THE PERCEPTIONS AND EXPERIENCES OF CLINIC MANAGERS ON THE IMPLEMENTATION OF INTEGRATED CARE FOR CHRONIC DISEASE IN PRIMARY HEALTH CARE CLINICS OF BUSHBUCKRIDGE IN SOUTH AFRICA

by

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DECLARATION

I, Mando Alinah Malebo, declare that this full dissertation is my work. It is being submitted for the degree of Master of Public Health at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination at this or any other University.

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30 April 2022

ABSTRACT

South Africa is faced with the dual burden of communicable and non-communicable diseases (NCDs). In response to this burden, the Department of Health (DOH) has designed a model to integrate chronic care in primary health care clinics (PHCs). The integration of the chronic disease management program (ICDM) was necessary to achieve optimal clinical outcomes for patients with chronic communicable and non-communicable diseases. The objective of the study was to describe how integrated chronic care is delivered, including patient pathways, in the two control PHCs clinics of Bushbuckridge; and to describe the experience of clinic managers in integrated care of chronic diseases, and to identify whether the implementation of the ICDM program in the PHCs differed from policy intent. Qualitative data from two clinics of deferring performance during a previous study on the DM program was used. The data was analysed using thematic analysis to find themes and contextualize the findings. The main findings revealed that the patient's pathway and elements of ICDM such as scheduling of patients' appointments, clinical records and filing system, and pre-dispensing of chronic medication varied between the clinics with ICDM recommendations. This was due to inadequate space in the clinics and a shortage of staff. In addition, limitations in resources, skills, and coordination, resulted in the minimal implementation of ICDM elements. The clinic managers were knowledgeable and had positive attitudes towards the program. However, a more enabling environment with adequate resources and skills was required to establish good workplace practices.

KEYWORDS: Integrated Chronic Disease Model, Non-Chronic Diseases, Primary Health Care

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DEDICATION

I would like to dedicate this work to my family, especially my children, my sister, and my partner for encouraging me to work hard to achieve my goals and for giving me unwavering support and lending a sympathetic ear. Thank you! I also appreciate the support from my friends and colleagues for believing in me

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NOMENCLATURE

AIDS: Acquired immunodeficiency syndrome
B/P: Blood pressure
CBTM: Community based Transition Model
CCM: Chronic Care Model
CHW: Community healthcare worker
FGD: Focus group discussion
HCW: Health care worker
HIV: Human immunodeficiency syndrome
HPT: Hypertension
ICIC: Improving Chronic Illness Care
ICCC: Innovative Care for Chronic Conditions
HICs: High income countries
HREC: Health Research Ethics Committee
ICDM: Integrated Chronic Disease Management
LHCW: Lay health care worker
LMIC: Low- middle-income countries
MWCH: Mother women child health
NCD's: Non-communicable diseases
NIMART: Nurse initiated Management of Anti-retroviral therapy
PDMS: Performance development management system
PI: Principal investigator
PLHIV: People living with HIV
PHC: Primary Health Care
PC: Primary Care 101
SARS Cov- 2: Severe acute respiratory syndrome corona virus 2
SM: Stanford Model
TB: Tuberculosis
TIER.NET: Three interlinked electronic registers for TB and HIV

CHAPTER ONE: INTRODUCTION AND BACKGROUND

This chapter offers an orientation of the study by presenting the background of the current study, the problem statement, aims and objectives, the research question and the background of the primary study.

1.1 Background

The Nkateko pragmatic cluster randomised trial assessed the effect of placing two lay health workers (LHWs) in a clinic to support integrated chronic disease care. This was done in seven rural primary health care clinics and one rural health centre of Bushbuckridge in Mpumalanga province. Four facilities were randomly selected to receive this support; the remaining clinics operated as usual. Alongside the trial, a detailed process evaluation was done in both intervention (four clinics) and control (four clinics). This evaluation aimed to understand under which context and through what mechanisms the clinic-based lay health worker intervention would enhance integrated chronic care for hypertensive (HPT) patients and would subsequently modify patient outcomes.

The process evaluation took 22 months (November 2013 – August 2015), covering the trial development, the implementation and the closure periods. Qualitative data collection methods used in this study included observation of clinic activities (*n* = 240 days) and semi-structured interviews with clinic managers, (*n* = 16 interviews). Purposive sampling was done by researchers responsible for processing evaluation, and it was designed to ensure the representation of a broad range of views and inputs.

The process evaluation researcher and a team of five field workers did data collection. The observational tool that was used focused on what observers needed to do, and a set of themes that guided the observation process. Observers kept detailed field notes for each day, a description of the steps an average patient goes through from arrival to leaving the health facility and the interaction between people in the facility. The observation guide focused on the pathway of care in a stepwise approach and the problems that could lead to the loss of the patient along their specific pathway.

The questions that were asked during clinic managers' interviews were about the current level of the staff, their numbers, their qualifications, their positions, their training and their responsibilities. The interviews also included questions around the provision of chronic care in the clinic including the functionality of the appointment system; filing system queuing/chronic pathway; patient management; the role of the community healthcare workers (CHWs); and issues around health systems such as drug supply, referral system and the maintenance of medical equipment.

Different sources of data for each facility were compiled into data extraction tables in Microsoft word using inductive and deductive approaches to identify the informative text. Summaries of descriptions of events were done and quotes were extracted. Data for each clinic was used to develop within and across-clinic comparative case analysis to explain and interpret the outcomes. The study findings showed that in the intervention clinics, task shifting from nurses to lay health workers, improved the appointment systems, filing, pre-packing of medication, managing the chronic care pathway and patients' adherence to their appointments, and so strengthened the functioning of the ICDM program in the primary health care clinics.

In my study, I have used secondary data from the primary Nkateko study to describe the perceptions and experiences of clinic managers on the implementation of integrated care for chronic diseases in primary health care clinics of Bushbuckridge in South Africa. I have used qualitative data from interviews with clinic manager's (n = 4) and clinic observations (n = 12 days). The interview transcripts and observation notes were from two control clinics which experienced variation in their performances based on the findings of the process evaluations, and were thematically analysed

1.2 The Problem Statement

There are current gaps in the integration of chronic care literature on the perceptions and experience of clinic managers in implementing the ICDM program and yet they are key implementers of the programme at the primary health care (PHC) level. It was envisaged that this study would contribute to the body of knowledge about the barriers and enablers the clinic managers faced in the process of implementing integrated chronic care and the factors which might lead to a variation of the ICDM program implementation in PHCs.

1.3 The Research Question and Aim

Research question: What are the perceptions and experiences of the clinic managers on the implementation of integrated care for chronic diseases in primary health care clinics of Bushbuckridge in South Africa?

Research aim: To understand why the implementation of the ICDM program varied between the clinics

Specific objectives:

1. To describe how integrated chronic care is delivered, including patient pathways, in PHCs of Bushbuckridge.
2. To describe the experience of clinic managers of integrated care of chronic diseases.
3. To identify whether the implementation of the ICDM program in the PHCs differed from the policy intent.

CHAPTER TWO: THE LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the sourced literature related to the study. It discusses the general perspectives on chronic disease prevalence focusing more on low- and middle-income countries (LMICs); the integrated chronic disease management (ICDM) program in South Africa; the street-level bureaucracy, a policy implementation framework; the implementation of the policies on the ground and prior research on the perceptions of health workers of the ICDM program.

2.2 A Perspective on Chronic Diseases

The prevalence of non- communicable diseases is on the rise globally. It kills 41 million people annually which is equivalent to 71% of all global deaths (1). People of all age groups, regions and countries are affected by NCDs. There are 15 million people who die annually between the ages of 30 and 69 and 85% of these premature deaths are estimated to occur in LMICs South Africa being one of those countries (1). South Africa is faced with a dual burden of communicable diseases like HIV/AIDS, TB and NCDs such as cardiac conditions, neurological disorders, diabetes and hypertension amongst many others. Chronic NCDs are viewed as problematic in South Africa because they contribute to preventable and premature mortality. Rates of chronic disease prevalence amount to 29.6% and is higher amongst the older adults compared to the younger adults below 50 years (2).

According to South African demographic survey data in 2017, the prevalence of hypertension was 48.2% and there were approximately 27.4% of men and 26.1% of women in South Africa with hypertension (1). The International Diabetes Federation estimated South Africa to have a prevalence of 14,6% translating into 4.3 million people with Diabetes Mellitus between the ages of 20 to 79 in 2019 (3). The prevalence of human immunodeficiency virus (HIV) in South Africa, according to the national HIV prevalence survey which was done in 2017, is estimated to be 18.90% translating to 7.9 million people living with HIV (PLHIV) which makes South Africa the country with largest HIV epidemic and anti-retroviral therapy (ART) program in the world (4). The growing life-threatening diseases, especially infectious diseases, exacerbate this burden. For example, to date, the life-threatening pandemic of SARS Covid-2 has infected millions of people around the globe. Early research suggested that pandemic fatalities are greatly impacted by diseases such as

HIV/AIDS and diabetes, both of which are chronic(5). The link between hypertension, diabetes and SARS-CoV-2 is angiotensin-converting enzyme 2 (ACE-2). These enzymes are expressed in the lungs, intestine, kidneys and blood vessel epithelial cells which are the one the co-receptors to infect cells(6).

The systemic review study done looking in Sub Saharan African countries showed that in terms of chronic care interventions, there was a need to develop primary care approach framework to address rising NCDs. The findings indicated that the issues such as the availability of essential diagnosing tools, and the use of standardised protocols for diagnosing and treating and monitoring needed to be prioritised in disease management interventions, especially in resource-poor settings (7).

2.3 The Health System Response to Chronic Diseases

The World Health Organisation (WHO) and the Institute for Health Care Innovation developed an Innovative Care for Chronic Condition (ICCC) framework to help accelerate the integration of chronic care and assist with the expansion of the policy framework for improving health care for people with chronic conditions (8). From studies conducted around the globe, there is growing evidence suggesting that patients with chronic conditions cope well when they receive appropriate treatment within an integrated system(9). This framework supports the integrated chronic disease management model (ICDM) developed by the National Department of Health (NDoH) in South Africa

2.4 The Integrated Chronic Disease Management Program in South Africa (ICDM)

The ever-increasing dual burden of communicable and non-communicable chronic disease is increasing the workload of health care workers (HCWs) in primary health care clinics in South Africa (10).In response to this dual burden, the National Department of Health (NDoH) in South Africa introduced the ICDM program to be piloted in three provinces in 2012. It forms part of the primary health care re-engineering strategy and aims at providing integrated prevention, treatment and care of chronic diseases at the primary health care level (PHC) (11). The primary health care re-engineering strategy aims at supporting preventive and health promoting-community based PHC through ward-based primary health care outreach teams, district clinical specialist teams and school health teams.

2.5 The Plan for the ICDM Program in South Africa

The ICDM program started at the provincial level with the establishment of a provincial task team, the identification of districts that implemented the model and a district engagement plan. The implementation at the provincial level required the establishment of an ICDM program district task team, followed by a facility implementation plan that outlined clear roles and responsibilities. At the facility level, the focus was on the facility preparations whereby the facility was re-organised into a one-point administration and three streams of care, which are the area of the acute/minor ailment; the maternal, women and child health area (MWCH); and the chronic area (12).

