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The implementation of nurse initiated and managed antiretroviral therapy in the City of Johannesburg clinics: perceived facilitators and barriers

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The Implementation of Nurse Initiated and Managed Antiretroviral Therapy in the City of Johannesburg Clinics: Perceived Facilitators and Barriers

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M Cur (Community Nursing Science)

Research Report submitted in fulfillment of the requirements for the degree of Master in Public Health (MPH) at the University of the Witwatersrand**.**

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April 2015

DECLARATION

I, the undersigned hereby declare that the work contained in this research report is my own original work and has not previously in its entirety or in part been submitted at any University for a degree.



Signature

29/09/2015

Date

ABSTRACT

Introduction: Antiretroviral therapy (ART) is a lifesaving clinical intervention for people living with HIV (PLHIV). An important barrier to accessing therapy is the shortage of the health workforce particularly doctors. In order to mitigate the shortage, a nurse driven ART delivery approach known as Nurse Initiated and Managed Antiretroviral Therapy (NIMART) has been implemented in the public sector in South Africa and in other countries. NIMART enables professional nurses to initiate HIV positive persons on ART and manage their care at primary health care clinics. This study sought to explore and describe perceptions of operational managers, facility managers and professional nurses on the facilitators and barriers to the implementation of NIMART in the City of Joburg (CoJ) clinics.

Methodology: This was an exploratory descriptive qualitative study which used in-depth interviews with a variety of respondents in order to gain insights into their perceptions of the implementation of NIMART in the CoJ clinics. In total, 26 respondents, comprising of operational managers, facility managers and professional nurses participated in the study. Thematic content analysis was used to analyse data drawing from the Donabedian structure-process-outcome framework.

Results: The respondents identified the adequacy of NIMART training and mentoring; the availability and use of NIMART guidelines and the integration of NIMART into Primary Health Care (PHC) services as structural facilitative factors for NIMART implementation. The shortage of the health workforce, shortage of antiretrovirals (ARVs), poor referral feedback, food insecurity and the mobility of patients were identified as key structural and process barriers to the implementation of NIMART. Respondents perceived the improvement in quality of life of NIMART patients and the clinics' ability to retain patients in care as indicative of the success of

NIMART implementation. Finally, respondent's suggestions for improving NIMART implementation in CoJ clinics focussed on improving shortage of the health workforce, improving the availability of ARV drugs and providing opportunities for continuing education for professional nurses.

Discussion, conclusion and recommendations: In order to mitigate the barriers identified in this study, recommendations were that the City of Joburg should utilize lower level health care cadres such as nursing assistants and lay counsellors to reduce the professional nurses' workload and thus improve access to treatment. In addition, the City of Joburg should revise the antiretroviral drug allocations to clinics and revise delivery schedules to ensure that clinics do not run out of ARV drugs. The referral feedback process should be strengthened through the referring clinic and the referral hospital jointly developing referral protocols that should be used by both institutions. Finally, the City of Joburg should consider conducting consultative discussions with professional nurses prior to introduction of new programmes and provide opportunities for regular updates for operational managers, facility managers and professional nurses. Future research could look at the role of PHC qualification in the implementation of NIMART.

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I would like to thank my supervisor, Ms Prudence Ditlopo, for her support, guidance and encouragement throughout the process of conducting this study. Her input was invaluable.

I hope that in some small way this research will contribute towards improving this very important aspect of health service delivery.

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NOMANCLATURE

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
CCMT	Operational Plan for Comprehensive HIV and AIDS Care Management and Treatment
CD4	Cluster of differentiation 4
CHC	Community Health Centre
CoJ	City of Joburg
HIV	Human Immunodeficiency Virus
HRH	Human Resources for Health
LMIC	Low and Middle Income Countries
LTFU	Loss to follow-up
MDG	Millennium Development Goal
NDOH	National Department of Health
NIMART	Nurse Initiated and Managed ART
NSP	National Strategic Plan on HIV, STIs and TB 2012-2016

PALSA PLUS	Practical Approach to Lung Health in South Africa
PHC	Primary Health Care
STRETCH	Streamlining Tasks and Roles to Expand Treatment and Care for HIV
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
WHO	World Health Organisation

CHAPTER 1: INTRODUCTION

1.1 Background

Acquired immunodeficiency syndrome (AIDS), caused by the human immunodeficiency virus (HIV) remains a major public health priority, even though there has been significant declines in the number of new HIV infections [1]. There were 2.3 million new HIV infections globally in 2012 compared to approximately 3.5 million new infections in 2001 [2, 3]. There are declines in the number of AIDS related deaths globally, approximately 1.6 million people died from AIDS in 2013, down from 2.3 million in 2005 [2]. Sub-Saharan Africa remains the region most heavily affected by HIV with nearly 1 in every 20 people living with HIV and accounting for approximately 69% of people living with HIV throughout the world [4]. However, the region has also experienced one of the sharpest declines in new HIV infections, with a reduction of 25% in 2012 [4]. South Africa is also experiencing declines in the rate of new infections, with an estimated decline of 22% between 2009 and 2012 although the number of people living with HIV (PLHIV) has increased from approximately 5.2 million in 2005 to about 6.4 million in 2012 owing to more people living longer on antiretroviral therapy [5]. The 2013 Global AIDS Report for South Africa indicated that there were approximately 350 000 AIDS related deaths in 2005 and about 240 000 in 2012 showing that fewer people were dying from AIDS [5].

Antiretroviral therapy can protect PLHIV from developing opportunistic infections, lower their chances of transmitting the disease and prolong their lives [3]. There is also no doubt that access to antiretroviral therapy (ART) results in remarkable reductions in mortality which may be as high as 95% in comparison to no intervention [6]. The UNAIDS World AIDS Day Report shows that access to ART grew by 62% globally in the past two years [7]. According to estimates of numbers

of people on ART in 2012, approximately 9.7 million people in low- and middle- income countries (LMIC) were receiving ART, an additional 1.6 million people from 2011 [3]. In sub-Saharan Africa, approximately 2.3 million people were added to treatment programmes in 2012, an increase of approximately 59% [7]. Although there are gains in increased numbers of those on treatment, the gap between those that are on treatment and those with an unmet need is still large at approximately 6.8 million people globally [7]. In 2012, only 32% of all those who should be on ART were receiving treatment in sub-Saharan Africa [3]. Approximately 2.1 million people are on ART in South Africa, but the country still has a large treatment gap, and is counted as one of 30 countries where 9 out of 10 people whose need for ART has not been met [3].

In November 2003, the South African National Department of Health (NDOH) announced the approval of the Operational Plan for Comprehensive HIV and AIDS Care, Management and Treatment (CCMT) [8]. The CCMT plan called for the large-scale provision of ART in specially accredited public health facilities for the first time [9]. On 1 April 2004, the provision of ARVs began at a number of accredited sites. These were mostly tertiary hospitals with patient care being largely managed by doctors. Accreditation required health facilities to satisfy an exhaustive list of accreditation requirements and thus slowed the pace of initiating patients on ART considerably [10]. The health workforce's inability to meet the demand for services at hospital centres led to extensive patient waiting lists. This resulted in thousands of eligible patients being unable to access ART services [11]. By 2007, the numbers of HIV positive people initiated on ART remained low and there was recognition that the provision of ART needed to be decentralised to local clinics [10, 12]. Provinces began to decentralise care through a model known as 'down referral' in which stable patients were referred to primary health care clinics closer to their homes for continuation of care. Patient care at local clinics was to be provided by professional nurses trained in HIV Management

[12]. In a landmark speech on World AIDS Day in 2009, President Jacob Zuma announced the government's plan to accelerate access to HIV prevention, treatment, care at primary health care level; a shift from the hospital based, doctor dependent approach that was used in the public sector [13]. The newly announced treatment programme would expand even further through a decentralised model, using a nurse driven approach to initiate patients on antiretrovirals (ARV's) [14].

Further to the announcement in 2009, the NDOH authorised professional nurses in the primary health care clinics to place patients (children, adults and pregnant women) on ART [15]. The professional nurses would use predetermined national regimens to prescribe ARVs and manage stable patients in a programme known as the Nurse Initiated and Managed Antiretroviral Therapy (NIMART) [15]. This policy shift has since been implemented in all 52 districts in the country [5]. The City of Johannesburg (CoJ), a Metropolitan Municipality which provides primary health care services in its seven sub-districts started in 2010 to implement this government initiative. This research project sought to explore and describe the perceptions of operational managers, facility managers and professional nurses regarding NIMART implementation in the CoJ clinics with the intention of identifying facilitators and barriers to improve implementation.

1.2 Literature Review

In response to the global call to increase treatment access, governments and organisations in many countries mobilized and brought in large financial resources and new health initiatives for ART scale up [16]. The resources and approaches aimed at supporting the rapid scale up included provision of personnel, training of health workers, increase of drugs and supplies and construction or renovation of treatment centres [17]. In spite of the significant progress made in ART scale up, the WHO noted that there were still major barriers which had to be overcome if ART was to be universally accessible to all who need it [18]. Increasing service access would, according to Price & Binagwaho (2010) depend largely on whether the existing health system constraints such as poor physical infrastructure and the capacity of the health workforce can be improved. A number of studies have highlighted the human resource challenge as key to sustainable ART delivery interventions in sub-Saharan Africa [15, 17, 18, 19].

