

ABSTRACT

Purpose of the study

The purpose of the study is to determine the effect of the down-referral chronic medication distribution system on patient's adherence to chronic medicine in Buffalo City sub – district by ensuring that chronic patients receive their correct medication on time and in correct quantities every month so that they can take the medication as recommended by the health professional. Adherence to chronic medication lead to better health outcome and reduced hospital re-admission.

Research Design

A non-experimental and descriptive quantitative research methodology was used. A data abstraction form developed by the researcher was used to record data from the medical records of chronically ill patients.

Findings

The results of the study revealed that most of the chronically ill patients who were admitted to hospital were not adherent to their chronic medication. Patients are non-adherent even if they have chronic medication with them. This was evident in the number of patients who do not remember how many days did they not take their treatment. Others indicated that they share their medication with other family members who suffer from the same chronic condition.

Conclusion

The patients' lack of understanding of their chronic condition and the consequences of not taking medication as instructed by the health professional contribute to non-adherence. Strengthening of health promotion programmes to educate the patients about their chronic condition would improve adherence. Most of the chronic conditions are life-style modifiable diseases. Patients

must be educated about the changes they can make to improve their quality of life.

KEY WORDS: Down referral chronic medication distribution system, chronic diseases, adherence, essential drug list

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ABBREVIATIONS

WHO	- World Health Organization
PHC	- Primary Health Care
DHS	- District Health System
DHMT	- District Health Management Team
NDP	- National Drug Policy
BUR	- Bed Utilization Rate
ALOS	- Average Length of Stay
DHIS	- District Health Information System
ARVs	- Anti-retroviral medication
EDL	- Essential Drug List
STG	- Standard Treatment Guidelines
NCDS	- National Chronic Disease Strategy
EPC	- Enhanced Primary Care
CCM	- Chronic Care Model
ECCM	- Expanded Chronic Care Model
CDM	- Chronic Disease Management
ICCC	- Innovative Care for Chronic Conditions
NHI	- National Health Insurance
HPT	- Hypertension
DM	- Diabetes Mellitus
HF	- Heart Failure
COPD	- Chronic Obstructive Pulmonary Disease
PSYC	- Psychiatric Condition
EPIL	- Epilepsy
TTO	- To Take Out medication

CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 INTRODUCTION

World Health Organization (WHO) in the Alma-Ata Declaration of 1978: 2, defined Primary Health Care (PHC) as an essential care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part of both the country's health system of which is a central function and main focus, and overall social and economic development of the community. It is the first level of contact of individuals, the family and community with the national health system, bringing health care as close as possible to where the people live and work, and constitutes the first element of continuing health care process”(WHO, 1978: 3).

The South African health system face significant challenges, which include quadruple burden of disease, economic and social inequity, barriers to accessing health services and inequitable distribution of health resources. The PHC approach is seen as the core platform for reform, building a restructured and effective health care system – rather than an additional reform. The implementation of this core platform would require a proper functioning district health system. The PHC approach formed the basis of the transformation of South African health system. The South African government established excellent public health legislation and policies, increasing infrastructure at primary care level, removing user fees for maternal and child care services (Schaay, Saunders & Kruger, 2011: 2).

Numerous barriers still exist in relation to accessing health care. One of the common barriers is the distance to the health facility. The overall average travelling time to a health facility for the poorest 20% of households is nearly 40 minutes and a single visit costs on average 11% of the households' monthly expenditure (McIntyre, 2010: 191).

The PHC Re-engineering initiative aims to:

- Strengthen the district health system (DHS), through the implementation of Chapter 5 of the National Health Act, with the district health management team (DHMT) being given the responsibility for the management of the DHS and be accountable.
- Place greater emphasis on the delivery of the community-based services by more pro-actively reaching out to families, with an emphasis on disease prevention, health promotion and community participation. This represents a shift from curative focus that characterises the delivery of health services at present (Schaay, Saunders & Kruger, 2011: 2).

The majority of the patients that receive healthcare services at Frere Hospital, in East London, are patients that have been referred from the (PHC) facilities within Buffalo City sub- district and other hospitals across the province. There are those patients that by-pass the PHC and present themselves at Frere Hospital. It is enshrined in the Constitution of the Republic of South Africa (1996: 14) that all citizens have the right to healthcare. Therefore, even if there are policies in place that stipulate that the communities must access healthcare services at the clinics closer to their homes as the initial point of contact, once a patient has presented himself or herself at the hospital, the patient cannot be turned away. There are contributing factors to this challenge, of which one them is the malfunctioning PHC. If the PHC system of the country does not meet the objectives it is intended for, it affects the healthcare system of the country.

The goal of the National Drug Policy (NDP) is to ensure an adequate and reliable supply of safe, cost-effective drugs of acceptable quality to all citizens of South Africa and the rational use of medicines by the prescribers, dispensers and patients. The health objectives addressed in the NDP include:

To ensure the availability and accessibility of essential drugs to all citizens, to ensure the safety, efficacy and quality of drugs, to ensure good prescribing and dispensing of drugs, to promote the rational use of drugs by prescribers, dispensers and patients through provision of the necessary training, education and information. To promote the concept of individual's responsibility for health, preventive care and informed decision - making (National Drug Policy of South Africa, 1996).

The down-referral chronic medication distribution system is one of the strategies implemented to ensure the availability and accessibility of essential drugs to all citizens.

1.2 PROBLEM STATEMENT

The South African health system is faced with many challenges that are related to service delivery. Due to the complexity of the health system itself, the process of health reform is continuing in order to address such challenges. Frere Hospital is a tertiary hospital situated in East London, within the Buffalo City sub-district. Service delivery at this hospital is affected by the challenges that the entire system face of which malfunctioning PHC and referral system are the major contributors. Frere hospital serves as a referral hospital for a population of 2.8 million (Statistics South Africa, 2011: 18). This catchment area includes Amathole, Chris Hani, Joe Gqabi and Buffalo City Municipalities.

The hospital down-refers chronic patients who are stable on treatment and are only reviewed by the doctor every six months. For the six months that the patient does not have to consult with the doctor, the medication is packed at the hospital and delivered to the clinic close to the patients' home through the down-referral chronic medication distribution system. This intervention is beneficial for the patients and the hospital. The patients do not have to travel long distances to collect their medication for their chronic diseases including hypertension or diabetes. The congestion and waiting time at the hospital are reduced. However it has become a concern that when delivering the down-referral chronic medication parcels to the clinics, the pharmacy personnel bring back the parcels that have not been collected by chronic patients for a maximum period of three months. The reasons for not collecting medication parcels therefore vary from defaulting on treatment or non-adherence to chronic medication. The patients' contact details are captured on the down-referral chronic medication distribution system when they register. Even those patients that do not have telephone numbers, they are requested to provide a telephone or cell phone number of a neighbour or a relative where a message could be left for them. Therefore once the returned medication parcels are captured, the pharmacist contacts the patients to determine the reasons why they have not collected their medication (Rx Solution, version 1.3).

- The bed utilization rate (BUR) of the hospital is 82.3%, with the average length of stay (ALOS) in the medical wards being 8.1 days against the national norm of 5.5 days (District Health Information System - DHIS 1.4.1.2 software version). It has been discovered that the majority of patients admitted in the medical wards are chronically ill patients who should be on long-term therapy. The hospital cost of admitting chronically ill patients increase on an annual basis, more especially the medicine costs. The pharmacist dispenses the chronic medication that will be delivered to the patient's local clinic through the down-referral chronic medication distribution system. The patients who are re-admitted to the hospital are those that have been on chronic medication, but presenting with symptoms of not taking their chronic medication correctly and consistently. The research is to assess the effect of the down-referral chronic medication distribution system on patient's adherence to chronic medication.

1.3 AIM OF THE STUDY AND OBJECTIVE

The aim and objective of the study will now be described

1.3.1 Aim of the study

The aim of the study was to determine the effect of the down-referral chronic medication distribution system on patient's adherence to chronic medicine in Buffalo City sub – district.

1.3.2 Research question

What is the effect of the down-referral chronic medication distribution system on the adherence to medication by the chronically ill patients in Buffalo City sub-district in the Eastern Cape?

1.3.3 Objective of the study

To determine the effect of down-referral chronic medication distribution system on the adherence to medication by the chronically ill patients in Buffalo City sub-district in the Eastern Cape.

1.4 SIGNIFICANCE OF THE STUDY

The researcher believed that it was important to conduct the study in order to know the extent to which the people living with chronic conditions understand these conditions. Understanding the condition by the patients requires them to commit themselves to working together with the health professional in discussing

and agreeing on the long-term therapy for the patients. The chronic patients should also understand their conditions as life-style diseases that even life-style modification can improve the quality of their lives. Therefore adherence is critical in ensuring good health outcomes. Assessing the adherence is important to review the system that should encourage chronic patients to adhere to their chronic medication. Also chronic patients taking responsibility for the management of their chronic conditions to improve health outcomes as well as reducing the hospital expenditure in managing non-adherent chronic patients.

1.5 DELIMITATIONS OF THE STUDY

This section addresses the scope of the study. The patients that are registered on the down-referral chronic medication distribution system database, suffer from life style diseases which include hypertension, diabetes mellitus, as well as other cardiovascular, orthopaedic and psychiatric conditions. The focus of the study was on these diseases because the patients have been on chronic medication for much longer. To achieve good health outcomes patients have to adhere to their chronic medication as well as life-style modification. The study looked at how many patients were admitted to hospital with the primary diagnosis of chronic disease that they were registered for on the down-referral chronic medication distribution system.

1.6 LIMITATIONS OF THE STUDY

The challenges of the study are highlighted in this section. The patients' level of literacy could have affected the understanding of their chronic diseases.

1.7 DEFINITION OF KEY CONCEPTS

This section will define in detail the concepts that appear more often throughout the study

1.7.1 Down-referral chronic medication distribution system

This is an intervention where the healthcare facility that offers higher level of care has stabilised a patient suffering from chronic condition and the doctor reviews that patient every six months. The chronic medication for that patient is dispensed and packed at the healthcare facility every month and send to the clinic close to the patient's home. (Inter-governmental Fiscal Review, 2003: 35). In this study the down-referral chronic medication distribution system delivers patients' medication closer to their

homes and therefore supposed to have an effect on patients' adherence to their medication.

1.7.2 Adherence

It is defined as the extent to which a person's behaviour –taking medication, following diet and executing life-style changes corresponds with agreed recommendations from the healthcare provider. (WHO Health Report, 2003). In this study adherence means the patients taking their medication according to the instruction and recommendations of the health professionals.

