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Assessment of factors affecting Healthcare workers involved in the Centralised Chronic Medicines Dispensing and Distribution (CCMDD) programme: The case of eThekweni Metropolitan Health district, South Africa

By

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Submitted as the dissertation component in fulfilment of the requirements for the degree of Master of Pharmacy by research in the school of Health Sciences, University of KwaZulu-Natal

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Declaration

I, Ms Lerisha Maharaj, declare as follows:

That the work described in this dissertation has not been previously submitted to UKZN or any other tertiary institution for purposes of obtaining an academic qualification, whether by I or any other party.

That my contribution to the project was as follows:

The research proposal was developed following consultations with my supervisor. The proposal was submitted to the Biomedical and Ethics Committee of the University of Kwa-Zulu Natal for review and approval. After receiving ethics approval, I had applied for KZN DOH approval. After receiving KZN DOH approval I organized the data collection with a team of data collectors, under the guidance of my supervisor. I drafted the manuscript presenting the work and this research is my original work. Where the use of the work of others has been made, it has been fully acknowledged.

Signed

Date 20 December 2018

Ms Lerisha Maharaj

Signed Supervisor

Date 20 December 2018

Dr Manimbulu Nlooto

Dedication

This dissertation is dedicated to my family:

My loving parents, Mr Mukesh and Mrs Aneetha Maharaj

for all the sacrifices, unconditional support and love. I hope to always make you proud

My only sister, Rasajna Maharaj

for all the encouragement, assistance and being my greatest fan

My husband, Dr. Nasheen Boodoo, for your patience, understanding, constant motivation and support;

My Late maternal grandmother, Mrs. Santhi Singh for all your blessings and guidance;

To my dear Lord Krishna, who made this all possible.

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Table of Contents

Declaration.....	i
Dedication.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Figures.....	vi
List of Tables.....	vii
List of Abbreviations.....	ix
Abstract.....	x

CHAPTER 1: Introduction

1.1. Background.....	1
1.2. Literature Review.....	2
1.3. Problem Statement.....	3
1.4. Research Questions, Aims and Objectives.....	3
1.5. General Methodology.....	4
1.5.1 Study Design.....	4
1.5.2 Study Area.....	4
1.5.3 Study Population and Sample Size Assumption.....	5
1.5.4.1. Inclusion Criteria.....	5
1.5.4.2. Exclusion Criteria.....	5
1.5.5. Recruitment and Selection of Study Participants.....	6
1.5.6. Data Collection Technique and Research Instruments.....	6
1.5.7. Statistical Analysis.....	6
1.5.8. Ethics Statement.....	7
1.6. Layout / Structure of the Dissertation.....	7
1.7. List of References for Chapter 1.....	8

CHAPTER 2:

The influence of training and work experience of Healthcare workers in the implementation of the Centralized Chronic Dispensing and Distribution Programme in eThekweni, South Africa: A cross sectional study.....	10
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CHAPTER 3:

Factors influencing Healthcare workers in the innovation of dispensing medicines to chronic patients: the case of the Centralised Chronic Medicines Dispensing and Distribution (CCMDD) programme in eThekweni, South Africa: A cross sectional study.....	34
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CHAPTER 4: Synthesis

4.1.1 Training required by Healthcare workers (HCWs) prior to being involved in the CCMDD programme.....	56
4.1.2 Familiarity with reasons for implementing the CCMDD programme does not result in the understanding of the CCMDD programme by HCWs.....	56
4.1.3 The majority of HCWs are unaware of facility targets with respect to the enrolment of patients onto the CCMDD programme	57
4.1.4 Belief of HCWs in the potential of the CCMDD programme.....	57
4.1.5 The pressure on HCWs to enrol patients onto the CCMDD programme is dependent on HCWs being equipped with sufficient resources and personnel.....	57
5. General Conclusion.....	58
6. Recommendations for Future Research.....	58
7 References for Chapter 4.....	58

Appendices

1. BREC Approval.....	60
2 Letters of Support from Facilities.....	61
3. Approval from KwaZulu Natal Provincial Department of Health.....	63
4. Approval from eThekweni Municipality Health District.....	64
5. Study Information sheet	65
6. Informed Consent form	69
7. Letter of Permission and Support to facility manager	70
8. Questionnaire for Healthcare workers involved in the CCMDD programme	71
9. Ethics Training Certificate.....	76

List of Figures

Chapter 1

Figure 1 : Map of the eThekweni Metropolitan Health District..... 5

Chapter 2

Figure 1 : Map of eThekweni Metropolitan Health District.....16

Figure 2: Normal probability plot of observed duration of involvement in the CCMDD programme in months versus the expected duration of involvement in months.....19

Figure 3: Awareness of HCWs with facility SOPs pertaining to the CCMDD programme..... 21

Chapter 3

Figure 1 : Map of eThekweni Metropolitan Health District 38

Figure 2: Time spent in a day by HCWs involved in the CCMDD programme..... 41

Figure 3: Awareness of facility target with respect to the enrolment of patients onto the CCMDD programme.....42

Figure 4: Aspects that need to be improved for a better implementation of the CCMDD programme..... 45

Figure 5: Responses by HCWs to the question of being equipped with sufficient resources/personnel to implement the CCMDD programme..... 46

List of Tables

Chapter 2

Table 1: Categories of HCWs.....	18
Table 2: Types of training attended before being involved in the CCMDD programme.....	19
Table 3: Types of training preferred prior to being involved in the CCMDD programme.....	20
Table 4: Reasons for unawareness & insufficient knowledge by HCWs of the NHI white paper.....	22
Table 5: Association of occupation of HCWs and familiarity of HCWs with the reason for CCMDD implementation.....	23
Table 6: Association between occupation and level of familiarity with SOPs at facility.....	24
Table 7: Association between the duration of involvement of HCWs in the CCMDD programme and familiarity with the reason for programme implementation.....	25
Table 8: Association between the duration of involvement of HCWs in the CCMDD programme and the awareness of the NHI White Paper.....	26

Chapter 3

Table 1: Categories of HCWs.....	41
Table 2: Responses of HCWs with respect to rating aspects from 1 (least negative) to 4 (most negative) which has a negative effect on the implementation of the CCMDD programme at facilities.....	43
Table 3: Challenges faced by HCWs in the implementation of the CCMDD programme.....	44
Table 4: Impression of HCWS about the CCMDD programme.....	46
Table 5: Association between impression of HCWs about the CCMDD programme and understanding of their role in its implementation.....	47
Table 6: Association between impression of HCWs about the CCMDD programme and time spent in a day within various aspects of the programme.....	48

Table 7: Association between the pressure to enrol patients onto the CCMDD programme, sufficient resources and understanding of HCWs of their role in the implementation of the CCMDD programme..... 49

List of abbreviations

CCMDD – Centralised Chronic Medicines Dispensing and Distribution

NHI – National Health Insurance

NDoH – National Department of Health

HCWs – Healthcare workers

NCDs – Non-communicable Diseases

PHC – Primary Healthcare Clinic

WHO – World Health Organisation

HIV – Human Immunodeficiency Virus

AIDS – Acquired Immunodeficiency Syndrome

CDU – Central Dispensing Unit

ARVs – Antiretrovirals

RH – Regional Hospital

SH – Step down Hospital

CHC – Community Healthcare Centre

SPSS - Statistical Package for the Social Sciences

WOBOT - Ward Based Outreach Team

RADUs - Remote Automated Dispensing Units

AGL - Adherence Guidelines

SOPs – Standard Operating Procedures

ABSTRACT

Background

This study aimed to assess the current role of Healthcare workers (HCWs) involved in the Centralised Chronic Medicine Dispensing and Distribution (CCMDD) programme and determine if the challenges experienced by HCWs result in an increased pressure. HCWs play a vital role in the provision of Healthcare services to patients however, little is known about the influence of training, work experience and factors contributing to the innovation in chronic medicine dispensing by HCWS.

Methods

A descriptive cross sectional study was conducted from October 2017 to December 2017 in seven public Healthcare facilities approved by the eThekweni Health district. A self-administered questionnaire with both closed-ended and open-ended questions was distributed to 245 eligible HCWs. The questionnaire was separated into sections and included amongst others socio-demographic characteristics of participants and sections on the implementation of the CCMDD programme by HCWs.

Results

The questionnaires were fully completed by two hundred HCWs yielding a response rate of 81.63% (200/245). In terms of training 62.5% (125/200) of all HCWs that participated in the study had undergone training. Many of the HCWs (112/200, 56.0%) were unaware of the CCMDD patient enrolment targets at their facilities. The majority of HCWs (162/200, 81.0%) were aware of SOPs and had sufficient knowledge of the National Health Insurance White paper (139/200, 69.5%). Almost all HCWs in this study (185/200, 92.50%) believed that the CCMDD programme had the potential to meet the objectives for which it was created. This study found a visible decrease in the congestion of patients at the Healthcare facilities (147/200, 73.50%).

Conclusion

Most of the HCWs in this study recognised the role played by the CCMDD programme in achieving a visible decrease in facility congestion. The majority of respondents agreed to have been trained and received adequate preparation enabling them to embark in the CCMDD programme. Many of the HCWs involved in the CCMDD programme received training before being involved in the running and implementation of the programme. More investigations should be carried out to gather the views and perceptions of patients attending the CCMDD programme. Further studies may look at the readiness of private sector providers and their roles in the implementations of public and private chronic medicines dispensing programmes.

Keywords: Centralised chronic medicines dispensing and distribution, national health insurance, Healthcare workers, central dispensing unit, remote automated dispensing units, chronic medicines.

CHAPTER 1: INTRODUCTION

1.1 Background

There has been a steady increase in the number of patients being diagnosed with non-communicable diseases (NCDs) requiring chronic treatment (WHO, 2005). Patients with NCDs need a different type of service as opposed to other patients. According to information released by the National Department of Health (NDoH) in South Africa, at least 50% of patients seen in primary Healthcare clinics (PHC) are with chronic diseases that necessitate monthly treatment (NDoH, 2014). Despite the fact that with the correct medication and lifestyle changes these NCDs can be easily managed, the number of deaths due to chronic diseases still continues to increase. As a result, one of the biggest challenges facing the NDoH is the need to ensure that its workforce meets the challenges of service delivery within a changing environment with a sizeable burden of disease. Therefore, it is important that the responses and needs of Healthcare workers (HCWs) are properly understood and adequately addressed, as it is the same HCWs that are tasked with implementing such strategies and health programmes.

The Centralized Chronic Medicines Dispensing and Distribution (CCMDD) programme was introduced on the 1st of February 2014 in South Africa by the NDoH with the purpose of making Healthcare more accessible to public Healthcare sector patients. The CCMDD programme is a National Health Insurance (NHI) pilot programme, which is a health financing system implemented with the idea to pool funds to provide access to quality, affordable health services for all South Africans based on their health needs, irrespective of their socio-economic status. Motsoaledi (2015) further emphasised that the NHI is intended to ensure that the use of health services does not result in financial hardships for individuals and their families.

The aim of the CCMDD programme is to decongest public Healthcare facilities and improve access to chronic medicines in South Africa. The programme contracts the dispensing and distribution of repeat prescriptions for stable chronic patients to private sector service providers (NDoH, 2015). This also promotes the concepts of patient adherence, accessibility and reduced transport costs. Du Toit (2015) stated that the CCMDD programme helps to alleviate these existing difficulties by serving as the "missing link."

It is important to note that the CCMDD programme was not only implemented with benefits to public sector patients in mind, but also with envisaged benefits for dispensing public Healthcare workers (HCWs) those of which include a reduced workload for overburdened staff thus resulting in the reduction of congestion at public Healthcare facility thereby improving the quality of care and service provided to patients (Du Toit, 2015). Although the CCMDD programme was introduced nationally in February 2014; this programme was implemented in February 2016 in the eThekweni Metropolitan Health District. However, little is known about the influence of training, work experience of HCWs

and factors contributing to the innovation of dispensing chronic medicines to patients in the eThekweni Metropolitan Health District.

1.2 Literature Review

The World Health Organization (WHO) estimated that, globally, approximately 35 million deaths (60% of all deaths) were attributable to chronic diseases each year, with more than 30 million deaths (52% of all deaths) due to cardiovascular disease (accounting for 30% of all deaths) and diabetes (2% of all deaths), (WHO, 2005). Developing countries account for 80% of chronic illnesses; South Africa is no exception and is faced with a quadruple burden of diseases and chronic diseases such as hypertension, diabetes, obesity as well as Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) and Tuberculosis are contributing factors (WHO 2005).

As a result, the existing Healthcare systems in South Africa are in dire need of change in accordance with HCWs responses and needs, so as to meet the increasing demands of these NCDs.

A successful implementation of a centralised system was introduced in Brazil to offer free comprehensive Healthcare to the entire population, irrespective of employment status or access to other forms of health insurance (Brazil Ministry of Health, 2000). Following the success of this programme in Brazil, South Africa may have learnt and introduced their own CCMDD programme. However in 2008, a study conducted at a Primary Healthcare unit in Santa Catarina, Brazil, resulted in the research identifying several weaknesses affecting the Healthcare service of the unit. The unavailability of medication as a result of stock shortages, lack of patient education and counselling during the dispensing process, ineffective communication regarding patient follow up treatment and well-being, were some of the factors identified affecting Healthcare service (Prevedello et al., 2014). The identification of solutions to the factors identified could assist in improving the implemented centralised system both in Brazil and as the CCMDD programme in South Africa.

The CCMDD programme is not the first centralised programme in South Africa, with the Central Dispensing Unit (CDU) being its predecessor. The CDU service model was first started in 2005 by the Western Cape Provincial Health in partnership with UTi Pharma as the outsourced and contracted private sector distribution company (Mathys, 2016).

HCWs play an integral role in the provision of Healthcare services to patients. Therefore it is imperative that research is conducted in order to understand the current role, opportunities and more importantly the challenges facing the HCWs involved in the CCMDD programme. This is with a view to improve the quality of Healthcare delivery to meet the NHI objectives.

A comprehensive literature review is integrated into chapter two and chapter three (the first and second manuscript respectively).

1.3 Problem Statement

South Africa has been afflicted with a quadruple burden of disease, of which HIV/AIDS and NCDs form a major part (Yerramilli, 2015). As a result there has been an unparalleled increase in the number of patients requiring access to long term chronic treatment and Antiretroviral (ARV) medication. According to Du Toit (2005) the increasing demand for chronic medication created with it a series of other patient and health related problems that needed to be addressed urgently.

The CCMDD programme was introduced and is driven by the need to provide quality patient care in the face of an increasing number of patients, as well as to reduce clinic and hospital congestion and waiting times and improve access to chronic medicines at community level (Zeeman, 2016). There is a shortage of research and published articles available both locally and internationally on centralised medicine dispensing in general and the CCMDD programme in South Africa in particular. This presents great opportunities for further research into this emerging area.

1.4 Research Questions, Aims and Objectives

The general question of this study was: “What is the role of HCWs in the CCMDD programme, and do the challenges experienced result in an increased pressure on the HCWs in the eThekweni health district? The specific questions to answer the general question are as follows:

1. Are HCWs involved in the CCMDD programme adequately prepared, sufficiently trained and ready to embark in the CCMDD programme?
2. What factors affect the ability of HCWs to meet the designated quota for the respective institutions?
3. How does knowledge of the NHI white paper affect the functioning and the HCWs involved in the programme?
4. What factors contribute to the non-uniformity in procedures of dispensing by HCWs?
5. What are the opportunities and challenges faced by the HCWs involved in the CCMDD programme?

