.3	
Male	41				20.7	
Type of Interview						
Individual	89				44.9	
Family	108				54.5	
Vignettes read in household						
Nontobeko (depression)	87				43.9	
Sifiso (harmful alcohol use)	33				16.7	
Herman (severe mental illness)	42				21.2	
Thandeka (trauma related anxiety)	22				11.1	
Brian (harmful drug use)	10				5.1	

CHWs identified 106 participants as possible positive cases for a mental health condition in need of referral to the PHC facility and 86 participants were considered possible negative cases, i.e., those without a possible mental health disorder (Table 15).

Table 15 shows the specific problems identified using the CMED and the BMH. However, given that the CHWs function is to identify any mental health problem, only the overall positive or negative CMED scores were used in relation to the BMH reference standard. Cronbach alphas for the AUD-C was 0.87, 0.69 for the PHQ-2 and 0.65 for GAD-2.

Table 14: CMED and BMH identified cases

CMED Cases	**Number of Positive Cases**	**Percent (N=192)**
Depression	47	24
Severe Mental Illness	25	13
Alcohol Abuse	19	10
Drug Use	9	4.7
Trauma related anxiety	6	3.1
Total CMED Positive	**106**	**55.2**
Total CMED Negative	**86**	**44.8**
Missing	**8**	
BMH Identified Cases		
BMH SCALE	**Number of Positive Cases**	**Percent (N=198)**
AUD_C (≥4)	34	17.2
PHQ2 (≥3)	56	28.3
GAD2 (≥3)	60	30.3
BMH (Positive for ANY condition)	**98**	**49.5**
BMH (Negative for ANY condition)	**99**	**50.3**

An area under the curve (AUC) ≥0.70 is considered fair/ acceptable, ≥0.80 is good/ excellent and ≥0.90 excellent/ outstanding (Mandrekar, 2010; Safari, Baratloo, Elfil, & Negida, 2016). ROC survey analysis shows that the CMED had an acceptable AUC of 0.73 (95% CI 0.67 – 0.79) [Figure 17]. It accurately identified 79% (sensitivity) of participants as having a possible mental health condition and accurately identified 67% (specificity) of participants as not having a mental health condition with a 73% probability (Table 16). The associated Positive Predictive Value (PPV) and Negative Predictive Value (NPV) (the proportions of positive and negative results that are true positive and true negative results, respectively) were 70% and 77%.

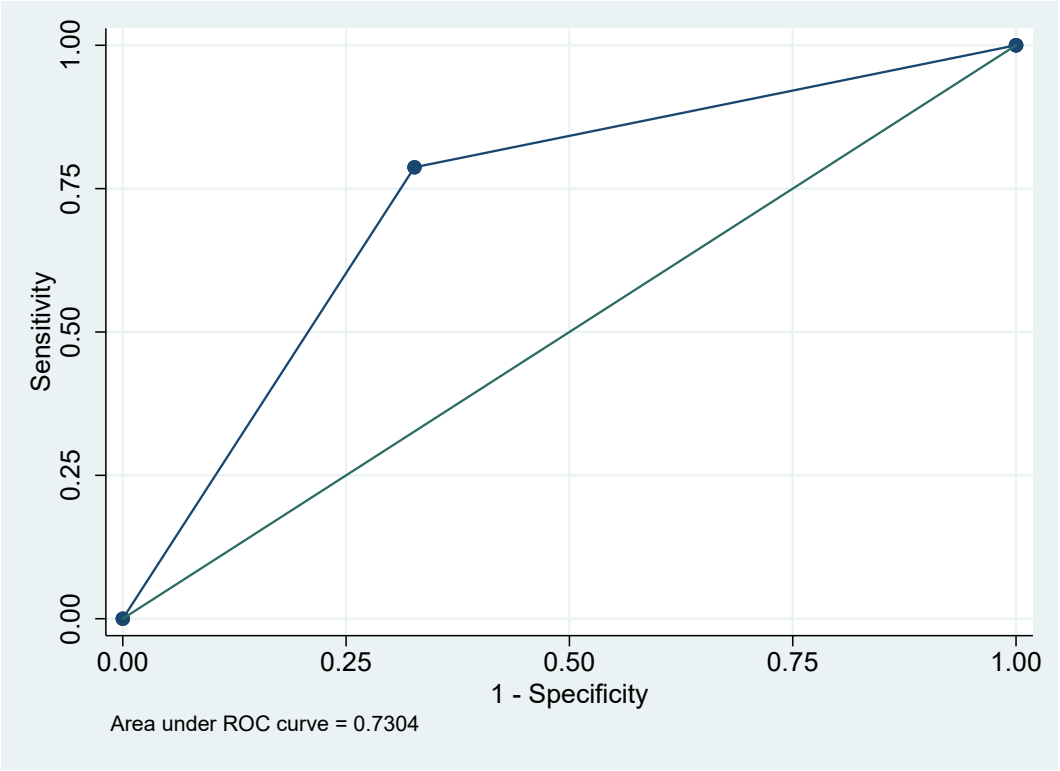

Figure 16: ROC curve for the CMED

Table 15: Performance of the CMED in identifying mental health problems at a household level (N=192)

Cut-point	Sensitivity (%)	Specificity (%)	Correctly classified (%)	LR+	LR-
≥ 0	100	0	48.96	1.00	0.00
≥ 1	78.72	67.35	72.92	2.41	0.32
> 1	0	100	51.04	0.00	1.000

5.5 Discussion

The CMED was assessed to have acceptable accuracy in identifying people with possible mental health conditions in the community. With a sensitivity of 79%, the tool has the potential for early identification and referral for further assessment and treatment among individuals who might otherwise not access any mental health services. A specificity of 67% along with a NPV of 70% [the probability that following a positive test result, an individual will truly have the condition, avoiding false positives] is a relatively good result. While the risk of overburdening PHC facilities

with false positive cases remains, a second mental health screen at the PHC facility level, using the BMH as part of routine care and will help mitigate this risk.

Findings are similar to previous studies that demonstrate that community mental health detection using a prototype matching approach does assist in identifying community members with possible mental health symptoms in need of onward referral(Jordans et al., 2015; S Mohsin et al., 2021), and can lead to increased mental health literacy (Shidhaye et al., 2017), and increased levels of demand leading to greater utilisation of health services (Jordans et al., 2020). The CMED had higher sensitivity (79%) than the community informant detection tool (CIDT) used in Nepal [64%] (Jordans et al., 2015), demonstrating that more than two-thirds of people detected using the CIDT and CMED are accurately detected [true positives].

In the context where 30% of South Africans experienced a common mental health condition in their lifetime (Herman et al., 2009), and where only 7,5% of the uninsured population access care for these conditions (Docrat et al., 2019), the need to increase by supply and demand for mental health services is highlighted. Low mental health literacy, lack of knowledge about service availability, stigma and misinformation about treatment pose barriers to help seeking (Jordans et al., 2020; Shidhaye et al., 2017; Subba et al., 2017). In the context of low levels of mental health literacy in African contexts (Egbe et al., 2014), interventions at a community level, such as the CMED tool, are important to improve communities understanding of mental health problems, community identification and awareness of service availability and help seeking (Subba et al., 2017). An added benefit of the CMED tool is that it is context sensitive and uses local idioms and illustrations to encourage conversations about mental health between CHWs and families in a non-stigmatising manner during routine home visits, whilst simultaneously assisting with screening and referral for care

The CMED tool may also be useful in tracing visits to link loss-to-follow-up patients to care, with the tool being helpful in identifying mental health problems that may be driving non-adherence. This is of particular importance as mental health conditions have a mutually reinforcing relationship with non-communicable diseases, compromising both prevention and treatment through exacerbating modifiable risk factors and compromising adherence and self-care (Prince et al., 2007).

5.6 Study Limitations

Limitations of this study include that the study was a pilot and was limited to one community health team in a sub-district in one region of the country. The CMED is administered in a household setting and some participants could have been reluctant to openly share their mental health experiences in the presence of other family members, particularly regarding harmful alcohol and drug use.

The BMH, on the other hand, was administered individually in private after the CHW consult and this could account for the difference in some CMED and BMH scores. The CHWs lack of familiarity with the tool and the presence of researchers observing the administration of the tool (for both CHWs and household members) could also have influenced the findings.

It is recognized that the use of a structured clinical interview by a trained clinician is an established "gold" standard to establish concurrent validity of diagnostic tools. Two factors informed the decision to use the BMH instead. The first of which is that it was already in use as a mental health screening tool at the PHC facility level. Hence, a degree of familiarity existed for the BMH. A second reason was that the CMED is not a diagnostic screen but rather a tool to identify potential mental health problems at a community level, with further screening and diagnostic assessments at facility level. A limitation of using the BMH as a comparison is that it did not include screening for psychosis which is a key condition in the CMED instrument.

In developing a tool for use by CHWs, a primary concern was whether the CMED would be able to identify individuals with mental health concerns. Further, given the use of a prototype matching approach in developing the case study vignettes, diagnostic categories were less important than being able to identify specific mental health problems. From this perspective, greater sensitivity was deemed to be of more importance in the development of the CMED. Sensitivity was therefore prioritized over specificity. While there is a risk of overburdening PHC facilities with false positive cases, the second mental health screen (BMH) was available in the study setting, administered by an enrolled nurse at a PHC facility level as part of routine care, to mitigate the impact of false positives. In addition, while making referrals using the CMED, particularly in the case of false positives, could stigmatise family members, the psychoeducation component of the CMED mitigates this risk. The findings from the Feasibility Study (Chapter 6) show that the psychoeducational components raised mental health awareness and were helpful in challenging stigmatizing beliefs regarding mental health conditions.

A limitation of the study is that the research assistants (RAs) were not blinded to the outcome of the CMED screen (positive or negative) and then went onto administered the BMH screen The pragmatics of the fieldwork provided two options: The first option was to have an RA who was not part of the observation component to administer the BMH. The second option was to use the same fieldworker who conducted the observation to also administer the BMH. A decision in favour of option two was primarily driven by the time and money costs. A further factor that influenced this decision was to avoid introducing yet another unknown person into the household as the need for respecting the privacy and dignity of the household members was paramount. In retrospect, randomly changing the order of assessments, would have been a better approach in minimizing interviewer bias during data collection.

5.7 Conclusion

The CMED has acceptable accuracy for facilitating recognition of mental health problems at the community level. Further research is required to establish the acceptability of the tool by community health teams and households as well as how best to integrate the use of the tool as part of routine screening for other conditions. While the CMED includes providing psychoeducation to improve mental health literacy, there is a need to demonstrate the CMEDs utility in improving mental health literacy, knowledge of and uptake of mental health services and reducing stigma as it becomes part of CHWs routine visits.

Chapter 6 : Feasibility Study

The feasibility of a Community Mental Health Education and Detection (CMED) Tool in South Africa.

Submitted for consideration to Social Sciences and Medicine Mental Health, August 2022

6.1 Abstract

Background: Poor mental health literacy, misinformation about treatment and stigma result in low demand for mental health services in low-and middle-income countries. Community-based interventions that raise mental health awareness and facilitate detection of mental health conditions, are instrumental in increasing demand as well as supply of available mental health services.

Objective: To assess the feasibility of a Community Mental Health Education and Detection Tool (CMED) for use with household members by community health teams in South Africa.

Methods: The feasibility of using the CMED in households was assessed using Bowen et al's methodological framework which informed the study design, interview tools and analysis. The feasibility study involved four phases: (1) observations of the CMED consultation to evaluate the administration of the tool; (2) semi-structured interviews with household member/s after the CMED was administered to explore experiences of the visit; (3) follow-up interviews of household members referred using the CMED tool to assess uptake of referrals; (4) and weekly focus group discussions with the community health team to explore experiences of using the tool. Framework analysis was used to inform *a priori* themes and allow inductive themes to emerge from the data.

Results: The CMED was found to be acceptable by both community health teams and household members, demand for the tool was evident, implementation, practicality and integration within the existing health system were also indicated.

Conclusion: The CMED is perceived as feasible by household members and community health teams, suggesting a 'goodness of fit" within the existing health system.

Keywords: Mental Health, Screening, Feasibility, Psychoeducation, Community Health Workers, Low- and middle-income countries

6.2 Introduction

More than 75 % of people with mental health conditions living in low-and-middle-income countries (LMICs) do not receive treatment (Moitra et al., 2022; Vigo et al., 2020). While global mental health efforts have focused on strengthening the supply of mental health services at a primary health care level (PHC) using a task sharing approach (Le et al., 2022), this approach alone is inaqequate as demand for services also needs to be addressed (Jordans et al., 2015; Shidhaye et al., 2017). Many people with mental health symptoms do not access care because of low mental health literacy and misinformation and stigma associated with available mental health and treatment (Egbe et al., 2014; Shidhaye et al., 2017). In South Africa, only 7.5 percent of the uninsured South African population who require care receive outpatient mental health care (Docrat et al., 2019). In order to address this gap, the South African Mental Health Care Policy Framework endorses integrating mental health into primary health care, including screening, using a task sharing approach (South African National Department of Health, 2013a).

Community health workers (CHWs) bridge the gap between communities and PHC facilities through detection and linkage to care for both physical and mental health conditions in many LMICs (Jordans et al., 2020; Shidhaye et al., 2017). In South Africa community health teams, comprised of CHWs supervised by PHC facility-based nurses called Outreach Team Leaders (OTLs), focus on household health profiling, health promotion and screening for specific conditions, and can refer to PHC facilities if required (South African National Department of Health, 2017b). These teams potentially provide a viable mechanism for testing and scaling up a task-shared model of integrated mental health care that has a robust evidence base of effectiveness, incorporating an implementation science approach (Barnett, Gonzalez, Miranda, Chavira, & Lau, 2018).

This study is part of the Southern African Research Consortium for Mental health INTegration

(SMhINT), which in close collaboration with the DoH has used implementation science to evaluate the scale up of a collaborative care package for CMDs integrated primary mental health care (Petersen, Kemp, et al., 2021). The dual need to strengthen identification of CMDs at a community level and improve mental health literacy in households was identified as a gap by the National and KwaZulu-Natal (KZN) DoH and through the first stage evaluation of the original package (Kemp et al., 2021). Further, a continuous quality improvement (CQI) SMhINT process indicated a lack of existing validated tools for CHWs to provide psychoeducation and identify people with mental health problems at a community level. The DoH thus requested the SMhINT team to address this gap which led to the development of the Community Mental Health Education and Detection (CMED) tool for use by CHWs at a household level in 2019. CMED is delivered using vignettes, which, as a symptom screening and literacy mechanism, has shown promise in highlighting depressive symptoms among underserved communities (Cabassa, Molina, & Baron, 2012; Martinez Tyson, Arriola, & Corvin, 2015; Petersen et al., 2006).

The CMED is adapted from the Community Informant Detection Tool (CIDT) originally developed in Nepal. It is designed for use by community health teams and is based on a prototype matching approach (Westen, 2012) where symptoms of mental health conditions are included in five case vignettes (prototype paragraphs) with related illustrations to facilitate the detection of possible depression, anxiety, psychosis, harmful alcohol and drug use, by matching household members presenting symptoms with the prototype paragraph . A flowchart at the beginning of the tool guides the CHW in determining which vignette to read in the household (Figure 15). The CMED helps to avoid potential stigma associated with clinical diagnostic labels as each vignette tells the story of a character e.g. Nontobeko, and is labelled by the character's name e.g. 'The story of Nontobeko' (Figure 16) and not by the associated mental health condition. An interactive psychoeducation component is included in each vignette (Figure 18) to raise awareness about mental health, reduce stigmatising beliefs and create demand for services. Healthy lifestyle advice (what household

members can do at home for their mental health) is read at every visit to raise awareness about mental health. Information that mental health problems can be treated and where to get help is also provided to create demand for services. Further, each of the five vignettes includes two structured questions that assist the CHW in matching symptoms with the vignette to determine if a referral for further assessment is required (Figure 19).