There were 'routes' with different colours that were marked, leading through the clinic to direct the patients to their different destinations without cross over taking place. These demarcations ensured the patients had access to enter and exit the facility without any difficulties. Scheduled appointments for review and collection of medication by patients with chronic diseases were uniformly distributed across five days of the week, as were scheduled appointments, by making use of the district health information system (DHIS) summary sheet for chronic cases (13).

The patients' clinical records were to be pre-retrieved by administration clerks or support staff at least 48-72 hours before patients' appointments. Each patient's documents were integrated into a single clinical file and stored in a single location using the first three letters from the patient's surname name, date of birth or address instead of diagnostic conditions. Designated or allocated professional nurses did pre-packing of patients' treatment 48 hours before the patients' appointments as soon as they receive the patient scheduling list (10).

The professional nurses' working hours needed to be scheduled according to the patient load of the facility, using a roster system designed for monthly or quarterly rotation. The nurses' allocation had to be in such a way that those who see chronic patients were required to be primary care (PC) 101 or PHC trained. Other nurses were undergoing this particular training to increase their capacity to manage patients with common diagnostic conditions and NCDs.

2.6 The Implementation Framework

The study employed the “Street-level Bureaucracy (SLB) framework” to understand what enabled the elements of the ICDM model to be successfully implemented in the two control PHC clinics. It was also used to understand the barriers which constrained the implementation of this model, by looking at underlying contextual conditions that activated these mechanisms.

Some of the factors to be considered in support of the framework implementation are the following: Financial and non-financial resources to ensure there is enough manpower to implement the health strategy. There should be a clear organisational structure and communication network to facilitate the implementation process. It’s important to have tools and clear systems in place to aid the implementation. The organisational structure should be clear and visible to everyone on how the department, units and sections are organised (14,15).

2.6.1 The Street-Level Bureaucracy: A Policy Implementation Framework

Often healthcare workers are not involved in the policy formulation process and yet they are expected to implement the policy with little additional staff capacity or no additional funds. The realities on the ground often do not match the policy makers’ expectations, and as a result, the frontline health workers have to adapt and modify policies, using their discretion, in their implementation to accommodate their work context and the patients’ needs; they are acting as ‘street-level bureaucrats (16). Understanding how and why health care workers adapt policy is key to ensuring effective implementation of said policy (17). Therefore, there is a need to investigate the experiences and perceptions of healthcare workers in implementing the ICDM program, and the factors that influenced its implementation

2.6.2 The Implementation of policies on the ground

Literature shows that the success or failure of policy implementation depends on the policy implementation process(18). Successful policy implementation could be realised by developing a policy support program, which assists in tracking how the policy moves at different stages from policy formulation to policy review. Since policies are formulated at the national level, those operating at a higher level might have the challenge of grasping what happens on the lower level on the frontlines. Possible policy failure can be attributed to the policy implementers such as health care workers using their discretional powers to decide on how to implement the policy and that might lead to success or failure in implementing the policy on the ground (19).

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2.8 Prior research on the integration of chronic disease model

A systemic literature review done on chronic disease models showed that as various chronic models were existing around the globe aiming to assist in the management of chronic conditions. The models were the chronic care model (CCM), Improving chronic illness care (ICIC), Innovative care for chronic conditions (ICCC), Stanford model (SM), and Community based transition model (CBTM). These models focused on some of the following elements; delivery system design and self-management support, clinical information system and decision support and health system organization amongst others (20).

A study on the experiences of the forefront implementers (nurses) during the implementation of the ICDM program in the 42 ICDM program-implementing clinics was conducted across the three provinces of Gauteng, North West and Mpumalanga. The study showed positive experiences of nurses who described an improved level of care at the facilities, better interaction with patients, teamwork, and the enhanced knowledge of professional nurses. There were some negative experiences reported as well, where the model was regarded as an added program, which increased the workload of the staff (21).

The gap this study will be aiming to address is the potential reasons for experiences and perceptions that may have led to the different implementation of the policy compared to the policy intentions. Although there are benefits of implementing the ICDM program in primary care settings in South Africa, one needs to acknowledge the associated barriers and enablers the implementation of integrated chronic care can have. The implementation of integrated care needs to be tailor-made to meet individual organisations because every primary care has its organisational norms and practices to adopt to realise change(22).

CHAPTER THREE: THE METHODOLOGY AND METHODS

3.1 Introduction

This chapter unpacks the research process, which provides information concerning the methods used in undertaking this research; the justification for the use of the methods; as well as the challenges that could arise from this approach. It describes the various stages of the research, which include the selection of clinics and data used for secondary data analysis. The chapter also describes the role of the researcher in qualitative research in terms of reflexivity. Furthermore, the chapter addresses the trustworthiness of the data, the limitations and the ethical principles that were considered during the study.

A research methodology is determined by the nature of the research question and the subject being investigated (23). The study used the data collected in the primary study to provide a description of the experiences and the perceptions of the clinic managers on the implementation of the ICDM program, which will either sustain or confront the theoretical assumptions on which the study is based. The thematic analysis approach was used to analyse the data, relating events in the order in which they occurred according to Creswell (24). The approach was deemed suitable for this study since the researcher wanted to understand how the ICMD was delivered and the reasons why it varied between these two clinics.

The strategy applied within this qualitative approach was a constant comparative approach which looked at and compared the different pieces of data sources such as fieldworkers' observations and clinic managers' interviews (25). The two clinics had some differences and some similarities in terms of what they had experienced regarding the ICDM program implementation hence these were compared. The data from different time frames of the trial were done as follows: 2 of the interviews and the first round of observations were done between November 2013 and June 2014 (trial development phase). Second round of observations was done between July 2014 and March 2015 (trial full implementation phase) 2 interviews and the last round of observations was done between April 2015 and August 2015 (trial closure phase)

3.1.1 Justification for using a qualitative approach

A qualitative research approach was chosen as the methodology for this secondary data analysis because it reinforces an understanding and interpretation of meaning as well as the intentions underlying human interaction (26). Because the secondary analysis involved the re-use of pre-existing qualitative data derived from the main study, it was used to identify, examine, categorise and interpret different patterns of data to obtain answers to the research question (27). This included data from participants' interviews and fieldworkers' observations

3.1.2 Challenges arising from using secondary data

Some of the challenges, which can arise from using secondary data, can be a breach of confidentiality and anonymity when data is shared; informal sharing of data between the researchers without ethics clearance; and the lack of first-hand knowledge about the collected data which could make the researcher less immersing in data (27). The researcher overcame these challenges by ensuring that data was formally requested from the custodian of the data and received the ethics clearance certificate before commencing with the secondary data analysis. Having Felix, who was the Principal investigator (PI) of the primary study helped clarify some of the elements of data that needed further understanding.

3.2 The Research Design

The research design refers to the systematic plan or the overall strategy that you choose to integrate the different components of the study in a coherent and orderly way to effectively address the research problem(28). This was a secondary study focusing on how the ICDM program was implemented in the two selected control clinics, looking at the experience and the perceptions of clinic managers of the implementation of this model.

3.3 Selection of Clinics

Within the main study site and population, the secondary data analysis focused on two of the control sites, selected based on the process evaluation findings, one with better performance and the other one with poor performance in the ICDM program implementation. Furthermore, this approach was used to observe the functioning of each clinic, its organisational culture, and the relationship between nurses and patients. Firstly, the classification of clinics as better or poor performing was based

on whether the clinic had the adequate infrastructure in terms of proving confidential consultation rooms and adequate space for patient queuing and waiting areas. The clinic management also determined the performance of the clinics whereby the stronger the clinic manager was the better the clinic performed and conversely. Lastly, other aspects of chronic care determined the performance of the clinics such as functional patient booking, filling and pre-packing systems amongst others whereby the clinic which had systems in place performed better than the one without them. The reason behind this was to establish if contrasts existed between these two clinics.

3.4 Data Used for Secondary Data Analysis

The observation data (*n* = 12 days) and clinic managers interview transcripts (*n* = 4 interviews) for two control clinics were used. These clinics were chosen because they continued with the ICDM program implementation, uninterrupted by the Nkateko intervention. The purposive selection of cases to include one 'positive' and one 'negative' case is also a manner in which researchers can ensure rigour (29).In this study, the clinics were selected to ensure that there is one clinic reporting better performance and one reporting poor performance in terms of the ICDM program implementation, based on the process evaluation findings. The data used for these two clinics were collected during the trial development phase whereby it was at an early stage of the ICDM program implementation in the clinics and another one was collected towards the closure period, which was deemed adequate to evaluate the changes in terms of the ICDM program implementation a year apart.

3.5 Secondary Analysis of Qualitative Data

First, the data was organised by sorting different data sets from the clinic observations of patient pathways, observation of patients in consultation rooms and clinic managers' interviews in the two clinics. This was followed by studying the data to get a general sense of the information and reflecting on the overall meaning, to understand what the participant was talking about in the data. The researcher jotted down notes and underlined some ideas as they came up while reading through the data. The main ideas were noted by using highlighters of different colours, while headings and notes were written in the margins of the transcript. The data was then sorted into smaller groupings before consolidating it while still ensuring the essence of the data was preserved. This process was done in a Microsoft word

document and printed transcripts. Headings and ideas from the different transcripts were recorded on separate sheets of paper. The aim was to identify relationships among the issues that came up in different transcripts and those that fell under the same category were grouped to form a sub-theme. Main themes were built from the list of sub-themes which has similar relationships, and these sub-themes were carefully re-examined and combined into one theme.

3.6 The Researcher's Background

The researcher becomes the instrument in data analysis because he/she makes all judgement about coding and categorising the data, therefore the reliability of data is influenced by the researcher(30). The researcher completed a module course on research methodology and qualitative data analysis and attended a workshop on research writing skills. The researcher is a qualified professional nurse with experience in the implementation of the ICDM program in clinics, the way primary health care clinics are run and have experienced first-hand, some of the challenges that clinics face. The researcher has worked as a facility mentor supporting PHCs in the Lejweleputswa district for four years and is currently working at a mine as an Occupational Health Practitioner. With this background, it was easy for the researcher to identify and understand the challenges faced by clinics in implementing intervention programmes. However, although the researcher is knowledgeable of the challenges faced by clinics in implementing programmes and how clinics are run, the focus of the study remains on understanding the participants' perspectives on the subject. The researcher's approach was that of an open mind in understanding the themes that emerged from the data.

3.7 Data Trustworthiness

Triangulation refers to the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena (31).

The triangulation of data was used, which compared the data which was extracted from different sources such as clinic observations and clinic managers' interviews. This data was also studied at different times, which were a year apart and at different phases of the trial period. Making use of this data collected from different sources ensured that elements formulated from the observations were crosschecked in the interviews with clinic staff to conclude (32).To further ensure validity, debriefing sessions between the researcher and

the supervisor who was knowledgeable about the data collected were done every second week at the beginning of report writing and later on once a month for nine months. This highlighted any flaws and gaps in the researcher's interpretations, guiding to achieving data accuracy. Furthermore, the researcher wrote reflective research and used it to avoid personal assumptions, clarifying the researcher's positionality and personal values that could affect data analysis (33).