Aim and Objectives of this study

The **aim** of this study was to assess the role of Healthcare workers (HCWs) involved in the CCMDD programme and if the challenges experienced result in an increased pressure on the Healthcare workers.

The **specific objectives** are as follows:

1. To assess if HCWs are adequately prepared, sufficiently trained and ready to embark in the CCMDD programme and to determine the reasons for any inadequacy in training levels of these HCWs.
2. To establish factors affecting the HCWs abilities to meet the designated quota for respective institutions.
3. To investigate how knowledge of the NHI white paper affect the functioning of the CCMDD programme and the HCWs involve in the programme
4. To establish the factors that contributes to the non-uniformity in procedures of dispensing by HCWs.
5. To investigate the opportunities and challenges faced by the HCWs involved in the CCMDD programme in the eThekweni Metropolitan Health District.

1.5 General Methodology

A self-administered questionnaire by HCWs involved in the CCMDD programme was conducted from October 2017 to December 2017.

1.5.1 Study Design

A descriptive cross sectional study using a questionnaire with both closed-ended and open-ended questions was self-administered by 200 HCWs in public healthcare facilities involved in the CCMDD programme.

1.5.2 Study area

Seven public healthcare facilities with different levels of care were approached in the eThekweni Metropolitan Health District. The public healthcare facilities included in this study consisted of three regional hospitals (RH), one district hospital used as a step down hospital (SH) by regional hospitals and three community health care centres (CHC).



Figure 1 : Map of eThekweni Metropolitan Health District (Source Google Maps 2016)

1.5.3 Study population and sample size assumption

This study consisted of HCWs in public healthcare facilities in the eThekweni Health District. According to the DOH report (2016/2017) there were an estimate of 69 924 filled posts as at 1 April 2017 in the KZN provincial department of health. The sample size was estimated by using the formula: $n = P (1-P) (Z-\alpha/2/E)^2$, where P = expected prevalence of HCWs involved in the CCMDD programme, $(Z - \alpha/2)$ = a constant code representing 95 % of confidence [1.96], E = margin of error [± 0.05] (Glenn, 1992). An assumption was made to detect at least 10 % ($P = 10\%$) using the above formula. A minimum sample size of 245 was required; however, to account for drop-outs and incomplete questionnaires, this number was increased by at least 10% to yield a maximum sample size of 269 participants. A total number of 300 questionnaires were distributed to Healthcare facilities.

1.5.4 Inclusion and exclusion criteria

1.5.4.1 Inclusion criteria

Only HCWs with at least a month of being involved in the CCMDD programme were included in the study.

1.5.4.2 Exclusion criteria

The HCWs that were not involved in the CCMDD programme for a period of less than a month were not included in the study, irrespective of their professional experience.

1.5.5 Recruitment and selection of study participants

Study participants were all HCWs involved in the CCMDD programme, present during the days of data collection and who satisfied the inclusion criteria. The questionnaire was pilot tested prior to data collection, and those HCWs who agreed to participate were requested to sign consent before being interviewed. This study enrolled 200 eligible HCWs due to the fact that not all HCWs in each category are involved in the CCMDD programme. Participation was voluntary and eligible HCWs were approached during working hours; a copy of the information letter/sheet about the study was given and explained to each participant.

1.5.6 Data collection technique and research instruments

A semi-structured questionnaire with both close- and open-ended questions was self administered by HCWs in public healthcare facilities involved in the CCMDD programme. The questionnaire included amongst others socio-demographic characteristics of participants and a section on the implementation of the CCMDD programme. The questionnaire was pilot-tested prior to data collection. The feedback from the pilot test was used to improve the questionnaire. The questionnaires the following information: (i) the duration of involvement of HCWs in the CCMDD programme, (ii) to establish if HCWs had undergone any training prior to involvement in the CCMDD programme, (iii) awareness and understanding of the contents of the NHI white paper, (iv) HCWs understanding of their role in the implementation of the CCMDD programme at their facilities, (v) aspects that need to be improved resulting in the better implementation of the CCMDD programme, (vi) being equipped with sufficient resources/personnel to implement the CCMDD programme.

1.5.7 Statistical analysis

The data collected was entered into an Excel spreadsheet and analysed using the Statistical Package for the Social Sciences (SPSS Version 25). Data was analysed using descriptive statistics such as frequency and percentages with 95% confidence intervals. Categorical variables were presented as a frequency and percentage, together with tables or graphs. A likert scale was used to determine levels of familiarity with Standard operating procedures (SOPs) such as: excellent, average, and poor and not at all as well as to rate aspects from 1 (least negative) to 4 (most negative) which has a negative effect on the implementation of the CCMDD programme at facilities Associations were carried out where applicable using Pearson chi-square tests. A p-value ≤ 0.05 was estimated to be statistically significant.

1.5.8 Ethics statement

This study received ethical approval from the Biomedical Research and Ethics Committee of the University of KwaZulu-Natal under the reference number BE 514/16. Permission to conduct the study among HCWs was obtained from the NDoH as well as the eThekweni health district. Gatekeeper's permission from individual institutions was then received. Participation was voluntary and a study

information sheet was given or explained to participants. HCWs who agreed to participate were requested to sign consent before being given a questionnaire. Questionnaires were coded to ensure full anonymity of respondents and sites. HCWs were free to withdraw at any time if they did not deem the questions appropriate.

1.6. Layout / Structure of the Dissertation

Chapter 1 outlines the introduction to the topic by providing information on the background as well as a literature review of existing studies regarding this topic. There is a statement of the problem, as well as research questions, the aim and objectives of this study. Information on the study design including, the study area, study design, statistical analysis and an ethics statement is also outlined.

Chapter 2 is the research article which has been prepared according to submission guidelines to the Journal of Pharmaceutical Policy and Practice, entitled, *“The influence of training and work experience of Healthcare workers in the implementation of the Centralised Chronic Dispensing and Distribution Programme in eThekweni, South Africa: A cross sectional study.”*

Chapter 3 is the research article which has been prepared according to submission guidelines to the Journal of Pharmaceutical Policy and Practice, entitled, *“Factors influencing Healthcare workers in the innovation of dispensing medicines to chronic patients: The case of the CCMDD programme in eThekweni, South Africa.”*

Chapter 4 is the synthesis and discussion of the significance of the findings of this study relating to the role of training and working experience of HCWs in the innovation of dispensing medicines to chronic patients , and factors influencing HCWs and their interests in the innovation of dispensing medicines to chronic patients in eThekweni metropolitan health district.

The appendices are attached at the end of this dissertation.

1.7 List of References for Chapter 1

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In order to assess the training and working experience of Healthcare workers (HCWs) involved in the CCMDD programme, a paper entitled, *“The influence of training and work experience of Healthcare workers in the implementation of the Centralised Chronic Dispensing and Distribution Programme in eThekweni, South Africa: A cross sectional study”* was prepared. The paper presented the results of the training and work experience of HCWs, knowledge of NHI policies by HCWs as well as familiarity with reason for implementation of the CCMDD programme. This paper was prepared following the guidelines of the Journal of Pharmaceutical Policy and Practice.

CHAPTER 2

The influence of training and work experience of Healthcare workers in the implementation of the Centralized Chronic Dispensing and Distribution Programme in eThekweni, South Africa: A cross sectional study.

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Abstract

Background

Healthcare workers (HCWs) play an integral role in the provision of health care services to patients. It is imperative to conduct research on the current role, opportunities and the challenges facing HCWs involved in the chronic dispensing and distribution of medicines to patients. Training and working experience of HCWs are important in the success of the implementation of a chronic dispensing and distribution programme. This study was conducted with the aim of establishing factors that affect the current role, opportunities and challenges faced by HCWs involved in the Centralised Chronic Medicine Dispensing and Distribution (CCMDD) programme in eThekweni Metropolitan Health District.

Methods

A descriptive cross sectional study was conducted from October 2017 to December 2017 using a self-administered questionnaire, with both closed-ended and open-ended questions, among HCWs in public healthcare facilities involved in the chronic dispensing and distribution of medicines to patients. The questionnaire included amongst others socio-demographic characteristics of participants and a section on the implementation of the chronic dispensing and distribution programme.

Results

In terms of training 62.5% (125/200) of all HCWs that participated in the study had undergone training. The majority of HCWs (162/200, 81.0%) were aware of Standard Operating Procedures (SOPs) and had sufficient knowledge of the National Health Insurance (NHI) White paper (139/200, 69.5%). A significant association was found between the duration of involvement of HCWs with familiarity with the reason for the implementation of the CCMDD programme ($P \leq 0.05$). HCWs involved for ≤ 2 months at the time of data collection and those involved since the implementation of the programme (in the eThekweni Health district in 2016) had a 100% familiarity with the reasons for its implementation.

Conclusions

Training of HCWs empowered them to understand SOPs and the reasons for the implementation of the CCMDD programme. The duration of involvement in the programme did not influence the knowledge of HCWs on the reasons for implementation of the programme. Further research is needed to explore factors influencing HCWs in finding innovative ways in the chronic dispensing of medicines.

Keywords

Healthcare workers, centralised chronic medicine dispensing and distribution, non-communicable disease, health systems trust, national health insurance, pick up point, standard operating procedures, Healthcare systems.

Background

As the global burden of disease transitions from acute to chronic diseases in Africa; many healthcare systems, including that in South Africa, are needed to change to meet the demands of these conditions. Most healthcare systems, especially in the public sector in developing countries, mainly focus on children, communicable diseases and emergencies; however, patients with Non-Communicable Diseases (NCDs) require a different type of service [1]. These ‘patients’ are often well when they attend healthcare facilities, but require regular monitoring, sufficient supplies of medicines and reliable measures such as adherence support, self-care and follow-up of non-attendance so as to retain them in care. Existing healthcare systems, especially in the public sector, will have to change to accommodate new demands for NCD care [1].

In 1998 the Unified Health System (Sistema Único de Saúde or SUS) was established in Brazil to offer free comprehensive healthcare to the entire population, irrespective of employment status or access to other forms of health insurance [2]. Developing a strategy to both distribute and monitor antiretrovirals (ARVs) through the public health system was part of the identified logistical challenge. In 2002, there were 424 sites around Brazil at which patients could receive ARVs [3]. These sites, called AIDS Drugs Dispensing Units (ADDU) were located in public hospitals or healthcare centres. In order to be eligible to receive treatment, a patient must be enrolled at the healthcare unit, and doctors from the public health system must follow-up with the patient and issue the prescriptions. The National AIDS Programme began to implement a system, known as the “Sistema de Controle Logístico de Medicamentos” (SICLOM; computerised system for control of drug logistics), which registers the distribution of ARVs, helping to maintain stock levels of drugs at ADDUs and to track prescriptions [4]. Following the success of this programme in Brazil, South Africa may have learnt and introduced their own CCMDD programme. This initiative in South Africa is a pilot programme of the National Health Insurance (NHI), and has been initiated in response to the steady increase in the number of patients being diagnosed with chronic illnesses and requiring chronic treatment[5], therefore causing an enormous strain on resources at public sector healthcare facilities [6]. The NHI is a health financing system that is designed to pool funds to provide access to quality, affordable health services for all South Africans (irrespective of their socio-economic status)based on their health needs, and is intended to ensure that the use of health services does not result in financial hardships for individuals and their families [7].

The CCMDD Programme is a national programme which provides alternative access to chronic medicine for stable public sector patients, and was introduced by the National Department of Health (NDoH) with the purpose of making health care more accessible and convenient to patients. The CCMDD programme commenced on 1st February 2014 and is currently rolled out in ten NHI pilot

districts in eight provinces, excluding the Western Cape, where a similar system already exists (The Central Dispensing Unit (CDU)) [8]. Keeping in line with the NHI White Paper published in December 2015, the programme allows for provisions of contracting private healthcare providers and improving access to pharmaceutical services [6].

Patients with chronic diseases receive medicine every month, and if stable on treatment, usually receive a repeat script for six months. Currently patients have to collect their medicine at their public sector Healthcare facility every monthly; which can be inconvenient and costly for patients as well as leading to the overcrowding of public health facilities. The CCMDD programme enables medicine from repeat scripts to be dispensed and distributed every month to an alternate pick-up-point (PUP). The National Department of Health in South Africa [NDoH] has defined PUPs as sites that are convenient to the patients' workplace or home, and are usually external and separate from the facility like a school hall or community centre [6]. However, some facilities have PUPs within the facility for patients that are unemployed and live in close proximity to the facility as opposed to an external PUP. Stable patients on chronic medicine are identified, educated about the programme, and invited to enrol onto the programme. The patient is then registered and chooses a PUP that is convenient from a supplied list of PUPs contracted to the CCMDD programme. The first prescription is collected by the patient from the facility with the patient being counselled on adherence. The facility then issues a repeat prescription for five months; thereafter the registration form and repeat script are submitted to the CCMDD service provider (currently Medipost). The designated service provider dispenses and delivers the medicine as a parcel to the patient selected pick-up-point, also informing the patient via SMS (in the patients preferred language of choice) when their medicine parcel is ready for collection. The patient collects their medicine parcel from the designated pick-up-point as per scheduled appointment. If the patient does not collect their medicine parcel within two days of scheduled appointment, the pick-up-point notifies the CCMDD service provider, who then attempts to contact the patient, if this fails, the facility is then informed and a Ward Based Outreach Team (WOBOT) is notified to trace the patient. Defaulters are referred back to facility and uncollected medicines are returned to the CCMDD service provider after fourteen days or an agreed period stipulated [9].

The Western Cape Government Department of Health has embarked on an initiative referred to as "Healthcare 2030 – The Road to Wellness". A key element identified in reducing the waiting times was the through the utilization of a Centralized Dispensing Unit – CDU, which commenced in 2005[8]. The CDU is an outsourced centralised unit that collects prescriptions for stable chronic patients from health care facilities, dispenses the medicines, and returns them to the facilities which the patients attend, packaged in tamper-proof parcels identified with outer labels[10]. By the end of February 2016 total of almost 19 million medicine parcels had been delivered [8] Critical success factors of the CDU programme were identified as: having a full-time contract manager as well as a

service user, standardised procedures, prescription management, patient selection and facility communication [8].

The successes of the CCMDD programme and the urgent need for service delivery closer to a patient's workplace or home necessitate initiatives and opportunities for alternative models for service delivery [10]. One such initiative is the establishment of Remote Automated Dispensing Units (RADUs) by the Gauteng Health Department, in conjunction with a private provider, similar to that of the CDU model in the Western Cape. Despite the implementation of RADUs in other countries such as Canada (Toronto) which showed to have been less successful, South Africa is a different environment with different Healthcare/delivery needs [10].

The CCMDD programme was not only implemented with benefits to public sector patients in mind, but also with benefits for public healthcare workers, such as a reduced workload for overburdened staff, which will lead to improved quality of service as well as reduced health facility congestion [9]. The results of study (published by the American Journal of Health System) between a decentralised and centralised unit dose drug distribution system within the same institution, showed that pharmacists in the decentralised area spent a significantly greater amount of their work time performing therapy-related activities as opposed to those pharmacists in the centralised system. The centralised unit dose system afforded a significantly greater participation in educational activities by all pharmacy personnel staffing that particular area [11].