Sub-Saharan Africa suffers the most human resources for health shortage in the world with 36 of 57 countries reported to be experiencing severe health workforce shortages [20, 21]. For example, Mozambique has less than 0.5 doctors and only three nurses per 1000 people living with HIV [17]. These figures fall far short of the recommended one or two doctors and up to seven nurses per 1000 people on ART in resource constrained settings [19]. According to a time and motion study which measured the human resources for health needs for ART delivery in South Africa, initiating all patients with CD4 $\leq$350 cells/µl (current eligibility criteria) within one year and maintaining them on treatment for another 12 months would require an increase of 2, 200 nurses; 3, 800 counsellors and 300 doctors [22].

As a consequence of health worker shortages cited above, task shifting became increasingly promoted as a mechanism to mitigate shortages of health personnel particularly doctors [18, 23]. Task shifting is the delegation of health service tasks, such as tasks performed by a doctor being delegated to a health professional with lower level of training such as a professional nurse [19, 24]. This changing of the skill mix of health workers presented opportunities, such as stimulating multidisciplinary teams where nurses initiate patients on treatment while doctors provide supervision and manage complex cases [21].

NIMART, a nurse centred task shifting ART delivery approach has been implemented in African countries such as Rwanda, Zambia, Lesotho and South Africa with a number of studies indicating that it is effective in improving access to treatment and care for PLHIV [20, 25-30]. A review of publications by Price & Binagwaho (2010) shows that in a nurse-centred task shifting approach in Zambia, more than 21 000 adults were enrolled in HIV care within a few years, of which 16, 200 started on ART. In Lesotho, the nurse driven community–supported ART programme enrolled double the annual number for adults and children [29]. With regards to patient outcomes, studies showed that in settings where nurses provide the majority of the care, there were good treatment adherence rates and favourable clinical outcomes [18, 29, 31]. A study that looked at patient referrals from nurses to doctors in an HIV primary health care setting showed that nurses and doctors reached the same diagnosis in most cases that they each examined [32]. And, a more recent study compared outcomes of ART patients that were managed by nurses and those that were managed by doctors in two provinces in South Africa, the study showed that there were no differences in mortality, viral failure or immune recovery between the two groups [33].

Furthermore, a few studies in South Africa looked at NIMART implementation from the nurses, doctors and managers' perspectives [20, 28, 34, 35]. In one example, the implementation of

NIMART in South Africa was evaluated as part of a trial known as Streamlining Tasks and Roles to Expand Treatment and Care for HIV (STRETCH) [28]. An important facilitating factor that was identified by the evaluation was that NIMART was well received by nurses, patients and doctors and that managers and nurses were confident in that they could apply the guidelines correctly and deliver ART successfully [20, 28]. The confidence of nurses was enabled by ongoing clinical support from doctors, District ARV Coordinators and availability of clear criteria for referral of more complex cases [20, 34]. The study also suggested that NIMART implementing nurses were able to accept the significant increase in workload because they were adequately prepared, felt supported and were encouraged by the fact that they were contributing to saving lives [20].

However, literature also highlighted a number of barriers to NIMART implementation. Nurses in one study reported that they were struggling with unmanageable workload due to additional NIMART tasks [20]. Also, the inability to shift some tasks performed by professional nurses to lower level nursing cadres such as nursing assistants prevented nurses from seeing more patients [34]. It was also found that enrolled nurses and nurse assistants were in most cases not included within ART delivery services, leaving professional nurses with a greater workload [34, 35]. Although training was found to be comprehensive and capacitating, nurses felt that mentoring was poor resulting in some nurses initiating patients on treatment before they felt confident to do so [34]. In addition, high staff turnover in clinics that were already poorly staffed, poor drug distribution systems and lack of local management support were cited as barriers that influenced the implementation of NIMART during the STRETCH trial [28]. The implementation of NIMART was also found to be contributing to the shortage of the health workforce within the health system by removing nurses from existing programmes in order to provide NIMART services [20]. Yet,

despite facing numerous challenges cited above, NIMART nurses and operational managers were optimistic about their work and felt empowered by their new roles [34].

The Primary Health Care approach in South Africa within which NIMART is located is conducted to a large extent by nurses; it is the level of service delivery which is accessible to most South Africans and therefore the only practical and feasible way for the ART programme to reach all those who need it [20]. However, as previously described, NIMART is not exempt from health delivery challenges and is not on its own the solution to health workforce problems associated with ART delivery [20, 34]. The Lusikisiki study in rural South Africa showed favourable outcomes in NIMART implementation similar to other studies shared in this study, but authors of the Lusikisiki study noted that the detail of the 'step by step' organisation of nurse initiated ART was lacking and thus the 'how' of NIMART was not known [26]. NIMART implementation in the CoJ is relatively new and thus far only one study has looked at the implementation in two municipalities in Gauteng province [34]. This study therefore aimed to answer some of the questions related to how best to implement NIMART by exploring and describing the facilitators and barriers to NIMART implementation in the CoJ clinics.

1.3 Problem Statement

Almost all individuals who are infected with HIV will eventually require antiretroviral therapy at some stage in their lives [5]. With approximately 6.4 million people in South Africa living with HIV, there is no doubt that scale up and increasing access is imperative [5]. South Africa, as reflected in its National Strategic Plan on HIV, STIs and TB 2012-2016 (NSP 2012-2016), aims to reach 80% of those who require treatment, care and support by 2016 [36]. In the face of massive expansion requirements for ART services at primary level, it is clear that the nurses will have to

carry the bulk of the expansion while they themselves are experiencing severe shortages and work under severe pressure [20]. The Strategic Plan for Nursing Education, Training and Practice 2012/13-2016/17 estimated professional nurse vacancies in the public sector to be 45 682 in 2011 and projected to increase to 49 231 by 2026 [37].

Since 2010, there has been high level discussion in the South African government about the role of nurses in ART provision and the role nurses could play in improving access to ART services [20]. These discussions however, focussed on understanding the legal frameworks and regulations such as the nurses' scope of practice, without paying attention to the 'how' of NIMART implementation within the existing health system constraints [20]. Successful implementation of NIMART requires that measures be taken to ensure patient's quality of life and safety, that institutional and professional challenges to implementation are addressed including exploring how to sustain the motivation and performance of over-stretched nurses [20]. Colvin et al. (2010) further suggests that there is not enough knowledge about how to implement NIMART programmes effectively particularly taking into consideration key facilitators and barriers at patient, provider and organisational levels. The current study, therefore sought to contribute to strengthening evidence related to the 'how' of NIMART implementation by exploring and describing the perceived facilitators and barriers from the provider's point of view.

1.4 Justification

NIMART is a complex task shifting intervention that requires the support of managers and health care workers, adequate training and mentoring, and adequate equipment and drug supplies among others for optimal implementation [20, 34]. The rapid expansion of NIMART in South Africa has

raised concerns about the country's ability to meet these requirements and the capacity to implement a sustainable programme [20]. It is clear from the studies cited above that NIMART implementation requires further investigation and understanding. If it is not properly managed, NIMART implementation risks nurses providing sub-optimal care, which will result in poor patient outcomes and negatively affect staff confidence and morale [34]. There is sufficient evidence from the application of the task shifting approach in Zambia, Mozambique and South Africa and other countries that show good quality care outcomes from nurse initiated ART, it is therefore important to focus on what can be done to strengthen and optimise this initiative [18, 20, 33]. Furthermore, the study is pertinent in that South Africa is in the process of rapidly expanding NIMART implementation at primary health care clinics in all districts including the CoJ. The study therefore sought to contribute to the body of knowledge that exists on how to improve and sustain the implementation NIMART services.

1.5 Study Aims and Objectives

The aim of this study was to qualitatively explore and describe the operational managers, facility managers and professional nurses' perceptions of the facilitators and barriers influencing NIMART implementation in the CoJ clinics with the overall goal of strengthening its implementation. The specific objectives were:

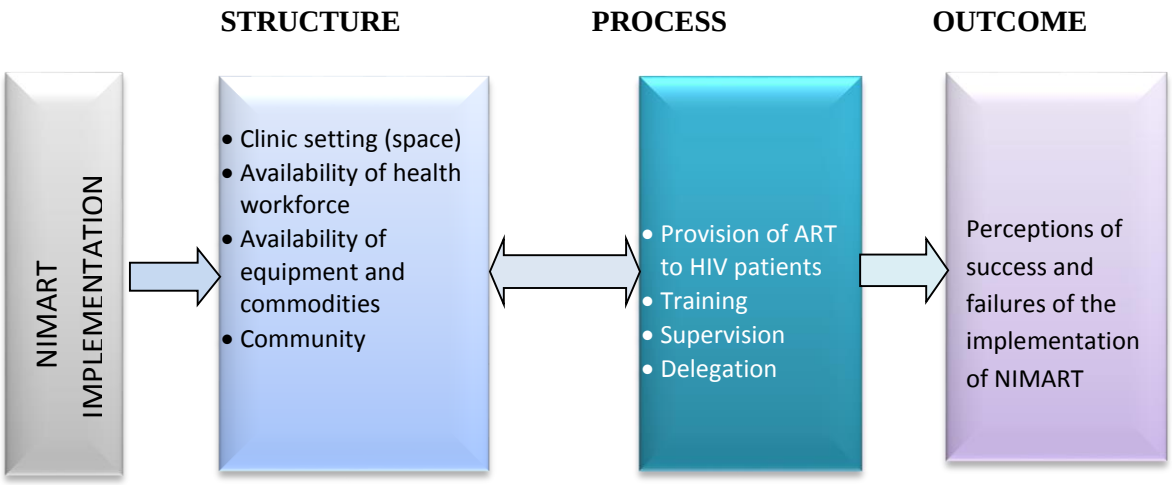
- To explore and describe the perceived facilitators to the implementation of NIMART in the City of Joburg clinics;
- To explore and describe the perceived barriers to the implementation of NIMART in the City of Joburg clinics;

- To explore and describe the perceptions of the operational managers, facility managers and professional nurses' of the successes regarding the implementation of NIMART in the City of Joburg clinics;
- To explore and describe the operational managers, facility managers and professional nurses' suggestions for improving NIMART implementation in the City of Joburg clinics.