1.7.3 Chronic diseases

- Chronic diseases are defined as diseases which have one or more of the following characteristics: they are permanent, leave residual disability, are caused by non-reversible pathological alteration, require special training of patients for rehabilitation or may be expected to require a long term period of supervision, observation or care. (WHO Health Report, 2003). In this study the most common chronic diseases we have affecting patients are Endocrine Diseases such as Diabetes Mellitus, dyslipidaemia, hyperthyroidism; Cardiovascular Conditions such as arrhythmia, heart valve disease, congenital heart disease, rheumatic heart disease, hypertension; Psychiatric Conditions including bipolar mood disorder, psychotic disorders delusional disorders and Musculoskeletal Conditions such as arthritis, rheumatoid arthritis, osteo-arthritis and gout.

1.7.4 Essential drug list

Essential drugs are the drugs that have been identified to treat the majority of diseases that are prevalent in the country in a cost efficient and effective manner. These are the drugs that are most needed for the healthcare of the majority of the population. They should therefore be available at all times in adequate amounts and in proper dosage forms. All the medication and management of chronic conditions are stipulated in the Essential Drug List (Essential Medicine List and Standard Treatment Guidelines, 2012: 1.1).

1.8 The Referral system within South African health system

Referral is a process by which a health worker transfers the responsibility of health care temporarily or permanently to another health worker (Akande, 2004: 133). The referral system happens because the health worker at the referring health facility is not competent enough to manage the condition presented by the patient. Therefore the patient will be referred to a health facility of a higher level.

The transfer becomes temporary when the patient at the higher level of care will be managed and stabilised by medication that is available in the Essential Medicine List (EML) of a primary health care facility, which is the referring facility. The treating doctor/health worker will transfer back the patient to the health facility that referred her/him with clinical notes and treatment. The facility will be requested to take over their referred patient and continue treatment as it is available in the primary health care EML.

The permanent transfer of responsibility of care from a health facility from lower level health care facilities to a higher level of care, which is normally tertiary health facility is to ensure that the transferred patient receives specialized care in terms of clinical management and appropriate medicine for treatment. Once the patient is managed and stabilised at the tertiary hospital, the patient will be down-referred to the health facility closer his/her home or place of work, not necessarily to the health facility that referred him/her to the tertiary hospital. The reason for down – referral is that the medicine to treat that patient can only be accessed at a tertiary level of health care because of the expertise required to prescribe it and of its costs. The list of these medicines will be stipulated in the EML for tertiary health services. It is therefore the responsibility of the down-referring tertiary health facility to make sure that on a monthly basis they provide the patient with the required medicine (Hospital Level Adult EML/STG, 2012: 1.1).

1.8.1 Down – referral chronic medication distribution system

Patients managed and stabilised at a higher level are referred back to the original referring health facility. Within the PHC services, patients can be referred from a lower level to a higher level facility. Once stabilised at a higher level facility, the patient is referred back to lower level facility for further management, still within the PHC. Throughout all different levels of health services, patients requiring specialised care are identified and referred to facilities for specialized services. Patients stabilised at higher level of care are down-referred to collect their medication at a clinic closer to their homes. If the patient is stabilized at

quaternary or tertiary or secondary levels of care, that facility has the responsibility to ensure that the treatment that the patient is stabilised on, is made available for the patient at all times. To ensure the continuous supply of medication to this patient, the higher level facility packs and deliver the medicine to the clinic closer to the patient's home. The patient is given the opportunity to choose the clinic that will be most convenient for him/her to collect their medication. This intervention is called down-referral chronic medication distribution system. In this case it is the treating doctor that declares a chronically ill patient to be stable. When the patient is stable, that patient will consult with the treating doctor every six months. During the six months the patient will have to come to the hospital to collect their medication only. This group of patients that are coming to the hospitals only to collect their medication end up spending three to four hours waiting in the queues in the hospital. One of the priorities of the Ministry of Health is to reduce the waiting times. Down-referral chronic medication distribution system is one the strategies in place that is used to reduce the number of patients that are coming to the hospital. It also supports one of the objectives of the South African National Drug Policy of 1996, which is to increase the availability and access of medication to the communities.

The South African health system also functions within a resource constrained environment. Therefore the Ministry of Health appointed a multi-disciplinary committee of experts that is representative of all the provinces and called it National Essential Medicine List Committee (NEMLC) for a five year term. Through consultation and research, the committee utilises evidence –based-medicine to develop a list of medicines to be used at various levels of care. This list is called Essential Medicine List or Standard Treatment Guidelines (EML/STG). This list ensures increased access and availability of cost-effective, safe and quality medicines (Hospital Level Adult EML/STG, 2012: 1.1).

Chronically ill patients, suffering from conditions like hypertension, diabetes mellitus, arthritis, dermatological conditions have to travel long distances, sometimes 300km from as far as Aliwal North to access their treatment at Frere Hospital in East London. Concerns have been raised that centralised based hospital services may create barriers of access for patients, with evidence suggesting that long distances, unaffordable transport costs and long waiting times potentially leads to loss of follow-up (Moshabela, Schneider, Cleary, Pronyk & Eyles, 2011: 393). Most of chronic patients are elderly citizens who are dependent on the government social grants for their livelihood. Sometimes the

patients do not afford to come collect their medication from the hospital for 3 months. This implies that these patients do not adhere and comply with their treatment therefore their chronic conditions are not managed effectively.

In response to these realities, the down-referral of the clinically stable chronic patients – from hospitals to lower levels of care in the health system, mainly primary healthcare (PHC) facilities, has been suggested as a necessary evolution of sustainable services (Decroo, Panunzi, Das Dores, Maldonado, Biot, Ford & Chu, 2009: 1186). However, it still has to be determined if closing the distance between patients and the health facilities where they receive their treatment is achieving better health outcomes. Better health outcomes can be achieved through adherence and compliance to the prescribed treatment.

Adherence is defined as the extent to which patients are able to follow the recommendations for prescribed for prescribed treatments.

Treatment \longrightarrow **adherence** \longrightarrow outcomes

Non-adherence with medication is a very complex healthcare challenge. If patients are non-adherent, their conditions complicate and some of them get re-admitted to the hospital. It is difficult to predict that patients are not going to take their medication. Patients may be non-adherent during different stages of their treatment. They may also discontinue treatment prematurely. Each patient has a different reason to terminate their treatment. At times it is intentional and at other times unintentional. There is no single contributor to non- adherence, sometimes it is related to the patient, treatment and /or healthcare provider. In other cases the patients stop taking the medication because they do not believe that the treatment is necessary. The elderly are a patient group that is vulnerable to negative health outcomes due to non-adherence. This is because older patients often use a variety of medicines for a number of chronic diseases. The consequences of non-adherence may be more serious. The process of intentional non-adherence involves a patient actively deciding that she/he is going to stop taking the medication as recommended and prescribed by the health professional. This decision may be influenced by the beliefs that the patient has about the medication she/he is taking. On the other hand there is unintentional non-adherence to the medication which is an unplanned behaviour on the side of the patient. This is rarely influenced by the patient beliefs. The contributing factors could be forgetfulness, lack of knowledge about the disease itself and the importance of

taking medication regularly. It is also possible that the patient does not know how to take the medication (Gadkari & McHorney, 2012: 98).

1.9 RESEARCH DESIGN AND METHODOLOGY

This sub-section provides an overview of the research design methods followed during the study. Greater detail on these aspects will be provided in Chapter 3.

1.9.1 Research Design

The researcher used the quantitative non-experimental and descriptive study design (Mi, MY et al, 2013: 181)

The quantitative researcher believes that the best way of measuring the properties of phenomena is through quantitative measurement, that is assigning numbers to the perceived qualities of things (Babbie, 2005:49). The researcher conducted a non-experimental and descriptive quantitative study because of the intention to provide a picture of a particular situation. The purpose of a descriptive research is to observe, describe and document aspects of a situation as it naturally occurs (Polit & Hungler, 1999: 195).

As part of the study design the Medical Record Review (MRR) was also utilised as the sub-design that was important in collection of the data. However MRR is commonly used in clinical research to ascertain exposures (co-morbidities) or outcomes (possible complications). The critical factor is that medical records are meant to document care.

1.9.2 Research Setting

The study took place at Frere Hospital - a tertiary hospital in the central region of the Eastern Cape Province. It has a catchment area of 2.8million population (44%) of the total Eastern Cape population (Statistics South Africa, 2011: 18).

The down-referral chronic medication distribution system unit is situated at Frere Hospital. This is where the patients that have been down-referred will be admitted in case of them becoming sick because of poor or non-adherence to chronic medication.

1.9.3 Research population

Bless & Higson-Smith (2000: 85) define population as the set of elements that the research focuses upon and to which obtained results will be generalized. The research population was medical folders of the stable chronically ill patients that have been registered on the down-referral chronic medication distribution system for a period of two years and above. The patient will have been declared stable by the doctor. In the two years that the patient would have been down-referred, the patient would have seen the doctor four times.

1.9.4 Research sample

According to Arkava & Lane (1983:27), a sample comprises elements of the population considered for actual inclusion in the study or it can be viewed as the sub-set of measurement drawn from the population in which the researcher is interested.

The down-referral chronic medication distribution system has 3 902 patients on the data base. A sample of 600 was systematically selected, taking a batch of 10 folders after every 10 folders. The reason for this was that there is no guarantee that all the medical records will contain the information required during the data abstraction process.

Inclusion criteria of the sample

- On chronic medication for at least 2 years and consulted with the doctor for 4 times
- These chronically ill patients should have been registered on the down-referral chronic medication distribution system for two years or above.
- The patient would have been declared stable by the doctor. In the two years that the patient would have been down-referred, the patient would have seen the doctor four times.

Exclusion criteria of the sample

- Patients who were 40 years old or younger
- On chronic medication for less than two years and consulted the doctor less than 4 times
- Patients on chronic medication and also on ARVs (anti-retroviral medication)

The patients who were 40 years old or younger were excluded from the study because chronic diseases or life-style diseases are diagnosed much later in life. Also the population in this age group are employed and would have medical insurance and therefore are more likely to seek healthcare services in the private sector.

The chronic patients who were on medication for the above mentioned chronic conditions and also on anti-retroviral medication (ARVs) were not included in the study. These chronic patients are more likely to be admitted a few times because of opportunistic infections and other co-morbidities. The second reason for not including them in the study was that they receive their ARVs from the PHC facility not through the down-referral chronic medication distribution system (Rx Solution, version 1.3).

1.9.5 Research instrument

The researcher developed a checklist for data abstraction. The source of information was the patient's discharge summary report contained in the patient's medical records.

The components of the data abstraction form included: demographic information, admission diagnosis, clinical management during hospital stay, length of stay, the discharge diagnoses and the medication that the patient has been given to take home.

Researcher made sure that the data abstraction tool/form developed was correct for capturing the information that answers the research question as well as addressing the objectives of the study.