The term 'Health workers' is defined by the World Health Organization (WHO) as people whose duties are centred on the enhancement of health, and can be divided into two groups; the first are those who provide health services, namely, doctors, nurses, pharmacists, therapists and other providers; and the second being management and support personnel [12]. For the purposes of this paper, the sense of the term 'Healthcare workers' will be confined to those who provide health services. Healthcare workers (HCWs) play an integral role in the provision of health care services to patients, therefore it is imperative that we research the current role, opportunities and more importantly the challenges facing the health care workers involved in the CCMDD programme, so as to address any shortcomings, and provide assistance where needed, so as to provide health care of impeccable quality and quantity, in accordance with the NHI objectives.

In June of 2016, a team of researchers from South Africa's NDoH, the World Bank, Boston University and the Health Economics and Epidemiology Research Office began enrolling patients into an evaluation of the National Department of Health's National Adherence Guidelines (AGL) for chronic diseases being implemented by the NDoH. The AGL is a tool for the NDoH to promote differentiated care, a client-centred approach that simplifies and adapts services across the HIV

cascade while reducing unnecessary burdens on the health system. The purpose of the AGL evaluation is to determine both effectiveness and implementation learning (using 5 patient cohorts and guided by 2 protocols). The 5 cohorts are meant to evaluate 5 interventions within the AGL to improve adherence to HIV care: fast track initiation counselling (FTIC), decentralized medication delivery (DMD), adherence clubs (AC), early patient tracing (TRIC) and enhanced adherence counselling (EAC). The results of the evaluation showed that providers expressed a need for stronger initial training, as well as ongoing mentorship and training [13].

An article assessing the implementation of performance management of HCWs in Uganda, showed that 49.6% of HCWs disagreed that the in-service training was adequate to deal with the existing skills gaps and that there were regular job-specific refresher courses. Of the participating HCWs 40.6% thought there were regular job-specific refresher courses and 9.8% were undecided [14].

As at the end of February 2016, the number of patients who are stable on their chronic medication and no longer need to queue for repeat medication were 347 750. This is up from 246 320 on 18 September 2015 and 210 840 at the end of July 2015 [15], with plans by the NDoH to increase this to one million patients by the year 2018 [6]. In order to reduce the increasing number of chronic patients attending public Healthcare facilities, training of HCWs is needed. However little is known about the influence of training of HCWs in reducing facility congestion. This study was conducted in the eThekweni Metropolitan Health District with the aim of establishing factors that affect the current role, opportunities and challenges faced by health care workers involved in the CCMDD programme.

Methods

Study design

A descriptive cross sectional study was conducted from October 2017 to December 2017 using a questionnaire, with both closed-ended and open-ended questions, self-administered by HCWs in public Healthcare facilities involved in the CCMDD programme.

Study Sites

Seven public healthcare facilities with different levels of care were approached in the eThekweni Metropolitan Health district, South Africa, which consisted of three regional hospitals (RH), one district hospital used as a step down hospital (SH) by regional hospitals and three community health care centres (CHC). The services at the CHC are jointly provided by the Provincial Department of Health and the Local Government authority, with former contributing 60% and the latter 40% [16]. However, this study included only the services provided by the provincial department of health.



Figure 1 : Map of eThekweni Metropolitan Health District (Source Google Maps 2016)

Study population

The study population consisted of medical officers, pharmacists, professional nurses' pharmacist interns, and pharmacist assistants.

Inclusion and exclusion criteria

HCWs were included in this study based on their involvement in the CCMDD programme with at least a month of work experience. Those not involved in providing services in this programme were excluded, irrespective of their professional experience.

Sampling procedure and sample size determination

Healthcare professionals were purposively sampled. A sample size was estimated based on an estimate of 69 924 filled posts as at 1 April 2017 in the KZN Provincial Department of Health [17]. To minimise sampling bias, assuming an expected 20 % prevalence of involvement in the CCMDD programme within a ± 5 % precision, an estimated sample size of 245 HCWs was calculated following a formula described in the literature [18].

Selection and recruitment of participants

Study participants were HCWs involved in the CCMDD programme, present during the days of data collection and who satisfied the inclusion criteria. The questionnaire was pilot tested by self-administration (prior to data collection), among HCWs in the healthcare facilities not included in the study. Information collected at this stage was used to improve the questionnaire, and excluded from the study. This study enrolled 200 eligible HCWs due to the fact that not all HCWs in each category are involved in the CCMDD programme.

Ethical approval

This study was approved by the Biomedical Research Ethics Committee (BREC) of the University of KwaZulu-Natal; under reference number BE 514/16. Participation was voluntary and eligible HCWs were approached during working hours; a copy of the information letter/sheet about the study was given and explained to each participant. The HCWs, who agreed to participate, were requested to sign consent before being given a questionnaire. Anonymity was not maintained due to the nature of the study, however in cases whereby HCWs were hesitant to include their names, their initials were accepted.

Data collection technique and instrument

A semi-structured questionnaire with both close- and open-ended questions was self administered by HCWs in public healthcare facilities involved in the CCMDD programme. The questionnaire was separated into sections and included amongst others socio-demographic characteristics of participants and questions on the implementation of the CCMDD programme. For this analysis, questions stated were amongst others (i) “How long have you been involved in the CCMDD programme?,” (ii) “Did you undergo any training in CCMDD prior to being involved in the programme?,” (iii) “Are you aware of any Standard Operating Procedures at your facility with respect to CCMDD?,” (iv) “Are you familiar with the reason of implementing CCMDD?,” (v) “Are you aware of the contents and have sufficient knowledge of the NHI white paper (the documentation that is the reason for CCMDD)?” . A likert scale was used to determine levels of familiarity with SOPs such as: excellent, average, and poor and not at all.

Statistical analysis

Data was first captured on Microsoft Excel and was thereafter analysed using the Software Package for Social Sciences (SPSS), version 25 for Windows. Data was analysed using descriptive statistics such as frequency and percentages with 95% confidence intervals. Categorical variables were presented as a frequency and percentage, together with tables or graphs. Associations were carried out where applicable using Pearson chi-square tests. A p-value ≤ 0.05 was estimated to be statistically significant.

Results

Response Rate

From the results, two hundred HCWs responded out of the targeted two hundred and forty five HCWs, yielding a response rate of 81.63% (200/245).

Socio-demographic characteristics of the study population

Occupation of HCWs

Table 1 presents the categories of occupation of HCWs enrolled in the CCMDD programme. No other characteristics were collected as the focus was on the duration of involvement in the CCMDD programme. Participants consisted mainly of pharmacists (57/200, 28.5%), followed by pharmacist assistants (55/200, 27.5%) and then other HCWs.

Table 1: Categories of HCWs

Category of health care workers	Frequency	Percentage	95% Confidence Intervals
Pharmacists	57	28.5	22.24 - 34.76
Pharmacist assistants	55	27.5	21.31 - 33.69
Professional nurses	36	18	12.68 - 23.20
Medical officers	22	11	6.66 - 15.34
Pharmacist Interns	30	15	10.05 - 19.95
Total	200	100	

Duration of involvement of HCWs in the CCMDD programme

Figure 2 illustrates the distribution of duration in months of HCWs in the CCMDD programme. The duration of involvement in the CCMDD programme was not evenly distributed among HCWs; they were either involved for a long duration or a short duration. The majority of HCWs irrespective of categories were involved in the CCMDD programme since the beginning of the catch up plan in February 2014 (89/200, 44.5%).

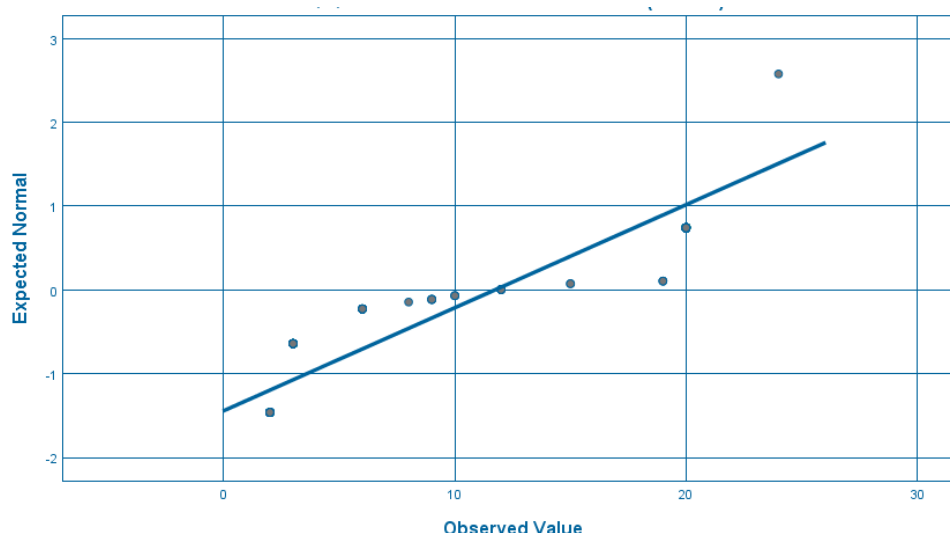


Figure 2: Normal probability plot of observed duration of involvement in the CCMDD programme in months versus the expected duration of involvement in months.

Training attended before involvement in the CCMDD programme

Table 2 presents the types of training attended before being involved in the CCMDD programme. The majority of the HCWs in this study reported that they underwent at least three types of training before their involvement in the CCMDD programme (128/200, 64.0%). Most of them were trained internally by peers (75/181, 41.4%) at the Healthcare facilities, followed by training workshops by the NDoH and stakeholders at facilities.

Table 2: Types of training attended before being involved in the CCMDD programme.

Type of training	Frequency	Percent	95% Confidence Intervals
Internal training by peers*	75	29.0	34.22 - 48.50
NDoH CCMDD implementation workshop*	55	21.2	23.7 - 37.10
Training provided at facility by stakeholders of CCMDD (HAST and Medipost)*	51	19.7	21.64 - 34.76
Not trained at all	78	30.1	35.21- 49.80
Total	259	100	

*More than one type of training attended. Legend: NDoH: National Department of Health, CCMDD:

Centralised Chronic Medicines & Distribution.

Training required before involvement in the CCMDD programme

Table 3 depicts the types of training preferred by HCWs before being involved in the CCMDD programme. Despite majority of HCWs being trained prior to involvement in the CCMDD programme (125/200, 62.5%), a total of seventy five HCWs (75/200, 37.5%) reported that they did not receive any training prior to being involved in the CCMDD programme. A question was referred to these seventy five HCWs, to indicate the type of training preferred before being involved in the CCMDD programme. The majority of them (30/75, 38.5%) indicated that it was mostly preferable to receive NDoH CCMDD implementation workshop training.

Table 3: Types of training preferred prior to involvement in the CCMDD programme (n=75)

Type of training	Frequency	Percent	95% Confidence Intervals
NDoH CCMDD implementation workshop	30	40.0	22.46 - 57.53
Workshops & seminars	22	29.3	10.28 - 48.31
No training needed (self-explanatory, SOPs would suffice, short explanation on form and practical observation during work)	12	16.0	-4.74 - 36.79
Internal training by peers	6	8.0	-13.70 - 29.70
Other sources of learning (information regarding patient eligibility criteria, training by external service provider)	5	6.3	-15.21-28.61
Total	75	100.0	

Legend: NDoH: National Department of Health, CCMDD: Centralised Chronic Medicines & Distribution

Awareness of Standard Operating Procedures (SOPs) on the CCMDD programme

Figure 3 illustrates the understanding of SOPs with regard to CCMDD at facilities. The majority of HCWs indicated that they were aware of SOPs with respect to the CCMDD programme at facilities (162/200, 81.0%). However, one hundred and fifty three out of one hundred and sixty two HCWs (153/162, 94.4%) were familiar with these SOPs. Although one hundred and fifty three HCWs were familiar with the SOPs, only a few HCWs (37/153, 24.2%) had an excellent understanding of those SOPs.

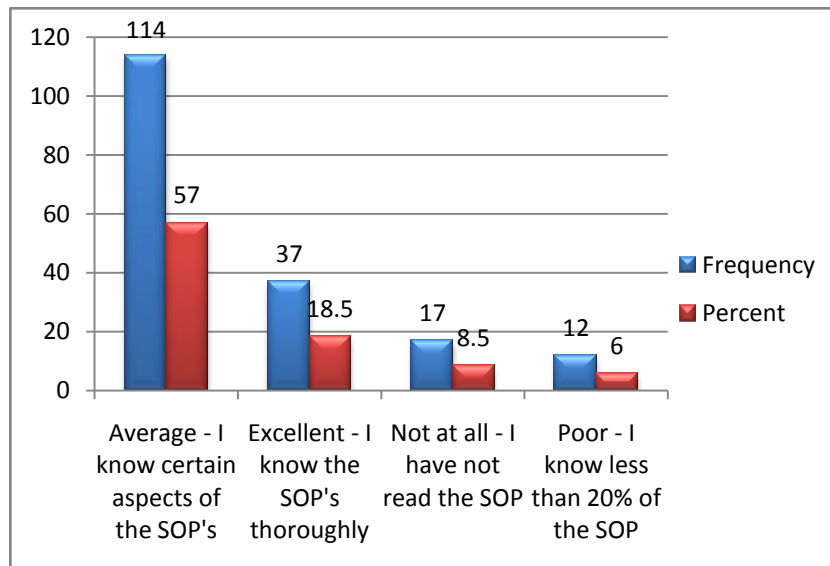


Figure 3: Awareness of HCWs with facility SOPs pertaining to the CCMDD programme

Legend: SOP – Standard Operating Procedure, CCMDD - Centralised Chronic Medicine Dispensing & Distribution

Familiarity of HCWs with reasons for implementing the CCMDD programme

HCWs were asked if they had sufficient knowledge of the NHI White Paper documentation and the reasons for implementing CCMDD programme. The majority of respondents were aware of and had sufficient knowledge of the NHI White paper (139/200, 69.5%) while almost all of the respondents were familiar with the reason for implementation of the CCMDD programme (195/200, 97.5%).

Non-familiarity of HCWs with reasons for implementing the CCMDD programme

Table 4 presents the reasons for unawareness and insufficient knowledge of the NHI White Paper. A total of (61/200, 30.5%) of HCWs responded that they had insufficient knowledge and awareness of the NHI White Paper. The main reason identified was that HCWs were not aware of the NHI document (32/61, 52.5%).

Table 4 Reasons for unawareness & insufficient knowledge by HCWs of the NHI white paper (n=61)

Reasons		Frequency	Percent	95% Confidence Intervals
	Not aware of the NHI document	32	52.5	35.19 – 69.80
	Document difficult to understand and too long	15	24.6	2.80 – 46.39
	Document available but not read	14	22.9	0.89 – 44.91
	Total	61	100.0	

Legend: NHI – National Health Insurance

Association between occupation and familiarity with reasons for implementing the CCMDD programme

Table 5 presents the association between occupation and familiarity with reason for CCMDD implementation. There was no significant statistical difference between the types of occupation and reasons for the implementation of the CCMDD programme, using Pearson chi-squared tests, p-value ≤ 0.05 . However, looking at the distribution, medical officers, professional nurses and pharmacist interns had a 100% familiarity rate, opposed to the 98.2 % for pharmacists and 92.6% for Pharmacist assistants.