A validity study that used the next level of screening at a PHC facility level using a validated symptom checklist (Brief Mental Health screening tool (Bhana et al., 2019) as the gold standard, found the CMED to have acceptable accuracy, identifying 79% (sensitivity) of participants as having a possible mental health problem and 67% (specificity) of participants as not having a mental health problem. However, along with establishing detection of a mental health problem, establishing perceptions of the feasibility of the CMED by community health teams and household members as well as "goodness of fit" to determine if the CMED is compatible with routine community services and functioning was imperative. This approach is in step with the push for better evidence of feasibility and "goodness of fit" of new tools introduced into the system (Le et al., 2022). This paper explores the feasibility the CMED tool to establish if community mental health screening is an appropriate intervention for further testing.

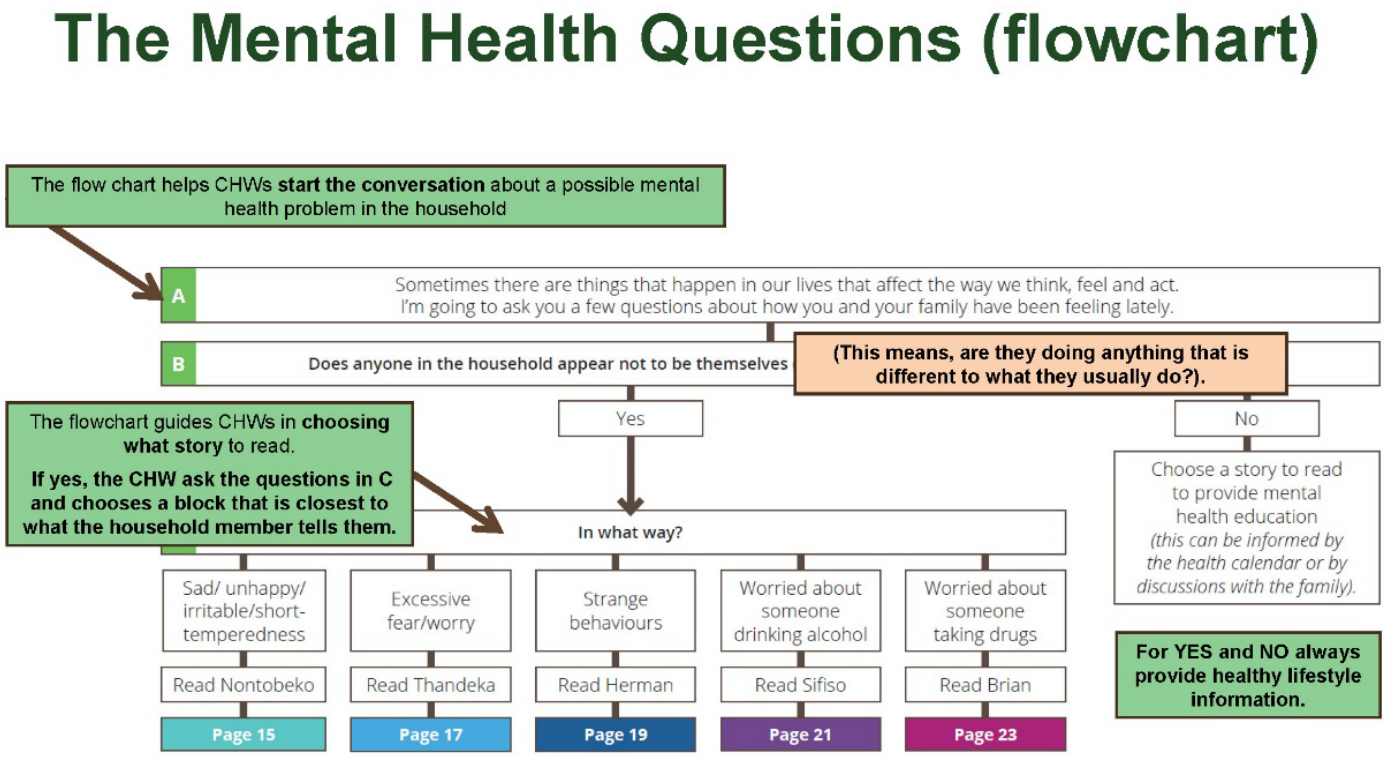

Figure 17: Flowchart guiding what vignette to read

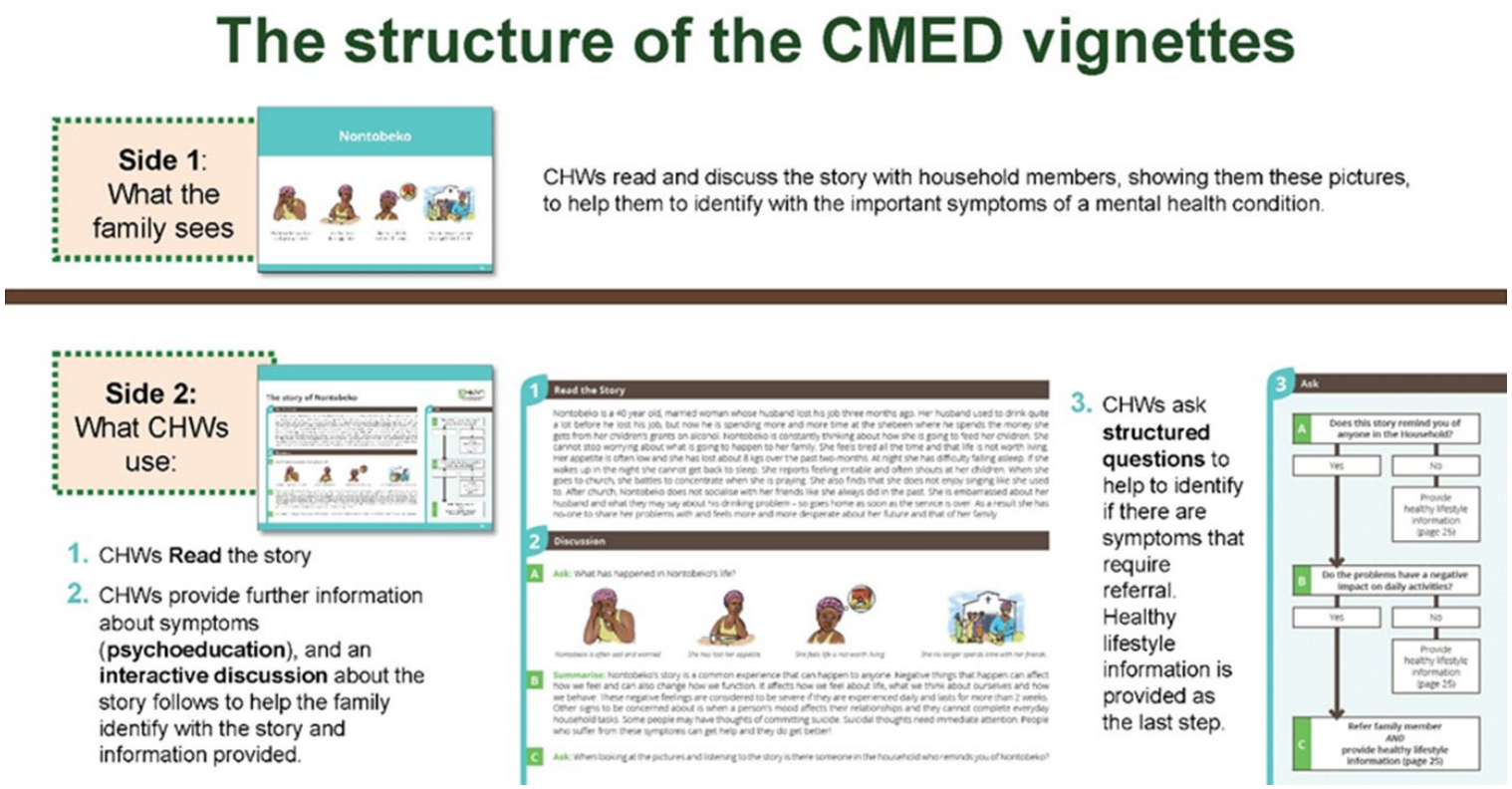

Figure 18: Structure of the CMED vignettes

6.3 Methods

6.3.1 Methodological framework

Feasibility studies are important in helping determine whether an intervention should be recommended for efficacy testing (Bowen et al., 2009) given that there is no existing data in South Africa on the feasibility of a community mental health screening and psychoeducation tool. Bowen et al.'s (2009) methodological framework for feasibility studies includes eight focus areas (acceptability, demand, implementation, practicality, adaption, integration, expansion and limited efficacy testing) as well as a focus on the practical implementation and workability of an intervention in a real world setting (Table 17). Bowen et al.'s feasibility framework informed the study design, interview tools (Table 17) and analysis. This paper focuses on acceptability, demand, implementation, integration, and practicality as the remainder are part of the second stage of the CMED evaluation of the SMhINT study.

Table 16: CMED feasibility framework

Feasibility Areas of Focus (Bowen et al., 2009)	**The CMED feasibility study asks…**	**Data informing the study: Can it work?**
Acceptability	To what extent is the CMED judged as suitable, satisfying, or attractive to program deliverers (community health team) and recipients (household members)?	• Observations • Semi-structured interviews with households • FGDs with community health team
Demand	To what extent is the CMED likely to be used (how much demand is likely to exist)	• Semi-structured interviews with family members • FGDs with community health team
Implementation	To what extent can the CMED be successfully delivered to intended recipients in some defined, but not fully controlled context? Is the intended purpose of the tool aligned to its use in practice in a real-world setting?	• Observations • Semi-structured interview with households • FGDs with community health team
Practicality	To what extent can the CMED be applied with participants using existing means, resources, and circumstances without outside intervention?	• Observations • Semi-structured interview with households • FGDs with community health team
Integration	To what extent can the CMED be integrated within an existing system?	• Observations • Semi-structured interview with households • FGDs with community health team

6.3.2 Setting

The study was conducted in the Newcastle sub-district of the Amajuba District in the KwaZulu-Natal province, South Africa. Newcastle comprises 34 mostly urban community wards (Newcastle Local Municipality, 2018), and is the most populous of the three sub-districts in Amajuba, making up 389 117 of the total population of 531 327 in 2016 (Statistics South Africa, 2016). It is serviced by a district and provincial hospital, a specialised maternal and child hospital and 14 PHC facilities. A limited referral mental health specialist service is located at the district hospital level (Petersen, Kemp, et al., 2021).

At the time of the study Amajuba included 12 community health teams with five teams located in Newcastle (Petersen, Kemp, et al., 2021). The community health teams provide PHC services at a ward based level with a target of each CHW visiting between 150 and 250 households a month depending on distance between households, demographic structure and the burden of disease of the local population (H. Schneider et al., 2018).

One community health team attached to a PHC facility was targeted for the study as it had the necessary formal structures (CHWs and OTLs) in place to guide activities in the community and PHC facility as required by the pilot study. The PHC facility was located in one of the largest townships in Newcastle and the community health team was linked to five community wards with a catchment of 10 157 households (Newcastle Local Municipality, 2018) with each of the 17 CHWs expected to visit 150 households a month.

6.3.3 Sampling and recruitment

The identified community health team comprised three OTLs and 17 CHWs. Following a four-day training of the community health team on mental health and the use of the CMED, the CHWs were

asked to use the CMED as part of their daily routine for a period of three weeks (see Chapter Five for details). CHWs were asked to use their local knowledge and community profiles to identify households where family members may have symptoms similar to those covered in the vignettes. These households were then targeted to be included in the study.

Household members over the age of 18 who were administered the CMED by a CHW were eligible to participate in the study. A project Research Assistant (RA), with a professional background in mental health, accompanied each CHW on the visits. The CHW first introduced the RA to the household and explained the purpose of the visit. If the household expressed interest, the RA then introduced the study and willing household members were consented. The planned sample is described in Table 18.

6.3.4 Procedure

The feasibility research involved four phases: (1) observation of the administration of the CMED in households; (2) semi-structured interviews with household members after the CMED administration; (3) follow-up interviews with household members referred for care; and (4) focus group discussions (FGDs) with community health teams (see Table 2).

6.3.4.1 Observation of the administration of the CMED in households

Permission for the session to be observed was obtained from both CHWs and household members within the informed consent process. The aim of the observations was to gain an in-depth understanding of how the CMED was administered in the household by CHWs, including fidelity, and how household members responded to the tool (Mack et al., 2005). The RAs accompanied each CHW on a minimum of three visits, where observations of the administration of the CMED tool were recorded with in-depth field notes, guided by a standardized template. The latter assessed how

the screening tool was received by the household, and how the tool was administered by the CHW, including how it was integrated into services normally provided by CHWs.

6.3.4.2 Semi structured interviews with household members

Following the CMED administration, the RA then conducted semi-structured in-depth interviews with household member/s once the visit was completed to explore the experiences of the CMED consultation and recommendations on how to improve the tool and the process.

6.3.4.3 Follow-up interviews with household members referred for care

Household members who identified with the symptoms displayed by the main characters in the vignettes were identified as at risk of having a mental health condition and given a referral by the CHW to the PHC facility for further screening and assessment as per routine care. The RA asked for permission from all household members referred, to do a follow up interview. The RA contacted the household member to schedule an interview at least three weeks after the date of detection. Structured interviews were conducted in person or telephonically based on the household members' availability. Household members, who the RAs were able to reach and who already had provided consent to participate in the study, were asked whether they had visited a health-care facility in the past three weeks. Household members who visited a PHC facility for problems associated with a symptom description identified by the CMED were asked a number of semi-structured interview questions that included whether/why they sought help and if treatment was initiated. Participants who chose not to act on a referral were asked for reasons for their decision, in order to identify barriers to access to care for mental health.

6.3.4.4 FGDs and mentorship with community health teams

FGDs were held weekly with the same community health team in the form of reflective sessions over a seven-week period. The purpose of these FGDs was to share experiences (successes and challenges)

of using the tool, identify common bottlenecks and to share learnings within the team. The FGDs also provided an opportunity to identify gaps and to thereafter provide mentorship for the community health team.

Weekly mentorship sessions were led by a CQI expert, as part of the intervention, to build on information provided in the training and to address gaps in CHW understanding and in the delivery of the CMED. The mentorship was also structured to support OTLs in providing mentorship to their CHWs in the delivery of the CMED as well as promoting self-care within the team. Two additional FGDs were conducted at the end of the process to reflect on the overall experiences and learnings. The FGDs were audio-recorded with participant permission.

All data collected through the audio-recordings of interviews and FGDs were transcribed in isiZulu and translated into English.

6.3.5 Sample

The targeted and actual sample size is included in Table 18. Some interviews included one family member while at other times more than one family member was present. More follow-up interviews were planned but were disrupted by the onset of the COVID-19 pandemic. Details of the characteristics of the household member sample have been described previously.

Table 17: Sample (targeted and actual)

	Focus Group Discussions	**Observations**	**Semi-structured interviews**	**Follow-up interviews**
Targeted sample	18	98	98	55
Actual sample	18	94	33 (n=55)	30

6.3.6 Data Analysis

Guided thematic analysis (Gale et al., 2013) using NVivo was used. Bowen et al.'s (2009) feasibility framework was used to develop the overarching *a priori* themes, while allowing for inductive themes to emerge per the framework analysis method (Gale et al., 2013). Triangulation was carried out by using different data collection methods (semi-structured interviews, structured follow-up interviews, FGDs and observations) and accessing information from diverse sources (household members and CHWs).