1.9.6 Validity and Reliability

1.9.6.1 Validity

Validity is defined as the extent to which an instrument measures what it purports to measure. Validity requires that the instrument must be reliable but the instrument can be reliable without being valid. The importance of ensuring the validity of the research instrument is to reduce errors in the measurement process. There is construct validity, content validity and face validity. Content validity is based on the assessment by the experts in that domain, for example it will be easier for maths experts to agree whether or not an item should be included in the algebra test. Face validity is concerned about whether the respondent will

recognize the information that the researcher is looking for. If the respondent knows what information is required, they can use context to interpret questions so as to provide useful and accurate information. In this study the researcher focused on construct validity. The validity is constructed in an attempt to organise and make sense of the behaviour. This type of validity is a judgement based on the accumulation of evidence using a specific measuring instrument (Kimberlin & Winterstein, 2008: 2276)

A discharge summary report is an important document that is both a permanent record of the patients visit to the hospital. It is also a means of communication between the hospital services and primary care providers because the patient is given a copy to take back to the health facility that referred up to Frere Hospital. The validity of the data abstraction tool was tested by conducting a pilot study where a smaller sample (50) was randomly selected from the study population.

1.9.6.2 Reliability

Reliability evaluates the stability of measures and the internal consistency of the measurement instrument. The internal consistency gives an estimate of the equivalence of sets of items from same tests. The co-efficient of internal consistency provides an estimate of the reliability of measurement. The reliability co-efficients range from 0.00 to 1.00, with higher co-efficients indicating higher levels of reliability (Kimberlin & Winterstein, 2008: 2276).

This pilot study tested the reliability of the data abstraction tool. Each individual recorded the data separately from the discharge summary report onto data abstraction tool. At the end the data abstraction tools were compared to see if all the team members captured the correct information that will be able to answer the research questions and address the research objectives. According to Worster & Haines (2004:189), data abstraction strategy is enhanced by application of a number of aspects known as data abstraction behaviour. This involves keeping data abstractors blind to the research question and objectives in order to reduce subjectivity of personal theories regarding the aim of the study. The researcher established unambiguous definitions of the inclusion and exclusion criteria. The data abstractors had clear rules regarding the management of missing or conflicting data. The researcher therefore used the research instrument in the bigger study sample.

1.9.7 Data collection procedure

Medical records that were used were accessed from the hospital medical records filing room. A data abstraction tool designed by the researcher was used to capture information from the patient's discharge summary report contained in the patient's medical records.

The researcher conducted a pilot study with a small number of patients medical records. The following colleagues; a clinical pharmacist, a clinical pharmacy registrar and a down-referral pharmacist assisted in abstracting the data from the discharge summary report into the data abstraction tool. The team members abstracted data individually and at the end the team reviewed the quality and precision of the data collected.

The data captured included the following; demographic information, admission diagnosis, clinical management during the hospital stay, investigations conducted, the length of stay, the discharge diagnosis and the medication that the patient has been given to take home.

Each data abstraction tool was given a unique code to identify it. All the completed data abstraction tools were kept in a safe place with restricted access by the researcher.

1.9.8 Data analysis

On completion of data collection, all the data abstraction forms were captured into the Microsoft Excel spreadsheet by the researcher. Then statistical analysis was performed using software package SPSS version 2.0.

Where there was a need for the researcher to organise data in tables and graphs, frequency distribution was utilised in the analysis.

1.10 Ethical Considerations

Ethical clearance was sought from the University of Fort Hare, Eastern Cape Department of Health and Frere Hospital Ethical Committees.

Permission was requested from the CEO of Frere Hospital to access the patients' medical records from the filing room.

Ethics is a set of moral principles that are suggested by an individual or a group and are widely accepted. They offer rules and expectations about most correct

conduct towards experimental subjects and respondents (de Vos, 2005:57). The basic ethical principle of confidentiality and anonymity were observed.

The following ethical principles were also followed:

1. Autonomy/self-determination:

- Respect for the person, human dignity
- Freedom to choose a course of action
- It is a right of the individual, as participant, to make his or her own decisions.
- It is the responsibility of the researcher to ensure that the participants have a free choice to participate or not.
- Anonymity refers to the situation where the researcher does not know who provided the information.
- The researcher keeps the information confidentially.

2. Beneficence and non-maleficance (Beneficence is often understood to cover acts of kindness or charity that go beyond strict obligation)

- Absence of harm to the research participant.
- Intention to do no wrong to the participant.
- The researcher is helpful rather than focusing on own goals.
- The activity involved in the study are executed with skill (Joubert & Ehrlich, 2012: 32).

Medical records review is a desktop research that uses secondary data. Even though there were no participants involved in the data collection, the researcher still fulfilled certain ethical principles. The researcher observed the principles autonomy, beneficence and non- maleficance. The principle of autonomy was observed by ensuring confidentiality and anonymity by ensuring that the names of the patients whose medical records were reviewed were not disclosed anywhere in the research during data collection, data analysis, discussion of the findings as well as in the recommendations. Beneficence is the action that is done to others. To fulfil this principle research must be of value to participants, community or the country. This study will benefit the community by determining the extent of adherence or non-adherence of medication by chronically ill patients. The benefit for the country is that policy makers can use the outcomes of the study to evaluate the intervention as well to strengthen strategies that will improve the health outcomes of the chronically ill population. Non – maleficance is also a critical principle is to do no harm patients. There are different types harm,

it can be immediate or long-term. The researcher kept the medical records (patient folders) in a locked cupboard, in a locked room with limited access. The patient folders were already coded and not using actual patient details. The patient details could affect their dignity that can cause long-term psychological harm. (Australian Council for International Development, 2015 : 5)

11 PROPOSED STRUCTURE OF THE STUDY

The study is divided according to the following chapters:

Chapter 1 – Introduction and problem statement

Chapter 2 – Literature review

Chapter 3 – Research methodology

Chapter 4 – Results and discussions

Chapter 5 – Conclusions and recommendations

1.12 CONCLUSION

PHC re-engineering in South Africa is one of the critical strategies to improve access to health care. Availability of medicines and promoting adherence to taking the medicines will improve the overall health outcomes.

The written report of the study as well as recommendations will be presented to the management of the Frere Hospital, where the study took place. It will also be presented to the District Health Management Team. This could form part of inputs to the policy discussions. The recommendations and findings could be some of the strategies used to improving health care services to the communities.

The following chapter will provide a detailed discussion of the literature review on topics pertinent to this study.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter discussed the background of the study and the problem statement. This chapter will focus on literature regarding the management of chronic diseases in other countries and in South Africa.

Chronic diseases are the largest cause of death in the world. The influence of global economic factors on chronic diseases impedes progress, as the orientation of health systems is towards acute care. A more concerted strategic and multi-sectoral policy approach is required to elevate the chronic diseases on the health agenda (Yach, 2004: 2616).

Chronic diseases are largely preventable diseases. Beyond appropriate medical treatment for those already affected, the public health approach of prevention is cost-effective and should be strengthened at the primary health care (PHC). Common modifiable risk factors underlie the major chronic diseases. A risk factor is a behaviour or condition that increases the person's risk for the disease. Common types of the cardiovascular diseases share a number of risk factors. These include age, family history, ethnicity, obesity, lack of physical activity and cigarette smoking (Schoenstadt, 2017: 1). Musculoskeletal disorders are injuries or conditions that affect bones, joints, ligaments, muscles and tendons. The most common conditions are rheumatoid arthritis, osteo-arthritis and gout. Osteo-arthritis is caused by long-term wear and tear of the joints whereas rheumatoid arthritis is a more complex disease whereby the immune system attacks its own cells and tissues. They have common non-modifiable risk factor which are age, gender and genetics (family history). The onset of the symptoms begins at the age of 40 to 60 years but gets worse as the person grow older. These common musculoskeletal disorders are more prevalent in females at the onset of menopause due to lack of estrogen. If a parent or a sibling suffers from the condition, the risk of the person to develop the disease is three times higher. The modifiable (lifestyle) risk factors include smoking, obesity, physical and emotional stress. Changing these factors may not only reduces the severity of symptoms but can also delay the progression of the disease. (Eustice, 2018: 2)

Non-adherence to treatment across chronic diseases is a world- wide problem of striking magnitude. Adherence to long-term therapy for chronic diseases in the developed countries averages 50%. Poor adherence to long-term therapy for chronic diseases severely compromises treatment effectiveness making it a

critical issue in public health from both the quality of life and the health economic perspectives. Therefore the impact of poor adherence grows as the burden of chronic diseases grows world- wide (World Health Organization, 2001: 20).

2.2 Definition of Chronic Conditions

Chronic conditions are defined by the World Health Organization (WHO) as requiring ongoing management over a period of years or decades, they cover a wide range of health problems that go beyond the conventional definition of chronic diseases such as heart disease, diabetes and asthma. Chronic conditions frequently go untreated or are poorly controlled until more serious complications arise. People with chronic conditions are more likely to utilize health care facilities particularly when they have multiple problems (Nolte & Mckee, 2008: 3). The goals of chronic care are not to cure but to enhance functional status, minimize distressing symptoms, prolong life through secondary prevention and enhance the quality of life (Grumbach, 2003: 4).

Today, the burden of deaths and disability in developing countries caused by non-communicable diseases outweighs that imposed by long-standing communicable diseases. The impact of the combination of these two categories (the “double response” approach) involves the integration of prevention and control of communicable and non-communicable diseases within comprehensive health care system based on PHC (World Health Report, 2003).

Discharging patients from the hospital is a complex process with many challenges. 20% of patients discharged are re-admitted to the hospital within 30 days. Preventing avoidable re-admission has the potential to improve both the quality of life of the patient and the financial well- being of the health facility. The clinical/medical necessity of continued hospitalization is primarily determined by the presence of acute health condition of sufficient severity that on-going diagnostic or therapeutic intervention is required (Kirby, Dennis, Jayasinge & Harris, 2010: 216).

Medication reconciliation is the process of verifying patient’s medication list at the point of care, that is discharging, to identify which medication has been added or discontinued or changed. Therefore performing an accurate medicine reconciliation is critical element of a successful discharge. It also provides an opportunity for clinicians to ensure that the patients understand what medication they are taking, how to take them and why they are taking them. Many

hospitalizations are not avoidable. Re-admissions may represent progression in the natural history of the underlying disease, a separate problem that is unrelated to the initial admission or it could be the consequence of patient’s inability to follow the instructions on the discharge plan, for example not filling prescriptions regularly (McKinney & Topor, 2011: 7).