3.8 Ethical Consideration

Permission was formally obtained from the custodian of the primary data whose ethics clearance was granted by the University of Witwatersrand Human Ethics Research Committee (M13037). All study data information was kept confidential and stored in a password-protected computer and study participants and clinic names were referred to by pseudonyms. The researcher also obtained ethical clearance from the university before the commencement of the secondary data analysis (M 102075). Both clearance documents are listed in the Annexures section of this paper.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter looks at the results from observations and clinic managers' interviews done at two clinics, analysed to assess the management of patients with chronic diseases, within the Integrated Chronic Disease Management (ICDM) program. Five themes came out of this data analysis and these included; patient pathways at the two clinics, scheduling of patients' appointments, clinical records and filing systems, pre-dispensing of chronic medication and, medical equipment. This section describes in detail the results of this analysis.

4.2 Patient Pathways

According to the ICDM program, chronic patients should have a designated waiting area. They are supposed to enter the clinic through a separate entrance from patients with other conditions. From the waiting area, they move to their designated vital signs station. From there they proceed to a consultation room and they leave the clinic. For other conditions, there should be a reception area for minor illnesses, ANC and immunization (maternal health) and preventive services, before the patients enter the waiting areas. The waiting areas are separated for maternal and child health, from minor ailments. Patients with minor ailments will then proceed to the vital signs station; from there they move to the consulting room and then exit the clinic. Maternal and child health clients move from the waiting area to the consultation rooms and exit the clinic. Figure 4.1 below illustrates the patient pathway according to the ICDM program guidelines.

PHC1's patient pathway did not follow what the ICDM program stipulates. However, at this clinic, chronic patients did not have a designated area where they waited to be attended to, according to the ICDM program guidelines. Patients with chronic diseases and patients with minor ailments were in the same queue and were attended to at the same vital signs station, before separating into different consultation rooms.

Figure 4.2.1 Patient flow according to the ICDM program.

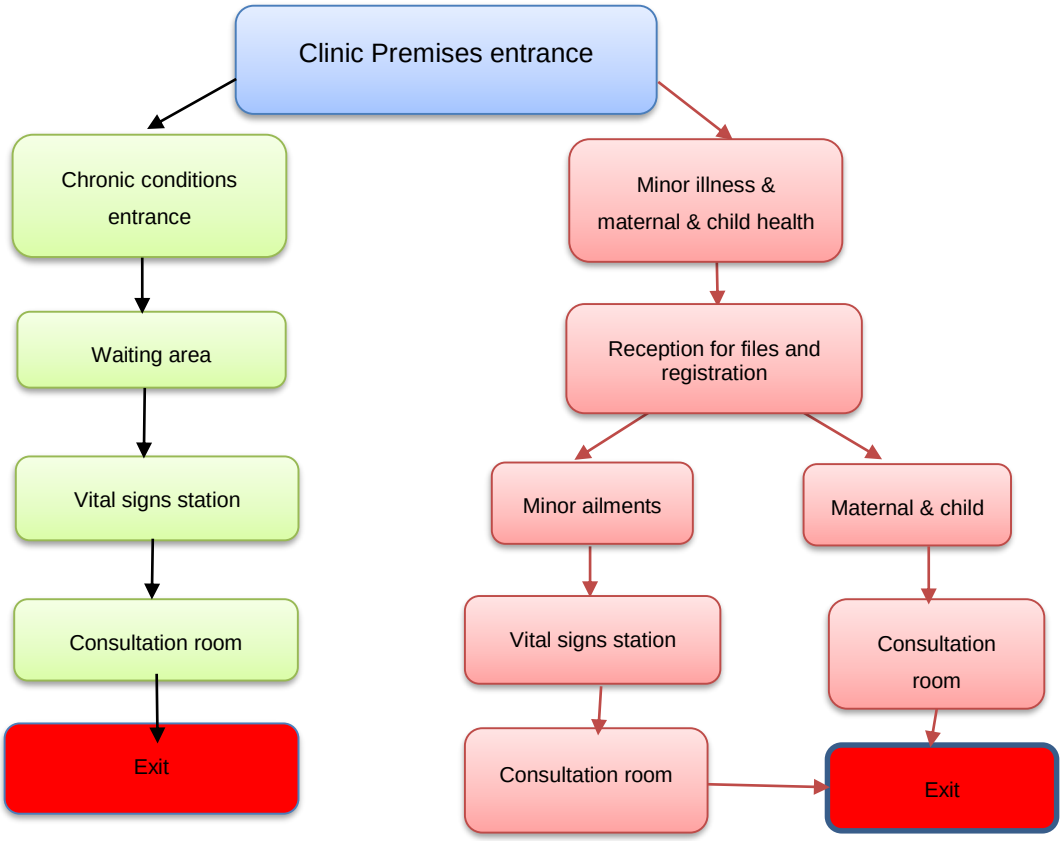
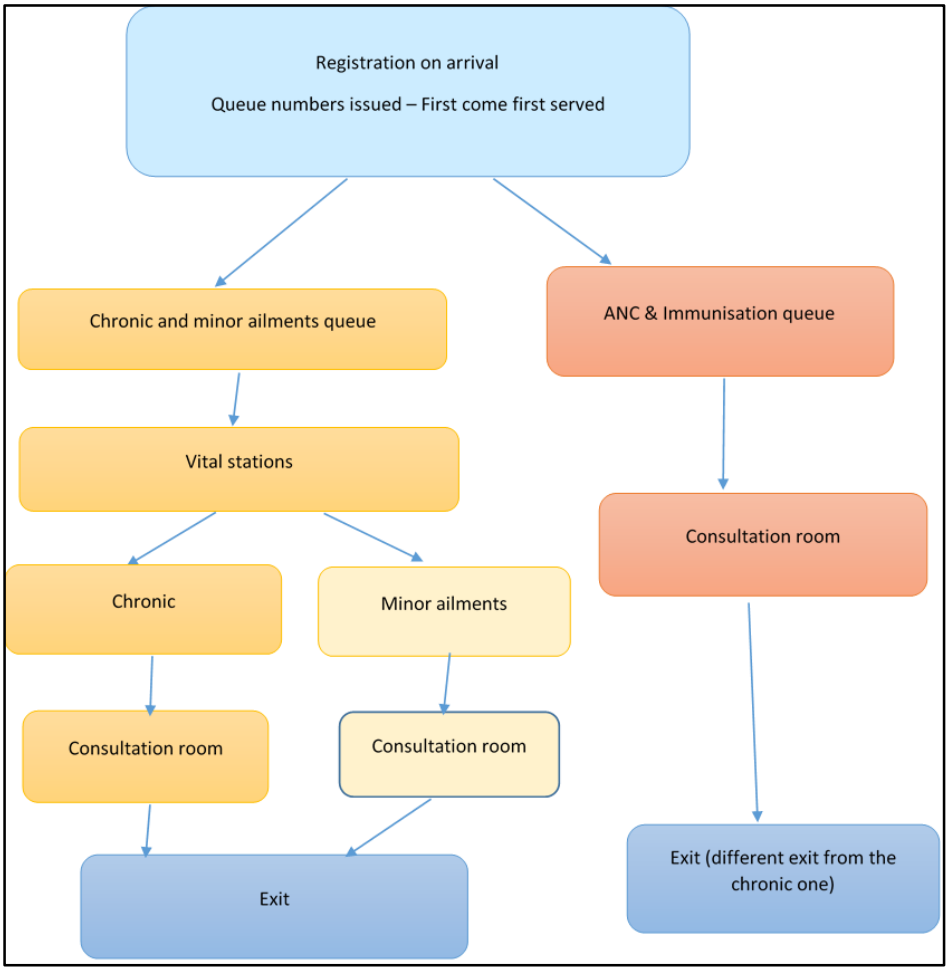


Figure 4.2 Patients pathway at PHC1



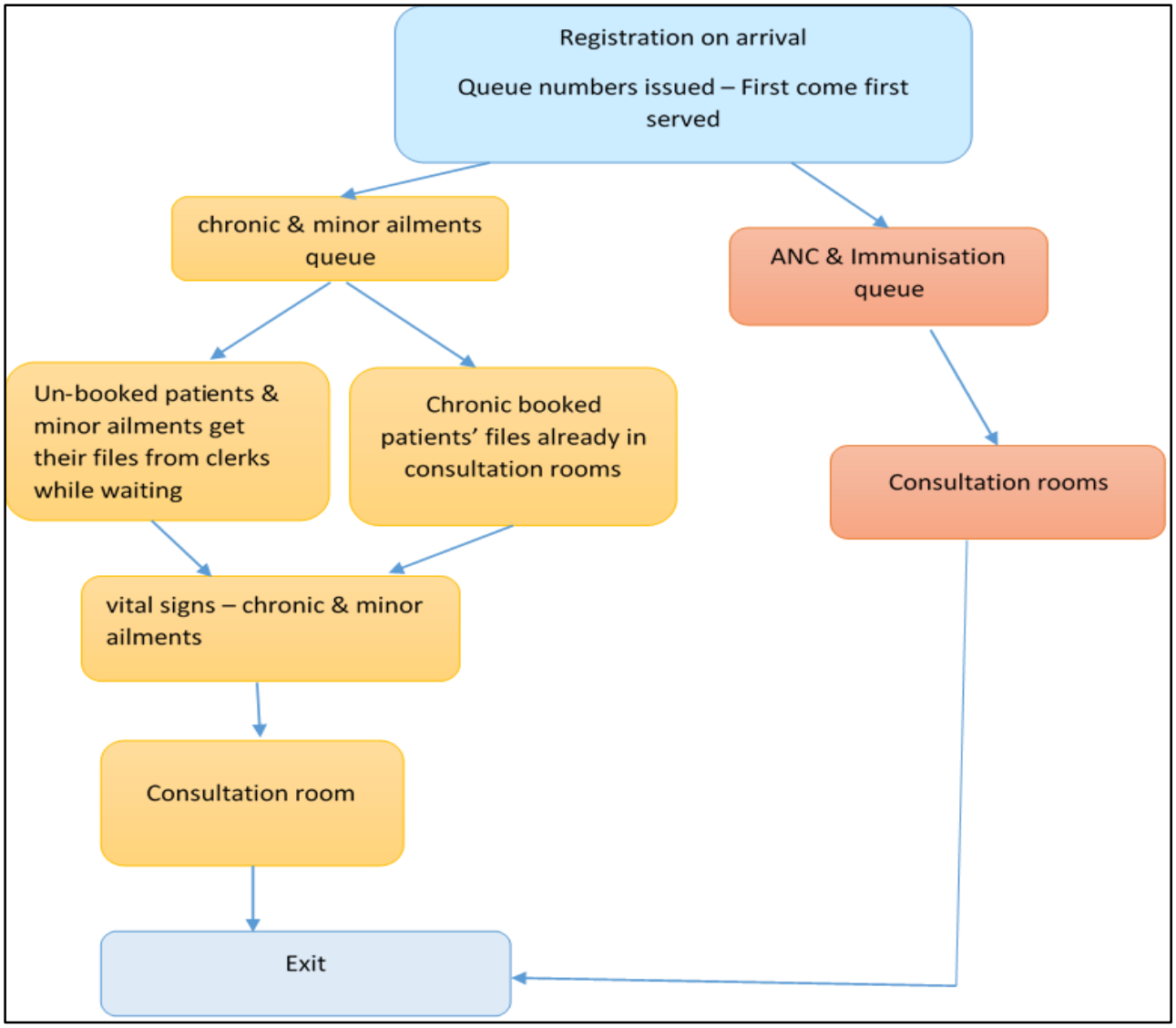
When the research team returned to the clinic a year later they observed that there were still challenges with adhering to the ICDM program pathway guidelines and stipulations. There was inconsistency regarding the station for taking vital signs, sometimes this was done at the vital signs station and sometimes it was done in the consultation rooms.