1.6 Overview of the Conceptual Framework

According to Botma & Greef (2010) conceptual frameworks broadly present an understanding of phenomena that is being studied and reflect the assumptions and philosophical views of the researcher [38]. The conceptual framework for this study draws from Donabedian **structure-process-outcome** model [39].

Figure 1: Adapted Donabedian Structure-Process-Outcome Model



The Donabedian Model was selected for this study as its flexibility lends itself to application in various health delivery settings [39]. This model provides a framework for classifying health care activities according to structural, process and outcome of health care delivery. For this study, the framework was adapted to classify NIMART activities that are cited in the literature as important components of NIMART implementation into the three categories of structure-process-outcome [20, 34, 39].

Structure described the context in which NIMART was delivered and includes aspects such as the clinic setting including space, the availability of the health workforce, availability of guidelines, equipment and the availability of antiretroviral drugs; while **process** described the provision of ART to HIV positive patients, incorporating all aspects of the interaction between patients and health care providers; NIMART training, mentoring and supervision. **Outcome** described the respondent's perceptions of successes and failures regarding the implementation of NIMART. Although according to Donabedian model the patient is at the centre of quality service provision, this study explored the facilitating factors and barriers to NIMART implementation from the lens of the service providers namely operational managers, facility managers and professional nurses [40]. Perception of facilitating factors were described as those factors throughout the structure-process-outcome continuum that enhanced the patient's ability to be initiated on ART and remain on ART for as long as was necessary to maintain health. Similarly, the operational managers, facility managers and professional nurse's perceptions of barriers to NIMART implementation were described as those factors that inhibit the patient's ability to be initiated on ART and the ability to continue receiving treatment and care in the CoJ clinics [40].

CHAPTER 2: MATERIALS AND METHODS

In this chapter, the study design, the selection of the study sites, the study setting, the sampling strategy, and methods for data analysis and quality control are described. An overview of the ethical considerations pertinent to this study will also be described.

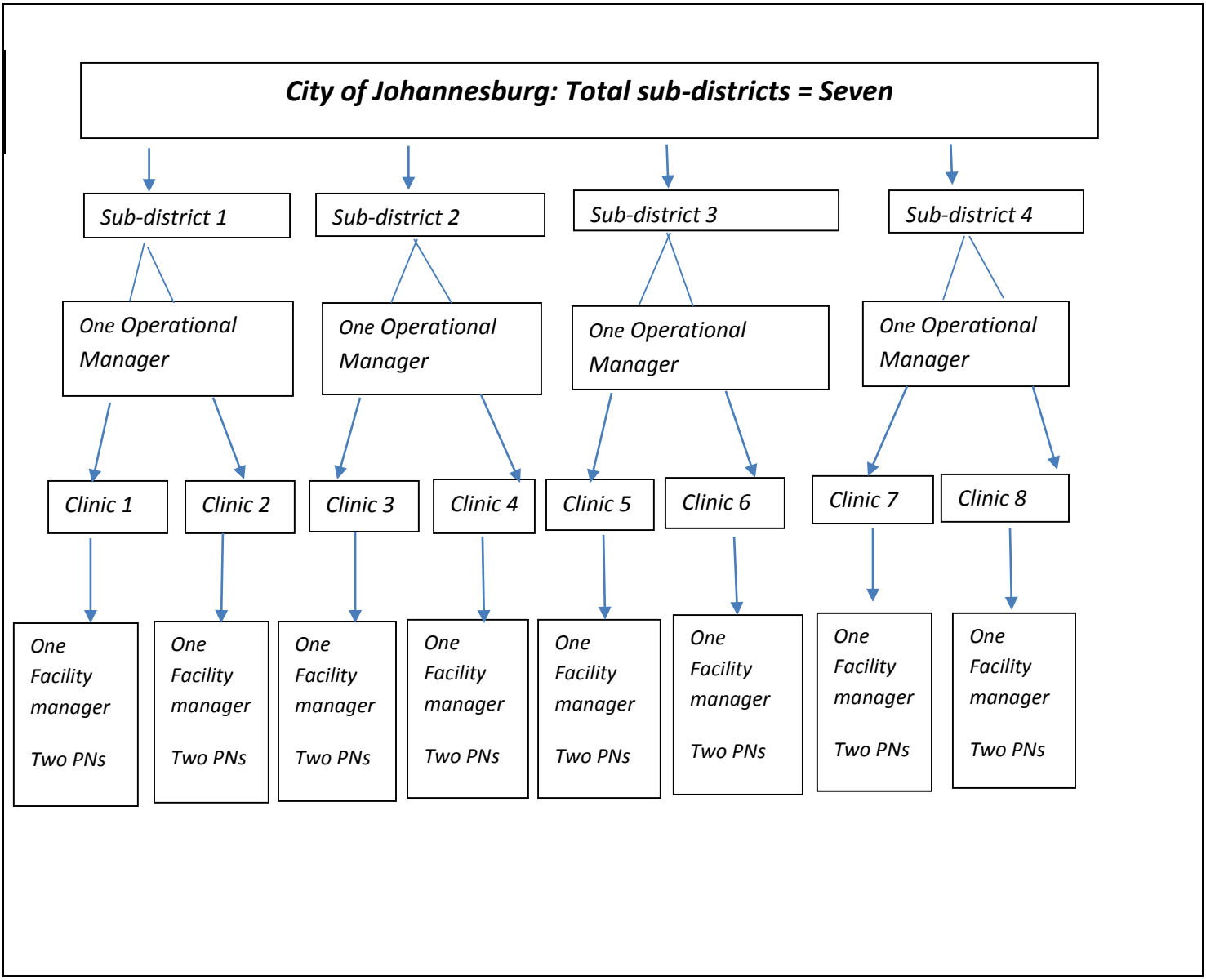
2.1 Study Design

This was an exploratory descriptive qualitative study which used in-depth interviews with a variety of respondents. Qualitative methodology is useful in collecting in-depth information of what people think of a particular event or situation and thus allowing the researcher to understand how the respondents perceive the research subject [41].

2.2 Study Sites

The study was conducted in the CoJ municipal clinics, Gauteng Province. The CoJ has a population of approximately 4,434,827 inhabitants and comprises of seven sub-districts in which the clinics are located [42]. The clinics render primary health care services including HIV and AIDS prevention, treatment and care services. A list of the seven sub-districts was obtained from the CoJ from which four sub-districts were selected to participate in the study using a simple random sampling strategy. Thereafter, a list of the clinics that were implementing NIMART in each of the selected four sub-districts was obtained. The four sub-districts had an average of 10 clinics each that were implementing NIMART. From this list, two clinics were selected through simple random sampling to participate in the study. In total, eight clinics from four sub-districts participated in the study. A summary of the sampling process for study sites is presented in figure 2 below:

Figure 2: Sampling Process Flow Chart



* PN refers to professional nurses

2.3 Study Participants

In total, 26 respondents participated in the study comprising of operational managers (n=4), facility managers (n=8), and professional nurses (n=14). From each of the four sub-districts, the operational manager responsible for coordination of HIV and AIDS programmes in the sub-district was purposively selected to participate in the study irrespective of whether they were trained in NIMART or not. With regard to the facility managers, in each of the selected clinics, the facility managers responsible for the management of services in the clinic including the implementation of NIMART were also purposively selected to participate irrespective of whether they were trained in NIMART or not. In each selected NIMART implementing clinic, two trained NIMART initiating professional nurses were purposively selected to participate. Trained NIMART initiating professional were included irrespective of the period within which they were implementing this initiative. It was anticipated that those nurses that had implemented NIMART for a short time and those that had been implementing for a longer period may have varied but valuable perceptions about NIMART implementation. In clinics where there were more than two trained professional nurses who were implementing NIMART, a duty list was obtained from the facility manager from which two professional nurses were selected through simple random sampling.

2.4 Data Collection Methods and Procedures

Data collection took place in 2012 over a period of three months. In-depth interviews were conducted with the respondents using a semi-structured interview guide. The interview guide explored the respondent's perceptions of the facilitators and barriers to the implementation of NIMART in the participating clinics; perceptions of successes and failures regarding NIMART implementation as well as recommendations for improving NIMART implementation in these

clinics. The development of the interview guide was informed by the Donabedian Structure-Process-Outcome conceptual framework described in Chapter 1. All interviews were tape recorded to ensure accuracy and to allow the researcher to concentrate on the interview [41].

Field notes were taken during all interviews to capture key phrases and major points made by the respondents as well as to record aspects of the interview setting [41]. All the interviews were conducted in English at the respondent's place of work during the times most convenient to the respondents. The researcher, who is a student at the School of Public Health at the University of the Witwatersrand, had no relationship with the respondents, the clinics that participated as well as the participating sub-districts. Each interview took approximately 45 minutes to complete.