The South African Health System and the referral patterns within the System

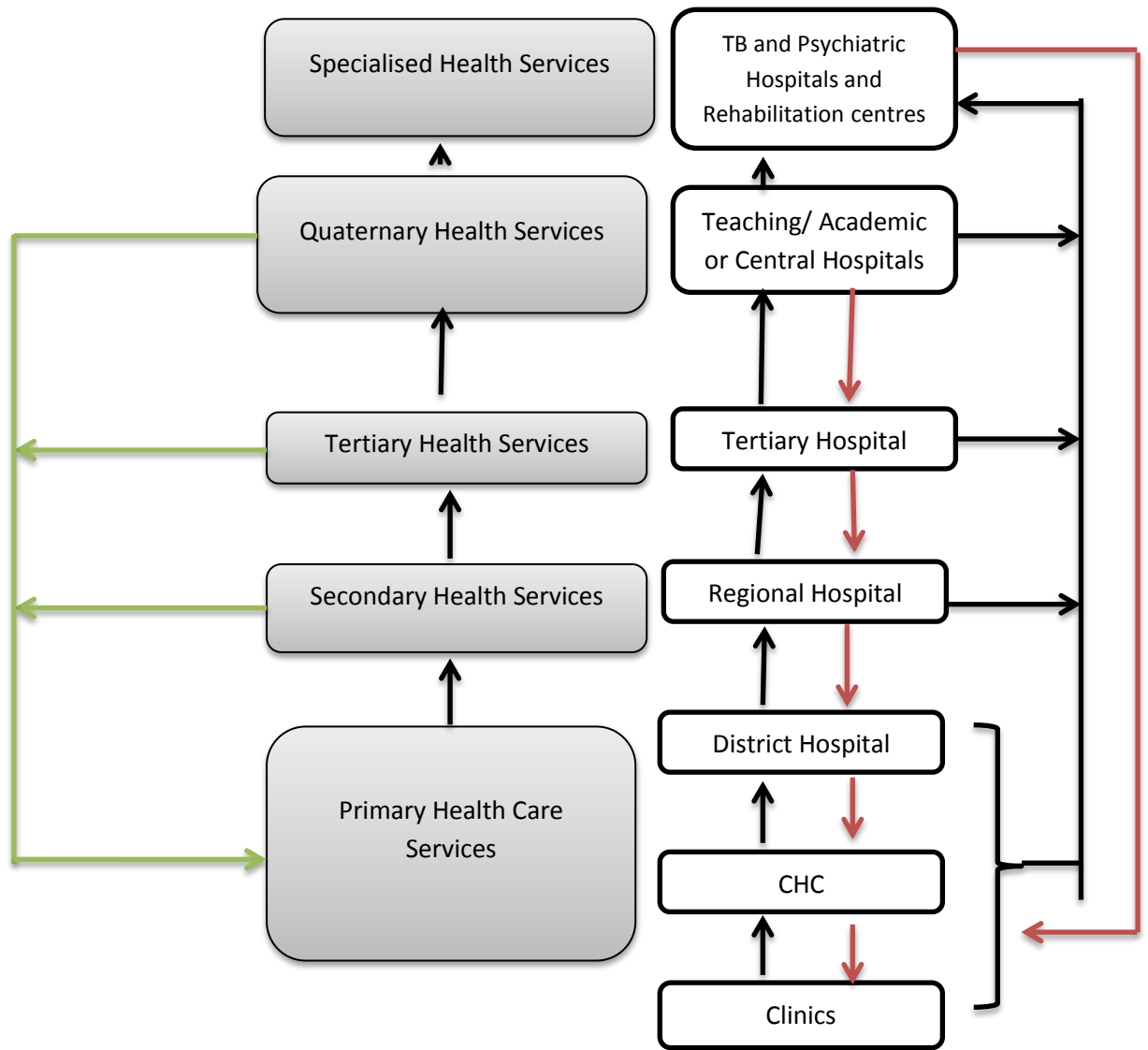


Figure 2.1: Different levels of care in the South African Health System (Researcher’s own illustration) – sourced from the Government Gazette 35101 of 12 August 2011 of Hospital Re-categorization.

The above diagram illustrates how the health professional refer patients from one level of healthcare to the other. A patient can be referred from the Clinic to the

district hospital, if the condition of the patients is managed at that level, there is no need to refer to the next level. The patient is back-referred to the clinic for further management. This referral is happening with the PHC services. However it does happen that a patient is referred to a higher level of care where the patient will be managed and stabilized on the resources at that level of care. Once the patient is declared stable by then the treating doctor, the patient will be down-referred.

Clinical stability is defined as an achievement of 5 normal vital signs (heart rate, blood pressure, blood glucose level, normal mental status and the ability to eat). Normal blood pressure range is 120/80 and 140/90. The blood glucose level is considered to be 4-7mmol/L before eating and 5-9mmol/L after eating. A normal resting heart rate for adults ranges from 60 – 100 beats a minute. Generally a lower heart rate at rest implies more efficient heart function (<https://www.hopkinsmedicine.org/health/heart/understanding-your-target-heart-rate>).

2.3 Management of chronic diseases in other countries.

2.3.1 Health System in America

Chronic conditions differ from the acute conditions on a variety of dimensions. Acute conditions have a sudden onset. They last for a short period of time without requiring on-going treatment. Acute conditions usually end up with cure. A condition is considered chronic if it has persistent or recurring health consequences lasting for a substantial period of time. It is not self-limiting. Chronic conditions have multiple causes and can occur long time after the causative exposure or behaviour. In chronic conditions the threat is on-going, long-lasting, affecting the social, physical, psychological and economic aspects of the person's life (Priester et al, 2005: 5)

American health care system is structured to respond to acute conditions. It therefore fails to effectively meet the needs of people with chronic conditions. A consequence of a system that is built on the acute care model is the chasm between the realities of having to respond to chronic conditions. The health system does not ignore chronic conditions themselves, it continues to respond to them in a sporadic manner, as if they are acute conditions. To meet their complex needs, the patients with chronic conditions often receive care from multiple clinicians who may work independently from each other. Each of these clinicians

may provide one or more services to the patient. By functioning in silos, they do not have complete information about the patients' condition or treatment history. This "silo" based approach hampers the follow through and co-ordination of care. Information about patients' health is rarely centralized, well-organised or easily retrievable. It makes it nearly impossible to manage many forms of chronic conditions that require frequent monitoring and on-going patient support. Effectively managing chronic conditions requires intimate understanding of the patterns of disease. Patients, not clinicians are best positioned to accurately detect such disease patterns. Only they, can provide the personal information regarding the impact of the condition on their health and well-being that is necessary for effective management. Effective chronic disease care must allow and encourage patients to be more engaged in their own care. Self-management refers to a variety of activities that individuals undertake with the intention of limiting the effects of their disease. Effective care of the chronically ill patients is a collaborative process, involving the definition of clinical terms that both the patients and providers understand. Managing chronic conditions demands skills and knowledge that extend beyond the biomedical training for preventing, diagnosing and treating acute conditions. Care co-ordination abilities, behaviour modification techniques and patient education can provide optimal chronic care (Priester et al, 2005: 8).

2.3.2 Health System in Australia

The health system in Australia is a mixture of public and private health service providers. State is responsible for the provision of health services including public health services, acute health services and a number of community-based services. They maintain a direct relationship with most care providers including regulation of health professionals and private hospitals. Since 1990s chronic disease has been the main focus of the health system reform in Australia. Health Chronic Disease Programme and National Primary Care Collaborative Programme are examples of programmes driven by Commonwealth Government (Nolte, Knai & Mckee, 2008: 131).

National Health Priority Action Council in 2005 supported the development of the National Chronic Disease Strategy (NCDS). The NCDS focuses on improved prevention and better management of the major contributors to the chronic disease burden. The agenda of the Australian government is to reduce the use of the hospital resources, reducing admissions, re-admissions and the length of stay (Davy, Bleasel, Liu, Chan, Ponniah & Brown, 2015: 194).

Chronic diseases account for 70% of disease burden in Australia. The two major chronic diseases affecting Australia are cardiovascular diseases and diabetes. Appropriate effective measures are required to mitigate the impact of the costs of health care due to increasing burden of chronic diseases. Evidence suggests that patients with effective self-management skills make better use of health care resources with potential to reduce hospitalizations. Diabetes is the principal cause of hospital admissions (Dennis, Zwar, Griffiths, Davies & Harris, 2008: 1).

Since 2007 funds were made available for services called “broader health cover” which refers to services that prevent hospital based services. The NCDS covers evidence-based care co-ordinating care across a range of health care services and promoting self-management. The Chronic Care Model was used in the implementation of the strategy. It also proved to be useful in understanding the impact of chronic disease management interventions (Hamar, Rula, Wells, Coberly, Pope & Larkin, 2013: 125).

In addition to NCDS, the Enhanced Primary Care Programme (EPC) was developed. The government paid the general practitioners fee-for-service. This is also an incentive for general practitioners to complete a care plan for patients with chronic disease and complex needs. The EPC also includes self-management element. Health care professionals are also trained to be able to teach self-management skills. All these are funded through the Australian government’s Medicare. This expanded the potential to access services even by those with low income. Approaches to chronic disease management in Australia tended to focus on the delivery service design and self-management support. The EPC package through Medicare Benefit Schedule (MBS) targeted specific chronic diseases. For example, the establishment of National Asthma Council of Australia, which is Asthma 3+ Visit Plan. The consultations included the severity, review of asthma related medication, provision of a written asthma action plan and education of the patient. All these programmes addressing chronic diseases are provided in a primary care setting, particularly general practice locations and state-administered community health centres. Equity of access to chronic disease care in Australia is underpinned by the Universal Health Insurance provided by Medicare. The Australian government is responding to the chronic disease management challenge with policies (Nolte et al, 2008: 137).

2.3.3 Health Systems in Canada

The hospital services and physicians public health care are insured under the Canada Health Act and are funded by the provincial governments. Most hospitals in Canada are private, non-profit making organization and physicians practice privately with a fee-for-service mechanism in place. In response to the ageing population and the growing burden of chronic disease, the federal and provincial governments have developed policies and initiatives that target both promotion of healthy life-styles and prevention of chronic diseases. The Integrated Pan-Canadian Healthy Living Strategy was approved in 2005. The main focus of this strategy was to promote healthy living. Other approached at both federal and provincial levels were aimed at preventing chronic diseases. They were implemented at various settings including schools, communities and work sites. The focus was on life-style related factors such as physical activity, healthy eating and tobacco use (Nolte, Knai & Mckee, 2008: 140).