Observations were collated into an excel document. Interview data were coded and analysed using the five stages of thematic framework analysis by two qualitative analysts (MG and NK). The stages include familiarisation; identifying a thematic framework; systematically applying the framework to the data (indexing); creating a summarised matrix for each theme (charting); and interpretation. Transcripts and observation field notes were entered into qualitative data analysis software (NVivo version 12). After reading ten transcripts (familiarization) a thematic framework was developed based on *a priori* themes using the eight focus areas of feasibility studies as well as new themes emerging from the data(Bowen et al., 2009). MG and NK coded the first 10 transcripts independently, using inductive and deductive methods to verify and ensure reliability of the coding process. The analysts met weekly to discuss theme development and resolve any interpretation discrepancies in the analysis process. Discrepancies that could not be resolved were reviewed by the project Principal Investigator. The analysts repeated the process applying the thematic framework to the data until all the remaining data were coded, including additional generation of codes, memos, and interview summaries. A summarized matrix for each theme (charting) was developed in Microsoft Excel which allowed for structured mapping and interpretation of data.

6.3.7 Ethics

Ethical approval was obtained from the University of KwaZulu-Natal Biomedical Research Ethics Committee (BF190/17) and the KwaZulu-Natal Department of Health. All participants provided written informed consent.

6.4 Results

Of the 17 CHWs participating in the study, 16 were female and a majority aged between 30 and 59 years of age. Just under half had completed grade 8-11 with most having worked as CHWs for over four years.

The main themes are presented within Bowen et al.'s feasibility focus areas and findings were triangulated across three data sources (interviews with families, FGDs with CHWs and observations of the CMED consultation).

6.4.1 Acceptability

As per Bowen et al.'s (2009) framework, acceptability refers to the extent to which the CMED is judged as suitable, satisfying, or attractive to program deliverers (the community health team) and recipients [household members]. Overall the community health team and families found the CMED tool to be acceptable which was reflected across all three data sources.

Value of new knowledge

All CHWs enjoyed bringing something new to their community confirming that mental health had not been formally addressed in the past. They reported that their households had tired of the same health promotion messaging around hygiene and maintaining vegetable gardens. CHWs indicated that the training and use of the CMED tool gave them more credibility in their households and they

felt appreciated by the community:

> *It was easy… because when you enter a household and the client thanks you for assisting … 'you guys have improved you read such good things now' [CMED] then you answer by saying 'we attend trainings now.'(CHW 4, FGD 2)*

There were strong indications that the mental health information was valued across households (33 households, n=55):

> *They [CHWs] bring knowledge that we did not know. Just like how my heart is black [feeling depressed] and not wanting food and not wanting to be around people. I did not know that the CHW knows about such things as well. (Household member 7031)*

Acceptability of the CMED consult

There was a general consensus from CHWs that the CMED was well received by the community and households really enjoyed the administration of the tool and were actively engaged in the consultation:

> *…the community also loves it and they enjoy it when we read it [CMED]. The community listens, they even ask questions that means they also enjoy it. (CHW 3, FGD 1)*

This finding was reflected in the data that showed that out of the 92 observations conducted, only four households had members who did not engage in the process. One person was silent during the CMED consultation and did not appear engaged but approached the CHW after the session to ask for a referral to the clinic (Observation 86). The majority of CHWs also reported that the tool was engaging to household members because the CMED was packaged through stories and pictures:

…it was designed in an attractive way and it gets an individual's attention… people have that enthusiasm to find out what is inside this tool." (CHW 7, FGD 2)

Most households (28/33) felt that CHWs were the best health care provider to administer the CMED because they were trusted to keep information confidential:

The CHW is not like your friend or your neighbour who tomorrow will stand by the washing line and insult you. The CHWs are able to keep your secrets. (Household member 7036)

CHWs also reflected on how the CMED enabled them to address the mental health aspect of their work, which was part of the DoH programme in theory but had not been practically implemented at a community level:

It really helps. Our referral letter has always [included] mental health and you ask yourself why they included it in the letter when we have never been told about mental health …but now you can see that they knew there would come a time for us to train and know more about mental health…(CHW 2, FGD 1)

Acceptability of vignettes and illustrations

All households found the vignettes to be understandable, clear and engaging, and felt empathy for the characters. Household Member 7029 recounts that after listening to the story of Nontobeko (character for depression) "*I felt pain in my heart it is really sore that she [Nontobeko] is worried and needs help".* Sixteen households commented on how the pictures helped to understand the vignettes better. All but two households interviewed (31/33) reported that the vignettes and illustrations (30/33) were relevant either to things happening in their community (20) or personally in their households (11).

Acceptability of CHWs providing referrals for mental health

While all households reported that they would accept a referral from their CHW for their mental health, one participant shared that she would not accept a referral to the local PHC facility due to a past negative experience. Reasons for accepting a referral included trust in the CHW, confidence in the CHWs knowledge, a need to get help and an established relationship with the CHW:

> *...she [CHW] has more information about the health of everyone in this house, she knows everything." (Household member 7024)*

A few household members shared that they had received a referral after the CMED visit and felt positive about the experience. CHWs across all FGDs also gave examples of how referrals using the CMED had resulted in access to care for household members:

> *I also did a follow-up on my referrals ...so the person did come here to see (the PHC counsellor) and then they were transferred to the hospital. (CHW 7, DB4)*

6.4.2 Demand

Demand, as framed by Bowen et al. (2009), focuses on the extent to which the CMED is likely to be used (how much demand is likely to exist) by CHWs in households and the extent to which households showed interest in the tool.

The CMED was perceived by all CHWs as being useful in helping people to access care and they felt that its continued use would make a difference to communities:

> *The tool will help a lot with the community because there are a lot of people who will live because of this tool…if we continue to read for them that they will get help. (CHW 3, FGD 2)*

CHWs also indicated that there was interest from the community for the tool to be administered more broadly in schools, churches and other community platforms as well as identifying particular households that could benefit from exposure to the tool.

> *Wherever she [CHW] goes she must not leave it [leave without administering the CMED]…it is important for the CHW's to talk about these short stories. … some people need to hear these stories-they are just missing a person to talk to you see. (Household member, 7001)*

6.4.3 Implementation

In assessing the implementation of the CMED it is important to review if the intended design of the tool was aligned to its use in practice in a real-world setting. It is also important to assess the fidelity of the process, i.e., was it used in the way it was designed, was it successfully delivered within the system and was it received in the way it was intended by recipients (Bowen et al., 2009).

CHW use of the tool in households (fidelity and delivery)

The RAs accompanied each of the 17 CHWs on a minimum of three visits. These observations indicate that more than half of the CHWs initially lacked confidence and missed important steps in the delivery of the tool (e.g. the flow chart that guides the CHW on what story to read, asking the structured questions that guide referral and healthy lifestyle advice) but that they improved significantly after the first two sessions.

> *It was exciting to see how the CHW had improved (delivery of the CMED). … the first interview did not go well. However, over a period of time she has developed more confidence…now she is able to use the tool appropriately. (Observation 83)*

The majority of CHWs also described how nervous they were using the tool for the first few visits "*I just felt so scared while using the tool" (CHW 8, DB 1),* and despite having a relationship with households the content was initially challenging. Most CHWs also commented that the format of the CMED tool was different to what they usually did at a routine visit as they were not used to reading to households and engaging them in an in-depth and interactive discussion.

Training and Mentorship

Given the initial lack of confidence in CHWs when using the tool for the first few visits, the need for mentorship was identified as essential to the success of the implementation of the CMED:

> *My observation is, if the CHW is well informed and able to use the tool, it makes the session more meaningful. The need for mentorship is essential...a lack of confidence...makes the visit longer. (Observation 61)*

Usability of the CMED tool

Overall all the CHWs found the tool easy to use, even though some were unsure what story to read when a person could be identified under more than one vignette. However, as CHWs became familiar with the tool they found it easy to navigate with some CHWs highlighting the flowchart (Figure 2) as particularly useful in guiding the CHW in choosing a vignette to read:

> *I found the tool easy to use …when a person tells you their problem you are able to determine which story to read to them. (CHW 2, FGD 1)*

All CHWs reported comfort in providing healthy lifestyle information and the tool provided a helpful formal process to talk about mental health and helped in screening for mental health

problems in households, "*with the tool you are able to discover a lot … things that you cannot discover on your own" (CHW 2, FGD 2).*

Received in the way it was intended by recipients

The following key themes that emerged regarding how the CMED was received by household members in its implementation.

CMED Tool provides safe space to talk about mental health

Most households (26/33) indicated that the CMED tool enabled family members to talk about mental health which they attributed to the interactive nature of the tool. Household members were able to ask questions and were able to talk about their own lives in reference to the characters in the vignette. There was also an acknowledgement by households that speaking about mental health was often difficult and would not be otherwise raised if it were not for the CHW engaging the family about mental health through the CMED tool:

> *We weren't going to be able to go ask for ourselves [about mental health] now when someone comes to ask us its better, we are able talk. (Household member 7030)*

Self-identification

Most household members (20/33 households) either self-identified with a vignette (15) or identified someone in their family (5) as having similar symptoms to those described in the vignettes:

> *Nontobeko's [character for depression in CMED] story relates to me, I feel I am Nontobeko. It is like the story is talking about me. (Household member 7001)*

This finding was confirmed in the FGDs, with all CHWs reporting that the tool helped household members to identify members with mental health conditions. The psychoeducation component in

each vignette also helped household members self-identify with the symptoms they were experiencing:

> *I am just like Nontobeko. I was fat but now most of my clothes don't fit, I've really lost weight due to my problems. I even went to the clinic to go check for HIV, diabetes thinking maybe I am sick but they found nothing. Today I've learned that I suffer from depression just like Nontobeko as we have the same symptoms. (Household member, 7117)*

Some participants also expressed relief that they and their families were not alone in experiencing a mental health problem as they explained that if a condition is in CMED then it must be happening to others too:

> *…what helps in these stories is that it makes you… realise that you are not the first one to go through this situation. (Household member, 7051)*

However, a few CHWs reported that it was challenging and frustrating when they knew a household member needed help but would not voice that they had a problem:

> *What I found challenging was that …Herman, Sifiso, Brian [characters in CMED] are people…that we know [in the households]. So the tool got to a point where it needed them to confirm but they would not say anything even though they know that they have these presenting symptoms…It was very difficult because there were a lot of people that I did not assist. (CHW 6, FGD 2)*

Raised mental health literacy

The majority of households (24/33) indicated that they had a raised awareness of mental health problems after being read a CMED vignette. They could name symptoms that they needed to look out for in themselves and their family members and had a raised awareness of the options available

to them for accessing care for mental health problems. It helped in identifying for example in one household, a family member enquired about help for her brother who was having suicidal thoughts:

> *The lady said, "Yes there's someone who wants to commit suicide" then she asked if it's possible for them to get help. I replied "Yes they can get help" she asked "are you sure?" I said, "Yes, we can refer them to the clinic." (CHW 3, DB2)*

One key bottleneck raised by many CHWs was that household members did not always receive care when referred to the clinic.

> *This is a very serious problem because nothing is as painful as providing a service to the client, referring them then they end up not getting any help. In other words …you are working for nothing. (CHW 9, FGD 1)*

This concurred with follow-up interview data that indicated that of the household members that were referred for a mental health problem, more than half (17/30) did not access care at the facility. Reasons given were poor relationships with the local clinic, fear of staff experienced by patients defaulting on medication, long queues and a preference to see the mental health counsellor directly, lost referral forms, feeling better after the CMED consult, a preference for CHW support, waiting for the return of the CHW, and competing priorities.

Some CHWs also described how they felt undermined by nurses at the PHC clinics as they questioned their professionalism in front of patients.

> *P2: I referred a patient here [clinic] she had disclosed something so big, when the nurse attended my client she spoke ill of me as and asked the client why she disclosed everything to me? My colleague at the clinic asked my patient if she trusts me given that I am her*

neighbour? They should refer to us as their fellow colleagues. CHW 2, FGD 2)

Raised awareness regarding stigma

Some CHWs indicated that the CMED psychoeducational components were helpful in challenging stigmatizing beliefs about mental health conditions. The CHWs explained that many households initially understood mental health to be about 'crazy people' but that the information in CMED helped to better understand and destigmatize mental illness:

> *Families can now separate that a person who has a mental health problem needs support not to just say 'they are crazy'. Now they say that 'oh we need to support them and send them to the clinic because they have this problem' and to also be able to understand their state. (CHW 12, FGD 2)*

The tool also helped some CHWs reflect on their own personal negative attitudes, particularly about people experiencing harmful alcohol and drug use*:*

> *This tool also changed the way that I think - I used to be judgmental towards people that used drugs but now I understand that they may be going through something and do not talk about it and end up doing drugs as a solution. (CHW 2, FGD 2)*

A few household members also spoke of how the tool had given them a different perspective on harmful alcohol use:

> *We learned a great lesson from it [CMED]… that when a person drinks a lot of alcohol...they are trying to ease their issues (hmm) that are hurting them (hmm)… it created a different perspective on how I view heavy drinking. (Household member, 7024)*

6.4.4 Practicality

Context

The context within which the CHWs work is markedly different from clinic consultations, with the tool being administered wherever the family chooses as it is their home. Examples of this from the

observations included consultations happening outside - at the washing line or while household members were washing their clothes - standing because a family did not have chairs, sitting on upturned buckets, and sitting on the bed, given that this was the only place to sit. Figure 20 gives insight into the context in which the CMED was delivered.

Figure 19: Example of the context of the CMED administration

CHWs also highlighted that individuals within households did not always feel comfortable disclosing their mental health problems with the rest of the household being present. This required CHWs to be sensitive to the dynamics in each household and to ensure confidentiality when required. In one FGD the CHWs highlighted that they belong to the communities and the households they work with and are often aware of household situations and challenges; with community members also aware of their personal challenges. One CHW described her vulnerability when reading the harmful alcohol use vignette as it was well known that this was a problem in her own family.

Emotional Labour

Most CHWs described the emotional labour they experienced after visits particularly when households faced multiple challenges and the personal impact on them.

> *For me it helps other people in the community but it also hurts me. When these people start sharing their stories with me that I did not know and they start explaining in detail, I end up getting hurt… I can't cry in front of them, I have to cut the session and leave or I have to comfort them when they are crying at the same time I am trying not to cry. I then end up not being fine at all. (CHW 6, DB4)*

One CHW described how this emotional strain impacted on the number of visits she could do in a day and that the CMED visits were best left for last as she felt drained after these visits. In each of the seven debriefing session the facilitators reminded the CHWs about the importance of self-care and the OTLs led breathing/mindfulness exercises that formed an integral part of their training.

Impact on routine work

In four FGDs, the CHWs described how administering the CMED was time consuming but beneficial to them and their communities. CHWs also explained that administration of the CMED required planning and scheduling as they also needed to complete their other duties.

Catalyst for addressing medication non-adherence and for linking to support beyond the health sector

Household members experience layers of problems and the tool was able to prompt discussions around medication non-adherence and social problems linked to mental health problems. This allowed CHWs to discuss the importance of adherence and linkage back into care, as well as make referrals to services beyond the health sector. For example, a woman's story around unemployment, and an inactive social grant prompted referral to the Department of Social Development to get help for these social issues and not just a referral for her mental health problems.

Triangulation

Triangulation of different data sources (FGDs, debriefing sessions, in-depth interviews and direct observations) from different respondents (community health teams, household members and research team) allowed for multiple perspectives of feasibility. By bringing together themes from across data sources, identification of cross cutting meta-themes in the analysis was facilitated. This generated higher level interpretations of the data including latent patterns of meaning. Through the process of triangulation different elements of each component [acceptability, demand, implementation, practicality and integration] of feasibility were tapped into, allowing for a more complete picture of the feasibility of the CMED to the community health team and household members. Consistent themes across data sources also provided greater confidence in the credibility of interpretations and the potential to transfer key learnings to similar contexts.