2.5 The Pilot Study

In order to assess the feasibility of the study and test the appropriateness of the semi-structured interview guide, four professional nurses who were trained in NIMART and were working in NIMART implementing clinics outside of the four sub-districts selected for the main study were interviewed for the pilot study [41]. The semi-structured interviews were found to be an appropriate data collection method as respondents gave relevant responses to the questions. However, two of the questions elicited repetitive responses from the respondents. These were: 'What in your view would be most helpful to improve your role in the implementation of NIMART?' and: 'What do you think could be done to improve the implementation of NIMART in your clinic?' The first question was removed for subsequent interviews as respondents gave the same responses to this question as they did for the second. Integration of NIMART into the Primary Health Care (PHC) continuum of services was not included as part of the interview guide but was raised by three of the four pilot respondents as an important issue. Perceptions of the integration

of NIMART into the PHC service provision was explored further in subsequent interviews in the main study.

2.6 Data Management and Quality Assurance

After completion of every interview, the researcher listened to the tape-recorded interview to check for audibility, the completeness of each interview and to get a sense of whether responses were relevant to the research questions. Interviews were transcribed verbatim in MSWORD by the researcher [41]. All electronic tape recordings and transcriptions were labelled immediately with a unique code only identifiable by the researcher and her supervisor. The transcriptions of the interviews were password encrypted and were only accessible to the researcher and her supervisor. Field notes were also kept for accuracy and back-up purposes.

2.7 Data Analysis

The researcher read all transcriptions line by line and compared these with written notes to ensure that all data was captured and to get an understanding of the meaning of data. Field notes were also used as part of the data. Thematic content analysis using both inductive and deductive methods was used to derive themes and sub-themes which were then coded accordingly. Inductive themes and sub-themes were identified from data through reading of the transcripts line by line to develop meaning and organise items relating to similar topics into themes. Deductive themes were derived from the conceptual framework and the literature. The derived themes and sub-themes provided insights into perceptions related to NIMART implementation, barriers and facilitators, perceptions of success of NIMART implementation as well as the respondent's suggestions for strengthening NIMART implementation. To ensure consistency and credibility of the analysis process, both the

researcher and her supervisor independently read three transcriptions from different groups of respondents and discussed the coding discrepancies until they reached agreement.

2.8 Ethical Considerations

Ethical clearance was obtained from the University of the Witwatersrand Human Research Ethics Committee (**M111186)** (Annexure C), followed by approval from the City of Joburg Municipality as well as the clinics that participated in the study. All the respondents were issued with the study information sheet which explained the purpose of the study and the terms of the respondent's consent. Participation was voluntary and the respondent's right to withdraw from the study at any time was explained. Respondent's consent to participate in the study was obtained and a separate consent was also sought for the use of a tape recorder. Anonymity was ensured by not recording any names of the respondents and the clinics that participated, confidentiality was maintained through the use of unique codes and safe storage of data. Respondents were informed that the information would only be accessible to the researcher and the supervisor. The study required only thoughts, views and perceptions from the respondents and therefore posed no possibility of physical or psychological harm to the respondents. The respondents were assured that their responses will not be shared with their supervisors.

CHAPTER 3: RESULTS

In this chapter, the contextual factors related to NIMART implementation at the CoJ clinics will be briefly described. The findings of the study are organised into four broad themes in response to the study objectives, these are, a) perceptions of the facilitators of NIMART implementation; b) perceptions of the barriers to the implementation of NIMART; c) perceptions of success regarding the implementation of NIMART and d) respondent's suggestions for improving the implementation of NIMART. From each broad theme, a number of sub-themes emerged as illustrated in Table 1.

Table 1: Structure of the Results Section

Broad Theme	**Sub-Theme**
Perceptions of the facilitators of NIMART implementation	• Decentralization of services to improve access • Adequacy of training and mentoring • Favourable organisational processes
Perceptions of the barriers to implementation of NIMART	• Shortage of the health workforce • Inadequate physical infrastructure • Shortage of ARV drugs and equipment • Poor referral feedback • Lack of supervision • The impact of food insecurity on treatment adherence • The impact of mobility of patients on treatment adherence
Perceptions of success regarding the implementation of NIMART	• Improved quality of life • Improved access to care and treatment • Retention in care
Respondent's suggestions for improving the implementation of NIMART	• Mitigate professional nurse shortages • Improve ARV drugs shortages • Improve referral feedback • Provide opportunities for continuing education for professional nurses

3.1 Contextual Factors Related to NIMART Implementation at the CoJ clinics

The implementation of NIMART was relatively new when the study was conducted between 2012 and 2013. The respondents had on average been working in primary health care services in the CoJ for 11 years and had been in their current positions as operational managers, facility managers and professional nurses for an average of two years. The operational managers and facility managers made reference to previous experiences related to introduction of new services when responding to some of the interview questions. Two out of four operational managers, all facility managers and all professional nurses included in the study were trained in NIMART. The training varied from five days to two weeks and was offered by different partner non-governmental organisations that were contracted by the CoJ to support NIMART implementation.

Three of the four sub-districts included in the study started NIMART implementation in phases, starting with clinics that were previously CCMT or down referral sites. The professional nurses that were working at those sites were trained in HIV management and were able to provide continuing care and treatment services to patients that were initiated at tertiary sites as the operational manager explained:

> *"With us, four of the clinics started as down-referral centres around [the year] 2009/10. So for us to implement NIMART it was not that difficult after training the nurses" (*Operational manager 1, urban clinics).

In one sub-district that participated in the study, the managers identified the clinics that were to implement NIMART services on the bases of size of the clinic, the number of professional nurses in such clinics and the size of the population in the catchment area of those clinics:

> "*We colour coded the clinics according to the readiness [to implement NIMART]. For example, a green code indicated that training has been done, that the clinic has at least one or two nurses that can implement, and that the clinic has a consulting area that can be used for NIMART, although this meant changing and moving some services, then the clinic can start [to implement NIMART]. So clinics like Clinic X were in the red because they were not ready or were too small"* (Operational manager 4, semi-rural clinics).

The clinics that participated in the study varied in terms of the days during which NIMART services were provided. In some clinics, the service was available on all weekdays while in some the service was available only on certain days.

3.2 Perceived Facilitators to the Implementation of NIMART in the CoJ Clinics

Two structural sub-themes and one process related sub-theme emerged as key facilitators for the implementation of NIMART in the clinics that participated in the study.

3.2.1 Decentralization of services to improve access

Operational managers, facility managers and professional nurses pointed out that the change in government policy regarding the provision of antiretroviral therapy in the public sector from doctor

driven, hospital based care to a nurse-led approach at primary health care level has helped to improve physical access to treatment and care for patients:

> *"Most of our clinics are within 5-10km radius and are accessible [to the patients]. Most people are able to reach the clinics quite easily to get initiated and stay on treatment because one of the things that contribute to defaulting is when people have to take 2-3 taxis to get to a clinic."* (Operational manager 3, township clinics)

In addition, the removal of the NDOH accreditation requirements for health facilities to provide ART has enabled almost all clinics to provide ART services without extensive infrastructure preparation:

> *"Although there are still a lot of challenges with NIMART [implementation], it is better now since we don't have to satisfy accreditation requirements. We would never meet those criteria with our situation, which required so many rooms, a pharmacy with so much shelving and so many fridges. The changes made it so much easier. So when we were given the go-ahead [to implement ART services] we started."* (Operational manager 4, semi-rural clinic)

3.2.2 Adequacy of training and mentoring

Operational managers and facility managers felt that NIMART training was adequate even though it was, according to some professional nurses, of short duration:

> *"Nurses find it easy to start and manage patients after NIMART training though some think it was too short and with a lot of information "* (Operational manager 3, township clinics).

Professional nurses reported that mentoring was useful as it removed anxiety and enabled the nurse to translate theory to practice. The availability of mentors either physically, per phone or by text messaging was perceived as being helpful:

"Mentoring was good and it took away the anxiety so it is very helpful because sometimes you are not confident, but when you see it being done you see that I can do it. Mentoring also reduces mistakes." (Professional nurse 4, urban clinic)

All categories of respondents expressed appreciation for the government partnerships with non-governmental organisations hereafter referred to as 'partners' that they worked with:

"I like ANOVA [one of the partners that provided training and mentoring] and the support they are giving us. They really involve us, they train us, provide us with updates because things are changing so quickly. So the support is tremendous the way they support us." (Facility manager 3, township clinic)

The majority of facility managers and professional nurses reported that they had copies of NIMART guidelines in their consulting rooms and that they found them useful in their work:

"The guidelines are useful you know… if you've never been exposed to something you don't know much about it but these ones [NIMART guidelines] are the ones we were trained on so we are using them and they seem to be adequate for us." (Facility manager 1, township clinic)

A qualification in Health Assessment, Treatment and Care, commonly referred to as the Primary Health Care (PHC) qualification, allows professional nurses to examine, diagnose and treat minor ailments including chronic conditions such as hypertension. Some of the NIMART trained nurses who possessed this qualification, felt that the qualification was beneficial to the NIMART programme in that nurses that had the qualification were able to manage most of the clinical conditions that the ART patient might present with. Currently nurses that are not trained in PHC refer the patient to another nurse who has the PHC qualification:

> *"I am trained in PHC as well. I am able to see NIMART patients in totality. I can deal with almost all common problems like the pain, cough, rash and so forth so definitely it is an advantage."* (Professional nurse 5, urban clinic)

A professional nurse who did not have the PHC qualification agreed:

> *"With HIV, I think it's better if you have PHC. I am not PHC trained but trained in NIMART so I find that sometimes I struggle and have to refer even things that I could manage if I was PHC trained."* (Professional nurse 12, semi-rural clinic)

However, operational managers did not perceive PHC training as a necessity for NIMART implementation:

> *"I think PHC in relation to NIMART is not that important because they use protocols and they use PALSA PLUS [Practical Approach to Lung Health in South Africa] guidelines and are able to refer if they need to. So those guidelines are very clear and that's the only thing that is making them [NIMART implementing professional nurses] to manage so far."* (Operational manager 4, semi-rural clinic)

3.2.3 Favourable organisational processes

The integration of NIMART into PHC services, management support and staff motivation was viewed by facility managers and professional nurses as internal processes that facilitated NIMART implementation. Facility managers felt that integrating NIMART into PHC facilitated NIMART implementation as it ensured that all nurses were able to provide the service. Integration also helped to reduce stigma as NIMART patients followed the same queue as all the other patients:

> *"It is wonderful but not easy. We integrate services when we are very short-staffed like [such as when] there's only two nurses on that day. And also for stigma it is helpful as everyone is served*

in any room. There isn't anything like the NIMART nurse is not there so we cannot assist you. All the conditions are managed by all nurses in all stations." (Facility manager 1, township clinic)

However, some of the operational managers felt that although integration is good, it prolongs waiting times for patients:

"I think integration helps in reducing stigma but the waiting times are much longer…" (Operational manager 3, township clinic)

Professional nurses perceived the role of managers as more supportive than supervisory. The support role included encouraging professional nurses, ensuring that they have all the necessary tools to implement NIMART as expressed by this professional nurse:

"I think my supervisor provides more of a support role than supervision. If for instance we are running short of a certain drug, she will go to the pharmacy or other clinic to get the drug instead of me leaving the clinic." (Professional nurse 11, semi-rural clinic)

The respondents noted the difference they were making in their patients and saw that as a motivation to continue in spite of the challenges:

"To me it is the best service [NIMART], even if I complain about this and that. We have seen the change that it does to patients under those conditions, it really works. The failure rate or defaulter rate compared to people that are progressing is minimal. When you see someone who was dead, who was Lazarus [biblical character that was raised from the dead] now is alive is what keeps us going." (Facility manager 5, urban clinic)

3.3 Perceived Barriers to the Implementation of NIMART

Five structural barriers to NIMART implementation were identified, these were: shortage of the health workforce; inadequate physical infrastructure; shortage of ARV drugs and equipment; food insecurity and mobility of patients. Process barriers were identified as lack of supervision and poor referral feedback.

3.3.1 Shortage of the health workforce

The majority of the respondents perceived the shortage of health workforce as a major barrier to the implementation of NIMART. According to the respondents, NIMART was implemented without taking into consideration the already existing staff shortages:

> *"Generally, I think the basket of services increases while the staff complement remains the same and this is a problem." (*Operational Manager 3, township clinics)

Operational and facility managers reported that critical shortages of the professional nurses resulted in some professional nurses being drawn from other existing services in order to implement NIMART. This negatively impacted on NIMART implementation and the delivery of other services thus resulting in long waiting times for patients:

> *"If for instance the nurse was providing TB or Wellness services, these services end up suffering because she is now doing NIMART. That is where we have a challenge. Because it [NIMART] was an 'add-on' service, it really has an impact on other services."* (Operational manager 3, township clinic)

In addition, because of staff shortage in most clinics, only one nurse was allocated to NIMART implementation on any given day. Some respondents noted that in some clinics when the

'NIMART nurse' was not available, patients were turned away and asked to come back at another time:

> *"To show that we are short staffed, if the NIMART nurse is not at work the patients are turned away. They will be told 'Sister X is not in, come back on this day' which is unfair, it's not supposed to be that way."* (Professional nurse 2, urban clinic)

Since ART services were not provided on a daily basis in some clinics due to staff shortages, some professional nurses felt that this was unfair to patients:

> *"As a result of staff shortage, instead of doing ART initiation every day, I break and do other services; I have to shift around to other services. I think it's not fair on patients, when they need me I'm not there and when I'm busy with other services I just tell them [patients]to come back tomorrow because their days is Wednesdays and Thursdays. You feel it's not fair but I'm also overworked."* (Professional nurse 3, township clinic)

In a number of clinics, the unavailability of other categories of staff such as enrolled nurses and nursing assistants was also highlighted as one of the factors contributing to high workload for the professional nurses and long waiting time for patients. Because of the unavailability of these cadres in many of the clinics, professional nurses were unable to delegate some of the simpler tasks so as to focus on clinical management.

> *"You see, professional nurses have taken over the responsibility for the treatment of the patient from the doctor but still has to continue with their nursing roles such as taking vital signs. Those things should be taken off the nurse by the nursing assistant so that she [professional nurse] deals with other issues. That would help render a more effective service."* (Professional nurse 4, urban clinic)

Facility managers and professional nurses bemoaned the fact that in provincial ART clinics, other health workers such as pharmacy assistants, phlebotomists and dieticians fulfil certain roles in the management of the patient. The absence of these personnel at the respondent's clinics adds to the nurses' workload:

> *"With NIMART [implementation], you have to have somebody who will be taking the bloods, there's a dietician, a doctor and a pharmacist [at provincial clinics]. So it's a multidisciplinary team. Here [in this clinic], it is only the [professional] nurse who fulfils the roles of all these people."* (Professional nurse 2, urban clinic)

Because of the increased workload resulting from large numbers of patients required to be seen on a daily basis, professional nurses are often forced to rush through the patients to reduce the queue, thus compromising the quality of care. Some professional nurses also reported that they often spend insufficient time consulting with the patients and examining them adequately.

> *"The patient must be assessed from head to toe and there are 50 of them waiting so you end up asking the patient about symptoms and not really examining the patient as one should do which is risky because you might miss that one important thing. How do you do the right thing with 50 patients that you must attend to all alone in one day?"* (Professional nurse 12, semi-rural clinic)

The shortage of HIV and AIDS counsellors was also perceived as a barrier to NIMART implementation. The respondents reported that there was an average of two lay counsellors per clinic with some clinics not having counsellors at all. The counsellors were contracted by the Provincial Health Department through non-governmental organisations. Their tasks included counselling patients for HIV testing and preparing them for treatment if tested HIV positive:

"They [the CoJ] say they don't have money so they withdrew the two counsellors that were working with us. WRHI [Wits Reproductive Health and HIV Institute] supported us with one counsellor who has also been withdrawn so now we have zero counsellors so I don't know how we are going to render HIV services." (Facility manager 5, township clinic)

In the face of shortage of health workforce, facility managers and professional nurses complained about record keeping which was perceived as being burdensome and increased the workload:

"The paperwork is burdensome. If we were only doing [consulting and examining] the patient it would be better but there's a lot of writing over and above the patient. Each and every time we have to complete the paperwork. If you have to write all the correct things for a NIMART patient, you can write two to three pages per patient. That takes a huge amount of time." (Professional nurse 12, semi-rural clinic)

In addition, the integration of NIMART into PHC services required that nurses work with records of the different health programmes such as registers, patient forms and statistics forms. This was described as difficult by the respondents:

"*Although integration is the way to go, the problem is the keeping of records for all different services, there is a register for ANC, another one for TB, another one for NIMART and another one for minor ailments and all these registers must be filled. So how do we do it on one table in one [consulting] room?"* (Professional nurse 9, township clinic)

The facility manager expressed despair as a result of shortage of staff:

"My feeling about the staff shortage is that there is nothing I can do, I found it like that and I don't think it is going to change anytime soon." (Facility manager 7, semi-rural clinic)

In spite of this despondency, some facility managers found alternative ways for mitigating nurse shortages such as ensuring that all trained nurses rotate to the NIMART room in order to get experience and ensure that patients are never turned away without receiving services:

> *"So we encourage them [professional nurses] to rotate to the NIMART room and learn about services in the other rooms. At the end of the day people [professional nurses] get sick, people take leave and we cannot have a situation where we say to a patient that they cannot be started on treatment because nurse so and so is not there."* (Facility manager 7, semi-rural clinic)

3.3.2 Inadequate physical infrastructure

Certain aspects of physical infrastructure in the clinics were perceived to be barriers to the implementation of NIMART. Space in the waiting area, size of the consulting rooms and the size of the store rooms was mentioned by all categories of respondents as inadequate. According to the respondents, municipal health services were previously preventative, catering only for a select programmes. The increase in health care service demand necessitated the inclusion of additional services:

> *"I think the structure, remember when the clinics were structured we did not have HIV and AIDS as a pandemic. Local authority was for preventative services only but we can't talk of that anymore. We [municipality clinics] only had family planning, mother and child services and TB but now we are having everything."* (Facility manager 5, township clinic)

With regards to the inadequate waiting area:

> *"On busy days such as Mondays patients can be seen waiting outside."* (Operational manager 2, urban clinics)

HIV and AIDS counselling is an important aspect of delivering NIMART services. The service is provided by lay counsellors who often struggle to find a room where they can provide safe and confidential counselling:

> *"The counsellors use empty rooms that are available on that particular day. Structurally, I don't think it [counselling rooms] were included in the structure because our clinics are very old and they never had in mind that one day we would need all these extra rooms for counselling etc. All our emergency rooms are utilized for counselling."* (Operational manager 1, urban clinics)

The unavailability of a functional telephone in the clinic seemed to be a source of frustration for the facility managers and professional nurses in semi-rural clinics as this impacted on their ability to call the laboratory for patients' results and to phone the ambulance in cases of emergency for instance.