The Centre for Chronic Disease Prevention and Control (CCDPC) was established in 2004 and operated under the Public Health Agency of Canada. Expanded Chronic Care Model (ECCM) was launched as a province-wide chronic disease management programme. As part of this programme the reports were published regularly about the disease prevalence, incidence, patient survival, costs and performance gaps. Patients and practitioners could access information and tools to support them in managing their chronic diseases Calgary Health Region, one of the provinces within the federal government of Canada launched “Living well with chronic condition”, self-management programme. The programme utilized electronic health records that stored patient information on-line. This allowed health care providers to instantly be able to access patients’ prescription history, allergies and laboratory results. There has been growing emphasis on improving governance and management of chronic diseases. Like the Australian government, Canada introduced strategies that are specific for individual chronic diseases. For example, the Diabetic Strategy focused on diabetes education, early intervention and effective prevention of complications (Nolte et al, 2008: 166).

2.4 Management of chronic diseases in Africa

Africa bears a significant proportion of global burden of chronic diseases along with poor countries of Asia and Latin America. The WHO projected that by 2020, the continent will experience the largest increase in death rates from cardiovascular disease, cancer, respiratory disease and diabetes. Africa's chronic disease is attributed to multifaceted factors including increased life expectancy, changing life-style practices, poverty, urbanization and globalization. Many African health systems are under-funded and under-resourced and they struggle to cope with cumulative burden of infections and chronic diseases. Health Ministries acknowledge the presence and impact of chronic disease burden but few countries have chronic disease plans and policies. Formal health care in Africa has developed in response to acute communicable disease and diseases of environmental degradation and pollution. Most health systems prioritise training and expertise in communicable diseases and under-estimate the importance of building human and material capacity for chronic disease care. Many hospitals and clinics lack basic equipment for effective diagnosis and treatment. In many countries high rates of avoidable complications and death have been attributed to weak health systems. There is a strong consensus that Africa faces significant challenges in chronic disease research, practice and policy. (Aikins, Unwin, Agyemang, Allotey, Campbell & Arhinful, 2010: 1).

It is reported that African origin populations residing outside Africa tend to have high stroke mortality rates with at least part of the explanation for this being high levels of hypertension and diabetes. Rapidly increasing levels of cardiovascular disease (CVD) and diabetes in Sub-Saharan Africa are occurring alongside continuing high rates of infectious diseases. These two broad types of diseases do not just exist in parallel, but can interact, one exacerbating the other. For example, diabetes increases the risk of developing active tuberculosis (TB). The presence of diabetes is associated with poorer outcomes. The WHO (2005) observes that chronic diseases can cause poverty in individuals and families, and draw them into a downward spiral of worsening disease. Poverty may intensify healer-shopping. A range of medical systems provide chronic disease care in many African countries, including biomedical services, traditional medicine and faith healing systems. Most of the burden of care of the chronically ill, is carried by patients' families and communities more-so in rural areas which often lie beyond the reach of policies and services. The role of community intervention is bridging the gap between social logic and medical logic regarding health and illness WHO

has been instrumental with its publication – “Preventing chronic disease: a vital investment”, which proposed that enough is known about causes, prevention and treatment of major chronic diseases to inform strong advocacy for changes in priority setting and re-allocation of resources towards chronic disease prevention in developing countries (Aikins et al, 2010: 3).

2.4.1 Health system in Ethiopia

Chronic non-communicable diseases such as epilepsy, diabetes, cardiac disease and hypertension represent a growing but neglected burden in developing countries. In Ethiopia, the average age at death of people with type 1 diabetes is just 32 years. When the chronic disease care is obtained, it is commonly years after onset of symptoms. If a chronic disease service exists, it is usually restricted to clinics in large urban hospitals but few people with chronic diseases can afford the time, and the cost of travel and board to attend them. There is evidence of desire to treatment. In rural Gambia 61% of people with active epilepsy would like to receive preventative treatment where they lived (Mamo, Seid, Adams, Gardiner & Parry, 2007: 228).

2.4.2 Health system in Nigeria

The Nigerian national health system provides for three tiers of health care: primary, secondary and tertiary. A good referral system is the main link between them. In Nigeria many secondary and tertiary health facilities are crowded with people with simple ailments that can be managed at primary health centres, while health workers in many of the primary health centres are idle. The primary health centres are supposed to be the point of first contact of patients. Patients are then referred from here to the other levels of health care. A high proportion of patients seen in tertiary health care facilities are not referred. Both the educated and non-educated by-pass the primary and secondary levels of care. Referral is a process by which a health worker transfers the responsibility of care temporarily or permanently to another health professional or social worker. The hospitals are usually overwhelmed with patients, which makes it difficult to achieve its objectives (Akande, 2004: 133).

2.4.3 Health system in Tanzania

Muhimbidu National Hospital (MNH) is a University Teaching hospital in Dar es Lem, Tanzania. The responsibility of this hospital is to provide tertiary services to the whole country. MNH offers care to the local population of 3 million. Local

services include level 2(secondary care) as well as level 1 (primary care). MNH is a public institution that is perceived to be cheap and be a convenient place to secure health care. This has led to overcrowding of patients at this hospital. The hospital is also criticized for its use of overqualified staff and expensive facilities to provide primary health care services. The provision of primary health care services in a tertiary hospital is estimated to raise costs 6-fold. The quality of service is compromised, access to for patients who really need tertiary health care becomes limited. The situation at MNH is not unique, other tertiary hospitals in Africa have been reported to face similar problems. Attempts to streamline referrals have been unsuccessful (Simba, Mbembati, Museru & Lem, 2008: 10).

2.4.4 Health system in Zimbabwe

Evidence has suggested inefficiency in the pyramidal health care referral system established in Zimbabwe in 1980, as part of its Primary Health Care model. The clinics and district hospitals were intended to provide local services for uncomplicated cases, referring patients with more serious conditions to regional, provincial and central hospitals. Peripheral health facilities are seen as providing inadequate standard of service while central hospitals are overloaded and inefficient. In Zimbabwe's hospital referral plan, district (secondary level) hospitals were to provide general in-patient services, accepting referrals from both rural and urban health centres and clinics. Provincial (tertiary hospitals) were to receive patients from the districts (secondary level) and provide specialist services. Quaternary level hospitals in the major urban centres were to serve as the national referral facilities and provide specialists and sub-specialist care. The evidence that all the hospitals were seeing the mix of all patients, that is primary, secondary and tertiary indicated that the Zimbabwe's pyramid hospital referral system was not working (Saunders, Kravitz, Lewin & Mckee, 1998: 10).

2.5 Management of Chronic Diseases in South Africa

The overall goal for health sector in South Africa is "A long and healthy life for all". The attainment of this goal requires the implementation of a multi – sectoral approach. The NCD epidemic can be prevented through the reduction of the underlying risk factors, early detection and timely treatment. NCDs are the leading cause of mortality, globally. In response to this challenge of the increase in the burden of disease, a number of Declarations were signed (SA Strategic plan for NCDs, 2013).

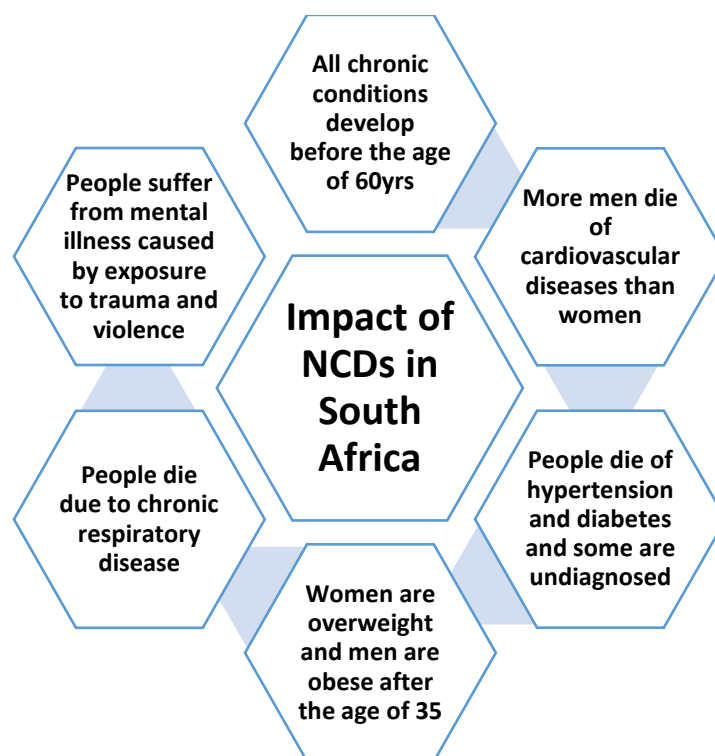
The United Nations General Assembly High Level Meeting of Heads of States and Governments adopted the Political Declaration on the Prevention and Control of NCDs. In April 2011, African Health Ministers met and adopted Brazzaville Declaration on NCDs Prevention and Control in the WHO African Region. In this Declaration countries committed themselves to develop integrated national action plans and strengthen institutional capacities for NCD Prevention and Control. Also in April 2011, the First Global Ministerial Conference on Healthy Life-styles and NCDs was held, attended by 90 Ministers of Health. The Moscow Declaration stated that a “paradigm shift” is an imperative in dealing with NCD challenges. NCDs are caused not only by the biomedical factors but also influenced by behavioural environment and socio-economic factors. The leaders agreed that to combat NCDs cannot only be at the Health Ministries level, it requires the whole government approach (SA Strategic plan for NCDs, 2013: 13).

Reducing the mortality from NCDs is critical to increasing life expectancy which is one of the output of the Negotiated Service Delivery Agreement signed between the Minister of Health and the President of the Republic of South Africa. This is a contribution to “long and healthy life for all”. When people are physically and mentally healthy, they produce more, learn better and incur less health costs. South Africa as part of the global picture, had to respond to the epidemic. The Minister and Deputy Minister of Health hosted a summit on the Prevention and Control of NCDs in South Africa. NCDs are largely preventable through attention to four major risk factors. These are tobacco use, unhealthy diets, physical inactivity and harmful use of alcohol (SA Strategic plan for NCDs, 2013: 7).

Chronic disease management (CDM) helps people to keep as healthy as possible through the prevention and early detection of complications and management of these chronic diseases. CDM is a public health care approach emphasizing and encouraging individuals living with chronic diseases to maintain their independence. As chronic patients are in many ways their own primary carers, their needs and preferences must be taken into account in the development of management plans. The ability of the health care professional to engage in effective communication may consequently make a profound difference in whether the encounter supports or discourages decisions and subsequent actions that will optimise the patients’ ability to live as well as possible with that particular disease. It is believed that informed patients improve their decisions by collaborating with their health care providers. Increasing patient involvement in

health care innovation has become a national priority and yet in practice most interventions are still designed without the input of the patients they are intended to benefit. There is a need to fully integrate non-communicable diseases into the re-engineering of the PHC in South Africa with the view to increasing community based prevention, screening, self-management, care and referral according to WHO innovative model for chronic care.