> "*Vital signs were taken in the consultation room in the morning but later at around 11:00 things changed; vital signs were taken in the usual place at the passage by one of the professional nurses. Later in the afternoon at around 1:30, vital signs were taken by the enrolled nurse, before the professional nurse took over again at around 3:00."* (Observations notes, PHC1 clinic)

This inconsistency was caused by not having a dedicated nurse for vital signs in the morning due to the limited number of nurses in the clinic. The nurse who was in the consultation room sometimes took the vital signs since there was no one to help at the vital signs station.

PHC2's patient pathway was different from the pathway in PHC1 and also from what the ICDM program stipulates. According to the ICDM program guidelines, chronic patients need to have a marked and designated waiting area for chronic patients. However, at PHC2 there was no designated area for chronic patients as they waited together with minor ailments patients. Figure 4.3 below illustrates the patient pathway at PHC2.

Figure 4.3 at PHC2



Both clinics were supposed to have a dedicated professional nurse attending to chronic patients but due to a shortage of staff there were times when one professional nurse had to see patients with both chronic conditions and minor ailments. Usually, the nurse would start by attending to patients with minor ailments and later move on to the chronic patients.

> *" Unlike the other days whereby chronic patients use their consultation room, today all the patients were seen in one consultation room, the reason for this is that there was only one nurse available in the morning to do consultations, the other nurses were busy with statistics."* (Observation notes, PHC1).
> *"I would say normally chronic patients are supposed to be managed by one professional nurse, all the chronic including the TB patients, they are supposed to be managed by one professional nurse, moreover Nurse Initiated and Management of Anti-retroviral therapy (NIMART) trained because we have got the HIV patients. Then due to the shortage that is why you find that you manage all the programmes."* (Clinic manager interview, PHC1)

> *"It did happen last week. There was a nurse here but somebody from the sub-district came and he wanted to interview the nurse who was working here. And then we said "Aaah that other side, there are also some patients, we cannot just let them sit here and wait for this nurse, it will be late for them". Then I decided to take those patients here to go to that other side to be seen there."* (Clinic manager interview, PHC2)

A year later, the shortage of staff persisted at PHC2. According to the interview with the clinic manager, there was no dedicated vital station area for chronic patients due to a shortage of staff.

> "*Though we are having a challenge, as ICDM, of staffing, I don't have their designated Vital Signs Station, due to staff shortages.* (Clinic manager interview, PHC2)

4.3 Scheduling of Patients' Appointments

According to the ICDM program, the professional nurse in the consultation room should do the scheduling of patient appointments. An administrative clerk could be stationed in a convenient area and schedule the patients according to the information provided by the

professional nurse on the chronic patient record. The maximum number of patients that should be consulted daily is pre-determined per facility usage. At the beginning of each week, the professional nurses should determine and provide a five-day period during which returning patients should be scheduled. All patients should then be given a choice as to the exact date that they would like to return within this period. The is not supposed to be imposed on the patient

At the beginning of the study, at PHC 1, the lack of proper recording of patients' medical files by nurses in the consultation rooms, made it more challenging to schedule appointments according to the ICDM program. According to the ICDM program procedures for scheduling appointments described above, the administrative clerk schedules appointments according to information provided by the nurse. However, according to the observations made at PHC1, the information provided by nurses had some appointment dates missing, which affected the smooth scheduling of appointments at this clinic.

> *"When some nurses were in the consultation room, they didn't write the appointment dates on the appointment list that they kept in the clinic, so then when they submitted the appointment list to the data capture, he only retrieved files for patients that were written on the list. However, in the patient's books, it was written that they should come on that particular date and when they arrived they found that their files were not retrieved so they had to go to the data capture's office to queue for their files."* (Observation notes, PHC1)

The clinic manager felt that this was attributed to staff work overload, resulting in nurses sometimes failing to do the proper recording in the patient files and other documents like registers.

> *"You think you have written something in the file of the patient, yet some of the things you have not jotted down, but it's in your head, you know exactly what to do, but due to pressure and the queue that was outside you forget to do some of the correct things that you knew in your mind. That if it was not because of pressure, I should have done this; I should be doing this properly"* (Clinic manager interview, PHC1)

A year later, at PHC1, the clinic manager said that the scheduling of appointments had improved. The manager had identified a knowledge gap and trained staff.

> *"what I did I realised that they are lacking knowledge, even the old ones. I had to teach them, I had to work with them to show them what the right thing is and then the situation (Scheduling of appointments) now is better. Jah is very much better, is coming, I hope after maybe six months, seven months we are getting there."* (Clinic manager interview, PHC1)

In PHC2, there was inconsistency in booking patients for their next appointment. Appointment dates were not recorded immediately after seeing the patients; were not discussed and agreed upon with patients, and sometimes appointments were given without recording in registers. This resulted in irregularities in the number of patients seen per day. The clinic was supposed to book only 10 patients on weekends as most of the staff were off duty but sometimes, they could book more than 10 patients. Similarly, there was an overbooking of patients on Fridays. The clinic was supposed to book more patients between Tuesday and Thursday compared to Friday and Monday because most of the staff were off duty between Friday and Monday. However, this was not adhered to.

> *"The challenge that I have experienced so far is that nurses don't book there and then. They see the patient and just pile the file there; they just give appointment dates and later they start putting the names on the booking register. And sometimes it's a challenge because you find that there is no consistency in the booking. Sometimes you find 30 patients in a day, other days it's more than 30, the other day 15. Sometimes I find on a Friday we see a lot of patients and yet the other staff are off. And even on a Saturday…"* (Clinic manager interview, PHC2)

In both clinics, this challenge was attributed to a shortage of staff at the clinic. There were supposed to be two groups of staff alternating between Tuesday to Thursday and Friday to Monday to allow staff to take their time off work. However, due to the shortage of staff, this posed a challenge.

"The reason is that we are short-staffed and what we are doing, there are two groups; the other one, like today it's Thursday the other one is going off, they will come back on…" (Clinic manager interview, PHC2)

4.3.1 Missed scheduled appointments

According to the ICDM program, if a patient misses a scheduled appointment, the pre-dispensed medication will only be kept in the consulting room for a further five working days. The patient's record will be filed back in the main filing area after five working days. Should the patient arrive within five working days after their scheduled date, the patient will be consulted after all the patients allocated to that time slot have been consulted, should they even arrive first. The patient will be placed at the back of the chronic queue. Should the patient arrive after five working days, the patient will need to follow the normal process of retrieving their files, wait for the vital signs and be consulted after all the chronic patients have been consulted. If patients do not return after five working days, the CHWs should trace and refer them for adherence counselling.

We found that staff in both clinics follow the ICDM program guidelines where those patients who miss their scheduled appointments are consulted last after all the patients allocated to that time slot have been seen.

"On the chronic queue, there were patients who came un-booked, the nurse who was in charge came to the queue and tell the patients everyone who came un-booked must go to queue at the back because they don't respect their appointments." (Observation notes, PHC1).

However, patients seemed to be unhappy with the system of seeing them last if they miss their scheduled appointments and arrive on an unscheduled day;

"People would come with some excuses; they default their dates. Should you come today not on your date, you will be seen after the people who are here on their booked date because today was not your date. We will be starting with those who have complied with their dates, then you will come after them. They will be grumbling saying whatsoever. We carry on doing the work. (Clinic interview, PHC1)

In PHC1, files for patients who miss their appointments were kept in the consultation room for at least three days, in the hope that the patients will come within these days and find their files in the consultation room. This was not according to the ICDM program which stipulates at least five days.

> *"There were files for patients who missed their appointments. Their files were kept in the consultation room for at least three days, this was just to give the patients a benefit of a doubt that if they happen to come, they'll find their files ready in the consultation room."* (Observation notes, PHC1).

For hypertension patients in PHC2, if they do not arrive on the date that they are expected to come to the clinic, their files are stored separately or were not filed back to their original filed positions *(the HPT defaulter's files are stored in a separate position for five days).* They believed that they might show up at the clinic a day after their expected date. Should they not show up in those five days, the files are returned to their normal stored places.

During observations at PHC2, the researcher noticed that there was a problem of losing patients' files if a patient missed a visit to the clinic for their scheduled appointment.

> *"In this case, there was a patient's file that was lost, and the clerk searched everywhere on the shelves and the file was not found. The patient was expected to come to the clinic a month before and the file was stored amongst the ones that were stored separately. The clerk didn't look there because she checked on the patient's return date and assumed that it was returned to the normal position but that wasn't the case."* (Observation notes, PHC2)

Clinic staff said many chronic patients at PHC1 did not honour their appointments with the clinic sometimes resulting in non-adherence to medication. Clinic staff said that patients told them they do not deliberately dishonour their appointments, but this happens due to challenges such as their distance from the clinic and also work commitments.

> *"The patients were not sticking to their appointment. There I must be fair, they were not, were just a few. I can say 50 per cent were sticking to their dates of appointments, but the others who were working, I even said if you are working, give me Saturday*

date when you are off, to come and collect the treatment instead of defaulting." (Clinic manager interview, PHC1)

Data from the clinic manager interviews also showed that missing appointments sometimes resulted in files going missing, since the missed appointment would disrupt the flow of how files were retrieved before the appointment and returned after the appointment. Due to a staff shortage, it was difficult to find a staff member who was free to trace what happened to the file of someone who missed an appointment.

"Especially over the weekends when we were here we found that the patient had defaulted and came to us. We are only two, you find that we go to the filing room, we check for the file. Sometimes you would find that they were still capturing some of the files which increased the waiting time of the patients as we are looking for the files." (Clinic manager interview, PHC2)

A year later we did not see any improvement to the challenges described above at both clinics which included missing files, patients missing their visits and the unavailability of extra staff to trace files of missed visits.