> *"You don't even have a telephone to phone the ambulance when you need one, it's challenging. You must phone for blood results and that too is a struggle."* (Professional nurse 12, semi-rural clinic)

3.3.3 Shortage of ARV drugs and equipment

Shortage of equipment such as blood pressure monitoring machines, Haemoglobin (HB) meters and stop watches for counsellors was perceived by facility managers and professional nurses to be hampering ART provision:

> *"Those are things such as BP machines that we use daily and repeatedly. They don't work anymore and we don't even have a maintenance system to maintain the equipment. But if I have submitted a list to the managers that this is what I need I've done my part beyond that there isn't much I can do."* (Facility manager 1, township clinic)

This expression illustrates how the respondent has resigned herself to the shortage of equipment:

> *"The only thing is that if I need the machine I must leave the room and get it from another room, if she's [another professional nurse] busy with the machine I must wait."* (Facility manager 8, semi-rural clinic)

On enquiry as to why there wasn't sufficient equipment, the facility manager identified issues of limited budget, the red tape, and centralisation as key challenges:

> *"The budget and the red tape that is there [in the CoJ] is the reason for insufficient equipment. If I have equipment that is damaged right now what am I supposed to do? We used to have the system of looking for quotes ourselves. I would get three quotes from companies and submit. The office would then buy the equipment from the lowest quote and it was quick but now they changed the system again and now it is done centrally. Anything that is centralised creates problems when it comes to the delivering side."* (Facility manager 2, urban clinic)

Almost all respondents reported the shortage of ARV drugs as an ongoing problem. The pharmacy often does not have adequate quantities and does not issue according to what the clinics ordered.

> *"Now and again we have a lot of stock outs, you order 600 [packets of medication] and you only get 150. So the pharmacy rations us. They [the pharmacy] say you're not the only clinic [that needs the ARVs] and for now you must just share what is available."* (Facility manager 1, township clinic)

The respondents mentioned that the facility manager often has to leave the clinic to drive to the pharmacy to collect 'emergency' medication:

> *"The one thing that is a challenge is we always have to be doing emergency orders. I feel that if they dispensed medication as per what we ordered- we wouldn't have to go and fetch emergency orders because we run out. There is always a shortage. If it's not this then it's that. Then we have*

to get into the car and go and fetch the medication, no one is going to bring it to you." (Professional nurse 5, township clinic)

The shortage of medication also results in delays in initiating patients on treatment and in some cases the medication must be rationed in small quantities to all the patients that are on treatment. This increases time and cost to the patient as he might have to visit the clinic frequently:

"I think treatment shortages make it difficult to provide a good service because with rationing patients you increase their cost of coming to the clinic as they have to come more often than if they had been given sufficient quantities also it's a burden to us because we have to see patients who are otherwise stable and should be seen once a month or once every two months. It also increases defaulter rate because what if the patient does not have money to come back after two weeks?" (Professional nurse 9, township clinic)

To ensure that the patient does not go home without medication, the respondents established alternative ways to limit drug shortages in the clinics. Clinics that seemed to have excess stock were requested to share with those whose stock levels were low. The operational manager explained:

"The clinics give us a weekly analysis of their drugs, the number of patients they have and the quantities of drugs they have. We phone the clinic with excess to share [with other clinics]. And that works very well, we never had a patient turned away without their medication." (Operational manager 2, urban clinics)

Interesting to note is that this problem solving initiative was highlighted by operational managers and did not seem to have filtered down to the professional nurses who expressed frustration with the shortage of drugs.

3.3.4 Poor referral feedback

Some of the patients that were referred to hospitals for further treatment and care did not return to the referring clinic and those that returned, did so without the written notes from the hospital showing what was done and how the clinic should proceed with the management of the patient:

> *"When we refer them to the hospitals we never get response on how the patient was managed and what needs to be done next. These are some of the things that hamper our management of patients."* (Operational manager 1, urban clinics)

3.3.5 Lack of supervision

The majority of professional nurses perceived supervision as inadequate. However, some did not seem to have a problem with this as they considered themselves as 'independent workers' or 'experts' who did not require supervision.

> *"I think the in-charge [facility manager] is inexperienced when it comes to NIMART and she feels that I'm ok with my work. She doesn't supervise; she knows that I know my work."* (Professional nurse 7, semi-rural clinic)

> *"I don't know if we are supervised or we are independent workers. I feel like we are more independent workers and I'm ok with that."* (Professional nurse 4, township clinic)

The operational managers and facility managers however, viewed the lack of supervision as problematic. The facility managers could not supervise the implementation of NIMART because they were not knowledgeable enough and secondly because they themselves have the additional responsibility of patient consultations because of nurse shortages:

"You see, supervision is important and should be done. The issue now is that because of shortage we also spend a lot of time in the consulting rooms seeing patients over and above our other duties. Also we feel inadequate because we don't know enough about NIMART." (Facility manager 6, township clinic)

3.3.6 The impact of food insecurity on treatment adherence

Food insecurity caused by poverty was one of the structural barriers identified by some of the respondents. Nurses often found that some patients were of low socio-economic status and did not have means or adequate access to food. This had negative impact on adherence:

"The other thing is as you know in informal settlement there is most often poverty. So *you find that we really have challenges as well as it affects our programmes because of hunger they end up defaulting not taking treatment*." (Operational manager 4, semi-rural clinics)

3.3.7 The impact of mobility of patients on treatment adherence

One of the characteristics of the communities in which the respondents practice is that of mobile patients. Some of the patients served by clinics in this study were foreign nationals from the neighbouring Lesotho, Zimbabwe and Mozambique, while some are South Africans who moved from the rural areas to the cities in search of employment opportunities. In addition, the patients were often unknown at the given address when a home visit was done. This resulted in high numbers of 'lost to follow up' (LTFU):

"The community mobility impacts negatively especially when it comes to TB cure rates and HIV. We find that we have a high defaulter rate because they go home and don't come back and don't report when they leave. Some default because they don't have money for food or transport. It's a

huge problem. Right now I think I have 100 defaulters on ART." (*Professional nurse 11, semi-rural clinic)*

3.4 Perceptions of Success Regarding the Implementation of NIMART in the CoJ Clinics

The respondent's perceptions of success of NIMART implementation were based on the difference NIMART implementation was making in patients' lives, improved access to treatment and the extent to which the services were able to retain patients in care.

3.4.1 Improved quality of life

The majority of respondents noted that the implementation of NIMART in the clinics contributed to improved quality of life, enabled patients to be productive and contribute to their family's welfare:

"Immediately they [NIMART patients] are ok they get jobs. So their lives improve, their quality of life improves. They look for work and the find it. NIMART has helped a lot of people." (Professional nurse 9, township clinic)

3.4.2 Improved access to treatment and care

The respondents also pointed to the difference the programme was making in ensuring that many people who would otherwise be on waiting lists in hospitals were initiated on treatment as timeously as possible:

"Before we started NIMART definitely patients were being sent to hospital much more frequently and many were on waiting lists, but now we hardly ever send patients to hospital, most are stable

on treatment and we are able to manage them. Once they start ART, they progress well." (Professional nurse 8, township clinic)

3.4.3 Retention in care

The facility managers and professional nurses felt that only few patients were lost to follow up. Several of those who were not retained in care were those that returned home to another country or to rural areas within the country.

"We do manage to retain the majority of our patients in care again because of the relationships we have with our patients. We have those that are going back home that don't come back but they are not many" (Facility manager 2, urban clinic)

3.5 Respondent's Suggestions for Improving NIMART Implementation in the COJ Clinics

The respondents' suggestions for improving NIMART implementation focussed on mitigating two structural barriers, the shortage of professional nurses and, shortage of ARV drugs and equipment. In addition, the respondents perceived the improvement of the referral feedback and the provision of opportunities for continuing education for professional nurses as priorities for improving NIMART implementation in the CoJ.