6.5 Discussion

Overall the community health team (program deliverers) and household members (recipients) found the CMED tool to be acceptable and our data shows that the CMED administration, vignettes and illustrations and the referrals for mental health were perceived as suitable, satisfying and appealing to programme deliverers and recipients. The use of relatable local idioms in the vignettes and illustrations and embedded in the everyday rhetoric of the local community is important as the prototype matching approach requires that the vignettes used are relatable and meaningful to household members (Subba et al., 2017).

In relation to demand, the CMED was perceived to be helpful to CHWs and households alike assisting household members to understand the mental health symptoms that they were experiencing and recognize that there was help available. Increased awareness is important in the context of poor mental health literacy where demand for services is impacted by a lack of information and knowledge about signs and symptoms of mental health problems and a lack of awareness about available services (Shidhaye et al., 2017). In turn, improved demand for mental health services should assist in identification of mental health conditions in patients attending PHC clinics for other conditions. This is because they are often overlooked in busy PHC clinics, as they require additional time and emotional labour to probe for symptoms. (Kemp et al., 2021).

In relation to implementation quality, our data suggests that fidelity in administration of the CMED was dependent on supportive mentorship of CHWs. Many CHWs initially lacked confidence in the delivery of the CMED and a few CHWs actively avoided being part of the process because of this. Improving CHW self-efficacy through supportive mentorship was key to the success of the CMED delivery, with CHWs becoming more comfortable and confident over time. This finding is similar to previous studies where supportive supervision underpins successful community health team interventions (LeBan, Kok, & Perry, 2021; H. Schneider, 2019).

With regard to practicality of the CMED, the prototype matching approach was helpful to CHWs to initiate conversations about mental health within households. It assisted in creating a safe space for household members to talk about their mental health, reducing the chances of labelling and providing a less threatening way of talking about sensitive topics through providing distance from personal accounts, allowing household members to talk about their problems through the characters in the story, as well as enabling participants to define the situation in their own terms. These findings are similar to previous studies that demonstrate how stories and illustrations provide such distance and help people talk about difficult issues (Barter & Reynold, 1999; Petersen et al., 2006). Additionally, our data suggests that the CMED has the potential to challenge stigmatising beliefs around mental health conditions through the use of psychoeducation in the vignettes and the healthy lifestyle advice. This is of particular relevance given that mental illness is highly stigmatised in African contexts (Egbe et al., 2014).

The tool was found to be useful in households and integrated well in existing CHW services of which health promotion is central. CHWs know their households and are skilled in dealing with sensitive issues within families particularly through their work with HIV patients (H. Schneider et al., 2018; Stansert Katzen et al., 2022), and exercised discretion by allowing individuals to talk to them privately at the end of the consultation if needed. The data also suggests that the CMED enabled household members to talk about social and health problems that they were experiencing including adherence challenges. This then promoted linkage to care for other problems suggesting that this approach may also be useful for health promotion around co-morbid conditions. Notable research indicates that there is high co-morbidity of CMDs with chronic diseases (Ciesla & Roberts, 2001; Moussavi et al., 2007), and more research would need to be done to determine if CMED increases linkage to care for defaulters. CHWs reported that the CMED differed from their other tools because of its prototype matching vignette format but that it had "goodness of fit" within the scope of practice of screening and health promotion.

The findings that not all referred household members received care at the PHC facility because of a lack of trust of the PHC professional staff of CHW referrals suggests a lack of integration of CHW teams and PHC facility staff. These findings corroborate results from similar studies involving CHWs and facility staff, where relationships have been described as strained and unsupportive, with common barriers cited including CHWs not being respected and integrated into the existing health system (LeBan et al., 2021; Pallas et al., 2013; H. Schneider et al., 2018). This bottleneck identified in the referral pathway is a major challenge that has the potential to compromise the positive perceptions and utility of the CMED tool in identifying mental health problems at a household level. Within a collaborative care approach, it is essential that communication between clinic staff is improved and referral systems strengthened so that household members have access to care once referred. As part of health system strengthening, a team-based approach central to collaborative care is required where CHWs are perceived as valuable members of the health team, with staff working together and communicating regularly to improve patient outcomes. This approach requires health facility managers to implement systems that actively promote an inclusive team-based approach.

The emotional labour that CHWs experienced not only through the delivery of CMED but also in their daily work of helping households manage multiple complex challenges emphasises the need for self-care approaches and debriefing for CHW teams within a supportive mentorship and a team-based approach. OTLs are well placed to provide this but in turn would also require support. Team and district WhatsApp support groups have been shown to be beneficial in other LMICs for sharing successes and challenges and providing emotional support (Feroz, Jabeen, & Saleem, 2020; Henry et al., 2016; O'Donovan et al., 2021; Pimmer, Mhango, Mzumara, & Mbvundula, 2017).

6.6 Limitations

The feasibility research was conducted with one community health team in one facility in a local

district in the KwaZulu-Natal Province in South Africa. There is a need for further studies to assess the feasibility of the CMED tool in different contexts.

6.7 Conclusion

The CMED was found to be acceptable by both community health teams and household members. It has the potential to raise mental health awareness and address misinformation and stigma about mental health, and potentially increase demand of mental health services. Implementation, practicality and 'goodness of fit" within the existing health system has been established.

Further evaluation and testing of the CMED with other community health teams as part of the routine package of community services is needed. This would include integrating the tool within the broader curriculum for training CHWs inclusive of other conditions, as well as the integration of the CMED into routine community screening tools and health promotion activities.

Chapter 7 : Discussion

In the context where 30% of South Africans experience a CMD in their lifetime (Herman et al., 2009), and where only 7,5% of the uninsured population access outpatient care for any mental health condition (Docrat et al., 2019), the need to increase supply of mental health services is highlighted. As noted in the introduction and literature review, this needs to be balanced with increased demand for mental health services. Low mental health literacy, lack of knowledge about service availability, stigma and misinformation about treatment pose barriers to help seeking (Jordans et al., 2020; Shidhaye et al., 2017; Subba et al., 2017). In the context of low levels of mental health literacy in African contexts (Egbe et al., 2014), interventions at a community level, such as the CMED tool, are important to improve communities understanding of mental health problems, community identification and awareness of service availability and help seeking (Subba et al., 2017).

This study has added new lessons for interventions for mental health at a community level in LMICs through the development and testing (accuracy, feasibility) of a community mental health education and detection tool in South Africa. Contributions to the evidence are described under each of the three sub-studies: 1) Formative Study 2) Accuracy Study 3) and the Feasibility Study as well as how the studies have contributed collectively to evidence.

7.1 Formative Study: contribution of evidence

The CMED tool was developed to address demand and supply for mental health services in South Africa through the provision of a psychoeducational and detection tool to strengthen mental health literacy, to facilitate self-identification of symptoms, as well as to help CHWs identify possible cases requiring referral for further screening, assessment and diagnosis. This objective is aligned to the literature that calls for interventions to increase demand for mental health services in order to improve utilisation of mental health services particularly in LMICs where major discrepancies exist between the number of people needing treatment for mental health conditions and the number

accessing treatment (Jordans et al., 2020; World Health Organisation, 2022). The CMED tool has been generated as an output for the use of the KZN DoH for provision of mental health services at a community level (Chapter 5).

Normalisation Process Theory [NPT] (Murray et al., 2010) was adopted as a broad framework in this study to identify they key mechanisms to promote the implementation, embedding and integration of the CMED tool. The researchers were guided by the four NPT constructs [coherence, cognitive participation, collective action and reflexive monitoring] (Murray et al., 2010) as a means to appraise factors that might promote or inhibit the routine incorporation of CMED into the routine health system.

Coherence (meaning and benefits to the users of an intervention)

One key component of coherence is clearly defining the context of the intervention and ensuring alignment with the system. This was essential in the development of the CMED tool as we needed to ensure "goodness of fit" within the existing community-level package of services, in order to promote adoption and normalisation of the CMED.

Chapter Four describes the extensive consultation process with KZN DoH to better understand their needs and to develop an intervention that would be functional and appropriate to the system. The CQI process mapping further contributed to our understanding of the context and the needs of the WBPHCOTs, allowing the development of a tool that would have utility for CHWs in their daily work. It was imperative that the tool could be aligned as much as possible to routine care so as to promote adoption within the system. The process mapping also allowed us to understand how mental health was incorporated in the package of services and how it could be expanded to promote mental health within a community-level package of care. The FGDs with the WBPHCOTs further expanded our understanding of how the tool could be used in the community. This process helped

to ensure that the CMED was developed in such a way so as to align to the vision of the DoH as outlined in the PHC re-engineering strategy (South African National Department of Health, 2010) and the COPC model (KwaZulu-Natal Department of Health, 2019).

The cultural relevance of the CMED tool was an important factor that needed to be considered in order to ensure cognitive participation by users. The use of the prototype matching approach using the vignettes is relevant as in many African cultures, where the tradition of oral storytelling for information sharing and learning transmitted orally through spoken word, forms an important part of cultural identity (Scheub, 1985). Drawing on this, CMED uses stories, incorporating local idioms in the vignettes and illustrations, to help to educate people about mental health conditions and provides a less threatening way of talking about sensitive topics. The prototype matching approach to detection and the related psychoeducation components in each vignette in the CMED is preferable to symptom-based checklist approaches to screening which use labels and are potentially harmful and stigmatizing in contexts, like South Africa, where mental health literacy is low. This is of particular relevance given that mental illness is highly stigmatised in African contexts and interventions targeted at raising mental health awareness in communities is recommended in addressing stigma (Egbe et al., 2014).

The vignettes enable household members to learn about the symptoms of the different mental health conditions through the experiences and stories of the different characters in the stories. This is in keeping with the African oral tradition of story-telling to convey teachings and information (Scheub, 1985). In this way psychoeducation is introduced within a culturally relevant framework of everyday rhetoric as well as promoting self-identification of symptoms of the different conditions in household members. This culturally sensitive approach speaks to coherence as the tool is designed to have cultural relevance and meaning to community members. This alternative approach to screening is also in line with increasing calls for screening tools to be more culturally sensitive

which is especially important when discussing mental health (Bass et al., 2007; Subba et al., 2017).

Chapter Four further describes how WBPHCOTs gave input into the contextual and cultural relevance of the tool by reviewing the local idioms and illustrations used in the vignettes. These steps were vital in ensuring the co-creation of a tool that is relevant to the routine community package of care offered in households.

Cognitive Participation (commitment and engagement of users to the intervention)

The DoH requested the research team to develop a tool for use at a community level, and this request in itself, speaks to the commitment of the DoH to the CMED. Additionally, cognitive participation by the DoH is also demonstrated through the meetings, email communication and active participation in the co-development of the tool by the DoH at both a provincial and national level described in Chapter Five. The cognitive participation by WBPHCOTs is demonstrated in Chapter Seven in the feasibility study through the observations and FGDs with WBPHCOTs as well as household members.

Collective action (compatibility of an intervention within a system)

Chapter Four describes the importance of the process mapping, observations of WBPHCOT activities as well as FGDs in ensuring congruence of the CMED tool with the functioning and routine services provided by WBPHCOTs. This process speaks to NPTs collective action where the impact of the CMED tool on CHWs work and the compatibility of the tool within the existing system is brought to the fore.

Important insights were gained including:

1) How CHWs could use their local knowledge to specifically target households where they feel a family member may have a mental health condition. This information was important in informing the next steps, assessing the accuracy and feasibility, of the pilot study,

described in Chapters Six and Seven.

2) Understanding was gained about referral pathways helping our team to ensure that mental health referrals were aligned with existing referral pathways for other conditions. This was particularly important in informing the standard operating procedure for CMED and how it could work within the system.
3) Understanding of the OTL's role in supervision, mentorship and CHW in-service training helped provide insights into how the CMED tool could be introduced into the system using OTLs to provide on-site training and mentorship in the use of the tool; as well as the provision of supportive mentorship to CHWs. The need for supportive mentorship has been repeatedly highlighted in the literature as essential to the success of community interventions (Assegaai & Schneider, 2019).
4) The toll of emotional labour on CHWs and the need for self-care emerged as also being important and this knowledge informed the training and mentorship of the WBPHCOTs in the pilot study, described in Chapter Three and Four.

The findings in Chapter Four also describe the overall "fit" of the CMED into the existing community package of services. It was found that the CMED did differ to the existing tools because of its prototype matching vignette format and interactive nature, however, it essentially was compatible given that it fell within the WBPHCOT scope of practice of screening and health promotion as outlined in WBPHCOT policy framework. The NPT process is also iterative in nature, and this is reflected in the continuous amendments that were made to the CMED tool based on feedback from the research process.

Reflexive monitoring

Reflexive monitoring refers to the formal and informal appraisal of the intervention. The feasibility of the CMED tool to WBPHCOTs and household members has been discussed in detail in Chapter

Seven using Bowen et al.'s (2009) framework for feasibility studies. Reflexive monitoring is also evident in the co-production of the CMED tool with the KZN DoH as they reviewed the tool and provided input throughout the development process.

7.2 Accuracy study: contribution of evidence

While Chapter Four describes the formative steps taken in the development of the CMED tool, Chapter Six assesses if the CMED tool is in fact able to accurately detect possible common mental health symptoms when used by CHWs in households.

As explained in Chapter Six, the results from the Accuracy Study provide evidence that the CMED can improve detection of mental health problems at a community level. With a sensitivity of 79%, the tool has the potential for early identification and referral for further assessment and treatment among individuals who might otherwise not access any mental health services. A specificity of 67% is a relatively good result and suggests the PHC facilities will not be over-burdened with false positive cases. This finding is similar to previous studies that demonstrate that community mental health detection using a prototype matching approach does assist in identifying community members with possible mental health symptoms in need of onward referral (Jordans et al., 2015; S. Mohsin et al., 2021). The CMED had higher sensitivity (79%) than the community informant detection tool (CIDT) used in Nepal [64%] (Jordans et al., 2015), demonstrating that more than two-thirds of people detected using the CIDT and CMED are accurately detected [true positives].

7.3 Feasibility Study: contribution of evidence

Whilst Chapter Six demonstrates that the CMED can improve detection of mental health problems, Chapter Seven explores the feasibility of the tool to WBPHCOTs and household members using Bowen et al.'s (2009) framework for feasibility studies as a methodological framework for

investigation (Table 17). Chapter Six focuses on five of Bowen et al.'s (2009) focus areas including the acceptability, demand, implementation, integration, and practicality of the CMED as the remainder are part of the second stage of the CMED evaluation of the SMhINT study, and are not in the scope of this study.

Acceptability (To what extent is the CMED judged as suitable, satisfying, or attractive to program deliverers [WBPHCOTs] and recipients [household members]?

Chapter Seven describes the overall acceptability of the tool to the WBPHCOT (program deliverers) and household members (recipients). The CMED tool was found to be acceptable and Chapter Seven demonstrates that the CMED administration, vignettes and illustrations and the referrals for mental health were perceived as suitable, satisfying and appealing to participants. The extensive formative work described in Chapter Four to ensure cultural sensitivity of the CMED to users (*NPT Coherence-meaning and benefits to the users of an intervention)* was confirmed in practice in the testing of the acceptability of the CMED as it was found to be relatable and meaningful to household members and WBPHCOTs alike. This finding is supported by the literature that calls for screening tools to be culturally relevant (Bass et al., 2007; Subba et al., 2017).

Demand (To what extent is the CMED likely to be used/how much demand is likely to exist?)

Chapter Seven also describes how the CMED promoted increased mental health literacy. The CMED was found to be helpful to CHWs and households alike in raising awareness of mental health symptoms and treatment options available. The psychoeducation component in the CMED, described in detail in Chapter Four, sets it apart from other community mental health detection tools, such as the CIDT which do not include psychoeducation, and it allows for the opportunity to raise awareness about mental health and in doing so reduce stigmatising beliefs about mental illness and increase demand for services. As discussed in this thesis, our contexts had low levels of mental

health literacy (Kemp et al., 2021) and increased awareness is essential where demand for services is impacted by a lack of information and knowledge about signs and symptoms of mental health problems and a lack of awareness about available services (Shidhaye et al., 2017). In turn, improved demand for mental health services should assist in identification of mental health conditions in patients attending PHC clinics for other conditions, as they are often overlooked in busy PHC clinics, as they require additional time and emotional labour to probe for symptoms (Kemp et al., 2021).