4.3.2 Tracing of patients who miss appointments

The ICDM program describes a defaulter as a patient who does not return to the clinic within seven days of their scheduled appointment. Their medication should be unpacked and redistributed within the medication stock for supply to other patients. Patients' full names addresses and contact numbers should be retrieved from their files and be entered into a home-based carers register as a defaulter requiring a follow-up. Home-based carers will then visit the patient to establish the reasons for defaulting and motivate them to return to the clinic for further assessment.

The approach of tracing patients who defaulted treatment in both clinics was different from the ICDM program approach. Chronic patients at PHC1 who missed their clinic appointments for more than three months were followed up telephonically by the nurse in charge. Then those that were not found telephonically on their list will be handed to home-base cares for tracing at their homes.

"Tracing of patients is done by the sister in charge with the help of data capture. The data capture issues a list of people who have not come to fetch their medication in three months and then hands it over to the clinic sister in charge so that she would call the patients to come to the clinic for their medication. Should that not work, the clinic sister in charge then pass on the list to the community home-based care group that works together with the clinic and the community. The community home-based carers will then visit the patients in their homes to find out what their problems with not going to the clinic might be. If they find the bedridden, they then go back to the clinic sister in charge to report." (Observation notes, PHC1).

In PHC2, the hypertension patients were not being traced after missing an appointment. The clinic only did follow up with patients who were on ART. These follow-ups were conducted a month after they missed their appointments.

"The only follow-ups that were done was for the patients who are on ART treatment. The follow-ups were done after a month of the patient's appointment date." (Observation notes, PHC2).

Every Wednesday, the community-based care group submitted a report on their tracing efforts in the community, to the sister in charge (senior nurse). The patients, who had not been to the clinic for three months and over, were no longer called defaulters but rather lost to follow-up patients. After three months of patients not showing up in the clinic, the files were filed back.

4.4 Clinical Records and Filing System

4.4.1 File numbering

The ICMD recommends that patients' files should not be stored per diagnostic condition but rather by the first three letters of the patient's surname and date of birth, or address e.g. ASM600108 or as per provincial/district filing protocol. Each patient (except active TB patients) should have a single file for acute and chronic records. All patients' records should be integrated, stored and available at a single administrative point.

In PHC1 the numbering of files for chronic and minor ailments was done using a patient's date of birth. The filing was done according to the year of birth for example all patients born in the 1990's files were put in one box labelled 1990. While at PHC2, the numbering of both minor and chronic files was done by first name and surname. At PHC2 they were not following the ICDM program rules that recommend one file per patient. Notes from the observations at this clinic showed that some patients had more than one file.

> *"The files for chronic patients were numbered using a number and the type of chronic condition for example 123(HPT). If the patient had multiple illnesses, then there will be multiple files. For example, if a patient had hypertension and HIV conditions then they will have 2 files: Patient No.1 123(HPT) and Patient No 2 345(ART)."* (Observations notes, PHC2).

A year later, the observations at PHC2 showed that there were no changes in terms of how chronic files were labelled or named previously but in PHC1, they were now using patient names, and surnames together with the date of birth to make the patient file retrieval process easier and more user-friendly. This was achieved because the clinic manager indicated she worked with her staff both old and new ones to show them how the work should be done.

> *"What I did I realised that they are lacking knowledge even the old ones. I had to teach them, I had to work with them to show them what is the right thing and then the situation now is coming."* (Clinic manager interview, PHC1)

4.4.2 Pre-appointment retrieval of patients' files

According to the ICDM program manual, for scheduled patients, their files are retrieved 48 to 72 hours before the patient's appointment and this is done by the clerk who is given the appointment schedule by the professional nurse. The professional nurse/administrative clerk is supposed to retrieve any outstanding results for laboratory investigations conducted during previous visits and place the results in the records of the patients. After updating the records, the records should be kept in a box at the chronic disease reception, vital signs station or consulting room depending on the facility arrangement.

The observations and interview data from the two clinics showed that both clinics retrieved files for scheduled patients before they came to the clinic in accordance with the guidelines. The files for chronic patients who were booked to visit the clinic on a specific date were retrieved the day before they had to visit the clinic. There was an appointment list/book that the clerk used to retrieve these files. The information on the appointment list was captured on the last visit the patient had made to the clinic. Every visit the chronic patients made to the clinic concerning medication collection, other than just visiting for minor issues was concluded with a return date. The clerk took the appointment list the day before the patients were expected to visit the clinic and retrieved their files in preparation for their visit to the clinic the following day.

However, the clinic staff sometimes failed to retrieve the files due to the inefficiency in scheduling the next appointments. Sometimes nurses in consultation rooms forgot to add some of the patients to the appointment list.

Shortage of staff, especially during weekends and the lack of space to store hard copy files hindered the smooth retrieval of files in both clinics.

> *"It's easy to retrieve the patient's file but our problem is a human resource, especially on weekends. And the other thing, when a patient goes up there looking for a file, a nurse will say to the patient "can you please go down to that office and find somebody (data clerk) who should give you a file". The patient is already up there but she will have to come back here for a file and go up again. So, we don't have another space where we can put our other cabinet on that other side. And it's even hard for the clerk to go up and down the whole day".* (Clinic manager's interviews, PHC2)

> *"There's not enough space to put the files in the filing area and some of the files are placed on top of the cabinet. When the clerk is not at work, the professional nurses mix chronic files and minor files and when patients come looking for their files, their files are not found."* (Observation notes, PHC2)

At PHC2, the files for booked/scheduled patients were pre-retrieved and put in the chronic consultation room according to the ICDM program guidelines. A year later, data from the observation notes and clinic managers' interviews for both clinics, showed that chronic

patients' files were retrieved one day (24 hours) before the patient's scheduled appointments, contrary to the ICDM program which stipulates 48 to 72 hours before the appointment.

> *"All booked chronic patients their files were taken out to the cabinet the day before and placed in the chronic consultation room."* (Clinic manager interview, PHC2)

> *''The service was still smoothly run because we were still booking our patients and files were being retrieved a day before."* (Clinic manager interview, PHC2)

> *"The files for chronic patients who are booked to come to the clinic on a certain date are pulled out a day before their arrival to the clinic so that the patients don't spend much time in the clinic." (*Observations notes, PHC1)

At PHC1, the files for all the chronic conditions, except for ART, were filed on the same day of the visit. ART patients' files were not returned on the same day because they first had to be captured electronically into the TIER.Net database. (The Three Interlinked Electronic Registers for TB & HIV)

At PHC2, the files for all the chronic patients who had managed to visit the clinic on the date of their appointment were filed on the same date after use. Two categories are in use in the clinic. The first one is the patients who are hypertensive, have minor ailments, are asthmatic, psych etc. These chronic patients carry booklets when they visit the clinic. The second one is ART and TB patients who carry cards when they visit the clinic. These booklets and cards have patient information such as a unique file number, the name and surname of the patient and the date of birth which assists in retrieving files.

4.4.3 Comparison of the filing system between the two PHCs

At the beginning of the trial, the two clinics both experienced problems with filing due to a shortage of files for keeping patient records, patient medical forms, which are, completed each time patients visit the clinic and the shortage of health care workers.

> *"Filing system was still a problem, why am I saying that? We don't have files. What we are using are the plain sheets."* (Clinic manager interviews, Belfast clinic/PHC2)

The filing system at PHC2 generally functioned reasonably well most of the days except for the general lack of space for filing and the lack of clerical staff on weekends. On weekends when the clerks were off duty, the nurses did the retrieval of files. This was a challenge due to the walking distance between the consultation rooms and the reception area where the files are stored. This also increased the workload of nurses on weekends when they were already short-staffed. The numbering of files was done using the first two to four letters of patient surnames and the system was working well.

The PHC1 clinic had challenges of losing some of the patients' files due to lack of space for filing and lack of clerk staff on weekends. This problem was exacerbated by the lack of stationery supplies available, leading to some patients not having proper files as they used plain sheets of paper to capture the details and data. Patients who arrived with no previous appointments confirmed again worsened it. When these unexpected patients arrived at the clinic it was time-consuming to retrieve their files, therefore staff would just use temporary files (sheets of paper) for that day.

During the second phase of the data collection, the duplication of files posed a problem resulting from the lack of blank files as described above. When there was a shortage of stationery such as medical forms that are used as patient files, the clinics (PHC1 and PHC2) made copies of files from the original ones. This, however, caused file duplication with some patients ending up having two files.

> *"There were patients who had two or three files at the clinic and that happened to chronic patients. There was a patient who came looking for his file and he was asked what his file is like because there are white and brown files he told them that he has white and brown files, and when they searched for the file, they found that indeed the patient had two files."* (Clinic observations notes, PHC1)

> *"In the afternoon when patients arrive at the filing area asking for the files, the clerk was not looking at the files. She was opening new files for the patients and making duplicate files and patients' medical history is lost. And she was doing it to all the patients who came in the afternoon."* (Clinic observations, PHC2)

This stationery shortage was a result of the long procurement of resources process at the clinics. The procurement has to pass several steps before it can finally be approved at the sub-district level and provincial level.

> *"Every clinic was having a budget, and that budget was supposed to be utilised by the very same clinic, but the clinic does not have power over the budget and even the Sub-district does not have powers over the budget. When the budget was out, we were called to procure. Every year we do that and even repeat it per year. We sent specifications including files to the Sub-district, they even sent them further to the suppliers, but it will come to a note or a report from the higher levels to say "You have exceeded your budget, stop doing this and that" or maybe they will say "Give us reasons why you order files."* (Clinic manager interview, PHC1)

For both clinics, after consultation, minor ailments files are immediately returned, while ART patients' files are sent to the data capturers for capturing into the electronic databases and returned thereafter.

There was also the problem of missing files due to files not being returned after consultations.

> *"The filing clerk came into the filing room and told the patient that she can't find the file then the patient told her that she never got her file in the filing room whenever she came to the clinic as she got her file in the consultation room and her file was in the cabinet. The clerk went into the consultation room with the patient and she told the nurse where her file is and the file was found and given to the patient."* (Clinic observation notes, PHC1)

At this clinic (PHC1), there was also a problem with patients taking their files home with them.

> *"Another thing that happened on this day was that a patient came in the filing room to register her name. After that, she was asked if she came to collect the pills and she said yes but she told them that she has the file with her and she always takes her file*

home because she doesn't want to spend a lot of time waiting for her file." (Clinic observation notes, PHC1)

4.5 Pre-dispensing of Chronic Medication

According to the ICDM program guidelines, the patient scheduling list should be provided to the allocated professional nurse or pharmacy assistant two days before the patients' appointments. The allocated professional nurse should pre-dispense the chronic medication according to the prescriptions. The medication should be pre-packed in a brown bag or clear opaque plastic bag depending on what is available. Where plastic bags are not available the facility should devise innovative measures to pre-dispense the medication. There should be a sticker with the patient's name and file number visible on the outer part of the bag to enable the validation of medication during dispensing. Once the medication is dispensed it should be placed alphabetically in the medication cupboard in the consulting rooms for professional nurses or stored in the pharmacy in case it is dispensed by the pharmacy assistants.

From the observations done in both clinics and from the clinic managers' interviews at the beginning of the trial, the pre-packing of medication was not done as observed and explained below.