Table 5: Association between the occupation of HCWs and familiarity of HCWs with reason for CCMDD implementation

Categories of HCWs			familiarity with reason for CCMDD implementation		Total	P-value	
			No	Yes			
Occupation	Medical officer	Count	0	22	22	P=0.104	
		% within Occupation	0.0%	100.0%	100.0%		
	Professional nurse	Count	0	36	36		
		% within Occupation	0.0%	100.0%	100.0%		
	Pharmacist	Count	1	56	57		
		% within Occupation	1.8%	98.2%	100.0%		
	Pharmacist assistant	Count	4	50	54		
		% within Occupation	7.4%	92.6%	100.0%		
	Pharmacist intern	Count	0	30	30		
		% within Occupation	0.0%	100.0%	100.0%		
	Total		Count	5	194		199
			% within Occupation	2.5%	97.5%		100.0%

Legend: CCMDD - Centralised Chronic Medicine Dispensing & Distribution, HCWs – Healthcare workers

Association between occupation of HCWs and familiarity with SOPs of the CCMDD programme at facilities

Table 6 presents an association between the occupation of HCWs and the level of familiarity with SOPs. There is a significant statistical difference association between these two variables, using Pearson chi-squared tests (p-value ≤ 0.05). From all the categories of HCWs, majority of the professional nurses knew the SOPs thoroughly (excellent) (14/32, 43.8%) whereas 18.4% (9/49) of pharmacist assistants were not familiar with the SOPs and have not read them at all.

Table 6: Association between occupation and level of familiarity with SOPs at facility

			Level of familiarity				Total	P-value	
			Average	Excellent	No	Poor			
Occupation	Medical officer	Count	13	6	2	1	22	P value=0.01	
		% within Occupation	59.1%	27.3%	9.1%	4.5%	100.0%		
	Professional nurse	Count	14	14	0	4	32		
		% within Occupation	43.8%	43.8%	0.0%	12.5%	100.0%		
	Pharmacist	Count	35	9	2	2	48		
		% within Occupation	72.9%	18.8%	4.2%	4.2%	100.0%		
	Pharmacist assistant	Count	28	8	9	4	49		
		% within Occupation	57.1%	16.3%	18.4%	8.2%	100.0%		
	Pharmacist intern	Count	24	0	3	1	28		
		% within Occupation	85.7%	0.0%	10.7%	3.6%	100.0%		
	Total		Count	114	37	16	12		179
			% within Occupation	63.7%	20.7%	8.9%	6.7%		100.0%
			Occupation						

Legend: SOPs – Standard operating procedures

Association between the duration of involvement of HCWs in the CCMDD programme and the familiarity with the reason for the programme implementation

Table 7 presents an Association between the duration of involvement of HCWs in the CCMDD programme and the familiarity with the reason for the programme implementation. There is a significant statistical difference association between these two variables, using Pearson chi-squared tests ($p\text{-value} \leq 0.05$). HCWs involved in the CCMDD programme for ≤ 2 months and since the implementation of the CCMDD programme by the NDOH had a 100% familiarity with the reason for implementation of the CCMDD programme (27/27, 100%) and (35/35, 100%).

Table 7: Association between the duration of involvement of HCWs in the CCMDD programme and the familiarity with the reason for programme implementation

			Familiarity with reason for CCMDD implementation		Total	P-value
			No	Yes		
Duration of involvement	<2 months	Count	0	27	27	P value=0.03
		% within Duration of involvement(Categories)	0.0%	100.0%	100.0%	
	2-3 months	Count	4	44	48	
		% within Duration of involvement(Categories)	8.3%	91.7%	100.0%	
	Since the catch up plan in February 2016,	Count	1	88	89	
		% within Duration of involvement(Categories)	1.1%	98.9%	100.0%	
	Since the launch of the CCMDD programme by the NDOH in 2015.	Count	0	35	35	
		% within Duration of involvement(Categories)	0.0%	100.0%	100.0%	
	Total	Count	5	194	199	
		% within Duration of involvement(Categories)	2.5%	97.5%	100.0%	

Legend: CCMDD - Centralised Chronic Medicine Dispensing & Distribution, NHI – National Health Insurance

Association between the duration of involvement of HCWs in the CCMDD programme and the awareness of the NHI White Paper by HCWs

Table 8 presents an association between the duration of involvement and awareness of the NHI White Paper, with a significant statistical difference (p-value ≤ 0.05). Those HCWs involved in the programme for less than two months had a better familiarity with the NHI White Paper (23/27,

85.2%) in comparison to those involved since the catch up plan was implemented in eThekweni in February 2016 (20 months) (66/89, 74.2%).

Table 8: Association between the duration of involvement of HCWs in the CCMDD programme and the awareness of the NHI White Paper by HCWs

			NHI white paper		Total	P-value	
			No	Yes			
Duration of involvement	<2 months	Count	4	23	27	P-value = 0.024	
		% within Duration of involvement(Categories)	14.8%	85.2%	100.0%		
	2-3 months	Count	22	26	48		
		% within Duration of involvement(Categories)	45.8%	54.2%	100.0%		
	Since the catch up plan in February 2016,	Count	23	66	89		
		% within Duration of involvement(Categories)	25.8%	74.2%	100.0%		
	Since the launch of the CCMDD programme by the NDOH in 2015.	Count	11	24	35		
		% within Duration of involvement(Categories)	31.4%	68.6%	100.0%		
	Total		Count	60	139		199
			% within Duration of involvement(Categories)	30.2%	69.8%		100.0%

Legend: NHI – National Health Insurance

Discussion

South Africa has been afflicted with the quadruple burden of disease, of which HIV/AIDS and Non-Communicable Diseases form a major part [19]. As a result there has been an unparalleled increase in the number of patients requiring access to long term chronic treatment and ARV medication. This increasing demand for chronic medication created with it a series of other patient and health related problems that needed to be addressed urgently [20]. Therefore, the CCMDD programme helps to alleviate these existing difficulties by serving as the "missing link" [20].

A response rate of 81.63% was yielded in this research; however despite being acceptable, the response rate can be explained by the reasons identified, which are problems which need to be remedied. In a study conducted to explore what could and should be a reasonable response rate in academic studies, the average response was 55.6% with a standard deviation of 19.7[21]. However, upon visiting the different institutions it was found that firstly, only a selected number of HCWs per category are involved in the CCMDD programme - not the entire complement of staff. Secondly, HCWs are too busy (due to staffing issues) to be interviewed or even fill out a questionnaire- this can clearly be seen in from the response rate of medical officers in table 1(22/200, 11.0%). Statistics support the latter statement as in 2013; there were just 25 state doctors and 92 private sector doctors per one hundred thousand people in South Africa. The average is 60 doctors per hundred thousand, while the world average is 152. Even in India (70), Brazil (189) and China (194), there are more doctors per one hundred thousand people [22].

This study found that the duration of involvement of HCWs in the CCMDD programme was not evenly distributed, demonstrating that HCWs were either involved for a long time or a short time in the programme. This finding is in agreement with ideas of successful recruitment and retention practices in a Healthcare programme to improve quality of care and services provided to chronic patients by HCWs [23].

In terms of training, 64% of all HCWs that participated in the study had undergone training, versus the 36% that were not trained. A training gap was identified in this study, which needs to be addressed, to ensure all HCWs are trained prior to being involved in the CCMDD programme. This is in agreement with Anacleto et al., (2005) who stated that if the team knows the system, providers are able to work together and can identify weaknesses in each process, suggest error prevention strategies and reduce errors, helping to improve care provided to the patients [24]. This is in agreement with another statement by the same authors on the occurrence of dispensing errors in the pharmacy of a large hospital, where the poor planning of medication systems was seen as the leading cause of error. It was found to be crucial for Healthcare providers involved with medication (physicians, pharmacists, and nursing staff) to be familiar with its system and different processes (drug prescription, dispensing, and administration) [24].

Despite the majority of HCWs in this study being trained prior to involvement in the CCMDD programme (125/200, 62.5%), a total of seventy five HCWs (75/200, 37.5%) reported that they did not receive any training prior to being involved in the CCMDD programme. This is important as it should be noted that any HCWs that are going to be involved in any programme (especially the CCMDD programme) should attend the implementation workshop, and not only management and those piloting the programme, so as to eliminate learning gaps. This is in agreement with a study conducted among HCWs by the World Bank in South Africa, which recommended that it is important to engage with staff to identify adequate initial training and ongoing mentorship of staff, which are important in ensuring effective implementation of the AGL [13].

With respect to awareness of SOPs pertaining to CCMDD at facilities, despite the majority of the HCWs in this study being aware (162/200, 81.0%) the minority (37/200, 18.5%) were unaware of facility SOPs. This finding is emphasized by the importance of SOPs in clinical research, whereby SOPs help define the group's standard practices and daily processes conducted, to assure execution of research tasks in accordance with institutional, state and federal guidance [25].

From the majority of HCWs in this study that were aware of SOPs at their facility (162/200, 81.0%) only (153/200, 76.5%) were familiar with these SOPs. This finding is in agreement with a study conducted by the eThekweni Metropolitan Health District together with Health Systems Trust (HST) which showed that there were no SOPs available for referencing at the facilities, out-dated stationery templates being completed incorrectly, incorrect procedures and poor knowledge of CCMDD programme [26]. Following the above identified gap, the HST developed a facility manual with uniform SOPs and stationary templates; the manual training is also repeated at all sub district quarterly meetings with representatives from every facility [26].

Although this study found that HCWs were familiar with the CCMDD SOPs, more than half (114/200, 57.0%) had an average understanding of these SOPs, with only twenty seven HCWs (27/200, 18.5%) having an excellent understanding of the SOPs. A greater awareness and familiarity with CCMDD facility SOPs is required, as awareness and level of understanding of SOPs are important with respect to the role of HCWs involved in the CCMDD programme. The findings of this study justify the recommendation by the University of California to upskill SOPs, conduct refresher training at facility level and monitor consistently HCWs at regular intervals to ensure compliance [25].

The majority of respondents in this study (69.5%) reported being aware of and having sufficient knowledge of the NHI White paper. This finding is in keeping with a study conducted on NHI at

tertiary institutions in Limpopo to determine the perspectives and experiences of HCWs which showed that although a greater proportion (64%) of the respondents had knowledge of the NHI; however, only 37% had detailed information on its implementation [27].

The analysis between occupation of HCWs in this study and level of familiarity with facility CCMDD SOPs showed that the HCW category of professional nurses understood the SOPs thoroughly (43.8%) as opposed to any other Healthcare category. When it came to having no knowledge and not having read the SOP as all, pharmacist assistants were the majority (18.4%). This again points to Pharmacist assistants needing interventions so as to be better equipped to implement and be involved in the CCMDD programme. The findings of this study are in agreement with a systematic review on the training of HCWs within essential medicines supply programs in developing countries which showed that training activities delivered in repeat sessions led to improvements of performance of HCWs and the transferability of knowledge from one programme to the other and work sites[28].

An association between the duration of involvement of HCWs in the CCMDD programme with familiarity with the reason for the implementation of the CCMDD programme in this study showed that HCWs involved for less than 2 months and since the implementation of the CCMDD programme by the NDOH, had a 100% familiarity with the reason for implementation of the programme. The HCWs that are involved in the programme for a longer period of time have a better familiarity. When implementing a public health program, it is essential for HCWs to be familiar with reasons for its implementation. This in agreement with a study conducted on the six components necessary for effective public health program implementation, of which a component identified was the effective performance management, especially through rigorous, real-time monitoring, evaluation, and program improvement [29]. HCWs involved in the programme for less than two months also achieved a 100% with respect to familiarity with the reason for the implementation of CCMDD. In this study, HCWs involved in the programme for 2 to 3 months and since the catch up plan in February 2016 (20 months) required refresher courses to achieve a 100% familiarity. Periodic refreshments in training would be a good idea, but most often refresher training can be called for even before the specified period, when the need arises competency. This is in agreement with a study by Bodanapu (2013) that recommended that refresher training should be delivered in cycles once in every 3 or 6 months, based upon the kind of job, the skills and the critical safety factors required to by the job [30].

An association between the duration of involvement and awareness of the NHI White Paper in this study determined that HCWs involved in the CCMDD programme for less than 2 months had a better familiarity with the NHI White Paper, compared to the HCWs involved in the programme since the catch up plan (February 2016). This is in agreement with a study conducted on the NHI in Limpopo on the views and perceptions of HCWs whereby 48% of the participants did not know about the policy contents of NHI; a greater proportion of allied HCWs (62%) and doctors (63%) did not know about the policy contents of NHI compared to emergency services HCWs (40%) and nurses (40%) [31].

Strengths and limitations of the study

This study has been conducted in the eThekweni Metropolitan Health District at seven sites; therefore caution is advised in interpretation of the results, as not all sites were involved in the study. In addition, the authors cannot generalise the findings to the entire district, the province of Kwa-Zulu Natal and the entire South African country. This study included only the services provided by the Provincial Department of Health in eThekweni Metropolitan Health District, therefore further research is needed to include services provided by local and provincial governments. The response rate was satisfactory compared to an average rate accepted in other studies [21]. The study sample was exclusively HCWs involved in the CCMDD programme in the public health sector. Further studies may be needed to investigate the readiness of private sector to implement chronic dispensing programme to patients.

Conclusion

The training of HCWs empowered them to understand SOPs and the reasons for the implementation of the CCMDD programme. The duration of involvement in the programme did not influence the knowledge of HCWs on the reasons for implementation of the programme. Despite the majority of HCWs involved in the CCMDD programme indicated being adequately prepared, sufficiently trained and ready to embark in the CCMDD programme, a small minority of HCWs identified the need for proper training prior to involvement in a chronic dispensing programme. Innovation is essential to all aspects of public health strategy and program development and is critical to developing the evidence base needed to establish and refine the technical elements of successful program implementation [28]. Further research is needed to explore factors influencing HCWs in finding innovative ways in the chronic dispensing of medicines.

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After presenting the influence of training and work experience of Healthcare workers in the implementation of the CCMDD programme in the eThekweni Metropolitan health district in Chapter 2, the factors influencing HCWs and their interests in the innovation of dispensing medicines to chronic patients, was further reported in Chapter 3. A paper entitled, “**Factors influencing Healthcare workers in the innovation of dispensing medicines to chronic patients in the CCMDD programme in eThekweni, South Africa.**” The paper was prepared following BMC guidelines, and is to be submitted to the Journal of Pharmaceutical policy and practice.

CHAPTER 3

Factors influencing Healthcare workers in the innovation of dispensing medicines to chronic patients: The case of the Centralised Chronic Medicines Dispensing and Distribution (CCMDD) programme in eThekweni, South Africa: A cross sectional study

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Abstract

Background

Health care workers (HCWs) play a vital role in the implementation of the country's health policy and the provision of health care services. They have the responsibility of ensuring that the government's health policies are translated into effective and efficient service delivery. The key to a successful outcome lies in the hands of HCWs tasked with implementing such strategies. This study was conducted with the aim of establishing factors influencing HCWs and their interests in the innovation of dispensing medicines to chronic patients in eThekweni Metropolitan Health District.

Methods

A descriptive cross sectional study was conducted from October 2017 to December 2017 using a questionnaire, with both closed-ended and open-ended questions, self-administered by Healthcare workers in public healthcare facilities involved in the chronic dispensing and distribution of medicines to patients. The questionnaire included amongst others socio-demographic characteristics of participants and a section on the implementation of the chronic dispensing and distribution programme.