The growing burden of disease is exacerbated by the aging population, as well as the effects of unplanned urbanization, and lack of education. Much of the rise in non-communicable diseases is attributable to four modifiable risk factors, namely: smoking, unhealthy diet, physical inactivity and excessive alcohol intake. The intermediate risk factors from the above-mentioned factors are hypertension, obesity and diabetes mellitus. The modifiable risk factors together with the intermediate risk factors may lead to the following chronic conditions, cardiovascular diseases, musculoskeletal diseases and endocrine diseases.



**Figure 2.2 : Extracted from Non-Communicable Diseases in South Africa –
Discovery Health**

South Africa, like other low and middle income countries, is undergoing health transition. This has been considered from the epidemiological and health system perspective, not from the patient perspective. HIV has become a chronic disease

associated with increasing life expectancy. This has shown to increase the complexity in management of these co-existing conditions, often resulting in poor health outcomes. The Innovative Care for Chronic Conditions (ICCC) Framework developed by WHO provides a roadmap for health systems to meet the demands for increasing need for chronic disease care. The patient and family, the community and health care team forms the centre of the triad which is supported by the larger health care organization. There are two significant health reforms occurring within South African Public Health. The first reform is the development of the National Health Insurance (NHI) scheme, which is a financing system that is aimed to provide equitable health care to all (Oni, McGrath, BeLue, Roderick, Colagiuri, May & Levitt, 2013: 1).

The principles of developing NHI are to improve access to quality health care services for the whole population and to provide financial risk protection against related health expenditure. Comprehensive health care will be provided through accredited and contracted public-private service providers with strong focus on health promotion and prevention services at community and household level. National Department of Health exchanged experiences with other countries that implemented NHI. Global experience shows the importance of PHC at the centre of service delivery, promoting health and preventing diseases. The South African PHC platform is established on three complementary components, which are ward – based PHC agents, school health services and District Clinical Specialist teams (Matsoso & Fryatt, 2013: 156)

Secondly, to support the NHI implementation the PHC re-engineering strategy was developed. It focuses mainly in improving access to PHC services as well as equitably addressing the growing multiple burden of disease. In this strategic plan there is a need to integrate all chronic disease management. The strategic plan was developed using the health system building blocks outlined in the WHO ICCC Framework. Gaps were identified. The framework does not incorporate the concept of multi-morbidity. While it recognizes the central role of patients, families and community with emphasise on the need for life-style and behaviour change and the effective management of chronic diseases. It does not incorporate the factors that influence this life-style choices, the ability to change the behaviour and medication adherence.

The South African Integrated Chronic Disease Management (ICDM), proposes the to incorporate the key components that are relevant in South Africa and other countries undergoing health transition: These are : the individual patient's and

their interaction with the health care team, the health care team is part of the larger organization. The following factors influence patient behaviour, biological interaction between co-existing diseases, risk factors contributing to the increasing complexity and the implication on the health care provider capability to manage these conditions within available policy framework. For this to be effective, the relationship between the patient's workload and the patient's ability to meet the demands of the workload must be considered. Patient's workload would include self-management, treatment modalities, behaviour changes and clinic visits. The patient's ability to meet the demands of the workload include physical and mental functionality and pre-existing health literacy and family support (Oni et al, 2014: 3).

2.6 The Referral system within South African health system

Referral is a process by which a health worker transfers the responsibility of health care temporarily or permanently to another health worker (Akande, 2004:132). The referral system happens because the health worker at the referring health facility is not competent enough to manage the condition presented by the patient. Therefore the patient will be referred to a health facility of a higher level.

The transfer becomes temporary when the patient at the higher level of care will be managed and stabilised by medication that is available in the Essential Medicine List of a primary health care facility, which is the referring facility. The treating doctor/health worker will transfer back the patient to the health facility that referred her/him with clinical notes and treatment. The facility will be requested to take over their referred patient and continue treatment as it is available in the primary health care Essential Medicine List.

The permanent transfer of responsibility of care from a health facility from lower level health care facilities to a higher level of care, which is normally tertiary health facility is to ensure that the transferred patient receives specialized care in terms of clinical management and appropriate medication for treatment. Once the patient is managed and stabilised at the tertiary hospital, the patient will be down-referred to the health facility closer his/her home or place of work, not necessarily to the health facility that referred him/her to the tertiary hospital. The reason for down – referral is that the medication to treat that patient can only be accessed at a tertiary level of health care because of the expertise required to prescribe it and its costs. The list of these medicines will be stipulated in the Essential Drug List

for tertiary health services. It is therefore the responsibility of the down-referring tertiary health facility to make sure that on a monthly basis they provide the patient with the required medication.

2.7 Down – referral chronic medication distribution system

Patients managed and stabilised at a higher level are referred back to the original referring health facility. Within the Primary Health Care services, patients can be referred from a lower level to a higher level facility. Once stabilised at a higher level facility, the patient is referred back to lower level facility for further management, still within the PHC.

Patients stabilised at higher level of care are down-referred to collect their medication at a clinic closer to their homes. If the patient is stabilized at quaternary or tertiary or secondary levels of care, that facility has the responsibility to ensure that the treatment that the patient is stabilised on, is made available for the patient at all times. To ensure the continuous supply of medication to this patient, the higher level facility packs and deliver the medication to the clinic closer to the patient's home. The patient is given the opportunity to choose the clinic that will be most convenient for him/her to collect their medication. This intervention is called down-referral chronic medication distribution system. In this case it is the treating doctor that declares a chronically ill patient to be stable. When the patient is stable, that patient will consult with the treating doctor every six months. During the six months the patient will have to come to the hospital to collect their medication only. This group of patients that are coming to the hospitals only to collect their medication end up spending three to four hours waiting in the queues in the hospital. One of the priorities of the Ministry of Health is to reduce the waiting times. Down-referral chronic medication distribution system is one the strategies in place that is used to reduce the number of patients that are coming to the hospital. It also supports one of the objectives of the South African National Drug Policy of 1996, which is to increase the availability and access of medication to the communities.

The South African health system also functions within a resource constrained environment. Therefore the Ministry of Health appointed a multi-disciplinary committee of experts that is representative of all the provinces and called it National Essential Medicine List Committee (NEMLC). Through consultation and research, the committee utilises evidence –based- medicine approach to develop a list of medicines to be used at various levels of care. This list is called

Essential Medicine List or Standard Treatment Guidelines (EML/STG). This list ensures increased access and availability of cost-effective, safe and quality medicines.

Chronically ill patients, suffering from conditions like hypertension, diabetes mellitus, arthritis, dermatological conditions have to travel long distances, sometimes 300km from as far as Aliwal North to access their treatment at Frere Hospital in East London. Concerns have been raised that centralised based hospital services may create barriers of access for patients, with evidence suggesting that long distances, unaffordable transport costs and long waiting times potentially leads to loss of follow-up (Moshabela, Schneider, Cleary, Pronyk & Eyles, 2011:401). Most of chronic patients are elderly citizens who are dependent on the government social grants for their livelihood. Sometimes the patients do not afford to come collect their medication from the hospital for 3 months. This implies that these patients do not adhere and comply with their treatment therefore their chronic conditions are not managed effectively.

In response to these realities, the down-referral of the clinically stable chronic patients – from hospitals to lower levels of care in the health system, mainly primary healthcare (PHC) facilities, has been suggested as a necessary evolution of sustainable services (Decroo, Panunzi, Das Dores, Maldonado, Biot, Ford & Chu, 2009: 1186). However, it still has to be determined if closing the distance between patients and the health facilities where they receive their treatment is achieving better health outcomes. Better health outcomes can be achieved through adherence and compliance to the prescribed treatment.

Adherence is defined as the extent to which patients are able to follow the recommendations for prescribed treatments.

Treatment → adherence → health outcomes

Non-adherence with medication is a very complex healthcare challenge. If patients are non-adherent, their conditions complicate and some of them get re-admitted to the hospital. It is difficult to predict that patients are not going to take their medication. Patients may be non-adherent during different stages of their treatment. They may also discontinue treatment prematurely. Each patient has a different reason to terminate their treatment. At times it is intentional and at other times unintentional. There is no single contributor to non- adherence, sometimes it is related to the patient, treatment and /or healthcare provider. In other cases the patients stop taking the medication because they do not believe that the treatment

is necessary. The elderly are a patient group that is vulnerable to negative health outcomes due to non-adherence. This is because older patients often use a variety of medicines for a number of chronic diseases. The consequences of non-adherence may be more serious. The process of intentional non-adherence involves a patient actively deciding that she/he is going to stop taking the medication as recommended and prescribed by the health professional. This decision may be influenced by the beliefs that the patient has about the medication she/he is taking. On the other hand there is unintentional non-adherence to the medication which is an unplanned behaviour on the side of the patient. This is rarely influenced by the patient beliefs. The contributing factors could be forgetfulness, lack of knowledge about the disease itself and the importance of taking medication regularly. It is also possible that the patient does not know how to take the medication (Gadkari & McHorney, 2012: 98)

2.8 CONCLUSION

This chapter focused on chronic diseases and how they are managed in different countries including South Africa. The complexity of the chronic disease management highlights a critical factor that a country cannot have one approach to addressing the challenge of increasing disease burden. The same approach cannot be implemented in managing chronic condition for a 24 years old adult to 80 years old adult patient. At the centre of the policy framework used in developing Chronic Disease Management Models is the patient. The policies and models developed, on their own cannot improve the health outcome. The patient workload and his/her ability to cope with the workload should be taken into consideration. South Africa like other countries going through health reform still lack a good strategy to manage chronic diseases resulting in improved quality of life and reduced mortality due to chronic diseases.

The next chapter will focus on the research methodology.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter dealt with literature review. The aim of this chapter is to describe in detail the processes that were followed during the research. The focus will be on the pre-determined aspects of the research design, research population and sample, research site, data collection process, analysis and interpretation.

3.2 RESEARCH DESIGN

The researcher used non-experimental and descriptive study design. Non-experimental study designs differ from the experimental designs in that there is no manipulation of circumstances, there is no treatment or condition change. The descriptive research design attempt to use statistical analysis to summarize a sample set of data in order to determine if there is a relationship between the variables (Gehle, 2013: 1).

The quantitative researcher believes that the best way of measuring the properties of phenomena is through quantitative measurement, i.e assigning numbers to the perceived qualities of things (Babbie, 2007:49). The researcher conducted a non-experimental and descriptive quantitative study because of the intention to provide a picture of a particular situation. The purpose of a descriptive research is to observe, describe and document aspects of a situation as it naturally occurs (Polit & Hungler, 1999: 195).

As part of the study design the Medical Record Review (MRR) was also utilised as the sub-design that was important in collection of the data. However MRR is commonly used in clinical research to ascertain exposures (co-morbidities) or outcomes (possible complications). The critical factor is that medical records are meant to document care.