3.5.1 Improve health workforce shortage

All categories of respondents proposed that the CoJ increase the number of enrolled nurses and nursing assistants at NIMART implementing clinics:

> *"I think a nursing assistant would be doing the basics such as weight, blood pressure temperature, pill count so that when the patient comes to me I can manage the treatment side of things. Even the time that the patient spends in the clinic would be less."* (Professional nurse 7, urban clinic)

A professional nurse shared her positive experience of having a nursing assistant in her clinic:

> *"We see more than 50 patients per day. This would not be possible if we didn't have an enrolled nursing assistant. She helps with vital signs, filling out forms, writing out treatment forms and labelling medicine and you can send her to get this or that for you."* (Professional nurse 12, semi-rural clinic)

Operational and facility managers also suggested that professional nurses be rotated to consulting rooms where NIMART patients were seen and to other services such as child health so as to avoid patients being sent away when 'specialist nurses' were not available:

> *"The rotation of nurses to other services is important so that they learn about services in the other rooms. This helps in that nurses will be competent to work in any of the services and patients will be served no matter who is not on duty that day."* (Operational manager 2, urban clinic)

3.5.2 Improve the shortage of ARV drugs and equipment

The respondents pointed out that the clinics must be issued the correct amount of drugs per order and be allowed to keep buffer stock:

"We must get the quantity that we ordered first time around. The other is transportation of stock. Using our cars to transport stock is a challenge. If that can be improved it will be better." (Facility manager 5, township clinic)

Respondents proposed that technologies and availability of equipment be improved in order to improve the quality of care and reduce time spent per patient consultation:

"If you look at our equipment, we are using old fashioned things. The scale for instance I have to shift that thing [manually adjust reading on weight scale] with fingers and try to adjust. We need electronic scales for a start." (Professional nurse 9, township clinic)

In order to reduce loss to follow up and poor adherence to treatment respondents indicated that counselling of patients can be improved through improving the quality of training of counsellors and by allocating an adequate number of counsellors per clinic:

"If we are to improve on defaulter rates we need consistency of counsellors for adherence counselling also ensuring that they are properly trained. As nurses we also counsel and educate patients but most of the time we are rushing because of the queue so counsellors are an important part of HIV services." (Facility manager 5, urban clinic)

3.5.3 Improve referral feedback

In order to improve referral feedback, operational managers proposed that regular meetings between referring clinics and the referral hospitals be held to discuss referral and feedback processes so as to improve the retention of patients in care:

"It is important that hospital management and clinics in their catchment area sit regularly to strengthen relationships and make sure patients don't get lost, we can't refer a patient and not know what happened at the hospital." (Operational manager 2, urban clinics)

3.5.4 Provide opportunities for continuing education for professional nurses

Professional nurses proposed that they (professional nurses) be afforded the opportunity to receive regular updates and attend discussion meetings on HIV and AIDS. This would improve their skills and ultimately benefit the patients:

> *"What I've realised with NIMART is that there is a lot of research and one must keep up to date with developments otherwise you will hold on to things that have changed if you don't keep up to date"* (Professional nurses 8, semi-rural clinic).

In addition, professional nurses felt that there was no platform for professional nurses to raise their concerns and contribute towards improving services. The professional nurses felt that they were unheard and suggested that the CoJ regularly conduct a 'nurses' survey' in order to get an understanding of the challenges nurses face:

> *"There are no systems for nurses to express our frustrations. Not that I know of. Managers will come and say ''we know we understand' and that's where it will end. And when we are sick we are accused of staying away from work. They [managers] don't take time to find out why nurses [professional nurses] get sick and become absent from work. Just as they have a patient satisfaction survey they must conduct a nurse's survey."* (Professional nurse 12, semi-rural clinic)

> *"We are in the front line of services and have seen new programs being introduced over the years. We [professional nurses, know that we can contribute to the improvement of services, but we are not considered when new programs are introduced" (*Professional nurse 3, township clinic).

CHAPTER 4: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, key findings will be discussed in relation to existing literature. The discussion will also draw on the adapted Donabedian structure–process–outcome model. Finally, strengths and limitations of the study, recommendations and conclusions will be presented.

4.1 Summary of Key Findings

Drawing on Donabedian structure-process-outcome model, this study found that both structural and process elements influenced the implementation of NIMART to varying degrees, for example, structural elements such as the shortage of health workforce, the shortage of ARVs and equipment and poor referral feedback seemed to have more impact on implementation. The conceptual framework was found to be useful in understanding the interaction between structure and process elements; for example, the shortage of ARV drugs, was found to be the upstream cause of process barriers contributing to the professional nurses inability to provide optimal care to their patients. However, the study found that the presence of structural barriers did not necessarily translate to poor implementation overall based on the respondents' perception of success. This finding was consistent with the criticism levelled against the Donabedian model that the sequential progression of the model from structure to process leading to outcomes was too linear and simplistic [43]. According to the authors, the model did not take into consideration for example the temperature of the environment or context in which the service was rendered [43].

4.1.1 The adequacy of training and mentoring

The study found the quality of NIMART training and mentoring to be facilitative in that it adequately prepared the professional nurses for their new role of initiating patients on ART. A study conducted on nurse-driven ART in rural Lesotho also found that training, when properly planned and implemented adequately prepared professional nurses to whom ART initiation tasks were shifted [29]. The availability of both NIMART guidelines and PALSA PLUS algorithms was found to be an important facilitating factor in providing additional guidance on patient management. Geogeu et al. (2012) reported that the nurses' growing familiarity with the guidelines and their use resulted in a positive influence on their clinical confidence. The PALSA PLUS algorithm approach was also shown in a randomized control trial in the Free State that it can be used to improve quality of care in areas where there were shortages of staff [30, 44]. Mentoring was similarly found to provide professional nurses with clinical confidence during the evaluation of the STRETCH trial in the Free State [28].

Linked to the provision of adequate management and care for NIMART patients, was whether having a qualification in PHC provided additional skills to professional nurses. Facility managers and some professional nurses were of the view that having a PHC qualification was advantageous in that those who had the qualification were better equipped to manage ART patients as their ability to treat opportunistic infections was better. However, the majority of NIMART implementing professional nurses in this study did not possess a PHC qualification. In some cases, patients were referred to the PHC nurse but generally, NIMART trained nurses were able to manage patients adequately. Therefore, a question of whether having a PHC qualification is important for NIMART implementing nurses or not requires further enquiry.

4.1.2 The integration of NIMART into PHC services

According to this study and consistent with existing literature, the integration of NIMART into PHC services is an important facilitative factor for NIMART implementation. The WHO points out that ART programmes which have been integrated into PHC services are likely to be strong, sustainable and able to increase access to ART [45]. A study in Zambia reported that integration of ART into PHC services improved enrolment of patients by 50% and contributed to the reduced perceptions of HIV related stigma in both patients and staff [46]. The South African 2013 ART guidelines also lists, as one of its goals the decentralization and integration of ART services to PHC facilities [47]. Similar to this study, some studies found that the continued verticalization of different programmes for reporting purposes was a barrier to integrating NIMART into PHC services [46, 25].

4.1.3 Inadequate supervision of professional nurses

This study found that facility managers were mainly playing a supportive role, which involved practically assisting professional nurses with initiating and managing patients on ART, than a supervision role. Other studies have reported that supervision of professional nurses implementing NIMART is an important part of the support that should be provided to improve quality of care [19]. The facility managers did not supervise the implementation of NIMART; it is therefore possible that the implementation of NIMART might have been compromised by lack of supervision. The current study argues therefore from both the perspectives of facility managers and professional nurses that both support and supervision are important for the implementation of NIMART and can, according to literature be provided simultaneously [19].

4.1.4 The shortage of health workforce

The shortage of professional nurses, nursing assistants, enrolled nurses, and HIV counsellors, was found to be a key structural barrier resulting in inadequate provision of ART [25, 34, 48, 49]. The nurses' inability to delegate tasks to lower level nursing cadres and the increased paperwork associated with NIMART implementation added to the workload of professional nurses [25, 50]. In addition, performance of non-nursing tasks such as collecting drugs from medicine depots compounded the problem of health workforce shortage. Similarly, a review of nurse's complaints received by the South African Nursing Council found that nurses were not coping with the workload and that the various 'non-nursing' functions that they had to do such as driving patients and stock in their own cars increased workload [37]. In order to mitigate the shortage of professional nurses, respondents proposed that some of the professional nurse's tasks be shifted to enrolled nurses, nursing assistants and lay counsellors. This view was supported by literature which pointed out that improving process elements (provision of ART) and thus outcomes can be achieved by reorganizing the structural elements such as the reorganization of the workforce to achieve maximal value and efficiencies [39, 51].

4.1.5 The shortage of ARVs and equipment

Adequate provision of ART, was dependent upon the availability of adequate structural elements such as timeous delivery of quality ARVs, equipment, and other commodities yet, a WHO survey showed that 36 out of 94 reporting countries had one stock out of antiretroviral drugs in health facilities as a result of weak procurement and distribution practices [49, 52, 53]. One of the CCMT objectives was to upgrade the national drug distribution systems at all levels of health care delivery

including establishing an electronic ordering and stock management systems and ensuring that there is adequate storage space to enable facilities to keep a minimum buffer stock of at least four weeks [49]. None of the clinics in this study had electronic ordering systems or adequate buffer stock. The accreditation system was also abandoned and thus some facility level supply chain management activities remained unattended. According to this study and other studies, the shortage of ARVs resulted in strained relationships between patients and health care workers, jeopardized the patients' ability to adhere to treatment, putting them in danger of disease progression and drug resistance [49, 53, 54]. Although the respondents explained that no patient left without medication, the study found that the shortage meant that patients were rationed; resulting in more frequent visits; costing the patient time and money and increasing the nurses' workload. In order to improve the shortage of ARVs at clinics, literature suggested an enabling information technology should be implemented at all clinics to ensure timeous processing of orders [49]. In addition, resources must be made available for the packaging and transportation of ARV drugs from the central depots to the clinics to avoid drug shortages [49]. To decrease pressure on storage capacity and still ensure that the facilities do not experience shortages, delivery schedules from central warehouse should be more frequent than once a month [53].

4.1.6 Poor referral feedback

A functional, reliable and clear referral system is an important process element necessary for adequate health care provision where services are decentralised from tertiary doctor driven services to nurse-led primary care services [19, 32]. According to the respondents in this study, the need for referrals to tertiary institutions had been greatly reduced by the introduction of NIMART; however, the study found that referral feedback was inadequate and unresponsive

resulting in treatment interruptions and patient being lost to follow up. In order to improve referral feedback processes the respondents proposed that health care managers of referral hospitals and the CoJ jointly develop referral protocols or standard operating procedures that would be used by the referring facility and the referral hospital.