"The medication was given to the patients in the consultation room. The medication was not prepared a day before. The nurse gave the medication to patients that she took from the medication cabinet that she had in the consultation room. There were times that the nurse would go to the other consultation rooms to ask for additional medication for a patient." (Observations notes, PHC1).

In clinic one, the clinic manager reported that pre-packing is not done due to the shortage of pharmacy trained clerks, whereas in clinic two the clinic manager mentioned the pre-packing is not done due to the lack of pre-packing material such as medication packing bags and sealing tapes.

"First, there's the issue of human resources. Sometimes for the chronic, we have chronic station and pre-packing of medication. If we can manage to deal with it, to address these two challenges, I think we can have packs or a proper system for pre-packing" (Clinic manager interview, PHC2).

Today it's just the two of us, pre-packing of medication needs somebody dedicated to doing it." (Clinic manager interview, PHC1).

A year later, the pre-packing of medication at clinic 1 had improved while in clinic 2 the clinic manager reported pre-packing as one of their main challenges which had not yet been resolved.

No, I don't have any challenges except the issue of pre-packing and the Vital Signs Station. (Clinic manager interview, PHC2).

"…I didn't find the issue of space, but otherwise we finally came up with the system of how to wrap medication and label it" (Clinic manager, PHC1).

The hypertension drugs were never in short supply in either of the two clinics, whilst at PHC1 there were the occasional ARV drugs stock-outs but they borrowed from neighbouring clinics whenever they were in short supply.

"We do have enough medication for treatment but sometimes we run short of these ARVs, like last week we ran short of LAMIVUDINE, we do request from neighbouring clinics…so we don't run out so that the patient will go out without medication." (Clinic manager, PHC2).

According to the observation data, both of the clinics (PHC1 and PHC2) never experienced a shortage of hypertensive drugs. However, drugs for other conditions shortages persisted and they continued borrowing from neighbouring clinics whenever there was a drug shortage, exactly like they did the year before.

"I do check if there's the treatment that is not there and then I will ask from the other facilities or maybe from the hospital." (Clinic manager, PHC2).

4.6 How the Implementation of the ICDM Program in the Clinics differed from the Policy Intent

Data from clinic observations and interviews with clinic managers showed that the ICDM program was not fully implemented according to the ICDM program. There were differences

in the implementation of patient pathways, scheduling of patients' appointments, filing, file retrieval, file integration, managing of files of patients who miss appointments, the tracing of patients who miss their appointments and the pre-packing of medication. Table 4.6 below summarises these differences.

Table 4.6 Table summarizing the differences in ICMD implementation

ICDM Policy recommendations	PHC 1	PHC 2
1. Scheduling of Patient's appointments It should be done by the nurse in consultation rooms after seeing the patient for the next patient clinic visit	Baseline: Scheduling of patient appointments was done by the nurse after seeing the patient	Baseline: The nurses gave the patients the return dates on patient carry cards/booklets, but didn't record the patient in the appointment register
	12 months: No change	12 months: No change
2. Filling File numbering should follow a system of first letters of the patient's surname and date of birth or address	Baseline: Done using DOB	Baseline: Filing is done using the patient's surname, unique file number and address
	12 months: A year later with surname and DOB	12 months: No change
2.1 File retrieval File pre-retrieval should be done 48-72hrs before the patient visit the clinic	Baseline: Files were retrieved a day before the patient visited a clinic	Baseline: Files were retrieved a day before the patient visited a clinic
	12 months: No change	12 months: No change
2.2 File integration When the patient has more than one chronic disease, the file should be combined to one file	Baseline: There was one patient file	Baseline: Sometimes 2 files
	12 months: No change	12 months: A year later it improved to 1 file per patient
2.3 Filing back patients files who were seen Patient files should be filed back on the same day after seeing the patients except for ART files which need to be captured first on	Baseline: Patient's files were collected from the consultation rooms the following morning to be filed later that day or the following day	Baseline: Files of the patients were filed back the same day after consultation

the system before filing them back	12 months: No change	12 months: No change
2.4 Managing file of patients who missed their appointment date If a patient misses a scheduled appointment, the pre-dispensed medication will only be kept in the consulting room for a further five working days.	Baseline: Files were kept for three days in case the patient shows up	Baseline: Files were kept for five days in case the patient shows up.
	12 months: No change	12 months: No change
3. Management of patient who shows up after a missed appointment Should the patients come within five working days after their scheduled date, the patient will be consulted after all the patients allocated to that time slot have been consulted even if they arrive first.	Baseline: The patients were made to queue and seen last	Baseline: The patients were made to queue and seen last
	12 months: No change	12 months: No change
4. Tracing of patients who defaulted treatment Patient to be traced 7 days after the missed appointment	Baseline: Tracing of defaulted patients was done after three months	Baseline: Tracing of defaulted patients was done after one month
	12 months: No change	12 months: No change
5. Pre-packing of medication before the patient clinic visit Medication should be pre-packed by the allocated professional nurse or pharmacy assistant two days before the patient's appointment**.**	Baseline: Pre-packing of medication was not done	Baseline: Pre-packing was not done in the clinic.
	12 months: pre-packing Improved	12 months: No change

4.7 Barriers Experienced by the Clinic in the Implementation of the ICDM Program

Both clinics faced challenges in implementing the ICDM program resulting in variations in the program intent. Some of the challenges the clinics faced were systemic. Others were due to relationships, staff-staff and staff-patient relationships and most of the challenges

were due to the lack of resources. Below is a detailed breakdown and explanation of barriers to the implementation of the ICDM program.

4.7.1 Shortage of human resources

In PHC1, chronic patients had one dedicated nurse who was responsible for attending to all chronic patients. However, due to the shortage of staff, one professional nurse sometimes ended up managing patients under all the services offered at the clinic. Some of the activities like pre-packing of medicines were neglected because the fewer staff could not cope.

> *"Pre-packing is not done because as I'm working, today we are two, pre-packing of medication needs somebody who will get the chance to do it."* (Clinic manager interview, PHC1)

The clinic managers viewed the staff shortages as the biggest challenge compromising the quality of services offered at the clinic. Staff was overwhelmed with activities, for example, one had to see patients, interpret the results and audit the patients' files for completeness. This resulted in poor documentation and poor and incomplete recording in files and registers. Due to the staff shortages, they ended up working long hours thereby compromising the quality of services rendered to patients.

> *"I think the major problem is the shortage of staff. Because we cannot maintain quality of care."* (Clinic manager interview, PHC1)

In PHC1, the shortage of experienced nurses at the clinic demotivated and exhausted the very few who were well experienced.

> *"She doesn't feel she is supported by other nurses as she is the only one at her level in the clinic (specialised PHC nurse) and has no one to seek assistance."* (Observation notes, PHC1)

PHC2 also experienced a shortage of staff. The clinic manager divided the nursing staff into two groups to try and share the workload among the staff.

"The reason is that we are short-staffed, and this is what we are doing: there are two groups; the other one, like today it's Thursday the other one is going off, they will come back on…like now we are six, we are working 3/3." (Clinic manager interview, PHC2)

The observation notes indicated that patients were also affected by the staff shortage due to an increase in the waiting time. In PHC2 community healthcare workers working in this clinic, had stopped and started focusing on their work in the community. The clinic did not have a pharmacist or a pharmacy clerk. The trained pharmacy assistant person assisted and the data capture sometimes also worked as a pharmacy clerk in addition to his work as data capture.

4.7.2 Limited space in the clinic

4.7.2.1 Space challenges related to filing

In PHC2, limited space made it difficult to place the filing cabinet near the administration area for easier access to patient files. The clinic manager mentioned that if the filing cabinet was to be placed in the reception area, it would minimise the unnecessary movement of the clerks.

"But I think it would be better if we can have a space on that other side in the reception where all the files are kept and she would stay there for the whole day, she doesn't have to make all those movements." (Clinic manager interview, PHC2)

4.7.2.2 General space issues in the clinics

The lack of adequate space in the clinics made it impossible for the clinics to have dedicated waiting areas as stipulated by the ICDM program guidelines for the three streams of care which were chronic, minor ailment and maternal and antenatal care. According to the observation data, all the maternal clients and the chronic patients utilised the same waiting area. The clinic manager in PHC1 felt that the clinic could perform well if they had more space to accommodate programs that need privacy and dressing rooms.

"Space generally it was limiting us to perform well. There are some of the programmes that just pop in, just like this one [Nkateko study], we would have loved to have given them a private room but because of the challenge of the space, we wouldn't do anything. Because even on our part we do need the space. So, that is a Departmental

issue, but it was not their fault, it was built during those times whereby there were few programmes." (Clinic manager interview, PHC1)

4.7.3 Lack of medical equipment and supplies

The ICDM program recommends that each chronic consulting room should have the essential medical equipment. For both clinics, the available medical equipment was not maintained/serviced as recommended in the ICDM program guidelines. In both clinics, servicing of medical equipment like BP machines was not done and they were not in good condition. They were not well maintained as stipulated by the medical equipment guidelines. They also had malfunctioning BP machines.

"The challenges experienced with the blood pressure machines were cuffs. They supply only one cuff per child and adult. The available cuffs in use are torn and have been improvised. I took out one cuff from the manual one and connected to that other one …" (Clinic manager, PHC2)

Clinic staff seemed to have no control over this challenge since the maintenance of equipment is the responsibility of the provincial department of health and not that of the clinic.

"With equipment, we do have a problem. Still, that's the Government's problem, because you find that we have the medical equipment, they are enough, the problem is that there are no batteries, they cannot buy batteries for us. The BP machines are not maintained. There's nobody to come and maintain them. Previously we had a team that was coming to check every year six months check and replace what is replaceable and give us the batteries." (Clinic manager interview, PHC1)

In PHC2 the other challenge that affected the process of pre-packing medication as required from the ICDM program was the lack of pre-packing materials such as sealing tapes and medication packing bags.

"She can do the pre-packing. Sometimes you find that we do even run short of the sealing tape and other times you find that when you do try to hold it like that, it does fall out." (Clinic manager interview, PHC1)

4.7.4 Knowledge gap

The observations at the clinics and interviews with clinic managers showed that the knowledge gap was one of the barriers to the implementation of the ICDM program. The clinic managers emphasised the importance of regular in-service training to keep the nurses well informed, as they were not knowledgeable about treatment for patients with chronic diseases.

> *"Nurses are not knowledgeable; nurses don't read that's why in service is very important. If they were knowledgeable, they would know the side effects of the treatment that is why we have to put more pressure on in-service education."* (Clinic manager interview, PHC1)

The professional nurse responsible for chronic care in PHC2 was new and had just completed bridging training. A bridging training is a program offered at a higher institute of learning to enable nurses to attain a Diploma in general nursing science. As a result, she was unable to manage chronic patients because she lacked the training and experience in chronic care.

> *"She is a professional nurse, she just came back from school, and she's from a bridging course. They have allocated her here because she thought if she is here she will be fine. After all, she's not having midwifery…along that other side, so she made a lot of mistakes because the medical record was not well completed and even the chronic one, so I took her back."* (Clinic manager interview, PHC2)

However, professional nurses do not get enough training. There are a limited number of training opportunities that the nurses would have wished for. Training and workshops are mostly offered to clinic managers.