Results

The majority of HCWs (178/200, 89.0%) were aware and understood their role in the facility with respect to the implementation of the CCMDD programme; however, many of the HCWs (112/200, 56.0%) were not aware of the CCMDD patient enrolment targets at their facilities. The majority of HCWs (185/200, 92.50%) believed that the CCMDD programme had the potential to meet the objectives for which it was designed for. They further indicated that they had noticed a visible decrease of patients at their facility level (147/200, 73.5%). Factors identified in this study with negative effects on the implementation of the CCMDD programme were mainly private service provider related issues (63/200, 31.5%) and an insufficient and inadequate trained staff at facilities(61/200, 30.5%). A significant association was identified between the pressure to enrol patients onto the CCMDD programme (as per designated facility quota) and HCWs understanding of their roles in the CCMDD implementation ($p \leq 0.05$).

Conclusion

Most HCWs were aware of their role in the implementation of the CCMDD programme. Private service provider related issues have a negative effect on the programme. Patient enrolment targets were unknown by HCWs. The majority of HCWs (185/200, 92.50%) believed that the CCMDD programme had the potential to meet the objectives for which it was designed for. They further indicated that they had noticed a visible decrease of patients at their facility level (147/200, 73.5%). Before HCWs are involved in the programme they should be made aware with of their roles and responsibilities in the implementation of the programme. HCWs expressed thee need to rotate within the different services of the CCMDD programme. Further research is needed to investigate views and perceptions of patients attending chronic dispensing programmes.

Keywords

Healthcare workers, National Department of Health, centralised chronic medicine dispensing and distribution, non-communicable disease, health systems trust, national health insurance, pick up point, standard operating procedures, facility quota.

Background

It has been estimated that a total of 12.3 million people will be receiving treatment for Non-Communicable Diseases (NCDs) or living with Human Immunodeficiency Virus (HIV) and receiving Anti-Retroviral Treatment (ART) by the year 2025 in South Africa [1]. The massive expansion of the ART programme within South Africa in the recent years coupled with the rising burden of NCDs is placing considerable strain and pressure on the health care system, thus resulting in challenges in maintaining high quality public services and causing an enormous strain on resources at public sector health facilities and Healthcare workers (HCWs).

The term 'Health workers' is defined by the World Health Organization (WHO) as people whose duties are centred on the enhancement of health, and can be divided into two groups; the first are those who provide health services, namely, doctors, nurses, pharmacists, therapists and other providers; and the second being management and support personnel [2]. For the purposes of this paper, the sense of the term 'healthcare workers' (HCWs) will be confined to those who provide health services. HCWs play a vital role in the implementation of the country's health policy and the provision of health care services. They have the responsibility of ensuring that the government's health policies are translated into effective and efficient service delivery. However, their rights are often overlooked [3]. The key to a successful outcome lies in the hands of HCWs tasked with implementing such strategies, and therefore unless the rights of HCWs are recognised and their needs adequately addressed, the best laid plans of government will be at risk.

The success of the HIV/AIDS programmes in South Africa in providing long-term treatment, demonstrates the possibility of reinventing models of care and providing pointers for how programmes targeting NCDs could be adapted for similar settings. Specific innovations for improving access to medicines have emerged over the past few years, with the Centralised Chronic Medicines Dispensing and Distribution programme (CCMDD) being the latest national programme providing alternative access to chronic medicine for stable public sector patients.

The CCMDD Programme is a national programme which provides alternative access to chronic medicine for stable public sector patients, and was introduced by the National Department of Health (NDoH) with the purpose of making health care more accessible and convenient to patients. The CCMDD programme commenced on 1st February 2014, excluding the Western Cape, where a similar system already exists (The Central Dispensing Unit (CDU)) [4]. Keeping in line with the NHI White Paper published in December 2015, the programme allows for provisions of contracting private health care providers and improving access to pharmaceutical services [5]. Patients with chronic diseases have to collect their medicine at their public sector Healthcare facility every monthly; which

can be inconvenient and costly for patients as well as leading to the overcrowding of public health facilities.

The CCMDD programme enables medicine from repeat scripts to be dispensed and distributed every month to an alternate pick-up-point (PUP). The National Department of Health in South Africa [NDoH] has defined PUPs as sites that are convenient to the patients' workplace or home, and are usually external and separate from the facility like a school hall or community centre [5]. However, some facilities have PUPs within the facility for patients that are unemployed and live in close proximity to the facility as opposed to an external PUP.

The CCMDD programme was implemented with benefits to public sector patients as well as HCWs in the public sector, hoping to achieve benefits such as a reduced workload for overburdened staff, which will lead to improved quality of service as well as reduced health facility congestion [6]. The results of study published by the American Journal of Health-System, illustrated that that pharmacists in the decentralized area (of a unit dose drug distribution system within the same institution) spent a significantly greater amount of their work time performing therapy-related activities as opposed to those pharmacists in the centralized system. The centralized unit dose system afforded a significantly greater participation in educational activities by all pharmacy personnel staffing that particular area [7].

The successes of the CCMDD programme and the urgent need for service delivery closer to a patient's workplace or home necessitate initiatives and opportunities for alternative models for service delivery [10]. One such initiative is the establishment of Remote Automated Dispensing Units (RADUs) by the Gauteng Health Department, in conjunction with a private provider, similar to that of the CDU model in the Western Cape. Despite the implementation of RADUs in other countries such as Canada (Toronto) which showed to have been less successful, South Africa is a different environment with different Healthcare/delivery needs [8].

A WHO report released showed that the world will be short of 12.9 million HCWs by the year 2035. Currently, that figure stands at 7.2 million. These findings – if not addressed now – will have serious implications for the health of billions of people across all regions of the world [9]. The WHO Assistant Director-General for Health Systems and Innovation (Dr. Marie-Paule Kieny) can be quoted as saying: “The foundations for a strong and effective health workforce for the future are being corroded in front of our very eyes by failing to match today's supply of professionals with the demands of tomorrow's populations, to prevent this happening, we must rethink and improve how we teach, train, deploy and pay health workers so that their impact can widen.” [9].

HCWs play an integral role in the provision of health care services to patients; therefore it is imperative that we research the factors influencing HCWs and their interests in the innovation of dispensing medicines to chronic patients, so as to find solutions to any challenges discovered and remedy gaps identified.

Methods

Study design

A descriptive cross sectional study was conducted from October 2017 to December 2017 using a self-administered questionnaire, with both closed-ended and open-ended questions, by HCWs in public Healthcare facilities involved in the CCMDD programme.

Study Sites

Seven public Healthcare facilities with different levels of care were approached in the eThekweni Metropolitan Health district, South Africa, which consisted of three regional hospitals (RH), one district hospital used as a step down hospital (SH) by regional hospitals and three community health care centres (CHC). The services at the CHC are jointly provided by the Provincial Department of Health and the Local Government authority, with former contributing 60% and the latter 40% [16]. However, this study included only the services provided by the provincial department of health.



Figure 1 : Map of eThekweni metropolitan health district (Source Google Maps 2016)

Study population

The study population consisted of health care professionals, which included medical officers, pharmacists and professional nurses and other pharmacy personnel (pharmacist assistants).

Inclusion and exclusion criteria

HCWs were included in this study based on their involvement in the CCMDD programme with at least a month of work experience. Those not involved in providing services in this programme were excluded, irrespective of their professional experience.

Sampling procedure and sample size determination

HCWs were purposively sampled. A sample size was estimated based on an estimate of 69 924 filled posts as at 1 April 2017 in the KZN provincial department of Health [11]. To minimise sampling bias, assuming an expected 20 % prevalence of involvement in the CCMDD programme within a ± 5 % precision, an estimated sample size of two hundred and forty five HCWs was calculated following a formula described in the literature [12]

Selection and recruitment of participants

Study participants were all HCWs involved in the CCMDD programme, present during the days of data collection and who satisfied the inclusion criteria. The questionnaire was pilot tested by self-administration (prior to data collection), among HCWs in the Healthcare facilities not included in the study. Information collected at this stage was used to improve the questionnaire, and excluded from the study. This study enrolled 200 eligible HCWs.

Ethical approval

This study was approved by the Biomedical Research Ethics Committee (BREC) of the University of KwaZulu-Natal; under reference number BE 514/16. Participation was voluntary and eligible HCWs were approached during working hours; a copy of the information letter/sheet about the study was given and explained to each participant. The HCWs, who agreed to participate, were requested to sign consent before being given a questionnaire. Anonymity was not maintained due to the nature of the study, however in cases whereby HCWs were hesitant to include their names, their initials were accepted.

Data collection technique and instrument

A semi-structured questionnaire with both close- and open-ended questions was self administered by Healthcare workers in public healthcare facilities involved in the CCMDD programme. The questionnaire was separated into sections and included amongst others socio-demographic characteristics of participants and questions on the implementation of the CCMDD programme. For this analysis, questions stated were: (i) "Do you fully understand your role in the implementation of the CCMDD programme at your facility?" (ii) "How much of time do you spend (in a day) involved in the CCMDD programme? HCWs had to choose from a set of options :(a) All of my day, (b) fraction of my day, (c)most of my day and (d) not at the moment" (iii) "Rate the following aspects

from 1-4 (with 4 being the most negative aspect and 1 being the least negative) of the factors listed that have a negative effect on the implementation of the CCMDD programme at your facility,” (iv) “Have you noticed a visible decrease in the congestion of patients at your facility,” (v) “What aspects need to be improved resulting in the better implementation of the CCMDD programme?” (vi) “Are you equipped with sufficient resources/personnel to implement the CCMDD programme?” (vii) “What is your impression of the CCMDD programme? In the questionnaire only 5 impression options were provided: (a) excellent, (b) good, (c) satisfactory, (d) challenging and (e) poor co-ordination, of which HCWs were able to select from.

Statistical analysis

Data was first captured on Microsoft Excel and was thereafter analysed using the Software Package for Social Sciences (SPSS), version 25. Data was analysed using descriptive statistics such as frequency and percentages with 95% confidence intervals. Categorical variables were presented as a frequency and percentage, together with tables or graphs. A likert scale was used to rate aspects from 1 (least negative) to 4 (most negative) which has a negative effect on the implementation of the CCMDD programme at facilities Associations were carried out where applicable using Pearson chi-square tests. A p-value ≤ 0.05 was estimated to be statistically significant.

Results

Response Rate

From the results, two hundred HCWs responded out of the targeted two hundred and forty five HCWs, yielding a response rate of 81.63% (200/245).

Socio-demographic characteristics of the study population

Occupation of health care workers

Table 1 presents the categories of occupation of HCWs enrolled in the CCMDD programme. No other characteristics were collected as the focus was on the duration of involvement in the CCMDD programme. Participants–consisted mainly of pharmacists (57/200, 28.5%), followed by pharmacists assistants (55/200, 27.5%) and then other health care workers.

Table 1: Categories of HCWs

Category of HCWs	Frequency	Percentage	95% Confidence Intervals
Pharmacists	57	28.50	22.24 - 34.76
Pharmacist assistants	55	27.50	21.31 - 33.69
Professional nurses	36	18	12.68 - 23.20
Medical officers	22	11	6.66 - 15.34
Pharmacist interns	30	15	10.05 - 19.95
TOTAL	200	100	

Legend HCWs – Healthcare workers

Understanding the role in the implementation of the CCMDD programme at facilities

The majority of HCWs (178/200, 89.0%) responded that they were aware and understood their role in the facility with respect to the implementation of the CCMDD programme.

Time spent in a day involved in the CCMDD programme

Figure 2 illustrates the time spent in a day by HCWs involved in the CCMDD programme. The majority of HCWs spend a fraction of their day involved in the CCMDD programme (86/200, 43.0%) with a minority of HCWs not involved in the CCMDD programme currently (33/200, 16.5%)

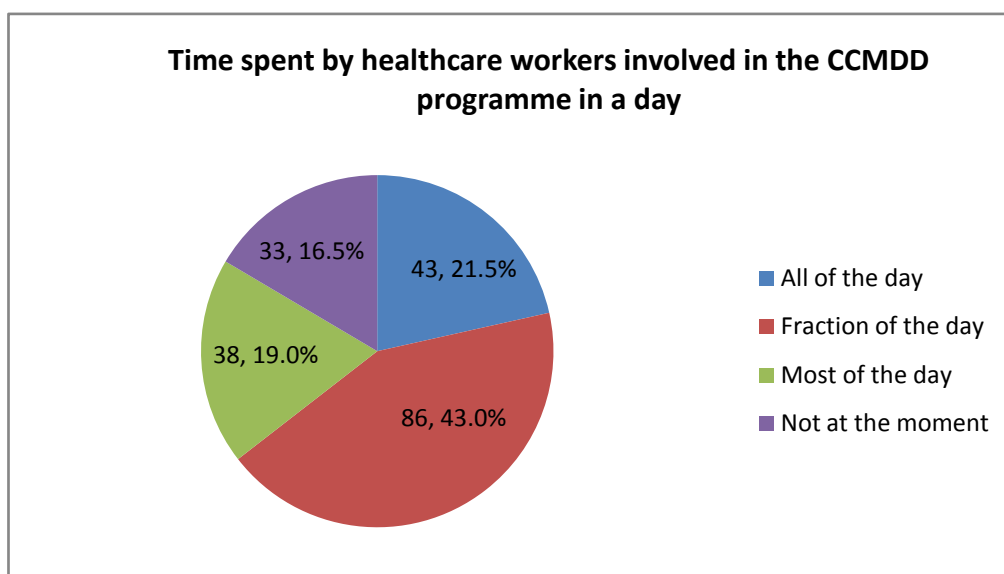


Figure 2: Time spent in a day by HCWs involved in the CCMDD programme

Legend: CCMDD – Centralised Chronic Medicine Dispensing & Distribution

Awareness of facility target with respect to the enrolment of patients onto the CCMDD programme

Figure 3 illustrates the awareness of HCWs with regards to the facility target with respect to the enrolment of patients onto the CCMDD programme. The majority of HCWs are not aware of these enrolment targets at facilities (112/200, 56.0%).

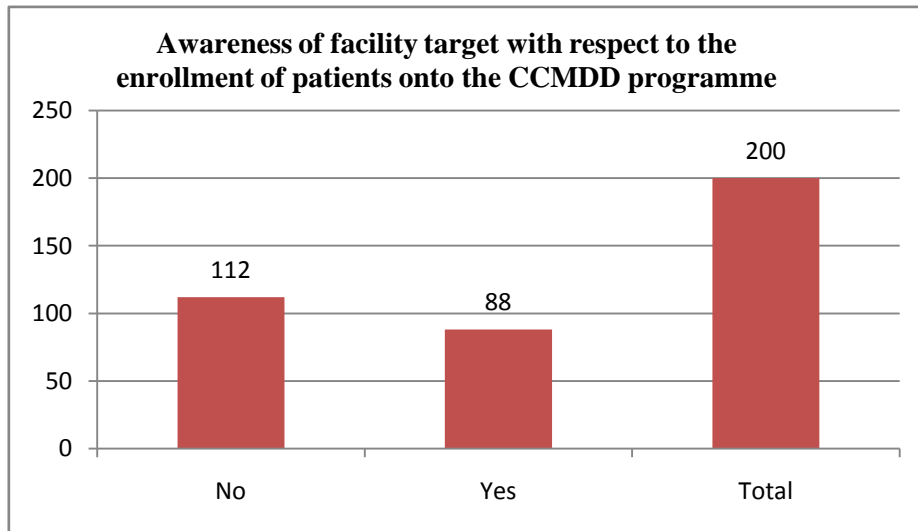


Figure 3: Awareness by health care workers of facility target with respect to the enrolment of patients onto the CCMDD programme

Legend: CCMDD – Centralised Chronic Medicine Dispensing & Distribution

Responses of HCWs on aspects with negative effect on the implementation of the CCMDD programme at the facility level

Table 2 presents the frequency and percentage of HCWs responses to the aspects they deemed to have a negative effect on the implementation of the CCMDD programme at their respective facilities. A likert scale was used to evaluate aspects affecting negatively the implementation of the programme (number 1 equals to least negative while number 4 was most negative). A lack of adequately trained staff (61/200, 30.5%) and private service provider related issues (63/200, 31.5%) were identified from the responses as having the most negative effect on the implementation of the CCMDD programme at their facilities.