4.1.7 The impact of food insecurity on treatment adherence

Food insecurity is prevalent amongst people living with HIV in many countries in sub-Saharan Africa and is recognized as one of the key structural barriers to ART adherence [55-57]. Food insecurity was associated with treatment interruptions and missed clinic visits, declines in physical health status and increased incidence of serious illnesses [55-57]. The respondents expressed helplessness when their patients were reluctant to take medication because they were hungry. The patients' reluctance to take their medication without food stemmed from treatment compliance education based on the fact that inadequate food intake may interfere with absorption of certain antiretroviral medication and lead to even poorer treatment outcomes [56-57]. Some studies showed improvement in adherence where food assistance was included as part of care and support [57]. The social grant, a food and sustenance program in South Africa was one of the key sources of income for people living with HIV [28, 50].

4.1.8 The impact of patient mobility on treatment adherence

Geographic mobility is being recognised as a potential barrier to HIV care and treatment [58]. Mobile people are broadly defined as those who move from one place to another either temporarily such as in search for work, seasonally or permanently for various reasons [58]. Some of the clinics in this study served highly mobile populations most of whom were migrants and transitional residents. The mobile nature of the population was viewed by respondents as a major contributor

to treatment interruptions and loss to follow up. Poor treatment outcomes due to patient mobility resulted from mobility induced treatment interruptions, conflicting demands on the mobile person's time and loss of family support [50].

4.1.9 Improved quality of life of NIMART patients

The respondents in this study were of the view that improvements in access to ART services and the retention of patients in care could result in better quality of life for NIMART patients. This finding was consistent with literature which ascribed improved quality of life in terms of the person's physical, social and emotional wellbeing with the use of ART [59]. This study also found that NIMART contributed to access to ART by bringing services closer to where patients live, a finding consistent with existing literature [27]. The success of smaller clinics to retain patients in care was also associated with few patient loads and the nurses' ability to build relationships as opposed to hospital based programmes with much larger numbers [27, 60, 61].

4.1.10 Provide opportunities for continuing education for professional nurses

Finally, the study showed that the participation of professional nurses in regular in-service trainings and attendance at update seminars was important for continued learning and sharing experiences. Ongoing training was important for improving the skills of health workers, enabling them to adequately provide the services [19]. Secondly, nurses were the 'front line workers' and share varied experiences in programme implementation. The implementation of a nurses' survey or other form of communication platform where professional nurses would be able to share their experiences and participate in planning and execution of NIMART and other health programmes would ensure that nurses views were considered and their involvement would benefit the implementation of health programmes.

4.2 Strengths and Limitations of the Study

Using the adapted Donabedian structure-process-outcome model, this study has highlighted important insights and lessons on a relatively new health programme that has been implemented in the CoJ clinics. The operational managers, facility managers and professional nurses provided varied responses which strengthened the analysis of findings. However, the study relied on participant's responses and did not observe the clinical, management and supervisory practices of the respondents and it is possible that social desirability might have influenced some of the responses. In addition, the study did not explore the patients' perceptions of NIMART implementation. The patients' viewpoints could have provided 'consumer of service' perspectives on how the implementation of NIMART might be improved. The study also did not explore the perceptions of doctors, particularly those who are involved in mentoring professional nurses.

The study showed that NIMART was introduced on existing health workforce shortages. Future studies could determine how the scale up of ART impacts on already overstretched and overwhelmed health workforce. This study also showed that the role of doctors has been refocused on mentoring professional nurses, future research studies could explore the efficiencies in the utilization of doctors in NIMART implementing clinics. Operational managers and professional nurses in this study differed in opinion on the necessity for NIMART trained professional nurses to possess a qualification in PHC. Future research could investigate whether there are differences in patient outcomes between NIMART nurses who possess PHC qualification and those that do not have the qualification.

4.3 Recommendations

In spite of perceptions of successful NIMART implementation described by respondents, the study suggested that key structural barriers such as shortage of health workforce, shortage of ARV drugs, equipment and poor referral feedback contributed to the inadequate implementation of NIMART. In order to reduce the impact of shortage of health workforce on professional nurses, it is recommended that the CoJ consider increasing the number of enrolled nurses and or nursing auxiliaries and lay counsellors in the NIMART implementing clinics as a cost effective way of mitigating the inadequate number of professional nurses. Rotating professional nurses to other clinic services and integrating NIMART into PHC services is a practical means by which to mitigate shortage of 'specialist providers' such as NIMART trained nurses. This study has shown that professional nurses, due to their workload are unable to provide comprehensive counselling to the patients and rely on lay counsellors to provide this service. It is recommended that the CoJ ensures that a minimum of two counsellors are available at NIMART implementing clinics on a regular basis. The CoJ could utilize the already existing relationship with NGO partners to provide training and mentoring for lay counsellors.

The CoJ should also consider increasing the buffer stock levels at the clinics, clinics should receive adequate ARV supplies and, in clinics where there is inadequate storage space, the drug delivery schedule should be revised to at least twice a month. Linkages between referral hospitals and local NIMART implementing clinics need to be strengthened. The CoJ and referral hospitals that are in the ambit of CoJ should jointly develop referral protocols for an efficient referral process including feedback to the clinic and ensure that nurses are trained on these protocols.

It is recommended that the CoJ conduct regular surveys through which nurses' opinions can be derived. This can contribute to improving implementation of not only NIMART but various other services rendered by the CoJ. Finally, the CoJ should leverage the operational managers, facility managers and professional nurses' positive attitude and commitment to the programme in its efforts to improve the implementation of NIMART.

4.4 Conclusions

NIMART was viewed by the majority of respondents as a successful programme which was contributing to improving the quality of life of PLHIV. The sense of being part of a programme with such a significant impact gave the respondents, particularly professional nurses, the courage to soldier on in spite of the structural and process barriers. However, the results of the study show that there is scope for improvement as discussed above.

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Annexure A: Semi Structured Interview Guide: Professional Nurses

THE IMPLEMENTATION OF NURSE INITIATED AND MANAGED ANTIRETROVIRAL THERAPY IN THE CITY OF JOHANNESBURG.

Semi-structured interview guide: Professional Nurses

1.) How long have you been working in this clinic?
   - Have you worked in any other clinic in this region?
   - If so, how for how long?

2.) Tell me about the type of community that your clinic serves
   - Do you think that the clinic is well located to adequately serve the health needs of the community?
   - If not, what are the reasons?

3.) What is your opinion regarding the size of this clinic and the community that it needs to serve
   - Would you say it has adequate staff to properly deal with health problems that the community present with?

4.) In your opinion, what are the objectives of NIM-ART?
   - How long has your clinic been implementing NIM-ART?
   - Why do you think NIM-ART was implemented in your clinic?

5.) Tell me about your experiences regarding the process of starting the implementation of NIM-ART in your clinic?

   - Were you trained on the implementation of NIM-ART?
   - Who was responsible for training?
   - What was covered during the training?
   - Would you say that your training was adequate for the work that you do in NIMART implementation?

6.) What is your role in the implementation of the NIM-ART programme?

   - How long have you been involved in the implementation of NIMART
   - Tell me about the process of initiating a patient on ART

        - Use of diagnostic tests
        - Use of drugs
        - Are the treatment delays?
        - Unavailability of equipment, tests, drugs
    - What is the reason for the unavailability?
    - In your opinion, does the clinic have adequate staff to implement NIM-ART optimally?
        - How many NIMART patients do you see in a day
    - Do you think there is currently adequate space in this clinic for the implementation of NIM-ART?
    - Are there NIM-ART guidelines in the clinic?
    - Are you using the guidelines?
        - If so, how helpful are the guidelines?
        - Are there any challenges with the use of the guidelines?
        - If so, how can this be improved?
    - Would you say that you are adequately supervised in your role in the implementation of NIM-ART?
    - Would you say you are getting adequate mentoring?
        - If so from whom?

7.) What are the other activities that you have to perform on a day to day basis including NIM-ART?
    - What is the impact of these activities on NIM-ART implementation?
    - What is the impact on other services?

8.) Are there other role players outside of your clinic that you interact with in the implementation of NIM-ART?

    - If yes, in what ways are the interactions helpful?

9.) What are the barriers to the implementation of NIM-ART?

10.) To what extent would you say the implementation of NIM-ART is effective in your clinic? What are your reasons for saying so?
    - Tell me about the patient experiences such as death rates, adverse events, loss to follow up since the implementation of NIMART
    - Do you think patients are satisfied with care?
    - Is there a system for measuring patient satisfaction in the clinic?

11.) What do you think could be done to improve the implementation of NIM-ART in your clinic?

12.) Are there any other issues regarding NIM-ART implementation that you would like to mention?

Annexure B: Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Ms Zanele Mophosho

CLEARANCE CERTIFICATE	M111186
PROJECT	The Implementation of Nurse Initiated and Managed Antiretroviral Therapy in the City of Johannesburg Clinic: Perceived Facilitators and Barriers
INVESTIGATORS	Ms Zanele Mophosho.
DEPARTMENT	School of Public Health
DATE CONSIDERED	25/11/2011
M1111860DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 25/11/2011 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Prudence Ditlopo

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...