3.3 RESEARCH SETTING

The study took place at Frere Hospital - a Developing Academic Tertiary Hospital in the central region of the Eastern Cape Province. It has a catchment area of 2.8 million population (44%) of the total Eastern Cape population (Statistics SA, 2011: 18). The catchment area stretches 70km to the west of East London, 300km (Aliwal North), to the border of Eastern Cape and Orange Free State and 124km to Butterworth, south-east of East London.

The down-referral chronic medication distribution system unit is situated at Frere Hospital. This is where the patients that have been down-referred will be admitted in case of them becoming sick because of poor or non-adherence to chronic medication.

3.4 RESEARCH POPULATION

Bless & Higson-Smith (2000: 85) define population as the set of elements that the research focuses upon and to which obtained results will be generalized. The research population was medical folders of the stable chronically ill patients that have been registered on the down-referral chronic medication distribution system for a period of two years and above. The patient will have been declared stable by the doctor. In the two years that the patient would have been down-referred, the patient would have seen the doctor four times.

3.5 RESEARCH SAMPLE

According to Arkava & Lane (1983:27), a sample comprises elements of the population considered for actual inclusion in the study or it can be viewed as the sub-set of measurement drawn from the population in which the researcher is interested.

The down-referral chronic medication distribution system has 3 902 patients on the data base. A sample of 600 was systematically selected, taking a batch of 10 folders after every 10 folders. The reason for this was that there is no guarantee that all the medical records will contain the information required during the data abstraction process that would answer the research question.

Inclusion criteria of the sample

- On chronic medication for at least 2 years and consulted with the doctor for 4 times
- These chronically ill patients should have been registered on the down-referral chronic medication distribution system for two years or above.
- The patient would have been declared stable by the doctor. In the two years that the patient would have been down-referred, the patient would have seen the doctor four times.

Exclusion criteria of the sample

- Patients who were 40 years old or younger
- On chronic medication for less than two years and consulted the doctor less than 4 times
- Patients on ARV and having another chronic condition because they are mostly likely to be hospitalised frequently for opportunistic infections.

The patients who were 40 years old or younger were excluded from the study because chronic diseases or life-style diseases are diagnosed much later in life. Also the population in this age group are employed and would have medical insurance and therefore are more likely to seek healthcare services in the private sector.

3.6 RESEARCH INSTRUMENT

The researcher developed a checklist for data abstraction. The source of information was the patient's discharge summary report contained in the patient's medical records.

The components of the data abstraction form included: demographic information, admission diagnosis, clinical management during hospital stay, length of stay, the discharge diagnoses and the medication that the patient has been given to take home. Researcher made sure that the data abstraction tool/form developed was correct for capturing the information that answers the research question as well as addressing the objectives of the study.

3.6.1 PART A - DEMOGRAPHIC INFORMATION

The information include gender where the appropriate gender was marked with an X, age range in years from 40 to 70+ years, educational qualification included pre-matric, matric and post-matric. The fourth category of biographical information was home language, which included Afrikaans, English, Xhosa and Other.

3.6.2 PART B – DISCHARGE SUMMARY REPORT INFORMATION

This section included information recorded on the discharge summary report as: admission diagnosis, clinical management during hospital stay, length of stay, the discharge diagnoses and the medication that the patient has been given to take home.

3.6.3 PART C – Questions related to medicine adherence

The researcher developed the above section in order to establish if the patient is adhering to their chronic medication. The information is recorded by the nurse or medical officer during the patient stay in the hospital. This information gives an indication of how well do patients with chronic diseases understand their conditions.

3.7 Validity and Reliability

3.7.1 Validity

Validity is defined as the extent to which an instrument measures what it purports to measure. Validity requires that the instrument must be reliable but the instrument can be reliable without being valid. The importance of ensuring the validity of the research instrument is to reduce errors in the measurement process. There is construct validity, content validity and criterion-related validity. In this study the researcher focused on construct validity. This type of validity is a judgement based on the accumulation of evidence using a specific measuring instrument (Kimberlin & Winterstein, 2008. 2276).

A discharge summary report is an important document that is both a permanent record of the patients visit to the hospital. It is also a means of communication between the hospital services and primary care providers. The validity of the data abstraction tool was tested by conducting a pilot study where a smaller sample (50) was randomly selected from the study population.

The following colleagues; a clinical pharmacist, a clinical pharmacy registrar and a down-referral pharmacist assisted in abstracting the data from the discharge summary report into the data abstraction tool. The team members abstracted data individually and at the end the team reviewed the quality and precision of the data collected.

3.7.2 Reliability

Reliability evaluates the stability of measures and the internal consistency of the measurement instrument. The internal consistency gives an estimate of the equivalence of sets of items from same tests. The co-efficient of internal consistency provides an estimate of the reliability of measurement. The reliability co-efficients range from 0.00 to 1.00, with higher co-efficients indicating higher levels of reliability (Kimberlin & Winterstein, 2008. 2284).

This pilot study tested the reliability of the data abstraction tool. Each individual recorded the data separately from the discharge summary report onto data abstraction tool. At the end the data abstraction tools were compared to see if all the team members captured the correct information that will be able to answer the research questions and address the research objectives. According to Worster & Haines (2004:189), data abstraction strategy is enhanced by application of a number of aspects known as data abstraction behaviour. This involves keeping data abstractors blind to the research question and objectives in order to reduce subjectivity of personal theories regarding the aim of the study. The researcher established unambiguous definitions of the inclusion and exclusion criteria. The data abstractors had clear rules regarding the management of missing or conflicting data. The researcher therefore used the research instrument in the bigger study sample.

3.8 Data collection procedure

Medical records that were used were accessed from the hospital medical records filing room. A data abstraction tool designed by the researcher was used to capture information from the patient's discharge summary report contained in the patient's medical records.

The data was collected over 3 months' period. One medical file was used to complete one data abstraction form. Each form was allocated a code, 001 to 600. This was to protect the identity of the patient. The data abstraction form had three sections. Part A was used to record the biographical information of the patients.

Part B of the data abstraction form was used to record admission diagnosis, clinical management during the hospital stay, investigations conducted, the length of stay, the discharge diagnosis and the medication that the patient has been given to take home.

Part C of the data abstraction form was used to record the information related to chronic medication. Specific questions were developed and were based on the notes written by the nurse during history taking. These questions were developed to establish the attitudes of patients towards their chronic medication when they are at home.

At the end of each day the researcher would return the medical folders that have been used to the medical records filing room. The completed data abstraction forms will be taken by the researcher for safe keeping.

3.9 DATA ANALYSIS

On completion of data collection, all the data abstraction forms were captured into the Microsoft Excel spreadsheet by the data capturer. Then statistical analysis was performed using software package SPSS version 2.0.

Where there was a need for the researcher to organise data in tables and graphs, frequency distribution was utilised in the analysis.

3.9 ETHICAL CONSIDERATIONS

Ethical clearance was sought from the University of Fort Hare, Eastern Cape Department of Health and Frere Hospital Ethical Committees. Permission was requested from the Chief Executive Officer (CEO) of Frere Hospital to access the patients' medical records from the filing room.

Ethics is a set of moral principles that are suggested by an individual or a group and are widely accepted. They offer rules and expectations about most correct conduct towards experimental subjects and respondents (de Vos, 2005:57).

The researcher observed the principles of confidentiality and anonymity by ensuring that the names of the patients whose medical records were reviewed were not disclosed anywhere in the research during data collection, data analysis, discussion of the findings as well as in the recommendations. The researcher observed the principles autonomy, beneficence and non-maleficence. The principle of autonomy was observed by ensuring confidentiality and anonymity. The names of the patients whose medical records were reviewed were not disclosed anywhere in the research during data collection, data analysis, discussion of the findings as well as in the recommendations. Beneficence is the action that is done to others. To fulfil this principle research must be of value to participants, community or the country. This study will benefit the community by determining the extent of adherence or non-adherence of medication by chronically ill patients. The benefit for the country is that policy makers can use the outcomes of the study to evaluate the intervention as well to strengthen strategies that will improve the health outcomes of the chronically ill population. Non-maleficence is also a critical principle is to do no harm patients. There are different types harm, it can be immediate or long-term. The researcher kept the medical records (patient folders) in a locked cupboard, in a locked room with limited access. The patient folders were already coded and not using actual patient

details. The patient details could affect their dignity that can cause long-term psychological harm. (Australian Council for International Development, 2015: 5)

3.10 CONCLUSION

This chapter has described in detail the process in conducting the research. The focus was given to discussing research design, population size and research site. The research instrument and the process of data collection were also discussed.

The results will be presented, analysed and interpreted in the next chapter.

CHAPTER 4: RESULTS AND DISCUSSIONS

4.1 INTRODUCTION

This chapter details the results of the research analysis and interpretation in accordance of the aim and objectives of the study. The data collection tool was the data abstraction form developed by the researcher. It was divided into three sections, biographical information – Part A, discharge summary report – Part B and history taking – Part C.

4.2 ANALYSIS OF PART A – BIOGRAPHICAL INFORMATION

This section presents the results of the biographical information of the respondents. The results were then analysed and interpreted in terms of gender, age, educational qualification and home language.

4.2.1 Gender

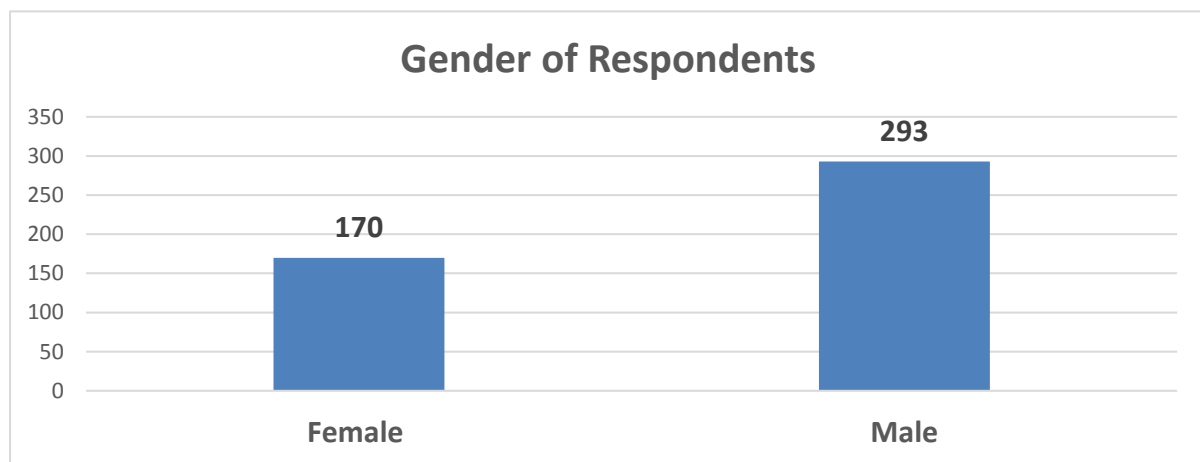


Figure 4.1 Gender Distribution

The above figure indicates that more men than women were represented in the research sample (63.3%: n=293, N=463). Most chronic conditions are not necessarily related to gender. The result of 293 males being hospitalised for chronic conditions that they were already receiving treatment for, could be an indicator that more males are non-adherent with their chronic medication. The 36.7%, n=170 of women could indicate that women generally take their chronic medication. Women usually consult the health professional when they start to experience a new symptom in addition to the chronic condition they are being treated for. Therefore this reduces the chances of more women to be hospitalized.