Table 2: Responses of HCWs with respect to rating aspects from 1 (least negative) to 4 (most negative) which has a negative effect on the implementation of the CCMDD programme at facilities

Scale 1-4	Lack of adequately trained staff		Incorrect patient medication received at facility		Lack of knowledge about CCMDD		Private service provider related issues	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	48	24.0%	71	35.5%	50	25.0%	34	17.0%
2	57	28.5%	64	32.0%	58	29.0%	50	25.0%
3	33	16.5%	35	17.5%	46	23.0%	51	25.5%
4	61	30.5%	28	14.0%	45	22.5%	63	31.5%
TOTAL	200	100%	200	100%	200	100%	200	100%

Legend: CCMDD – Centralised chronic medicine dispensing and distribution

Visible decrease in the congestion of patients at the healthcare facilities

The majority of HCWs (185/200, 92.50%) believed that the CCMDD programme had the potential to meet the objectives for which it was designed for. They further indicated that they had noticed a visible decrease of patients at their facility level (147/200, 73.5%).

Challenges faced by Healthcare workers in the implementation of the CCMDD programme

Table 3 presents the major challenges faced by HCWs in the implementation of the CCMDD programme. The majority of respondents identified private service provider related issues (37/200, 18.5%) being the main challenge faced in the implementation of the programme.

Table 3: Challenges faced by HCWs in the implementation of the CCMDD programme

Challenges	Frequency	Percent	95% Confidence interval
Private service provider related issues	37	18.5	5.99-31.01
No challenges identified	35	17.5	4.91-30.08
Insufficient trained staff	33	16.5	3.83-29.16
CCMDD prescription forms are tedious, not user-friendly and time consuming	31	15.5	2.76-28.24
Patient prefers to collect at facility as a result of previous challenges experienced at PUP	23	11.5	-1.53-24.53
Insufficient buy-in by stakeholders	12	6.0	-7.43-19.43
Expansion of the programme and unmanageable queues in the long run	8	4.0	-9.57-17.57
Patients defaulting	8	4.0	-9.57-17.57
Inadequate internal processes of the programme	5	2.5	-11.18-16.18
Poor communication between patients and HCWs at the PUP	4	2.0	-10.27-14.27
incorrect filing of form by prescriber	4	2.0	-10.27-14.27
Total*	200	100	

Legend: PUP - Pick up point, CCMDD – Centralised chronic medicine dispensing and distribution, HCWs – Healthcare workers

Aspects identified to be improved for better implementation of the CCMDD programme

Figure 4 illustrates aspects for improved implementation of the CCMDD programme. A list of aspects needed by indicating a yes or a no answer was provided to respondents. The majority of HCWs identified that more training was require in the form of workshops and seminars (150/200, 75.0%) followed by more in-service training is required at the facility (103/200, 51.5%).

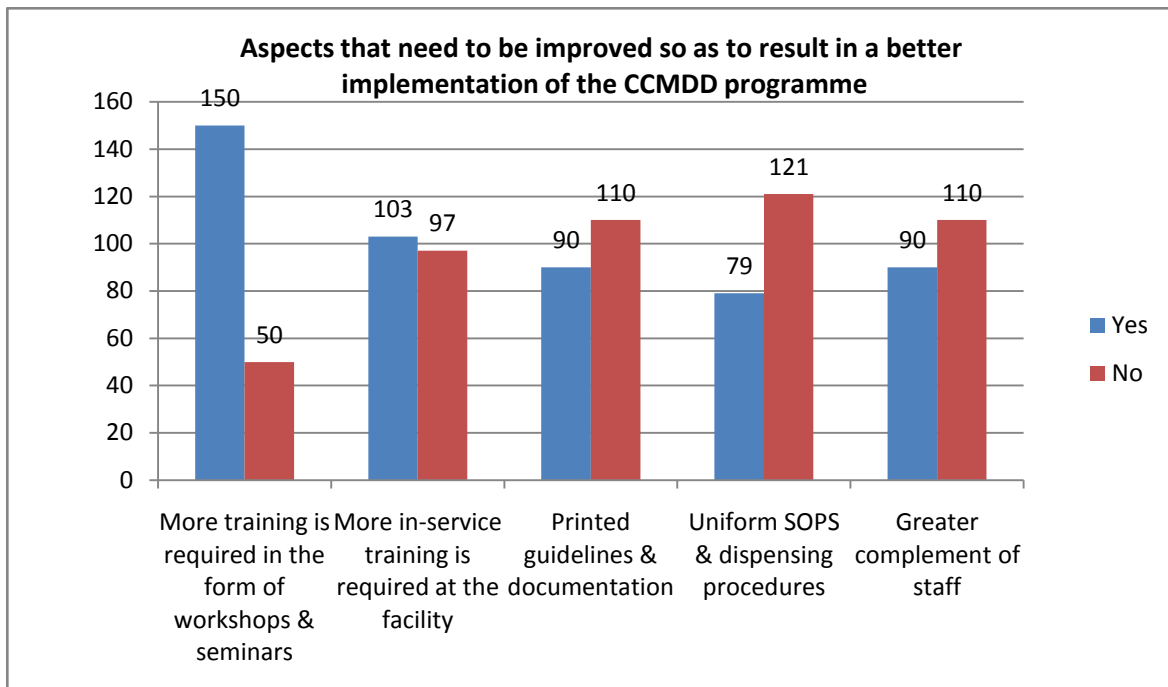


Figure 4 Aspects that need to be improved for a better implementation of the CCMDD programme Legend: SOPs – Standard operating procedures

Impressions of HCWs about the CCMDD programme

Table 4 presents a scale of impressions of HCWs about the CCMDD programme. The majority of HCWs had a good perception of the programme (74/200, 37.0%) followed by an excellent impression (41/200, 20.5%).

Table 4: Impression of HCWs about the CCMDD programme

Variables	Frequency	Percent	95% confidence intervals
Good impression	74	37.0	26.0-48.0
Excellent impression	41	20.5	8.14-32.85
Challenging impression	34	17.0	4.37-29.62
Satisfactory impression	33	16.5	3.83-29.16
Poor co-ordination	9	4.5	-9.04-18.04
Excellent but challenging	3	1.5	-12.25-15.25
Challenging and poor co-ordination	3	1.5	-12.25-15.25
Satisfactory but challenging	2	1.0	-12.79-14.78
Good but challenging	1	0.5	
Total	200	100	

Sufficient resources and personnel to implement the CCMDD programme

Figure 5 illustrates the responses of HCWs about allocation of resources for the implementation of the CCMDD programme. The majority of HCWs indicated that they were equipped with sufficient resources and or personnel to implement the CCMDD programme (117/200, 59.0%).

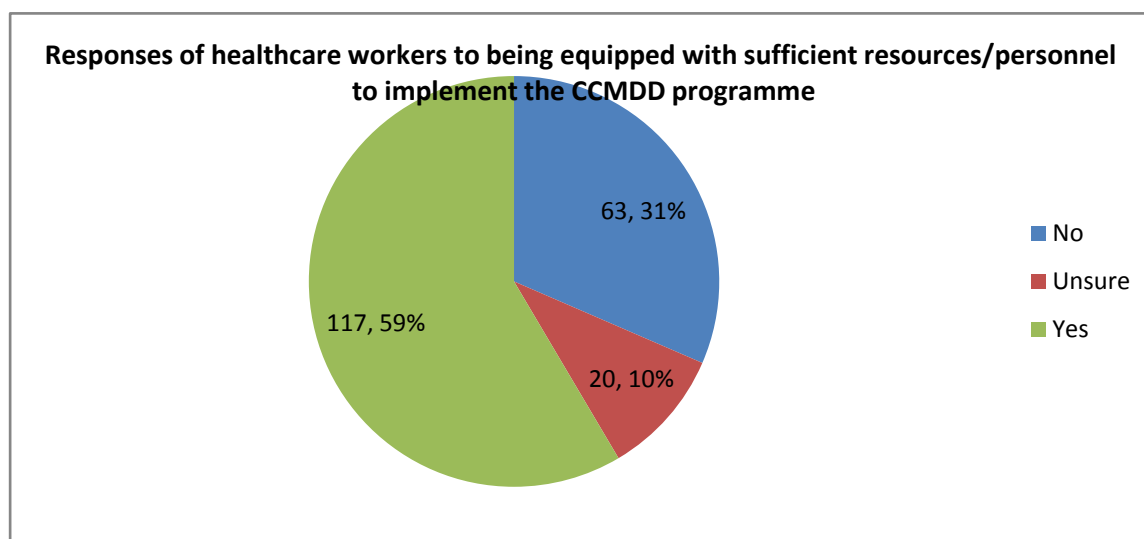


Figure 5: Responses by HCWs to the question of being equipped with sufficient resources/personnel to implement the CCMDD programme

Bivariate Analysis

Association between impression of HCWs about the CCMDD programme and understanding of their role in its implementation

Table 5 presents an association between impression of HCWs about the CCMDD programme and understanding of their role in its implementation. From the HCWs that understood their role in the implementation of the CCMDD programme (178/200, 89.0%), majority had a good impression of the programme (67/178, 37.6%), p value ≤ 0.05 .

Table 5: Association between impression of HCWs about the CCMDD programme and understanding of their role in its implementation

			Understanding of role in CCMDD		Total	P-value
			No	Yes		
Impression of CCMDD programme	Challenging	Count	2	32	34	P = 0.005
		% within Impression of CCMDD programme	5.9%	94.1%	100.0%	
	Challenging & poor co-ordination	Count	1	1	2	
		% within Impression of CCMDD programme	50.0%	50.0%	100.0%	
	Excellent	Count	0	41	41	
		% within Impression of CCMDD programme	0.0%	100.0%	100.0%	
	Excellent & challenging	Count	0	3	3	
		% within Impression of CCMDD programme	0.0%	100.0%	100.0%	
	Good	Count	7	67	74	
		% within Impression of CCMDD programme	9.5%	90.5%	100.0%	
	Good & challenging	Count	0	1	1	
		% within Impression of CCMDD programme	0.0%	100.0%	100.0%	
	Poor co-ordination	Count	3	6	9	
		% within Impression of CCMDD programme	33.3%	66.7%	100.0%	
	Poor co-ordination & challenging	Count	0	1	1	
		% within Impression of CCMDD programme	0.0%	100.0%	100.0%	
	Satisfactory	Count	8	25	33	
		% within Impression of CCMDD programme	24.2%	75.8%	100.0%	
Satisfactory & challenging	Count	1	1	2		
	% within Impression of CCMDD programme	50.0%	50.0%	100.0%		
Total	Count	22	178	200		
	% within Impression of CCMDD programme	11.0%	89.0%	100.0%		

Legend: CCMDD – Centralised chronic medicine dispensing and distribution

Association between impression of HCWs about the CCMDD programme and time spent in a day within various aspects of the programme

Table 6 presents the association between the impression of HCWs about the CCMDD programme and time spent in a day within various aspects of the programme. The majority of those HCWs that spend all of their day involved in the CCMDD programme (20/43, 46.51%) had an excellent impression of the CCMDD programme (p-value ≤ 0.05).

Table 6: Association between impression of HCWs about the CCMDD programme and time spent in a day within various aspects of the programme

		All of the day	Fraction of the day	Most of the day	Not at the moment	Total	P-value	
Impression of CCMDD programme	Challenging	Count	6	16	3	9	P =0.000	
		% within Impression of CCMDD programme	17.6%	47.1%	8.8%	26.5%		100.0%
	Challenging & poor co-ordination	Count	0	1	0	1		2
		% within Impression of CCMDD programme	0.0%	50.0%	0.0%	50.0%		100.0%
	Excellent	Count	20	9	8	4		41
		% within Impression of CCMDD programme	48.8%	22.0%	19.5%	9.8%		100.0%
	Excellent & challenging	Count	3	0	0	0		3
		% within Impression of CCMDD programme	100.0%	0.0%	0.0%	0.0%		100.0%
	Good	Count	11	27	22	14		74
		% within Impression of CCMDD programme	14.9%	36.5%	29.7%	18.9%		100.0%
	Good & challenging	Count	0	1	0	0		1
		% within Impression of CCMDD programme	0.0%	100.0%	0.0%	0.0%		100.0%
	Poor co-ordination	Count	1	4	1	3		9
		% within Impression of CCMDD programme	11.1%	44.4%	11.1%	33.3%		100.0%
	Poor co-ordination & challenging	Count	0	1	0	0		1
		% within Impression of CCMDD programme	0.0%	100.0%	0.0%	0.0%		100.0%
Satisfactory	Count	2	25	4	2	33		
	% within Impression of CCMDD programme	6.1%	75.8%	12.1%	6.1%	100.0%		
Satisfactory & challenging	Count	0	2	0	0	2		
	% within Impression of CCMDD programme	0.0%	100.0%	0.0%	0.0%	100.0%		
Total		Count	43	86	38	33	200	
		% within Impression of CCMDD programme	21.5%	43.0%	19.0%	16.5%	100.0%	

Legend: CCMDD – Centralised chronic medicine dispensing and distribution

Association between the pressure to enrol patients onto the CCMDD programme, sufficient resources and understanding of HCWs of their role in the implementation of the CCMDD programme

Table 8 presents the association between the pressure to enrol patients onto the CCMDD programme, sufficient resources and understanding of HCWs of their role in the implementation of the CCMDD programme. The majority of HCWs had sufficient resources/personnel to implement the CCMDD programme (83/128, 64.9%) and did not feel pressured to enrol patients to meet facility quota (p-value ≤ 0.05). The majority of the HCWs (70/72, 97.2%) understood their role the implementation of the CCMDD programme. An association between pressure to enrol and understanding of the role showed a significant difference (p-value ≤ 0.05).

Table 8: Association between the pressure to enrol patients onto the CCMDD programme, sufficient resources and understanding of HCWs of their role in the implementation of the CCMDD programme

Variables			Sufficient resources/personnel to implement CCMDD programme			Total	P-value	Understanding of role in CCMDD		Total	P-value
			No	Unsure	Yes			No	Yes		
Pressure to enrol patients to meet facility quota	No	Count	35	10	83	128	P = 0.026	20	108	128	P= 0.05
		% within Pressure to enrol patients to meet facility quota	27.30%	7.80%	64.90%	100.00%		15.60%	84.40%	100.00%	
	Yes	Count	29	10	34	72		2	70	72	
		% within Pressure to enrol patients to meet facility quota	39.70%	13.70%	46.60%	100.00%		2.80%	97.20%	100.00%	
	Total	Count	63	20	117	200		22	178	200	
		% within Pressure to enrol patients to meet facility quota	31.70%	10.10%	58.30%	100.00%		11.10%	88.90%	100.00%	

Discussion

The changing epidemiological profile of South Africa has led to an over extension of public sector health care facilities. By the end of September 2016 more than 735 080 patients in 37 Districts and 1672 health facilities were participating in the CCMDD programme [13].