> *"Nurses attend training and workshops but not so often. Most of these workshops are attended by clinic managers." (Observation notes, PHC1)*

On the other hand, there are training and workshops that nurses could attend however; the shortage of staff prevents them from attending.

"Training and workshops are available, but the shortage of staff prevents nurses from attending them." (Observation notes, PHC2)

4.7.5 Poor relations and support among staff and with patients

Internal issues and staff relations were some of the challenges to the implementation of the ICDM program. Clinic managers from the two clinics (PHC1 and PHC2) were not receiving adequate respect and support from the district management and from the very staff they were managing.

"The challenges that come from the top and the ones that you are with here, so as an Operational Manager you don't reach a point where you can say: I'm working effectively, I'm getting this and that, when I want this I can get it, is a problem." (Clinic manager interview, PHC1).

The implementation of the ICDM program was intended to be done as a team effort to achieve the desired program goals but instead, the following staff relations with the clinic manager came out strongly in PHC1 according to the observation data:
The assistant nurse was disrespectful to the clinic manager; she talked back to her, failed to follow the given instructions and took unauthorized leave. In PHC2, an enrolled nurse was often very rude to the patients and shouted at them.

"The assistant nurse was talking to the enrolled nurse and data capture. She was telling them that she doesn't care what the sister in charge say as long as she wants to she will go on leave because even herself [the clinic manager] when she wants to go she goes and even if she doesn't have leave days she goes and no one question her." (Observation notes, PHC1)

"Again, in the BP area, the same nurse was talking to the patient in a low voice and the patient did not hear what the nurse has just said. She shouted at the patient saying "have you not heard what I have said, or should I repeat myself to you? (This time her voice was high compared to the first time she talked to the patient)." (Observation notes, PHC2)

The staff were not relating well with each other on both PHC1 and PHC2. They were gossiping and back-biting each other instead of supporting and assisting one another to deliver the quality work and service expected from them.

There were poor relations observed in PHC1 and PHC2 between patients and staff in general. For example, in PHC1 the lack of communication between the staff left the patient confused about whom to follow or listen to.

> *"In the afternoon, the cleaner came to the chronic queue and found a guy standing on the passage. She told him that no one is allowed because they are blocking the way for the staff when they want to move around, the guy told the cleaner that; he was told by the nurse to stand there*." (Observation notes, PHC1)

At some points, patients found themselves being neglected as all staff were taking their lunch breaks at the same time and there was one nurse, who was doing data capturing, who left the clinic for driving lessons. One patient was accused of taking her file home when, in fact, she did not take it home. The cleaner threatened a patient who was falsely accused of messing on the clinic floor when they refused to clean up after themselves.

> *"The cleaner insisted that she cleans but the patient refused because indeed it wasn't her child who did the mess. When the cleaner saw that the patient was serious about not cleaning, she threatened the patient saying that she is going to tell the nurses about her behaviour."* (Observation notes, PHC1)

We observed that the clinic manager in PHC1 needed nurses to be committed to their work to enable her as a manager to focus on running the clinic rather than having to do nursing work.

> *"As an operational manager, she finds herself doing more hands-on practical nursing work i.e., patient consultation than management and supervision of other staff and the whole clinic. She does not have time to sit in the office and reflect upon how the clinic is progressing."* (Observation notes, PHC1)

On the other hand, staff also blamed management for not fully supporting them.

"One nurse expressed that people in management do not show concern at all. All they know is making jokes and fun of one's mistakes. She also felt that though the clinic has clear goals the problem is with management, so it's difficult to achieve those goals." (Observation notes, PHC 2)

4.7.6 Communication and engagement

The researcher found that in both PHC1 and PHC2 there was limited communication and engagement between the Department of Health (DOH) sub-district office and the clinics. Nurses were dictated on what to do and were not given a chance to share their opinions in the implementation of programmes like the ICDM program.

"Nurses do not have any input in the affairs or operation of the clinic. The sub-district just come down and dictate that you have to start implementing one, two, three things without hearing from the nurses whether that would work or not". (Observation notes, PHC1)

"Some nurses said that sometimes performance development management systems (PDMS) are just written down without any discussion between the nurse and her supervisor" (Observation notes, PHC1)

Notes from both clinics (PCH1 and PCH2) also showed that management did not listen to their staff's opinions and ideas on how to improve the clinic.

"Suggestions on how to improve the clinic are not considered. Supervisors are always looking for mistakes and management is not treating them well." (Observation notes, PHC2)

"One of the administration clerks at clinic PHC1 finds some of his supervisors difficult to talk to. He says suggestions that he puts forward to improve the filing system are not taken up." (Observation notes, PHC1)

4.8 Facilitators in the Implementation of the ICDM Program in the Clinics

Some factors facilitated the implementation of the ICDM program at the two clinics. Below is a detailed breakdown and explanation of the facilitators.

4.8.1 Staff development

Although the data under the knowledge gap earlier on in this paper showed that the training opportunities for nurses were limited and mainly that the clinic managers attended workshops, staff training has been an integral part of the ICDM program. In PHC1 All staff members were part of the in-service training that is done twice a week to strengthen their knowledge of chronic treatment.

> *"The nurses were not knowledgeable about the chronic that's why in service is very important. If they were knowledgeable they would have known the side effects of the chronic treatment hence we had to put more pressure on the in-service education."* (Clinic manager interview, PHC1)

4.8.2 Staff relations and teamwork

From Observation data in PHC2, patient management information sharing enhanced teamwork and assisted in reducing patient waiting time. This factor was an important facilitator for the success of the ICDM program.

> *"The nurses felt they work hand in hand and if one doesn't understand anything, they are free to ask another person for help."* (Observation notes, PHC2*)*

Despite the challenges that were mentioned earlier in this paper, from the observations in PHC2 concerning how staff interacted with one another and the patients, in some instances, the relationships were commendable at the clinic and were a facilitator in strengthening the ICDM programme.

> *"How much of ICDM is happening here? - We are trying…patient/staff relationship – chronic patients are happy"* (Clinic manager interview, PHC2)

CHAPTER FIVE: DISCUSSION

5.1 Introduction

This chapter discusses the summary of results, what other studies found and how it fits into related studies. It also discusses how the theoretic framework has helped to understand the findings, strengths, weaknesses and recommendations.

5.2 Discussion

The overall aim of the study was to understand the implementation of the ICDM program at two clinics in Mpumalanga, South Africa from the perspective of clinic managers and to identify whether the implementation of the ICDM program varied between the two clinics and differed from the policy intent. The study showed that problems with communication and information sharing were identified as another barrier to implementation in most countries and failure to adequately distribute new guidelines to clinicians reportedly led to poor implementation of guidelines (34). The results from two clinics showed that there was no effective system in place to assist in the implementation of the ICDM program in terms of patient appointment bookings, Pre dispensing of medication and defaulter tracing.

The two clinics implemented the scheduling of patients' appointments differently. The results showed that although there were challenges experienced in achieving a smooth flow of scheduling of appointments in both clinics, PHC1 had a system in place for the scheduling of patients' appointments whilst in PHC2, the scheduling of patients' appointments was done haphazardly. File numbering and filing varied between the two clinics during the second phase of the data collection. PHC1 had improved their system by making use of both patient surnames and date of birth instead of just using the date of birth alone. This made the patient file retrieval easier and there were no more missing files compared to PHC2.

Clinic managers that were interviewed demonstrated a lot of knowledge about the implementation of the ICDM program. They understood what was expected from them and the possible challenges that could hinder the successful implementation of the program based on their previous challenges experienced with the same program rolled out in another

province. The study in KwaZulu Natal that determined the perceptions and experiences of professional nurses with the implementation of the ICDM program reported that professional nurses had positive perceptions, experiences and attitudes towards the implementation of the ICDM program. (21). Similarly in this study, both clinic managers at PHC1 and PHC 2 were very appreciative of the impact the ICDM program brought to their clinics despite the challenges they had during the implementation process. They also aired their views on how ICDM integrated chronic care is delivered and the clinic's shortcomings in delivering this care according to the ICDM program. They said sometimes the patients follow the patient pathway stipulated by the ICDM program but due to challenges such as the shortage of staff, this flow is disrupted. A previous study was done (2019) in the Gauteng province of South Africa to assess the implementation of the ICDM program to support the researcher's findings that the shortage of staff poses a challenge in the adherence to the ICDM program. The study reported that the limited human resources could have contributed to the lower commitment to the implementation of the ICDM program (35).

LMICs faced many common barriers to implementing health intervention strategies as mentioned in section 2.2. The study done with five of LMICs in three continents found the most common barrier were lack of financial material and human resources. (36). The results in this study showed that both clinics scheduled patients' appointments as stipulated by the ICDM program, but this is not done smoothly as intended by the policy, sometimes due to shortcomings like the lack of resources at the clinics and also sometimes due to shortcomings by patients who do not honour their scheduled appointments. This finding adds to a body of evidence that missed appointments are a common problem among chronic patients receiving their medication at primary health care centres and decentralized pick-up points in South Africa (37,38).

The pre-appointment retrieval of patients' files was done at both clinics but there was a lack of consistency with nurses sometimes forgetting to add eligible patients to the appointments lists. The clinics were also found to be lacking in retrieving the files 48 to 72 hours before the scheduled appointments according to the ICDM program and only retrieving the files 24 hours before the scheduled appointments. The missing of scheduled appointments by patients translated into the disruptions of the proper filing of patient medical records at the clinic. If medical records are not filed properly the clinic staff loses those records resulting in the clinic being unable to provide quality health services. This finding is supported by a study

done in the province of Limpopo in South Africa investigating the role of medical records in the provision of primary health care services, which concluded that missing files contributes partly to the poor quality of services offered at clinics (39).

Pre-dispensing of chronic medication at both clinics was not being done effectively and regularly. The clinic managers at the two clinics explained that the pre-dispensing of chronic medication was not done due to the lack of pharmacy-trained clerks and the lack of pre-packing material such as medication packing bags and sealing tapes. In the study done in Gauteng (South Africa) to assess the implementation fidelity of the ICDM program, the study found that issuing patients with two months' supply of medication was helpful when the dispensing could not be done regularly as expected according to the ICDM program. If patients were to be given two months' supply of medication at a time it would have saved them time because they have to attend the clinic less often. It will assist in decongesting the clinic and ease the staff workload because the number of patients to be seen will be lower (35).

The results also showed that clinics were not tracing patients who missed their scheduled appointments according to the ICDM program, but they only traced HIV and TB patients, and hypertension patients are not traced. There is a need to fully utilize the tracers for HIV and TB by extending their duties to tracing hypertension patients. This finding supports results from research on integrated HIV and hypertension management in rural South Africa done by Ameh et al (10). Ameh et al research found that the HIV programme needs to be more extensively leveraged for hypertension treatment to achieve optimal BP control (39).