Implementation (To what extent can the CMED be successfully delivered to intended recipients in some defined, but not fully controlled context? Is the intended purpose of the tool aligned to its use in practice in a real-world setting?)

The findings in Chapter Seven indicate that implementation quality of the administration of the CMED was dependent on supportive mentorship of CHWs. This was also a finding in Chapter Four in the formative study. Supportive mentorship of both OTLs and CHWs was key to the success of the CMED delivery. This finding is similar to previous studies where supportive supervision underpins successful community health team interventions (LeBan et al., 2021; H. Schneider, 2019). It highlights the need to move away from once off training sessions, that are usually viewed as the quick and easy approach to training but rarely embed learning, and to ensure that knowledge is embedded through onsite training and supportive mentorship. We believe OTLs are well positioned to provide this mentorship but high workload and competing demands result in mentorship being secondary to their other roles. OTLs need to be supported within their facilities by Operational Managers to ensure that they have the time and resources to mentor and support CHWs to support the inclusion of mental health services into the routine community package of care. Mental health specialists, such as psychologists based in the district hospitals, in turn need to diversify their skills in supporting and upskilling health workers at a PHC level. This is consistent with the task sharing approach outlined in the WHO tiered model for mental health services (World

Health Organisation, 2022) and the WHO optimal mix of services pyramid (World Health Organisation, 2003).

Practicality (*To what extent can the CMED be applied with participants using existing means, resources, and circumstances without outside intervention?)*

The practicality of the CMED are discussed in Chapter Seven. The CMED was helpful in initiating conversations about mental health, with the vignettes and illustrations providing a safe space for household members to talk about their mental health through the characters in the vignettes. This approach reducing the chances of labelling and provided a less threatening way of talking about sensitive topics by providing distance from personal accounts. These findings are similar to previous studies that demonstrate how stories and illustrations provide such distance and help people talk about difficult issues (Barter & Reynold, 1999; Petersen et al., 2006). Additionally, our data suggests that the CMED has the potential to challenge stigmatising beliefs around mental health conditions through the use of psychoeducation in the vignettes and the healthy lifestyle advice. This is of particular relevance given that mental illness is highly stigmatised in African contexts (Egbe et al., 2014).

Integration (To what extent can the CMED be integrated within an existing system?)

Chapter Seven also describes the integration of the CMED tool into routine care. Integration is also an important factor in NPT as Collective action *(compatibility of an intervention within a system)* is a key mechanism required to promote the implementation, embedding and integration of a new intervention into routine care.

The tool was found to be well integrated into the existing CHW services of which health promotion and screening are central. Similar to the findings in the Formative Study discussed in Chapter Four, CHWs reported that the CMED differed from their other tools because of its prototype matching

vignette format but that it had “goodness of fit” within the scope of practice of screening and health promotion.

Findings also indicate that the CHWs are well positioned to deliver CMED in households; their in-depth knowledge communities and their ability to manage sensitive issues in their routine work, such as HIV disclosure and support, (H. Schneider et al., 2018; Stansert Katzen et al., 2022), ensures that they are able to manage patients with possible mental health conditions in a sensitive and discrete manner.

The data also suggested that the CMED provided a platform for household members to talk about other health challenges including adherence, suggesting that this approach may also be useful for health promotion around co-morbid conditions. Notable research indicates that there is high co-morbidity of CMDs with chronic diseases (Ciesla & Roberts, 2001; Moussavi et al., 2007). The CMED tool may be useful in tracing visits to link loss-to-follow-up patients to care, with the tool being helpful in identifying mental health problems that may be driving non-adherence.

The findings that not all referred household members received care at the PHC facility because of a lack of trust of the PHC professional staff of CHW referrals, suggests a lack of integration of CHW teams and PHC facility staff. These findings corroborate results from similar studies involving CHWs and facility staff, where relationships have been described as strained and unsupportive, with common barriers cited including CHWs not being respected and integrated into the existing health system (LeBan et al., 2021; Pallas et al., 2013; H. Schneider et al., 2018). This bottleneck identified in the referral pathway is a major challenge that has the potential to compromise the positive perceptions and utility of the CMED tool in identifying mental health conditions at a household level. Within a collaborative care approach, it is essential that communication between clinic staff is improved and referral systems strengthened so that household members have access to care once referred. As part of health system strengthening, a team-based approach central to collaborative care is required where CHWs are perceived as valuable members of the health team, with staff

working together and communicating regularly to improve patient outcomes. This approach requires health facility managers to implement systems that actively promote an inclusive team-based approach.

In addition, some household members did not access care due to the unavailability of counsellors and because of this became despondent and lost trust in the system. This challenge is well documented in the literature and is reflective of barriers to supply of mental health services that then impact on demand for care seeking (World Health Organisation, 2022). In this case poor availability of quality mental health services due to resource constraints and high workload of counsellors was a barrier to the demand for care. Additionally, past negative experiences of mental health services, distrust of health workers' ability to provide treatment as promised all impact a person's willingness to seek care and disclose their mental health problem.

The emotional labour that CHWs experienced not only through the delivery of CMED but also in their daily work of helping households manage multiple complex challenges emphasizes the need for self-care approaches and debriefing for CHW teams within a supportive mentorship and a team-based approach. OTLs are well placed to provide this but in turn would also require support. Team and district WhatsApp support groups have been shown to be beneficial in other LMICs for sharing successes and challenges and providing emotional support (Feroz et al., 2020; Henry et al., 2016; O'Donovan et al., 2021; Pimmer et al., 2017).

7.4 Overall contributions

Despite significant steps in policy development and legislation to improve mental health integration into routine care, District hospitals and PHC facilities are still ill-equipped to deal with severe mental health disorders and CMDs with the treatment gap showing no signs of abating (Docrat et al., 2019; Hlongwa & Sibiya, 2019). More needs to be done to transfer policy into practice to promote the integration of mental health at a District and PHC level. There is a need for the scope of practice of general health workers, including WBPHCOTs, at a PHC level to be explicitly

inclusive of mental health services (Academy of Science of South Africa, 2021), accompanied by mental health training, technical support and supervision by specialist mental health providers and explicitly included in the specialist scope of practice and routine role (Academy of Science of South Africa, 2021). Additionally, mental health integration at a District Health System level needs to be included into routine services and procedures at a District management and at a facility level in order to transfer policy into practice (World Health Organisation, 2022) across the cascade of care. The MhINT model, in which this study is embedded and described in Chapter One, provides an implementation package for the integration of care for CMDs into district-level services at the PHC and community level, and provides a vehicle to transfer the National Mental Health Policy and Strategic Plan (South African National Department of Health, 2013a) into action. The components of the MhINT model at a PHC facility level include health promotion (facility talks), routine screening (using the routine BMH tool), assessment (using the routine APC tool) and referral for treatment to the clinic counsellor, doctor or mental health specialist providing mental health care integration at each step of the PHC facility care cascade [Figure 21].

This thesis, through the formative, accuracy and feasibility studies, adds an additional component to the care cascade at a household and community level and has shown how the CMED supports the other elements along the cascade of care of the MhINT model promoting a whole system approach to integration of mental health into PHC [Figure 21]. The development of the community-component in the mental health care cascade is aligned to the emphasis of community services in the National Mental health Framework and Strategic Plan (South African National Department of Health, 2013a), the National PHC re-engineering strategy (South African National Department of Health, 2010) and the community-oriented primary care (COPC) model (KwaZulu-Natal Department of Health, 2019) in order to bring about a whole community approach to care.

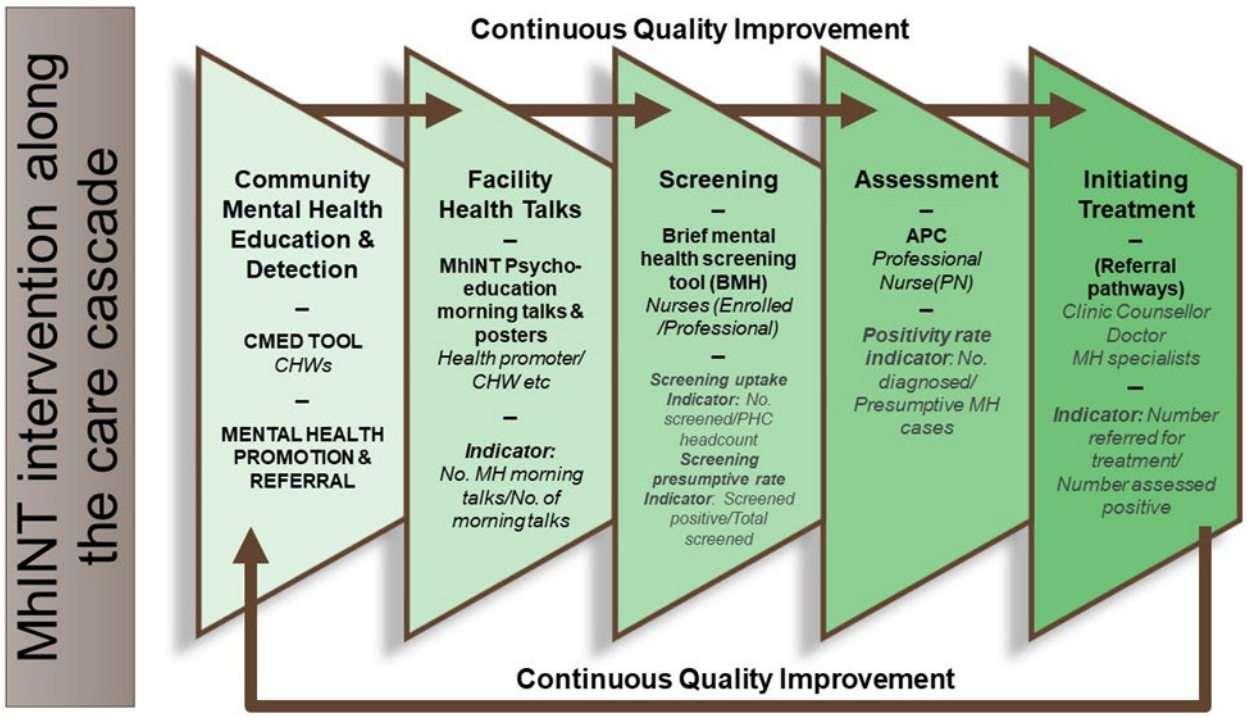

Figure 20: Community level care as part of the MhINT intervention care cascade

The three studies collectively provide a culturally sensitive, valid and feasible tool that is non-stigmatizing and empowering of people, and that can assist CHWs to accomplish their roles and functions of screening, health promotion and linkage to care with respect to mental health. The CMED can act as a catalyst for improving demand for services and raising the public priority profile of mental health. The tool combines mental health literacy (through the psychoeducation components) and mental health screening to promote self-identification of mental health symptoms to assist household members in making informed decisions about their mental health care and promotes an understanding of why a referral has been made. This aligns to increased calls internationally for service users to be actively engaged and responsible for their own health care and wellbeing as part of a people-centred approach to care so as to reduce the dependency burden on health systems (World Health Organisation, 2007, 2016b). This is also aligned to the principles of COPC, an approach prioritized by the KZN DoH, where communities are encouraged to engage in

decisions about their own health care and are educated to understand and recognise their health needs, to seek health care accordingly and to participate in the management of their health care (KwaZulu-Natal Department of Health, 2019). This is in alignment with the WHO tiered system for mental health care (World Health Organisation, 2022) and the WHO framework for optimal mix of services (World Health Organisation, 2003) as the CMED tool allows household members to self-identify mental health conditions, thereby empowering and promoting greater agency in individuals (World Health Organisation, 2007).

In addition, the healthy lifestyle information can promote greater self-care at the community level, with the WHO tiered system for mental health care and framework for optimal mix of services both emphasising that the majority of mental health care should be self-care and community support (World Health Organisation, 2003, 2022). Additionally, the CMED is aligned to the overall goal of universal health coverage as outlined in the SDGs as mental health care is made accessible to all by bringing care to a household level (World Health Organisation, 2022). The community component is also endorsed by the WHO tiered system for mental health care (World Health Organisation, 2022) and framework for optimal mix of services (World Health Organisation, 2003) and COPC (KwaZulu-Natal Department of Health, 2019) as CMED extends the PHC mental health services from a facility level to a household level, and facilitates onward referral for care to the PHC facility. This is important as the existing community package of services lacked integration of mental health services.

7.5 Policy implications and recommendations

At the time of reporting this study, both the NDoH and KZN DoH had adopted the CMED at a policy level to be part of the routine community-level package of WBPHCOT services. This is an

exciting step for mental health in South Africa as the CMED has the potential to increase demand for services as demonstrated in this study.

However, the risk of the supply of services not being able to meet the demand for services is a significant concern. The MhINT collaborative care model described in this study (Chapter 1) meant that facility counsellors, trained to manage CMDs namely depression and anxiety, were available in most of the PHC facilities in the Amajuba District. Despite this, some household members were not able to access care for their mental health due to the unavailability of counsellors given their high work load and competing demands within the health facility. If the CMED goes to scale in all Health Districts in South Africa, the appropriate supply of services needs to be addressed. The need for the DoH to adopt a comprehensive collaborative package is essential in order to ensure that mental health is integrated at each level along the treatment cascade to manage increased demand for care.

As part of health system strengthening, a team-based approach, central to collaborative care, is required where WBPHCOTs are perceived as valuable members of the health team, with staff working together and communicating regularly to improve patient outcomes. This needs to exist at each level of the system including at a District management and Health Facility level where the work of the WBPHCOTs is valued by the facility managers and the extended team. This approach requires health facility managers to implement systems that actively promote an inclusive team-based approach, including placing CHW data reporting on the agenda. Previous research suggests that the success of community-based interventions are strongly reliant on support from the PHC facilities (LeBan et al., 2021; H. Schneider et al., 2018).

Mentorship of CHWs is also central to the success of community services (H. Schneider et al., 2018) and our data shows that mentorship, given the initial lack of confidence in CHWs when using the tool, was essential to improving CHW self-efficacy and the success of the implementation of the CMED (as discussed in Chapter 7). OTLs are well positioned to provide supportive mentorship to

CHWs but as cited in the literature, one of the most pressing challenges WBPHCOTs face is insufficient supervision with OTLs having high workloads with competing demands within the PHC facilities (H. Schneider et al., 2018). District management and Operational Managers of PHC facilities need to ensure that OTL roles are clearly defined and protected so that their core focus is the mentorship and support of CHWs in the provision of services at a community level.

A paucity of mental health indicators are problematic at both a facility and community level as, in their absence, mental health targets and outcomes cannot be monitored effectively. Data forms an important role in health systems and indicators and targets help inform system strengthening and related budgeting (World Health Organisation, 2022). For this reason, mental health indicators and targets need to be included in the National District Health Information Systems platform so that mental health is prioritised and monitored along with other disease programmes. This will enable data driven CQI processes to be used to embed mental health services into the system along the cascade of care. Figure 21 includes indicators for each step in the cascade that can be used to set targets for mental health integration.

In addition, working on this study has highlighted the importance of political will through expressed commitment by leaders, institutional commitment and budgetary commitment in the adoption of mental health within the health system (World Health Organisation, 2022). A study can provide evidence-based research that an intervention, such as CMED, works and is feasible but it is the political will that drives a process forward and without this, implementation and scale-up of innovations within routine services is unlikely.