The majority of HCWs in this study (178/200, 89.0%) responded to understanding their role. Role understanding and effective communication are core competencies for collaborative practice. The findings of this study are in agreement with Suter et al., (2009) who stated that the ability to work with professionals from other disciplines to deliver collaborative patient-centred care was considered a critical element of professional practice requiring a specific set of competencies [14].

The majority of HCWs in this study responded to having spent only a fraction of their day involved in the CCMDD programme (86/200, 43.0%) which is consistent with the findings that only a selected number of HCWs were involved in the CCMDD programme. This finding is in contradiction with another study conducted in 2005 suggesting that employee engagement was linked with performance when employees devoted sufficient time to a particular task [15]. The authors further stated that when employees were engaged, they were more likely to put energy into interactions with clients and there may be a spill-over effect onto colleagues, creating a more engaged workplace generally and as a result may also be a reason why engagement might have an effect on performance outcomes in health care[15].

The majority of HCWs in this study are not aware of facility enrolment targets (112/200, 56.0%). Healthcare facilities in the eThekweni district were given facility targets to meet with respect to the enrolment of patients onto the CCMDD programme, as part of the eThekweni district roll out plan. The eThekweni district roll out plan formed a part of the provincial monthly target, which was designed so as to meet the national set target [16]. This suggestion can be further collaborated by the Healthcare provider perspectives from the evaluation of the National Adherence Guidelines for Chronic Diseases in South Africa, whereby it was stated that targets and priorities for decongestion of patients needed to be clearly communicated and appropriate training for all guidelines and strategies was required[17].

The majority of HCWs in this study identified private service provider related issues (37/200, 18.5%) being the main challenge faced in the implementation of the programme. This finding is further emphasised by a report on the functioning of the CCMDD programme in the eThekweni Metropolitan Health District which states the shortcomings of the private service provider [18]. The most common private service provider related issues were identified (after correlation of responses by all Healthcare facilities via an email template circulated by the district pharmacy manager) as (i)incorrect pick up point data capturing and delivery, (ii)late deliveries of parcels to pick up point (after the patient has

come for collection), (iii) incorrect patient details data capturing, (iv) re-congestion of facilities due to private service provider queries, (v) prescriptions scanned at facility but not received by private service provider and (vi) incomplete dispensing of patient prescriptions by private service provider (whereby patients have more than one script)[18].

The belief in the potential of the CCMDD programme by HCWs in this study was confirmed by almost all of the respondents (185/200, 92.50). The CCMDD programme was not only implemented with benefits to public sector patients in mind, but also designed to benefit HCWs in the public sector, such as a reduced workload for overburdened staff, which will lead to improved quality of service as well as reduced health facility congestion [6]. With respect to the objectives for which the CCMDD programme was designed, this study found a visible decrease in the congestion of patients at the Healthcare facilities (147/200, 73.50%). It is important for HCWs to believe in the programme that they are pioneering, as improving clinical processes and ensuring a high-quality patient experience is highly dependent on the commitment, dedication and skills of a hospital's employees [19].

In order to identify aspects that need to be improved so as to result in the better implementation of the CCMDD programme, HCWs were asked which aspects they felt needed to be improved. The majority of HCWs identified that more training in the form of workshops and seminars are needed (150/200, 75.0%). Therefore it is highly recommended that the majority (preferably all) of staff are given the opportunity to attend workshops and seminars provided by the department and other organizations as part of training for programmes. If this is not possible, then those HCWs that do attend are to provide in-service training at the institution, so as to train and educate other Healthcare workers. A study found evidence that showed that training is better than no training and that the knowledge from one training program may be transferable to other programs and work sites [20].

Another important question posed to HCWs in this study was whether they were equipped with sufficient resources and or personnel to implement the CCMDD programme. Just over half of the participating HCWs in this study (117/200, 59.0%) responded with a yes. This is in agreement with another study conducted by the World Bank in South Africa about the evaluation of the National Adherence Guidelines (AGL) for chronic diseases in South Africa, which emphasized that training the right and an adequate number of personnel plays an important role in implementing both the CCMDD programme [17].

A significant association between the impression of HCWs in this study of the CCMDD programme and time spent by HCWs involved in the CCMDD programme was determined (p-value ≤ 0.05). The majority of HCWs that spent all their day involved in various aspects of the CCMDD programme (20/43, 46.51%) had an excellent impression of the CCMDD programme. From this association we

can see that the more time spent engaged on a programme results in a better impression of the programme, as when employees are engaged [17].

The pressure to enrol patients onto the CCMDD programme in this study showed a significant difference when associated with being equipped with sufficient resources and personnel (p -value ≤ 0.05). It is important that HCWs are provided with sufficient resources and personnel to adequately perform both their role and fulfil their responsibilities toward their patients as well as achieving a highly successful programme outcome as can be seen from the recommendation by the study done by the World Bank in South Africa which stated the potential for the AGL to reduce the burden on clinical staff [19].

It was discovered that HCWs are too busy (due to staffing issues) to be interviewed or even fill out a questionnaire- this can clearly be seen by the response rate of medical officers in table 1 (22/200, 11.0%). Statistics do in fact support the latter statement, as in 2013; there were just 25 state doctors and 92 private sector doctors per one hundred thousand people in South Africa. The average is 60 doctors per hundred thousand, while the world average is 152. Even in India (70), Brazil (189) and China (194), there are more doctors per one hundred thousand people [15].

Strengths and limitations of the study

This study has been conducted in the eThekweni metropolitan health district at six sites. As not all sites were involved in the study, caution is advised in interpretation of the results, and the authors cannot generalise the findings to the entire district, the province of Kwa-Zulu Natal and the entire South African country. Another strength of this study was an achieved good response rate of 81.63%. This is in agreement with a study conducted to explore what could and should be a reasonable response rate in academic studies [21]. The percentage of missing value for almost all variables in this study was very low, if not negligible. The study sample was exclusively made of HCWs involved in the CCMDD programme in the public health sector. Further research is needed to investigate views and perceptions of patients attending chronic dispensing programmes.

Conclusion

Most HCWs were aware of their role in the implementation of the CCMDD programme. Private service provider related issues have a negative effect on the programme. Patient enrolment targets were unknown by HCWs. Before HCWs are involved in the programme they should be made aware with of their roles and responsibilities in the implementation of the programme. It is also recommended that all HCWs are involved in the CCMDD programme, this programme requires all HCWs to work in conjunction with each other for the benefit of patients. HCWs expressed the need to rotate within the different services of the CCMDD programme. HCWs play an important role in the

provision of healthcare services to patients seeking medical assistance in the public healthcare system; therefore it is imperative to address challenges, shortcomings and opportunities identified to provide health care of impeccable standard, in accordance with the NHI objectives. Further research is needed to investigate views and perceptions of patients attending chronic dispensing programmes.

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CHAPTER 4 – SYTHESIS

4.1 Synthesis and Discussion – Significance of major findings

4.1.1 Training required by Healthcare workers (HCWs) prior to being involved in the CCMDD programme

In terms of training the majority of all HCWs that participated in the study had undergone training before being involved in the implementation of the CCMDD programme. Training of HCWs empowered them to understand SOPs and the reasons for the implementation of the programme; therefore a training gap was identified by the 39.0% of HCWs (78/200) that did not receive any training prior to being involved in the programme. The NDoH CCMDD implementation workshop was the option preferred by most of the HCWs that did not receive training (30/78, 38.5%). It is imperative that all HCWs undergo training prior to being involved in the implementation of the CCMDD programme, this is in agreement with a study conducted by Penfold (2018) which stated employee training is important as it helped improve engagement and increased retention. The author also stated that if training is conducted effectively and correctly, it had a positive impact on efficiency, innovation and productivity. In a study by Anacleto et al, (2007) it was stated that Healthcare services are a multidisciplinary system in which actions of the involved HCWs are directly linked and mutually dependent, therefore any flaws in one of the processes will affect the other providers' actions and patient care. The authors recommended that it was important for Healthcare providers involved with medication (physicians, pharmacists and nursing staff) to be familiar with its system and different processes (drug prescription, dispensing and administration) (Anacleto et al, 2007). A similar analogy can be applied to the concept of training HCWs involved in the CCMDD programme.

4.1.2 Familiarity with reasons for implementing the CCMDD programme does not result in the understanding of the CCMDD programme by HCWs

Although almost all of the HCWs in this study responded to being familiar with the reason for the implementation of the CCMDD programme (195/200, 97.5%), only 76.5% of HCWs were familiar with SOPs (153/200). From the 76.5% of HCWs that were familiar with the SOPs, even fewer HCWs (37/153, 24.2%) had an excellent understanding of the SOPs. These results indicate that familiarity with the reasons for the implementation of a programme does not equate to the understanding of the programme, therefore it is recommended that HCWs receive SOP upskill training, be monitored consistently and receive refresher training at regular intervals to ensure compliance. This is in

agreement with a study by Bodanapu (2013) that stated it is important to devote sufficient time to refresh employees in current issues and to increase their competency by providing Refresher training which increases the self-confidence and morale of the employees.

4.1.3 The majority of HCWs are unaware of facility targets with respect to the enrolment of patients onto the CCMDD programme

Healthcare facilities in the eThekweni Metropolitan Health District were provided with facility targets with respect to the enrolment of patients onto the CCMDD programme, as part of the eThekweni District roll out plan. The majority of HCWs are not aware of these enrolment targets at facilities (112/200, 56.0%), therefore identifying a gap to be addressed and remedied. It is imperative that the correct information is cascaded and correctly communicated to HCWs on all aspects of the CCMDD programme including enrolment targets. This is in agreement with a study conducted by the World Bank Group (2017) found that targets and priorities for the decongestion of patients needed to be clearly communicated and appropriate training for all guidelines was required.

4.1.4 Belief of HCWs in the potential of the CCMDD programme

Almost all HCWs in this study (185/200, 92.50%) responded to believing in the potential of the CCMDD programme to meet the objectives for which it was created. They further indicated that they had noticed a visible decrease of patients at their facility level (147, 73.5%). Steel (2014) explains that the CCMDD programme was designed with envisaged benefits to HCWs in the public sector including reduced workload for overburdened staff, which will lead to improved quality of service and reduced health facility congestion. As a result, it is important that HCWs believe in the potential of the programme of which they are pioneering as explained in a study conducted by Sherwood (2013) which demonstrated that improving clinical processes and ensuring a high-quality patient experience is highly dependent on the commitment, dedication and skills of a hospital's employees.

4.1.5 The pressure on HCWs to enrol patients onto the CCMDD programme is dependent on HCWs being equipped with sufficient resources and personnel

In this study, the pressure by HCWs to enrol patients onto the CCMDD programme showed a significant difference when associated with being equipped with sufficient resources and personnel. It is important that HCWs are provided with sufficient resources and personnel to adequately perform both their role and fulfil their responsibilities toward their patients as well as achieving a highly successful programme outcome as can be seen from the recommendation by the study done by the World Bank (2017) in South Africa which stated the potential for the AGL to reduce the burden on clinical staff.

5. General Conclusions

Despite many challenges faced by HCWs in the CCMDD programme, HCWs recognised the role played by this programme in achieving a visible decrease in facility congestion. The majority of HCWs involved in the CCMDD programme indicated the role of training received before being involved in the running and implementation of the programme. Most of respondents agreed to have been trained and received adequate preparation enabling them to embark in the CCMDD programme. The majority of HCWs in this study understood their role in the implementation of the CCMDD programme.

6. Recommendations for future research

Further research is needed to cover the remaining districts and provinces in South Africa (in which the CCMDD programme has been implemented) to explore the role of training and working experience of HCWS involved in the CCMDD programme. More investigations should be carried out to gather the views and perceptions of patients attending the CCMDD programme. Further studies may look at the readiness of private sector providers and their roles in the implementations of public and private chronic medicines dispensing programmes.

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8. Appendices

8.1 BREC approval



Ms L. Maharaj (210503167)
Discipline of Pharmaceutical Sciences
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Dear Ms Maharaj

Title: Assessment of factors affecting health care workers involved in the centralised chronic medicines dispensing and distribution (CCMDD) programme: The case of eThekweni Metropolitan Health District, South Africa. Degree: M-Pharm BREC REF NO: BE514/16

EXPEDITED APPLICATION

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received on 05 September 2016.

The study was provisionally approved pending appropriate responses to queries raised. Your response received on 28 February 2017 to BREC letter dated 26 January 2017 have been noted by a sub-committee of the Biomedical Research Ethics Committee. The conditions have now been met and the study is given full ethics approval and may begin as from 06 March 2017.

This approval is valid for one year from 06 March 2017. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290408-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be RATIFIED by a full Committee at its next meeting taking place on 14 March 2017.

We wish you well with this study. We would appreciate receiving copies of all publications arising out of this study.

Yours sincerely



Professor Joyce Tsoka-Gwegweni
Chair: Biomedical Research Ethics Committee

cc supervisor: njoto@ukzn.ac.za

cc postgraduate officer: neneo1@ukzn.ac.za

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8.2 Letters of support



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RKK 10/2016

14th October 2016

To Whom It May Concern

Re: Miss Lerisha Maharaj Persal No. 64910423

This serves to confirm that I have known Miss Lerisha Maharaj since January 2014 when she commenced duty as a Pharmacist Intern at our institution.

During her internship year, I found her to be a very responsible person who conducted herself in a positive and professional manner.

I fully support her in her current research project and I am confident that she will make a success of it.

I wish her all the best.

Yours faithfully,

Pharmacy Manager



health

Department:
Health
PROVINCE OF KWAZULU-NATAL

CATO MANOR COMMUNITY HEALTH CENTRE
REHABILITATION DEPARTMENT
25 Kalenden Road, Cato Manor 4091
P O Box 2443, Durban 4001
Tel: 031 261 4260 Fax 031 261 4746
Email: vijaynaidoo2@kznhealth.gov.za
www.kznhealth.gov.za

22 August 2016

To whom it may concern,

This serves to confirm that Miss.L. Maharaj (Persal number 64910423) a pharmacist at Cato Manor Community Health Care centre, has full support from the facility, in conducting her research ("assessment of factors affecting health care workers involved in the centralised chronic medicines dispensing and distribution (CCMDD) programme : The case of eThekweni Metropolitan Health district, South Africa") for a master in pharmacy, provided ethics approval is granted.

For any queries please contact me on 031 260 4260

Yours sincerely,

Matron. G.N Mkhize

uMnyango Wezempilo . Departement van Gesondheid

Fighting Disease, Fighting Poverty, Giving Hope

8.3 Approval from Kwa-Zulu Natal Provincial Department of Health



health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address: 590 Langa/Balele Street, Pietermaritzburg
Postal Address: Private Bag X9051
Tel: 033 395 2805/3189/3123 Fax: 033 394 3752
Email: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

DIRECTORATE:
Health Research & Knowledge
Management

HRKM Ref: 055/17
NHRD Ref: KZ_2016RP26_21

Date: 13 February 2017
Dear Ms L. Maharaj
UKZN

Approval of research

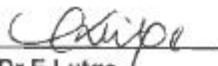
1. The research proposal titled '**Assessment of factors affecting Health care workers involved in the Centralized Chronic Medicines Dispensing and Distribution (CCMDD) programme: The case of eThekweni Metropolitan Health district, South Africa**' was reviewed by the KwaZulu-Natal Department of Health.