The shortage of human resources, limited space in the clinic, lack of medical equipment and supplies, staff knowledge gap, and poor staff relations and communication were some of the barriers to the successful implementation of the ICDM program that were observed. These health systems challenges hindered the smooth implementation of the ICDM program. The same sentiments are echoed by Mahomed and Asmall (21), who alluded that despite clinics' preparedness and commencing with the implementation of activities, the lack of adequate resources required at the clinics poses a major challenge to the successful implementation of the ICDM program (21). Another study by Ameh showed that the quality of care in the ICDM program is compromised by structural challenges like the malfunctioning of medical equipment, machines and a staff shortage (40).

The interpretation of some of the behaviour observed during the implementation of the program in the study suggested that the clinic manager's acted as street-level bureaucrats on many occasions as defined in section 2.6. The clinic managers in trying to manage their difficult jobs, exercise discretion and develop coping mechanisms concerning implementation of the ICDM program in these two clinics. They tried to implement some of the ICDM elements even though it was not according to the specification of the ICDM policy. The study showed that poor communication of policies on the ground can lead to confusion and inconsistency in the implementation of health interventions. (34) It was evident that the clinic manager's behaviour affected the implementation of the ICDM program whereby the better the relations among themselves staff the better the clinic performed and conversely. This also depended on the knowledge and the skills they possessed regarding the integration of chronic care.

Clinic managers recommended that clinic staff should be given more in-service training. Staff at primary health care clinics comes with pre-service training, however, they require additional in-service training and supportive supervision to enable them to work with chronic patients. This is supported by Nicol, who did a systematic review of published studies that report on pre-and in-service training with a focus on healthcare providers' competencies and skills to manage immunisation data (41). They found that combined and multifaceted training interventions could help improve the healthcare providers' knowledge, skills and competency in data management. They further pointed out that giving healthcare providers the right training is hindered in low- and middle-income countries by limited or lack of in-service training (42).

5.3 Study Strengths

The data were compared from different trial periods a year apart, which were the pre-trial phase and the closure phase. This was deemed adequate to evaluate the changes in terms of the ICDM program implementation a year apart. There were two sources of data; clinic observations and clinic manager interviews. Having data collected from two different sources ensured that meaning constructed in the observations was also present in the interviews with clinic managers. The secondary data analysis provided the opportunity for the researcher to analyse and interpret the primary data to explore and generate new knowledge on the experiences and perceptions of the clinic managers regarding the ICDM program. It also allowed the researcher to test the implementation framework theory (SLB)

to understand what enabled or hindered the implementation of the ICDM program in the two clinics.

5.4 Study Limitations

This study used secondary data therefore, there was no control over the data collection process and no additions were made later on post data collection. As a result, the reasons why the clinics managed to change certain aspects of the ICDM programme elements within a year between data collection were not thoroughly explored. The study was conducted in two resources-constrained rural clinics; therefore the experiences of clinic managers of the ICDM program might be different in other better-resourced clinics.

5.5 Conclusion

The delivery of the ICDM program at these clinics was faced with systemic challenges that were deeply rooted in the health system thereby impacting negatively the smooth implementation of the ICDM program. The lack of human resources, coordination of the ICDM program activities, and inadequate space in the clinics were the major issues affecting the integration of chronic care including patient pathways. However, the involvement and the leadership of the clinic management and staff in this program give hope and have seen positive outcomes in the implementation of this program. Future research is highly recommended to understand how the ICDM model works in urban PHC clinics will. As this will enable one to understand whether the experience of clinic managers in the implementation of the ICDM program in highly-resourced rural districts will be the same as the one in poorly-resourced rural districts.

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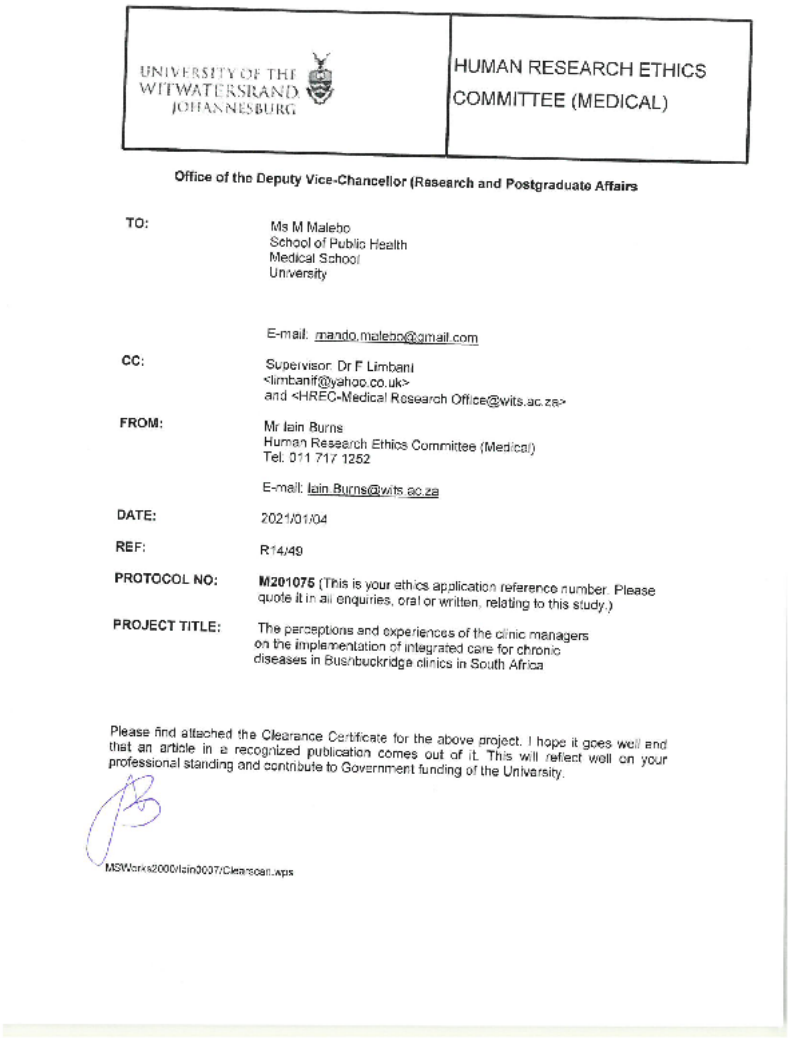
APPENDICES

Appendix 1: Ethics clearance for secondary data



UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Postgraduate Affairs

TO: Ms M Malebo
School of Public Health
Medical School
University

E-mail: mando.malebo@gmail.com

CC: Supervisor: Dr F Limbani
<limbanif@yahoo.co.uk>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2021/01/04

REF: R14/49

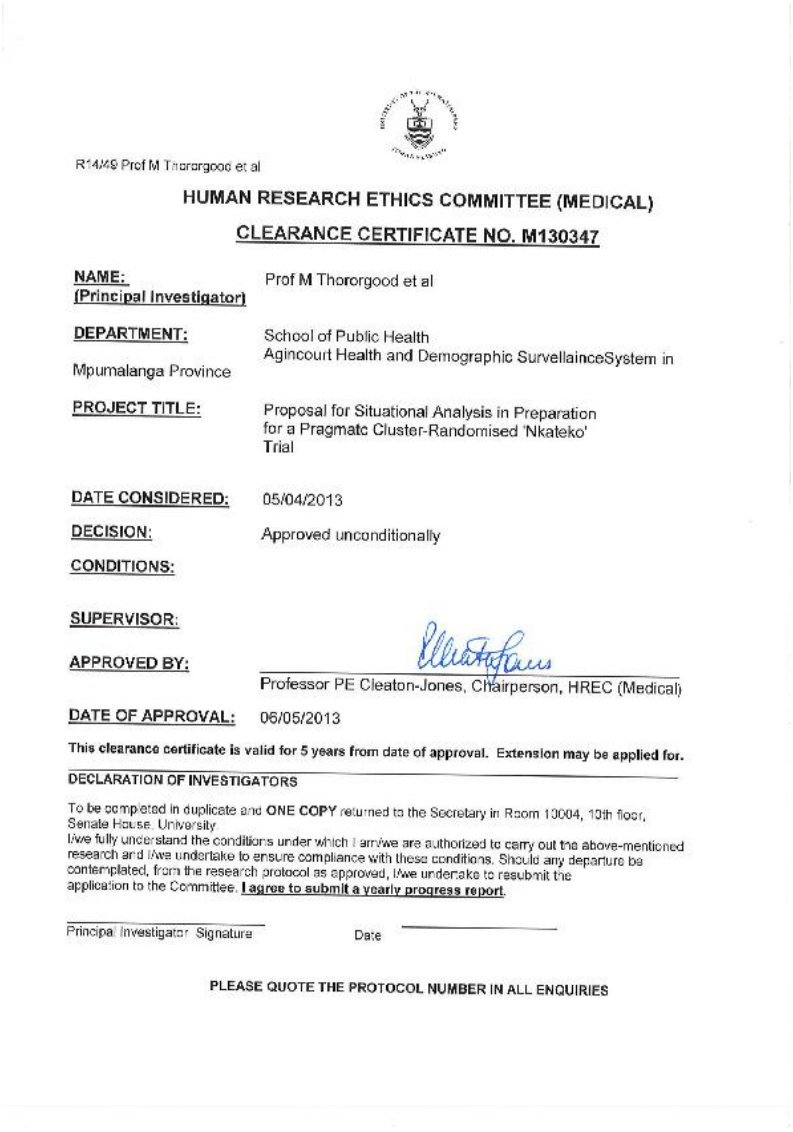
PROTOCOL NO: **M201075** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: The perceptions and experiences of the clinic managers on the implementation of integrated care for chronic diseases in Bushbuckridge clinics in South Africa

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

MSWorks2000/Iain3007/Clearcert..wps

Appendix 2: Ethics clearance for Nkateko



R14/49 Prof M Thororgood et al

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M130347

NAME: (Principal Investigator)	Prof M Thororgood et al
DEPARTMENT:	School of Public Health
Mpumalanga Province	Agincourt Health and Demographic SurvellainceSystem in
PROJECT TITLE:	Proposal for Situational Analysis in Preparation for a Pragmatc Cluster-Randomised 'Nkateko' Trial
DATE CONSIDERED:	05/04/2013
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	
APPROVED BY:	Professor PE Cleaton-Jones, Chairperson, HREC (Medical)
DATE OF APPROVAL:	06/05/2013

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

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 13004, 10th floor, Senate House, University.
I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.**

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 3: Permission letter to use secondary data

The Centre for Health Policy

26 June 2020

Dear Ethics committee

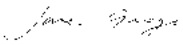
Applications for secondary analysis of the Ntaketo trial data

This letter is provide permission for three masters students: Dineo Mothlele, Manape Kgopa, and Mando Malebo to use some of the Ntakeko trial data to do a secondary data analysis study, which was conducted between 2013-2017

Attached is the ethics certificate for the trial

As the Wits PI on the trial I give permission for these students to use the data.

Kindest regards



Professor Jane Goudge
Director of the Centre for Health Policy

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