Despite PHC re-engineering efforts to integrate services, the South African health system remains fragmented. Disease-specific programmes are structured within the DoH organograms as directorates or programmes that are semi-independently managed through the District health system and this results in managers focusing on their respective programmes without considering synergies between programmes (Malakoane et al., 2020). For example, different directorates such as the

Mental Health Directorate and Community Based Care Directorate do not communicate effectively even though projects have synergies and intersect. It is important that when conducting implementation research that has an integration agenda, a comprehensive understanding of how the system works is necessary to facilitate communication within programmes and between different levels of the health system. A need for more integrated approaches within health systems are required to bring about real change (World Health Organisation, 2022) and to normalise mental health as a priority and cross-cutting area within the DoH. This requires expressed institutional commitment (World Health Organisation, 2022) and support of the integration of mental health into PHC, which South Africa has in the form of policies supporting the integration of mental health into primary health care. However, practical plans and budgetary commitment (World Health Organisation, 2022) for operationalizing these policies are absent. All three forms of commitment are required to drive the integration of mental health into PHC forward in South Africa.

7.6 Recommendations for further research

Further evaluation and testing of the CMED with other WBPHCOTs as part of the routine package of community services is needed. This would include integrating the tool within the broader curriculum for training CHWs inclusive of other conditions, as well as the integration of the CMED into routine community screening tools and health promotion activities. The CMED second stage evaluation is underway as part of SMhINT and has included the scale-up of the CMED intervention to a further 10 WBPHCOTs in all three of three sub-districts (Newcastle, Emadlangeni and Dannhauser) in Amajuba. The scale-up of the CMED will give insights into the applicability of the CMED tool in different contexts.

In addition, further research is needed to assess if the CMED does improve demand for mental health services by increasing help seeking at a PHC facility level. This is also part of the second-stage evaluation of the CMED that is underway as part of the larger SMhINT study, where mental

health referrals and uptake of mental health services will be reviewed in ten facilities with attached WBPHCOTs that have received the CMED intervention. These will be compared against mental health referrals and uptake of mental health services in clinic facilities with WBPHCOTs which have not received the CMED intervention. Future research could also include a randomized control trial to determine if patient mental health outcomes improve following screening, referral and uptake of services of identified individuals screened using CMED vs usual care.

7.7 Limitations

The Formative Study included all WBPHCOTs from the Newcastle sub-district the Accuracy and Feasibility study was limited to one WBPHCOT and its surrounding community wards in the Newcastle sub-district in Amajuba, in KwaZulu-Natal.

The CMED was administered in a household setting and some participants could have been reluctant to openly share their mental health experiences in the presence of other family members, particularly regarding harmful alcohol and drug use. The BMH, on the other hand, was administered individually in private after the CHW consult and this could account for the difference in some CMED and BMH scores in the Accuracy Study. In addition, there is possibility of bias in the accuracy study given that the RAs had observed the administration of the CMED in the households and were not blinded to the outcome of the CMED screen (positive or negative) and then went onto administered the BMH screen.

The CHWs also initially lacked familiarity with the CMED tool and the presence of researcher assistants observing the administration of the tool (for both CHWs and household members) could also have influenced the findings.

We were fortunate to collect most of our data before the onset of the COVID-19 pandemic, however, the data collection for the follow-up interviews (household members referred for care) was impacted. Some of the interviews had to take place telephonically and many interviews did not

take place due to incorrect numbers given and unanswered calls. For those that did occur the data lacked the richness of the face-to-face interviews (Appendix 4a).

7.8 Conclusion

In conclusion, it has been an honour and a privilege to have situated my PhD within this field of work. There were days in this journey that I doubted myself and wondered if I was the right person to tell this story, however, my interest in working in communities was never in question. Community work has been a passion of mine for several years starting with a participatory research project I did in my early twenties as an honours student with the guidance of my then supervisor, Mary van der Riet, who was dedicated to making the voices of communities heard, where "the researched" became the experts and researchers learners. This worldview cemented the paradigm from which I locate myself in the work I do, with an aim to bring about change in communities and where research is done for a social purpose. This position brings with it a vulnerability and a strong chance of deep disappointment given that the resource constrained contexts within which we work have multiple layers of complexity and no easy fix exists.

In this project, I accompanied CHWs on visits to households - as a researcher and as a human being, these visits highlight the best of humanity but also the worst. The best is spending time and connecting with people, celebrating when something can be done to help and witnessing the magic of close-knit communities. The worst - the abject poverty is glaring and the stories of abuse and hardship are heart breaking. The buffer of the clinical context of a health facility is removed and patients become people and their suffering is brought to the fore and an overwhelming sense of helplessness creeps in.

Through this work I hope that I have accentuated the courage of CHWs and their heart for the work that they do despite overwhelming adversity. I also hope that the CMED has made a difference, however small, for communities as well as the CHWs who administer it.

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Chapter 9 : Appendices

9.1.1 Appendix 1: Expert panel review

Expert Panel review:

Please review each vignette using the following guiding questions:

Are symptoms relevant to this condition?

1) The vignette includes symptoms commonly found among people with this condition.
    a. Yes
    b. If NO, what are the problems and what changes would you recommend?

2) **Graphics**- are the graphics used appropriate in depicting some of the symptoms of the disorder?
    a. Yes
    b. If NO, what changes would you recommend?

3) **Additional Comments (eg. Appropriateness for South African Context):**

9.1.2 Appendix 2: WBPHCOT FGD guide (formative study)

Ward Based Primary Health Care Outreach Team (WBPHCOT) process mapping and FGD guide for facilitators

1) Contact Session One
    - Consents
    - Process map and FGDs

Process mapping

Mapping and allocation of Households (HH)

- What is your typical working week?
- How do you know what HH you need to visit?
- Once in the HH what helps you decide what to do?
- Who do you talk to in the HH?
    - Is it everyone? Is it one person?
- What tools are you currently using?
- Do you refer? How?
- Data flow

Tracing of patients chronic conditions

- Link to primary health care (PHC)
- Loss to follow ups?
- Data Flow

Meetings

- How often do you meet?
- Who Chair's the meetings?
- Stakeholder meetings (OSS, War rooms)
- Data flow

Mental Health (bigger group)

- Do you include anything around mental health in your visits?
- What do you do?

CMED

- Allocate different vignettes to each group

Focus group Discussion Questions

PRESENT THE TOOL AND EXPLAIN HOW WE PROPOSE TO USE IT: *The aim of the Community Mental Health Psychoeducation and Detection (CMED) Tool would be to provide both education on mental disorders as well as identify possible people with mental health problems in the community, who could benefit from available mental health interventions.*

The tool will is made up of stories/examples, education on mental health and related pictures to help Community Health Workers (CHWs) screen for mental health conditions in their households. There are also 3 questions that the CHW will ask after each story and pictures are discussed. The first questions asks if there is a match between the story and anyone in the household. If there is someone in the household with similar problems to the story, another two question are then asked. These questions ask 1) if the problems impact on the family member's daily functioning and 2) if the person would like the WBOT team nurse to visit the household to assess the person. If the family member answers yes to all three questions a referral will be made to the WBOT team leader. The team leader will then assess the patient using APC.

READ THE VIGNETTES OUT LOUD, AND AFTER THE VIGNETTE ASK THE FOLLOWING QUESTIONS:

1) What do you think about this story?
    - Is the story clearly understandable?
    - How can the language be changed to make it easier to understand?
    - Is the story too long or too short?
    - Is there any way that the story could be improved?

2) What do you think about the pictures?
    - Are the pictures clear?
    - Do the pictures relate to your communities?
    - How could the pictures be improved?

3) What would you do if you found this person when visiting your HH?

4) How would you feel reading this story to your HHs?

5) When do you think you should read this story? (linking to process map)

6) How often do you think you should read this story?

    - Every visit?

7) Let's talk about the three questions:
    - How do you feel about asking these questions in your households?
    - What would be the best way to ask these questions?
    - How do you think the family would respond to you suggesting they see the WBOT team leader for their problem?
    - How do you feel about taking on the role of helping them to get this kind of care?
    - What would you do if the person matches the story but doesn't think they need help?

8) As an Outreach Team Leader (OTL) what would your role be regarding this story?
    - Professional Nurse (PN)
    - Enrolled Nurse (EN)
9) What would your concerns if such a tool would be introduced part of your routine role.

10) What type of support would you need to manage mental health care users?

11) Do you have any other comments or suggestions?

9.1.3 Appendix 3 WBPHCOT informed consent

Ward Based Primary Health Care Outreach Team (WBPHCOT) Consent (English)

S-MhINT Study Information Sheet and Consent for Community Mental Health Education and Detection (CMED) **Tool feasibility study**

You will be given a copy of this information sheet

Dear WBPHCOT member,

I am a researcher working with the Southern African Research Consortium for Mental health INTegration (S-MhINT) Scale-up Project at the University of KwaZulu-Natal in Durban, South Africa, in collaboration with the University of Washington in Seattle, USA. S-MhINT is a research and capacity-building consortium in Southern Africa that aims to use implementation science to strengthen regional mental health integration into primary health, antenatal, and chronic care platforms in under-resourced areas of eastern South Africa, central Mozambique and southern Tanzania.

You are invited to participate in a study that involves research about the feasibility of the Community Mental Health Education and Detection (CMED) Tool as part of routine care provided at a household level with the hope of improving community demand of mental health services and access to care. Before agreeing to take part in this research study, please read the information below so that you understand what the study will involve. Please read this carefully and feel free to ask me if there is anything that is not clear or if you have any questions about your participation.

What is the purpose of this study?
The aim of the study is to gather information about whether the Community Mental Health Education and Detection (CMED) Tool is feasible and acceptable to health care providers and community members.

Who are we asking to participate?
We are asking 3-5 WBOT teams (professional nurses, enrolled nurses and community health workers) in the Amajuba district (in KwaZulu-Natal) to participate. The study will be conducted in June-August 2019.

What will it mean if you participate in the study?
If you participate in the study, you will be asked to:

1) Participate in a focus group discussion made up of WBOT team participants to review the CMED tool
2) Participate in a training on mental health disorders, using the CMED and referral of community members
3) Try out the tool for 2-3 weeks in your designated households
4) With your permission your consultation with the family members will be audio recorded
5) Participate in semi structured interviews to explore your experiences of using the tool and referral of patients

The focus group discussions and interviews will take between 30 and 40 minutes and will be audio recorded. During the interview you will be asked questions about your experience of using the CMPD tool in your household visits.
You may refuse to answer any question for any reason. You do not need to provide a reason to refuse a question.

Will my information remain confidential?
Yes. Should you agree to take part in the study, all your records will be seen by the study researchers only. Information and results of the study that are shared with other researchers will not contain any identifiable (personal) information such as names or contact details. Every effort will be made to keep your information

confidential. Although we will try to conduct the interviews in a private room, it might happen that, during the course of the interview, a patient or clinic staff member may come into the room. If this happens we will stop the interview and resume once the person has left. Because the focus groups are made up of a group of people, we cannot guarantee that others in the group will keep your information confidential; however, interview records from the meeting will be handled as confidentially as possible.

Recordings of consults will be kept confidential.

The information from your focus groups, interviews and consult recordings will be stored on a computer and protected with a password. Your data will be stored under password protection for up to five years on the project computers.

What are the possible benefits of participating in this study?
There will be no direct benefit for participating in this study. We hope that the study results will help us to improve the service provision for patients with mental health disorders.

What are the possible drawbacks or discomforts of participating in this study?
The only cost to you of participating in this study is your time.

Do I have to participate in this study?
It is your choice whether you want to participate in this study or not. If you decide not to participate, you will not be prejudiced in any way, and your decision will not affect your position in your WBOT team. If you decide to take part, you are still free to withdraw from the study at any time and without giving a reason. Should you agree to participate, we will ask you to sign the attached consent form.

How will we report this research?
We intend to publish the findings so that others can also learn from the study. We will report our results and other aspects of the study in scholarly journals, conferences and to the Department of Health via policy briefs and other reporting structures. The findings will also be used for degree purposes for a Doctorate in Psychology (PhD). No identifying information will be used. In line with current requirements from peer-reviewed journals, all research data will be made publicly available once it has been anonymised within a specific period after the research has ended. The researchers will make the data from this research project available publicly upon the request from other researchers.

This study has been ethically reviewed and approved by the UKZN Biomedical research Ethics Committee (approval number BF 190/17).

In the event of any problems or concerns/questions you may contact the Principle Investigator, Inge Petersen on 031 260 1709 or the UKZN Biomedical Research Ethics Committee, contact details as follows:

For questions related to the study	**For Your rights as a research participant**
The Principal Investigator, Professor Inge Petersen **Centre For Rural Health** **School of Nursing and Public Health** **4th Floor George Campbell Building** **Howard College** **Private Bag X 54001** **Durban** **4000** **KwaZulu-Natal, SOUTH AFRICA** **Tel: 27 31 260 1709**	**BIOMEDICAL RESEARCH ETHICS COMMITTEE (BREC)** **Research Office, Westville Campus** **Govan Mbeki Building** **Private Bag X 54001** **Durban** **4000** **KwaZulu-Natal, SOUTH AFRICA** **Tel: 27 31 2604769 - Fax: 27 31 2604609** **Email: BREC@ukzn.ac.za**

Email: Peterseni@ukzn.ac.za	

Consent Form for WBOT members

Please complete this form after you have been through the information sheet and understand what your participation in this study entails.

Thank you for considering taking part in this study. If you have any questions arising from the information sheet, please ask before you decide whether to take part. You will be given a copy of the information sheet and consent form.

I, (write your name here), _____ have been informed about the feasibility study of the Community Mental Health Education and Detection (CMED) tool.

I understand the purpose and procedures of the study.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting my position at the clinic.

If I have any further questions or concerns or queries related to the study, I understand that I may contact the researcher at 031 260 1709 or peterseni@ukzn.ac.za.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact the Biomedical Research Ethics Committee (details above).

Please tick or initial	**Yes**	**No**
I understand that if I decide at any time during the study that I no longer want to take part, I can notify the researchers and withdraw without having to give a reason.		
I consent to my research data being made publicly available once it has been anonymised. I understand that no personal information such as my name or my identity number will be used.		
I consent to have the consultation with family members recorded		
I consent to the interview being audio recorded.		

_____ _____

Signature of Participant **Date**

_____ _____

Signature of Researcher **Date**

9.1.4 Appendix 4 Household member informed consent

Information Sheet and Consent for Household Members (English)

To participate in a study to find out if a Community Mental Health Education and Detection (CMED) tool is feasible and acceptable to community members

You will be given a copy of this information sheet

Date: _____

Dear Community Member,

I am a researcher working with the Southern African Research Consortium for Mental health INTegration (S-MhINT) Scale-up Project at the University of KwaZulu-Natal in Durban, South Africa. S-MhINT is a research- and capacity-building consortium in Southern Africa that aims to use implementation science to strengthen regional mental health integration into primary health, antenatal, and chronic care platforms in under-resourced areas of eastern South Africa, central Mozambique and southern Tanzania. The project is funded by the National Institutes of Health (NIH) in the United States of America in collaboration with the South African Department of Health.

You are invited to consider participating in a study that involves research.

What is the purpose of this study?
The research is to show if we can identify symptoms of mental health disorders in the community using something called the Community Mental Health Education and Detection (CMED) tool.

Who are we asking to participate?
We are asking community members like yourself in the Amajuba district to participate in the study.

What will participation in the study involve?
Participation in this study will involve the following procedures:

1) We will provide you with an opportunity to consent to participate in the study.
2) One of our researchers will sit in on your consultation to better understand how we can improve the tool.
3) After your consultation we will invite you to participate in a short interview where we will ask you questions around your experience of receiving the tool. The interview will take 20-30 minutes.
4) If you have been referred for treatment we would like to visit you again to ask questions about your visit at the clinic and your pathway to care.

Will my information remain confidential?
Yes. Should you agree to take part in the study, all the information collected from you will be seen by the study researchers only. Information and the results of the study that are shared with other researchers will not contain any identifiable (personal) information such as names or contact details. Every effort will be made to keep your information confidential. The interview will occur in the household setting and if someone walks in on the interview we will stop the interview until the person has left.