The proposal is hereby **approved** for research to be undertaken at Clairwood, King Edward VIII, King Dinuzulu and RK Khan Hospital; Cato Manor CHC, Hlengisizwe CHC, Inanda CHC.

2. You are requested to take note of the following:
 - a. Make the necessary arrangement with the identified facility before commencing with your research project.
 - b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.
3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely


Dr E Lutge

Chairperson, Health Research Committee

Date: 13/02/17

Fighting Disease, Fighting Poverty, Giving Hope

8.4 Approval from eThekweni Municipality Health District



health

Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE:

Physical Address : 83 King Cetshwayo Highway, Mayville, Durban, 4001
Postal Address: P Bag X54318, Durban 4000
Tel: 031 - 2405308 Fax: 031 2405555 Email: somaroo@ukzn.ac.za

eThekweni District Office

13 December 2016

Dear Ms Maharaj

Re: Assessment of factors affecting Health care workers involved in the Centralized Chronic Medicines Dispensing and Distribution (CCMDD) programme: The case of eThekweni Metropolitan Health district, South Africa

I have pleasure in informing you that the eThekweni District Office supports the above-mentioned NICD research project, at the following health care facilities:

- i. Cato Manor CHC
- ii. Clairwood Hospital
- iii. R.K. Khan Hospital
- iv. King Edward Hospital
- v. King Dinizulu Hospital
- vi. Hlengisizwe CHC
- vii. Inanda CHC

Please note the following:

- i. All research activities must be conducted in a manner that does not interrupt clinical care at the health care facility,
- ii. logistical details must be arranged with the CEO/medical manager /operational manager of the facility,
- iii. this research project should only commence after final approval by the KwaZulu-Natal Health Research and Knowledge Unit, and full ethical approval, has been granted, and
- iv. a report of your findings should be forwarded to the eThekweni district office on completion of your project.

Yours sincerely

H Somaroo (Dr)
Public Health Medicine Specialist

Fighting Disease, Fighting Poverty, Giving Hope

8.5 Study Information sheet



UNIVERSITY OF TM
KWAZULU-NATAL
—
INYUVESI
YAKWAZULU-NATALI

Informed Consent Form for health care professionals (Doctors, nurses, pharmacists, pharmacist interns and Post – basic pharmacist’s assistants) involved in the CCMDD programme treatment in the EThekweni Health district.

Title of Research Study – *“Assessment of factors affecting Health care workers involved in the Centralized Chronic Medicines Dispensing and Distribution (CCMDD) programme: The case of eThekweni Metropolitan Health district, South Africa”*

- 1. Name of Principle Investigator/s** – Lerisha Maharaj
- 2. Name of Organization** – University of KwaZulu-Natal, discipline of Health sciences, Department of Pharmaceutical sciences.
- 3. This Informed Consent Form has two parts:**
 - Information Sheet (to share information about the study with you)
 - Certificate of Consent (for signatures if you choose to participate)

You will be given a copy of the full Informed Consent Form

Information Sheet

Introduction

My name is Lerisha Maharaj and I am currently completing my Masters in Pharmacy, at the University of Kwa-Zulu Natal. My research is based on the current CCMDD programme that is being rolled out in public health sectors. I will be investigating the roles, opportunities and challenges faced by Health Care workers involved in the CCMDD programme. I am going to give you some information and invite you to participate in my research. Before you decide on participating you can speak to whomever you feel welcome with about this research. If you do not understand any words or phrases in the consent form, you may ask questions, and I shall try to answer them to the best of my ability.

Purpose of the research

This study was developed to establish the impact of Healthcare workers on the CCMDD programme. The CCMDD programme has been initiated in the public health sector to ease the burden on the health sector as well as to ensure that medicines become readily available to patients in a more convenient process. By understanding the impact Healthcare workers have on the CCMDD programme, we can outline any shortcomings and identify solutions to the problems experienced. This research will involve your participation in a questionnaire. You have been invited to participate in this research as I feel that your experiences gained from being involved in the CCMDD programme can contribute to a better understanding of the effect of Healthcare workers on the programme.

Type of Research Intervention

The research involves a self explanatory questionnaire that can be self-administered.

Participant Selection

Only Healthcare workers (medical officers, professional nurses, pharmacists, pharmacist interns & Pharmacists assistants) that have been involved in the CCMDD programme for a period of 2 months or more are eligible for participation.

Voluntary Participation

Your participation in this research and questionnaire is entirely voluntary, and the decision to participate is entirely yours. You may change your mind during the course of the questionnaire and stop participating if you deem appropriate. If you choose to not participate in this research, your involvement in implementing the CCMDD programme will not be affected. If you accept, you will be asked to fill out a questionnaire and consent form. The completed questionnaires and consent forms will be provided and collected by UZKN data collectors

Procedures

A. Provide a brief introduction to the format of the research study.

We are conducting this research project so as to gather information from Healthcare workers about their roles, opportunities and challenges experienced as a result of being involved in implementing the CCMDD programme. Every Healthcare worker involved in the CCMDD programme, in the current institution will be provided with a survey to complete. If you accept to participate in this study, you will be asked to fill out a questionnaire provided by myself and accompanying UKZN data collectors. You are welcome to answer the questionnaires on your own or the data collectors can assist by reading out the questions and writing down your response. It would be appreciated if you could answer all questions on the questionnaire. However, if you do not wish to answer any particular question, you can move on to the next question. The information recorded is confidential and your name is not included/indicated on the actual questionnaire, only a number. The completed questionnaire will be kept with the principal investigator at UZKN (Pharmacy Department) and no one besides the supervisor and I will have access to the questionnaire. All data collected will be destroyed 5 years after the completion of the Masters Project.

Duration

The research will take place over 3 months and during this time you will be asked to complete a questionnaire and participate once.

Risks

There is a small possibility that you may share some personal information with us by chance. However we do not wish for this to occur. You do not have to answer any questions in the survey or the focus group discussions if you do not feel comfortable.

Benefits

Your participation is likely to help us to improve the implementation of the CCMDD programme, by identifying and shortcomings/challenges experienced by Healthcare workers involved in the CCMDD programme, so as to improve the implementation of the programme as a whole. I will be able to understand shortcomings and aid in finding solutions for the future.

Reimbursements

There are and will be no costs incurred by participants as a result of participation in the study. There are also no incentives or reimbursements for participation in the study

Confidentiality

All the information we will collect will remain strictly confidential. Any information kept on the computer will be password protected. All physical information viz. questionnaires, consent forms and data sheets will be kept for a period of 5 years and destroyed by shredding thereafter.

Right to Refuse or Withdraw

You are not obligated to participate in the research. If you choose to refuse to participate in this research, the Healthcare services you provide will not be compromised. You can also choose to stop participating in the questionnaire at any time.

Who to Contact

The research proposal has been reviewed and approved by the UKZN Biomedical Research Ethics Committee (approval number BE 514/16). An ethics committee is responsible for ensuring that research participants are protected from harm while participating in a research. In the event of any problems, concerns or if you wish to find out more about the research ethics committee that has approved this research, you can contact:

1. Dr. M. Nlooto (Research supervisor)
Email: nlooto@ukzn.ac.za
Telephone: 0312607030

2. Ms Lerisha Maharaj (principal investigator)
Email: Lerisha.maharaj@gmail.com
Telephone : 073 832 6078

3. UKZN Biomedical Research Ethics Committee
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: BREC@ukzn.ac.za

4. Informed consent

(This section is mandatory)

I _____ (full name in capital letters) have been sufficiently informed about the study entitled “*Assessment of factors affecting Health care workers involved in the Centralized Chronic Medicines Dispensing and Distribution (CCMDD) programme: The case of eThekweni Metropolitan Health district, South Africa*” By _____ (name of principle investigator / data collector in capital letters). I confirm that I have received information about the study or it has been read to me. I have had the opportunity to ask questions and my questions were answered to my satisfaction. I fully understand the purpose and procedures of this study. I hereby declare that my participation in this study is completely voluntary and that I have the ability to withdraw from the study at any time. My refusal to participate or to withdraw from the study will not have any impact on the Healthcare service I receive. I know that if I have any further questions about the study I can call the researcher or supervisor.

Signature of Participant Date

Signature of Witness Date

Statement by the researcher / person taking consent

I confirm that I have ensured that the participant has understood the purpose of my research and what it entails. I confirm that I have given the participant an opportunity to ask questions and I have answered the questions fully. I confirm that the participant has not been coerced into giving consent, and the consent has been given voluntarily. A copy of this informed consent has been provided for the participant.

Print name of researcher/person taking consent

Signature of researcher/ person taking consent

Date _____

8.6 Letter of permission and support to facility manager

To the Facility Manager

(Name of institution to be inserted here)

Date

Dear Sir/Madam

RE: Application for support to conduct a study in your Facility

I am a master's student in the discipline of pharmaceutical sciences, at the University of Kwa-Zulu Natal. I am conducting research that will be formulated into a research proposal, to be submitted at the end of June 2018. I would like to request your permission and support in order to successfully conduct my research project in the facility, under your responsibility. The title of the study is: "Evaluating the factors that affect the role of Health care workers involved in the Centralized Chronic Medicines Dispensing and Distribution (CCMDD) programme, in the eThekweni Metropolitan Health district, in South Africa"

An information sheet about the project is attached to this letter. I would like to conduct a survey among randomly selected Healthcare workers, involved in the implementation of the CCMDD programme at the facility. For this I require your assistance and permission in order to enter the premises of the public health facility.

The research proposal has been reviewed and approved by the UKZN Biomedical Research Ethics Committee (approval number BE 514/16) and approval from National Department of health as well as the eThekweni health district has been received, and is attached. This research study is registered with the postgraduate office of School of Health Sciences, University of Kwa-Zulu Natal, Westville Campus. You may contact Ms. Phindile Nene at the research office (Telephone: 031 260 8280) as well as my Supervisor, Dr. Manimbulu Nlooto (Telephone: 031 260 7030 or Email: Nlooto@ukzn.ac.za) in the Discipline of Pharmaceutical Sciences for further clarity if required.

Yours Faithfully,

Miss Lerisha Maharaj

210503167

8.7 Questionnaire for Healthcare workers involved in the CCMDD programme

Please tick the appropriate box and fill in information where applicable

SECTION A – GENERAL DATA

1.1 What is your occupation

Medical Officer	
Pharmacist	
Pharmacist Assistant	
Nurse	
Other (Please specify)	

1.2 How long have you been involved in the CCMDD programme?

2 Months	
2-3 Months	
Since the Catch-up Plan	
Other (Please specify)	

1.3 Did you undergo any training in CCMDD prior to being involved in the programme?

Yes	
No	
Other (Please specify)	

1.4 If you answered yes to the above question (1.3), what training were you provided with?

NDoH -CCMDD Implementation workshop	
Training provided at facility by Stakeholders of CCMDD (e.g. HAST, MEDIPOSTetc)	

Internal Training by Peers	
Other (Please specify)	

1.5 If you answered no to question 1.3 regarding training, how would you like to have been trained?
(Please explain)

1.6 Are you aware of any Standard Operating Procedures at your facility with respect to CCMDD?

Yes	
No	
Other (please specify)	

1.7 If you answered “yes” to the above question (Question 1.6) are you familiar with these SOP’s pertaining to the implementation of the CCMM programme?

Yes	
No	
Other (please specify)	

1.8 How familiar are you with these SOP’s?

Excellent – I know the SOPS’s properly	
Average – I know certain aspects of the SOP’s	
Poor – I know less than 20% of the SOP	
Not at all – I have not read the SOP	

1.9 Are you familiar with the reason of implementing CCMDD?

Yes	
No	
Other (please specify)	

1.10 Are you aware of the contents and have sufficient knowledge of the NHI white paper (the documentation that is the reason for CCMDD)

Yes	
No	
Other (please specify)	

1.11 If you answered “No” to the above question (Question 1.9) please provide a reason:

PART B: IMPLEMENTATION OF CCMDD

2.1 Do you fully understand your role in the implementation of the CCMDD programme at your facility?

Yes	
No	
Other (please specify)	

2.2 How much time do you spend a day involved in the various aspects of the CCMDD programme?

All of my day	
Most of My day	
A fraction of my day	
Not at the moment	

2.3 Are you aware of the target that your facility has to meet, with respect to enrolling patients onto the CCMDD programme?

Yes	
No	

Other (please specify)	
------------------------	--

2.4 Rate the following aspects (from 1-4, with **4 being the most negative aspect** and **1 being the least negative**, that has a negative effect on the implementation of the CCMDD programme at your facility:

Lack of adequately trained staff	
Incorrect patient medication received at facility	
Lack of knowledge about CCMDD	
Medipost related issues	

2.5 Do you think that CCMDD has the potential to do all that is expected of the programme? I.e. decongest health facilities, improve accessibility to medication etc?

Yes	
No (Please specify why)	
Other (please specify)	

2.6 Have you noticed a visible decrease in the congestion of patients at your facility?

Yes	
No (Please specify why)	
Other (please specify)	

2.7 What are some of the challenges that you as a health care worker, face, with respect to the implementation of the CCMDD programme? Please explain briefly.

2.8 What aspects need to be improved, resulting in a better implementation of the CCMDD programme?

More Training is required in the form of	
--	--

workshops and seminars	
More Training is required as in-service training at the facility	
Printed guidelines and documentation	
Uniform SOP's and dispensing procedures and familiarity of them	
Greater complement of staff	

2.9 What is your impression of the CCMDD programme?

Excellent	
Good	
Satisfactory	
Challenging	
Poor Co-ordination	

2.10 Do you feel pressured to enrol patients so as to meet the designated quota per facility?

Yes	
No	
Other (please specify)	

2.11 Are you equipped with sufficient resources /personnel to implement the CCMDD programme?

Yes	
No	
Other (please specify)	

THE END

8.8 Ethics training certificates



**Zertifikat
Certificat**

**Certificado
Certificate**

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants



Certificat de formation - Training Certificate

Ce document atteste que - this document certifies that

Lerisha Maharaj

a complété avec succès - has successfully completed

Introduction to Research Ethics

du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

May 12, 2016
CID : XZ2pqrKdhi

Professeur Dominique Sprumont
Coordinateur TRREE Coordinator



Continuing Education Programs
Programmes de formation continue

Ce programme est soutenu par - This program is supported by :

European and Developing Countries Clinical Trials Partnership (EDCTP) (www.edctp.org) - Swiss National Science Foundation (www.snf.ch) - Canadian Institutes of Health Research (<http://www.cihr-irsc.gc.ca/e/2891.html>) - Swiss Academy of Medical Science (SAMS/ASSM/SAMW) (www.samw.ch) - Commission for Research Partnerships with Developing Countries (www.kfpe.ch)

[REV : 20170310]



Zertifikat Certificat

Certificado Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants



Certificat de formation - Training Certificate

Ce document atteste que - this document certifies that

Lerisha Maharaj

a complété avec succès - has successfully completed

Research Ethics Evaluation

du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

May 12, 2016
CID : idB1109PIK

Professeur Dominique Sprumont
Coordinateur TRREE Coordinator



Ce programme est soutenu par - This program is supported by :

European and Developing Countries Clinical Trials Partnership (EDCTP) (www.edctp.org) - Swiss National Science Foundation (www.snf.ch) - Canadian Institutes of Health Research (<http://www.cihr-irsc.gc.ca/e/2891.html>) - Swiss Academy of Medical Science (SAMS/ASSM/SAMW) (www.samw.ch) - Commission for Research Partnerships with Developing Countries (www.kfpe.ch)

[REV : 20170310]