What are the possible benefits of participating in this study?
There are no direct benefits to you for participating in this study. You will receive no remuneration for your time. We hope that the study results will help us to improve the service provision for people with mental health problems.

What are the possible drawbacks or discomforts of participating in this study?

There is no cost to your participation in the study. You may feel slightly uncomfortable in answering some of the questions. If there are any questions that make you feel uncomfortable at any point in our discussion, please let us know as you are not forced to answer those questions.

Do I have to participate in this study?
It is your choice whether you want to participate in this study or not. If you decide not to participate in this study, the care you normally receive from the WBOT team will not be affected in any way. If you decide to take part, you are still free to withdraw from the study at any time and without giving a reason. Furthermore, if you agree to participate, we will ask you to sign the attached consent form.

How will we report this research?
We will report our results and other aspects of the study in journal articles, conferences and to the Department of Health. No identifying information will be used. The findings will also be used for degree purposes for a Doctorate in Psychology (PhD). In line with current requirements from peer-reviewed journals, all research data will be made publicly available once it has been anonymised within a specific period after the research has ended. The researchers will make the data from this research project available publicly upon the request from other researchers.

In the event of any problems or concerns/questions you may contact:

For questions related to the study	For Your rights as a research participant
The Principal Investigator: **The Principal Investigator, Professor Inge Petersen** **Centre For Rural Health** **4th Floor George Campbell Building** **Howard College** **Private Bag X 54001** **Durban** **4000** **KwaZulu-Natal, SOUTH AFRICA** **Tel: 27 31 260 1709** **Email: Peterseni@ukzn.ac.za**	**BIOMEDICAL RESEARCH ETHICS COMMITTEE** **Research Office, Westville Campus** **Govan Mbeki Building** **Private Bag X 54001** **Durban** **4000** **KwaZulu-Natal, SOUTH AFRICA** **Tel: 27 31 2604769 - Fax: 27 31 2604609** **Email: BREC@ukzn.ac.za**

Consent Form for Patients

Please complete this form after you have been through the information sheet and understand what your participation in this study entails.

Thank you for considering taking part in this study. If you have any questions arising from the information sheet, please ask before you decide whether to take part. You will be given a copy of the information sheet and consent form.

I, (write your name here), _____ have been informed about the purpose of the study. I understand the purpose and procedures of the study.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting the services I receive at my facility.

Please tick or initial	**Yes**	**No**
I understand that if I decide at any time during the study that I no longer want to take part, I can notify the researchers and withdraw without having to give a reason.		
I consent to my research data being made publicly available once it has been anonymised. I understand that no personal information such as my name or my identity number will be used.		
I consent to the interview being audio recorded.		
I consent to have my information on the tool used for research purposes		
I consent to have a researcher sit in on my consultation		
I consent to have my consultation audio recorded		

_____ _____

Signature of Participant **Date**

_____ _____

Signature of Researcher **Date**

9.1.5 Appendix 5: Observation template

Descriptive notes ***What's happening?***	**Reflective notes** ***What do you think/feel/experience?***
Making contact | What's the property like? What's the greeting like? How did the CCG make contact/introduce herself and the team? What was the attitude of the household members? How did the CCG respond to negative welcome?	

Descriptive notes ***What's happening?***	**Reflective notes** ***What do you think/feel/experience?***
Entering the property | Were the household inviting? Any difficulties entering the property? Did you sit inside or outside? What was the seating like?	

Descriptive notes *What's happening?*	Reflective notes *What do you think/feel/experience?*
Consultation | Who of the household is present? Are people listening in the background? Are there any disturbances? How confident is the CCG in using the tool? What are the reactions to the consultation? Is there a sense of understanding? Did the mental health section fit well? How long did the session take? Any disruptions?	

Descriptive notes ***What's happening?***	**Reflective notes** ***What do you think/feel/experience?***

9.1.6 Appendix 6: Household member semi-structured interview guide

Semi-structured Interview Guide: Acceptability of CMED tool

1) What was your experience of listening to the stories today?

2) Were the stories clearly understandable?
    - Is there any way that the story could be improved?

3) Did the pictures help you understand the story?
    - Do the pictures relate to your communities?
    - Are there any pictures that don't apply to your community?
    - Could these pictures be made clearer?
    - How could the pictures be improved?

4) What were thoughts about the three questions asked with the story?
    - Were these questions acceptable to you?

5) Do you think it is acceptable for community health workers to talk about these stories to members in the community?

6) Do you think it is acceptable for CCGs to ask these questions?

7) Did you/family find it acceptable for the CCG to refer you to the clinic/other facility?

8) Would you or your family members access help if offered at the facility?

9) Were the stories helpful to you?

10) From [Nontobeko's] story did you learn about symptoms that people with similar problems experience?
    a. Where they can get help?
    b. Or how they can help themselves?

11) Do you have any other comments or suggestions?

9.1.7 Appendix 7: Follow-up structured interview guide

Household member

Follow-up interview post referral

Date:	RA:
CRHID:	Participant name:

S-MhINT Community Mental Health Education and Detection (CMED) Feasibility Semi-structured interview: Family Member

The information you provide us will help us in strengthening services for community members. We are really interested in hearing more about your experiences of being referred by the CCG, if you accessed care and your experiences at the clinic. There are no right or wrong answers.

Access to treatment		
1.	Do you remember on this date _____ you received a letter of referral from the CHW?	Yes No
2.	Do you think that having the CHW refer you for help is acceptable?	Yes No
3.	Please tell me why you think this?	
4.	If you agreed to be referred did the CHW have referral forms?	Yes No
5.	What was your understanding of the referral?	
6.	Did you go to the health facility after you were referred?	Yes (skip to 9) No

7.	Do you mind sharing with me why you did not access care?	☐ Couldn't get time off work ☐ Family responsibilities ☐ Moved to a new area ☐ Didn't think I could be helped ☐ I was feeling better ☐ I forgot about the referral ☐ I was waiting for the CHW to give me the referral Other (specify): ✎
8.	Did you access care somewhere else?	Yes No
8.a	Please specify where you sought help from	☐ Friends/ neighbours ☐ Private doctor ☐ A phc in another area Other (specify): ✎
8.b	Why did you choose to get help from _____ (in 8a)?	[END INTERVIEW FOR NO REFERRAL UPTAKE]
The following questions are for participants who took up the referral		
9.	Where did you go for help? Waluthola kuphi usizo?	Osizweni 2 Other ✎
10.	Date when you accessed care?	
11.	Why did you choose this pathway of care?	
12.	What help did you receive?	☐ Counselling ☐ Medication ☐ Accessing Grants ☐ Nothing Other (please specify) ✎

13.	Which health provider did you see about this problem that you were referred for?	☐ Clinic Counsellor ☐ Doctor ☐ Psychologist ☐ Psychiatrist ☐ Social Worker ☐ Do Not Know Other (please specify)
14.	What was your experience of seeing the health provider?	
15.	Do you have a return date to go back to the facility?	☐ No ☐ Yes
16.	Please specify (write date):	
17.	Do you think you will go?	☐ Yes ☐ No
18.	Please can you tell me why?	

Thank you for your time

Follow up Record Form

- Each participant is to be followed up using 3 attempts
- 1 follow up attempt is made up of at least 3 phone calls; in the morning, the afternoon and late afternoon.
- Record each phone call in the form below including the date and time.

CRHID	
Date	
RA	

First attempt			**Second attempt**			**Third attempt**		
Date and time			Date and time			Date and time		
		No answer			No answer			No answer
		Wrong number			Wrong number			Wrong number
		Number not going through			Number not going through			Number not going through
		No number			No number			No number
Comments and other reasons								

9.1.8 Appendix 8: WBPHCOT FGD guide (Feasibility Study)

Ward Based Primary Health Care Outreach Team Member Focus Group Discussion Guide

Understanding the CMED
1. CMED tool a. How easy is it to use the CMED tool? b. What do you like most about using the tool? c. What don't you like about using the tool? d. Are there things that are confusing? e. Do you understand the whole tool? 2. Tell me more about how different the tool is from other tools you use to screen family members? a. Is it similar to other tools that you have used/currently use? b. How is it different? 3. How did you previously assess mental health in households? a. Did you use any other tools? b. How did you refer people for mental health? c. How did you educate people about mental health? 4. Do you think the tool is important? Why? a. What is its main purpose? 5. How does this tool fit in with the goals of the DoH? a. How does it help WBCOTS? b. How does it help communities? c. Would communities appreciate the tool? 6. Take me through the process of administering the tool. a. Consent, buy-in b. Screening, pictures, stories c. Identification and referral d. Education 7. Tell me more about how the information is recorded, managed for each household.
Buying into the CMED
1. Let's talk about whether or not the tool is a good idea. a. Will it help you in your job? b. Will it help households, communities? c. Will it help the clinic? 2. Are you willing to get to know the tool better? 3. Why are you important in using the tool? 4. Why is the OTL important in using the tool?

5. Who will ensure that the tool is used correctly?
    a. OTL?
    b. Clinic?
    c. Team members?

Working together to make the CMED work

1. How does the tool affect your usual routine when you visit households?
    a. Does it help you, or is it more in the way?
    b. Issues with time?
    c. Issues with privacy?
2. Tell me more about your training.
    a) Do you think the training was enough to help you to use the tool?
    b) Do you think more training/mentorship is needed to help you understand mental health?
    c) Do you think more training/mentorship is needed to help you to use the CMED tool?
3. How much training do you think you will need?
    a. Once-off training or regular?
    b. Mentoring?
    c. Other kinds of support?
    d. Will the OTL also require training and mentorship?
4. How will the tool affect how you work with others?
    a. With your colleagues?
    b. With families?
    c. With your supervisors?
    d. With the clinic?
5. What did you find easy, difficult in using the tool?
6. What did you find difficult in using the tool?

Assessing how well the CMED works

1. You've used the tool now for about 3 months now -what are your thoughts about this experience?
2. Looking towards the future, what impacts do you think the tool will have?
3. How will we know if the tool works or not?
    a. How will we know if communities are happy with the tool?
    b. How will we know if referrals work?
    c. How will we know if people know more about mental health?
    d. Are there ways in which families can give feedback on the process?
    e. Are there ways in which you can give feedback about the process?
4. What are the main barriers to using the tool as it is supposed to be used?
    a. In terms of screening and referral

b. In terms of education

5. We are going to ask other WBPHCOTs to use the tool. What do you think should be done differently?

9.1.9 Appendix 9: CMED pilot training materials

9.1.10 Appendix 10: Mental health training agenda

Day 1	Welcome and introductions Pre-training evaluation Establishing group norms About this training My name myself/culture and mental health Values Activity	Depressive Disorder Self-care activity Closure
Day 2	Check in/self-care Being a guide on the side Bipolar Disorder Wellness wheel activity Living with a disability	Anxiety Disorders Self-Care Closure
Day 3	Check in/self-care Psychosis Suicide Aggression and Mental Health Care Act Disability	Substance Use Disorders Self-care Closure
Day 4	Check in/self-care The older person Integration of MH into every day Consolidation quiz	"My journey" activity Post-training evaluation Closure and farewell Photo

9.1.11 Appendix 11: Accuracy Study questionnaire

CMED Accuracy Questionnaire			
CRH ID			
1.	Date	/ / DD MMM YYYY	
2.	CCG Name and Surname:		
3.	Ward Number:		
4.	Type of interview	Family	Individual
5.	If family, how many people:		
6.	Client Name and Surname:		
7.	Client Bar-Coded ID Number:		
8.	Client age	…… years	
9.	Client date of birth	/ / DD MMM YYYY	
10.	Gender	1 □ Male	2 □ Female
11.	Client address		
12.	Client telephone number:		
13.	Client alternative telephone number		

14.	Vignette read in the household today	Nontobeko	
		Thandeka	
		Herman	
		Sifiso	
		Brian	
	CMED Questions (RA to record patient response pattern)		
15.	Does this story remind you of anyone in the household?	1 Yes	2No
16.	Do the problems have a negative impact on daily activities?	1 Yes	2No
17.	Would you like me to arrange a referral to the clinic? (If person is present)	1 Yes	2No
18.	Would you like me to arrange a referral to the clinic? **(If person is not present)**	1 Yes	2 No 3 Do not know
19.	Outcome of CMED Detection Tool	1 Positive	2 Negative
20.	Does the person agree to referral? **(If person is present)**	1 Yes	2 No

Brief Mental Health (BMH) Screening Tool (To be administered to the patient by the RA)

Alcohol Use Disorders Identification Test (AUD-C)			
I am going to ask you some questions about your use of alcoholic beverages			
21.	How often do you have a drink containing alcohol in the last year?	Never	0
		Monthly or less	1
		2-4 times a month	2
		2-3 times a week	3
		4 or more times a week	4
22.	How many drinks containing alcohol do you have on a typical day when you are drinking?	1-2 drinks	0
		3-4 drinks	1
		5-6 drinks	2
		7-9 drinks	3

		10 or more drinks	4
23.	How often do you have six or more drinks on one occasion?	Never	0
		Less than monthly	1
		Monthly	2
		Weekly	3
		Daily or almost daily	4

Total Score (add the number for each question to get your total score)

Scoring: A cut off score of ≥4 is screen positive

Depression (The Patient Health Questionnaire PHQ-2)			
Over the last two weeks, how often have you been bothered by any of the following problems?			
24.	Little interest or pleasure in doing things	0 days	0
		1-7 days	1
		8-11 days	2
		12-14 days	3
25.	Feeling down, depressed or hopeless	0 days	0
		1-7 days	1
		8-11 days	2
		12-14 days	3

Total Score (add the number for each question to get your total score)

Scoring: A cut off score of ≥3 is screen positive

Anxiety: Generalized Anxiety Disorder Screen (GAD-2)			
Over the last 2 weeks, how often have you been bothered by the following problems?			
26.	Feeling nervous, anxious, or on edge	0 days	0

		1-7 days	1
		8-11 days	2
		12-14 days	3
27.	Not being able to stop or control worrying	0 days	0
		1-7 days	1
		8-11 days	2
		12-14 days	3

Total Score (add the number for each question to get your total score)

Scoring: A cut off score of ≥3 is screen positive

In all instances, screen positive means that the person has symptoms of the disorder and not necessarily the disorder itself.

-END-

9.1.12 Appendix 12: The CMED Tool


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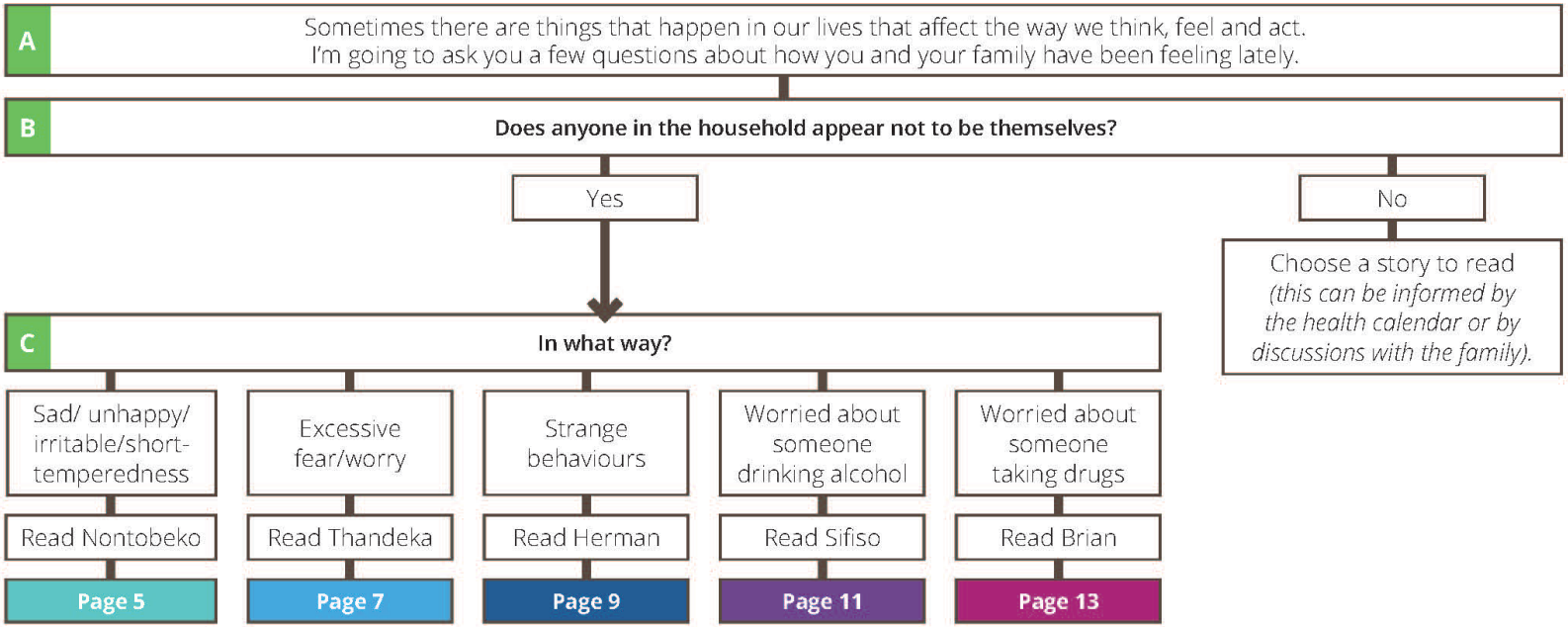
for Mental health INTegration
Community Mental Health Education and Detection Tool
(CMED)
2019
English Version

Mental Health Questions



Nontobeko

Nontobeko is often sad and worried.

She has lost her appetite.

She feels life is not worth living.

She no longer spends time with her friends.

The story of Nontobeko

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1 Read the Story

Nontobeko is a 40 year old, married woman whose husband, Sfiso, lost his job three months ago. Sfiso used to drink quite a lot before he lost his job, but now he is spending more and more time at the shebeen where he spends the money she gets from her children's grants on alcohol. Nontobeko is constantly thinking about how she is going to feed her children. She cannot stop worrying about what is going to happen to her family. She feels tired all the time and that life is not worth living. Her appetite is often low and she has lost about 8 kgs over the past two-months. At night she has difficulty falling asleep. If she wakes up in the night she cannot get back to sleep. She reports feeling irritable and often shouts at her children. When she goes to church, she battles to concentrate when she is praying. She also finds that she does not enjoy singing like she used to. After church, Nontobeko does not socialise with her friends like she always did in the past. She is embarrassed about Sfiso and what they may say about his drinking problem – so goes home as soon as the service is over. As a result she has no-one to share her problems with and feels more and more desperate about her future and that of her family.

2 Discussion

A **Ask:** What has happened in Nontobeko's life?

Nontobeko is often sad and worried.

She has lost her appetite.

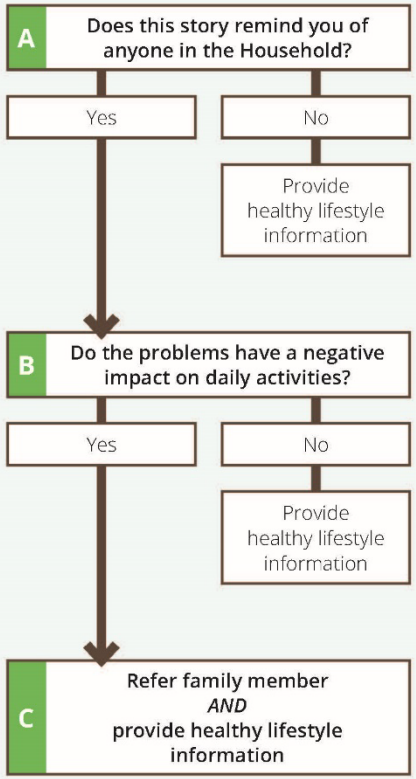
She feels life is not worth living.

She no longer spends time with her friends.

B **Summarise:** Nontobeko's story is a common experience that can happen to anyone. Negative things that happen can affect how we feel and can also change how we function. It affects how we feel about life, what we think about ourselves and how we behave. These negative feelings are considered to be severe if they are experienced daily and lasts for more than 2 weeks. Other signs to be concerned about is when a person's mood affects their relationships and they cannot complete everyday household tasks. Some people may have thoughts of committing suicide. Suicidal thoughts need immediate attention. People who suffer from these symptoms can get help and they do get better!

C **Ask:** When looking at the pictures and listening to the story is there someone in the household who reminds you of Nontobeko?

3 Ask



Thandeka

Thandeka was mugged.

She now finds it hard to sleep.

She keeps thinking of the incident.

She does not want to talk about the incident.

The story of Thandeka

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1 Read the Story

Thandeka is a 40 year old woman who lives in an informal settlement near a small town where she works at a supermarket. She is married with four children. Thandeka was going home after work one day when she was mugged. She had just got off the taxi and was walking along the road when a man approached her and demanded her phone and money. When she refused he took out a knife and told her he would stab her if she did not do what he said. Thandeka was very scared and tried to run away but the man grabbed her arm and forced her to hand over her things. The man was disturbed by another person who came to help Thandeka. Although she was not hurt, she has not been able to return to work since the incident which seems to have changed her. She often finds herself thinking about the incident and cannot seem to forget some of the things that happened. She finds herself crying sometimes without reason and has difficulty falling asleep. Thandeka is very worried she is going to be attacked again and has started thinking about her own death and often worries about who would look after the children if she died. Her friends no longer visit her because she does not talk to them when they do. Each time her family tries to talk to her about the incident she gets upset.

2 Discussion

A **Ask:** What has happened in Thandeka's life?

Thandeka was mugged.

She now finds it hard to sleep.

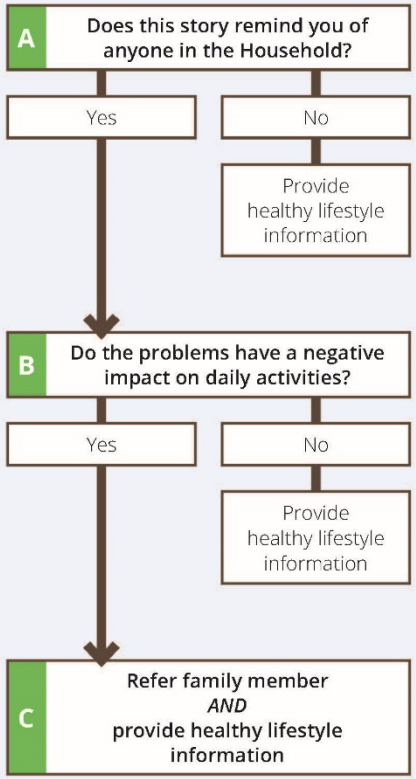
She keeps thinking of the incident.

She does not want to talk about the incident.

B **Summarise:** When a child or an adult experiences or witnesses something that is shocking, s/he may become fearful, or feel helpless and keep remembering the shocking (traumatic) event. Children may also behave in a way where they repeat one behaviour over and over again. Because such shocks can happen to anyone, most think that this is the way some people cope with shock or trauma in their lives.

C **Ask:** When looking at the pictures and listening to the story is there someone in the household who reminds you of Thandeka?

3 Ask



Herman

He complains of hearing voices.

Herman is anxious and suspicious.

He spends most of the time on his own.

He no longer takes care of his appearance.

The story of Herman

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1 Read the Story

Herman is a 23 year old young man living at home with his parents. His mother has noticed that over the past few months, his behaviour has changed and become increasingly strange. He used to be very enthusiastic about his life but now he says that he has no motivation and does not want to follow his dreams. He used to drink alcohol socially, but no longer wants to spend time with his friends and is not currently using any substances. He complains of hearing voices that other people cannot hear. He jumps from topic to topic when he talks to someone and is often impossible to understand. He is unable to concentrate on work and tells friends and family that he believes someone has been following him when he leaves the house, and spying on him in his bedroom at night. He has lost his job as a petrol attendant in town because of complaints from customers about his behaviour. He now spends all of his time on his own and wanders around aimlessly in the township and no longer takes care of his appearance.

2 Discussion

A **Ask:** What has happened in Herman's life?

He complains of hearing voices.

Herman is anxious and suspicious.

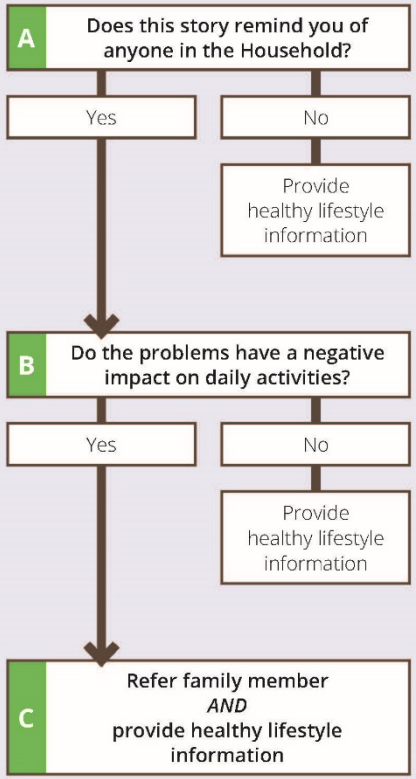
Herman spends a lot of time on his own.

He no longer takes care of his appearance.

B **Summarise:** A person who thinks feels and acts in a way that makes it difficult for them to live their lives or their behaviour makes it difficult for their families to function is in need of care. These people may see or hear things that others do not. They may also talk in a way that is not understandable or talk to themselves as if another person is present. These behaviours should be present over a month or longer.

C **Ask:** When looking at the pictures and listening to the story is there someone in the household who reminds you of Herman?

3 Ask



Sifiso

Sifiso's drinking has gotten worse.

He lost his job because he was drunk at work.

He gets into fights at the shebeen.

When he drinks he becomes aggressive.

The story of Sifiso

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1 Read the Story

Sifiso is married and has three children. He lost his job as a taxi driver three months ago because he used to sometimes drink before going to work. Since then his drinking problem has gotten worse and he drinks alcohol daily. He is now drinking more alcohol more often and has started drinking earlier in the day. He often spends the whole day at the shebeen. He says that he drinks alcohol to relax. When he drinks, he says or does whatever he likes and gets quite aggressive, demanding the money his wife gets from the children's grants to buy alcohol. Due to heavy drinking, his hands tremble, he sweats a lot and is restless. His wife is very worried about him but he refuses to get help and says he does not have a problem.

2 Discussion

A **Ask:** What has happened in Sifiso's life?

Sifiso's drinking has gotten worse.

He lost his job because he was drunk at work.

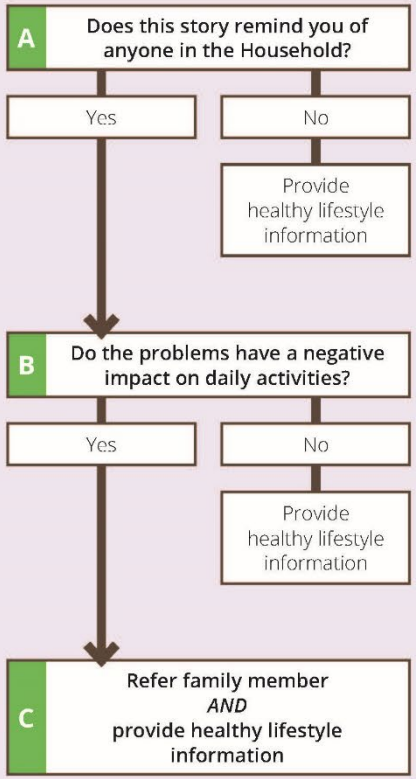
He gets into fights at the shebeen.

When he drinks he becomes aggressive.

B **Summarise:** Having a few drinks in a week is often not a problem. Drinking everyday can have an effect on a person's health, as our bodies become used to alcohol and a person may drink more and more to get the same effects. This can make a person want to take alcohol every day to make them feel better. By drinking more that 5-6 drinks a day, a person may have a drinking problem.

C **Ask:** When looking at the pictures and listening to the story is there someone in the household who reminds you of Sifiso?

3 Ask



Brian

Brian often skipped school.

His mother is very worried about him.

He smokes dagga and whoonga with his friends.

He often steals money from his Mother's purse.

The story of Brian

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1 Read the Story

Brian is a 17-year-old boy who lives with his divorced mother and sister, age 12. Brian started using dagga with his friends to relax and be cool. Over time he has spent more and more time hanging out in shebeens and smoking with the wrong crowd. He has lost interest in his school work and has dropped out of school. He spends all day watching TV or hanging out on the corner smoking with his friends. His mother found him stealing from her purse and is really worried as he disappears from home for days and she is concerned he may be using whoonga. He has moved from smoking only dagga to smoking whoonga.

2 Discussion

A **Ask:** What has happened in Brian's life?

Brian often skipped school.

His mother is very worried about him.

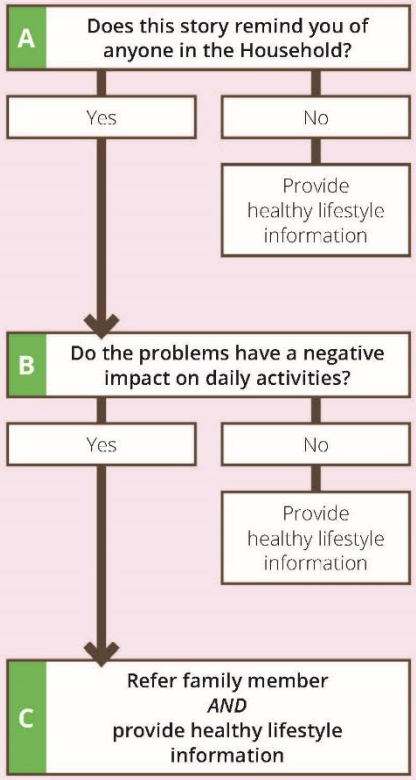
He smokes dagga and whoonga with his friends.

He often steals money from his Mother's purse.

B **Summarise:** Adolescents and young adults experiencing these symptoms start taking less interest in how they dress or look, their academic performance declines as does their relationships with family and friends. Some changes in eating and sleeping behaviour may also be present. They are focused on drinking or using drugs.

C **Ask:** When looking at the pictures and listening to the story is there someone in the household who reminds you of Brian?

3 Ask



Healthy lifestyle

Get enough sleep.

Access support.

Get active.

Take time to relax.

Avoid harmful use of substances.

Healthy eating habits.

Advise the family member

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Things to know

- Lifestyle refers to the way in which a person lives and how they behave.
- Lifestyle can play an important part in how we deal with problems, and our lifestyles can also help us get better.
- People should be encouraged to continue with activities that were interesting or that previously brought them pleasure.

Things to do

Encourage family members to adjust their lifestyle activities to ensure:

Get enough sleep
Try to get eight hours of sleep a day. If you have difficulty sleeping, consult your clinic nurse.

Access support
Talk to a friend/ health worker/ someone you trust.

Get active
Regular exercise will help.

Take time to relax
- Participate in regular social activities.
- Spend time with supportive family/friends.
- Take part in activities you enjoy doing.

Avoid harmful use of substances
Alcohol should be taken in moderation. Limit alcohol to ≤ 2 drinks/day and avoid alcohol on at least 2 days/week.

Healthy eating habits
- Try to eat fresh fruit and vegetables every day.
- Try to cut back on junk food, salt and sugar.

CRH
CENTRE FOR RURAL HEALTH

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