4.2.2 Age

Table 4.1 Age distribution of respondents

Age distribution of respondents N = 463	
Age	Percentage
41 - 50 yrs	17.7
51 - 60 yrs	31.5
61 - 70 yrs	24
70+ yrs	26.8

The age distribution of the respondents was recorded using the range of 41 to 70 years and above. Table 4.1 above indicates that the majority of respondents were between the ages of 51 and 60 years (31.5%: n=146, N=463). The majority of respondents in this age range suffer from one or two chronic conditions for various reasons. Some could have inherited the chronic condition. Individuals in this age survive on state social grants. Combining the age range from 51 to 70 years and above result in 82.3%: n=381, N=463. This results could indicate that most individuals suffer from more than one chronic condition. Therefore they are hospitalised more often. In some instances, individuals take their chronic medication as instructed by the health professional. They develop new symptoms that lead to them to be hospitalized. That resulting in the second or third chronic condition being diagnosed. Most of the chronic conditions are lifestyle diseases health. The demands of life-style in recent years are increasing because of work pressures.

3 Educational Qualifications

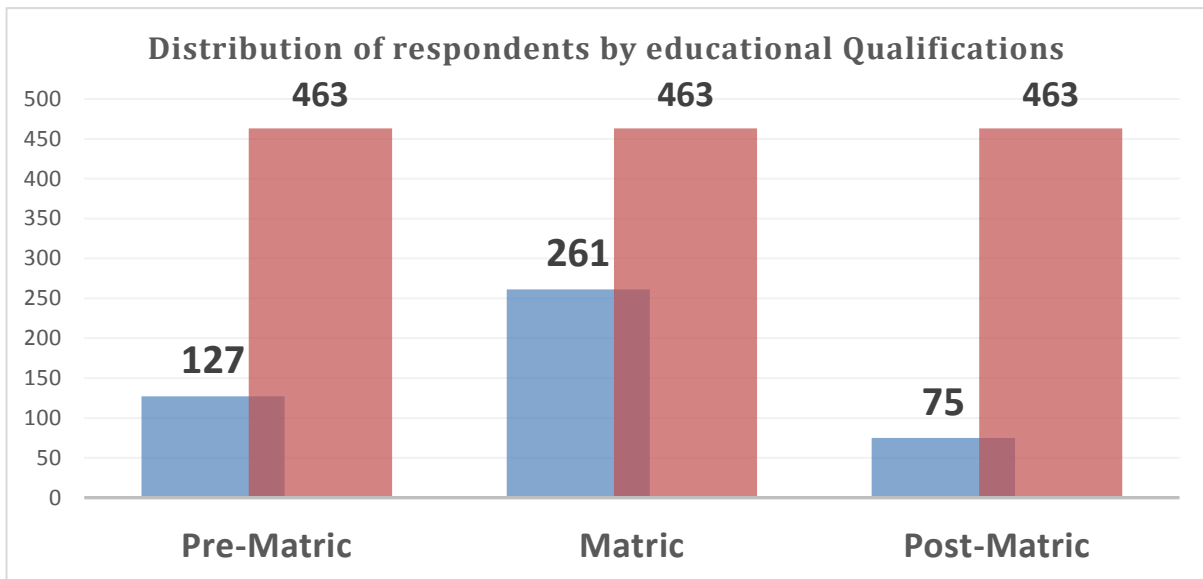


Figure 4.2 Distribution by educational qualification

The least category of respondents in the research sample was the respondents with post matriculation qualifications (16.2%: n=75, N=463) while the majority of the respondents were the ones with matric qualification (56.4%: n= 261, N=463). The least number of the respondents could indicate that the respondents with post-matric are adherent to their medication. This category understands their chronic conditions and also understands the consequence of not taking their chronic medication. The persons who understands their chronic conditions are able to notice other symptoms that may arise and consult health professional before it becomes a complication that would require hospitalization.

4.2.4 Home Language

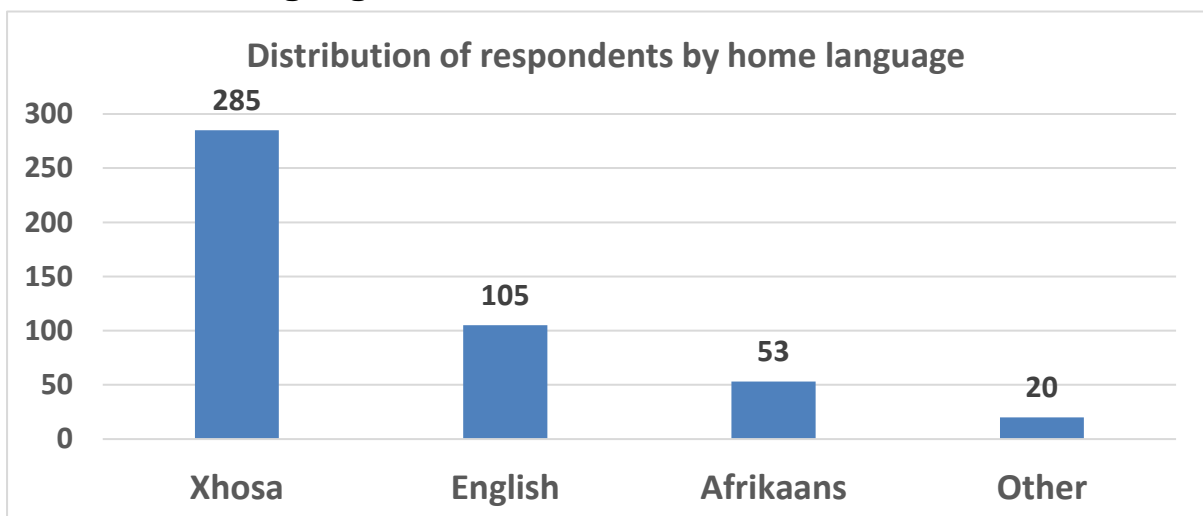


Figure 4.3 Distribution of respondents by home language

The above figure shows that the majority of respondents have Xhosa as their home language (61.6%: n=285, N=463). The high number of respondents in this category could be because the research site is situated in an area where Xhosa is predominantly spoken. The other contributing factor could be language barrier. The majority of the doctors and pharmacists are not Xhosa speaking. Therefore it is highly probable that patients leave the consultation room not fully understanding their chronic condition or conditions and the importance of taking their medication as instructed by the doctor. The counselling in the dispensary is done by non-Xhosa speaking pharmacists who might not be able to ascertain that the patient clearly understands how they should take their medication. Poor adherence or non-adherence and incorrect taking of chronic medication could lead to complications and hospitalization.

4.3 ANALYSIS OF PART B – DISCHARGE SUMMARY REPORT

Table 4.2 Distribution of participants by admission diagnosis versus Discharge Diagnosis

Health Condition	Admission Diagnosis	Discharge Diagnosis	Newly confirmed diagnosis on discharge
Acute	177		
HPT	188	252	64
DM	99	162	63
HF	92	114	22
COPD	71	75	4
PSYC	16	38	22
EPIL	54	51	0

The above table indicates that on admission, a proportion of patients, n=177 presented with symptoms that they were not sure what causes them. Other categories like hypertension (HPT) n = 188, knew that they had been diagnosed with the condition before and were taking medication for it. After the clinical investigations and management during the hospital stay, on discharge the number of patients with confirmed HPT increased to n = 252.

Table 4.3 Distribution of participants by admission diagnosis, discharge diagnosis and the chronic medication to take home (TTO).

Health Condition	Admission Diagnosis	Discharge Diagnosis	TTO (Chronic Medication)
Acute	177		
HPT	188	252	266
DM	99	162	151
HF	92	114	104
COPD	71	75	69
PSYC	16	38	38
EPIL	54	51	55

The number of participants who were admitted with known diagnosis of hypertension, n=188, increased to n = 252 on discharge. Sixty-four participants in the category of n = 177 that presented with acute symptoms on admission, were not aware that their acute symptoms were complications of their underlying chronic condition. The total number of prescriptions with medication to treat chronic hypertension was n = 266. The attributing factor in this case could have been that some patients could have been on treatment for other chronic conditions but hypertension had been confirmed during the investigations conducted during the patient's hospital stay.

Hypertension is a significant public health problem. It remains an important public health challenge and one of the risk factors for coronary heart disease and stroke. Management and control of hypertension are possible with a combination of medication and strict life-style changes. Published studies indicate that approximately 60% of patients treated for hypertension discontinue treatment within 6 months. Apart from adverse effects, the most common causes of non-adherence include lack of involvement in the treatment process, lack of motivation to continue with the treatment and lack of information on the disease. An important component to control hypertension is knowledge which is at lower rates. Observations indicate that patients with hypertension are least knowledgeable on normal blood pressure values and on life-style changes required during the treatment process. Poorly controlled or untreated hypertension causes gradual irreversible organ damage, leading to life-threatening complications or even death. Therefore knowledge and education are considered crucial for hypertension control. Better patient education and communication with health care professionals could improve some factors that decrease adherence. (Al-Ramahi, 2014: 125).

Table 4.5 Distribution of participants by history taken during hospital stay

The table below indicates responses that patients gave during history taking on admission. All the variables have the potential to affect adherence to chronic medication.

History taken	Response	Frequency	Percent
C1: Use of other medication	Yes	91	19.7
	No	372	80.4
C2: Blood pressure and blood glucose testing	Yes	22	4.8
	Not sure	2	0.4
	No	439	94.8
C3: Days missing medication	Not sure (MISSED)	202	43.6
	Never	261	56.4
C4: Staying without taking medication	Yes	120	25.9
	No	343	74.1
C5: Last medication collection	Not sure	27	5.8
	Month ago	317	68.5
	Over month ago	119	25.7
C6: Availability of medication	Yes	332	71.7
	Not sure	91	19.7
	No	40	8.6
C7: Pharmacist-Patient communication	Yes	42	9.1
	Not sure	13	2.8
	No	408	88.1
C8: Family history of disease	Yes	207	44.7
	Not sure	2	0.4
	No	254	54.9
C9: Medication sharing	Yes	93	20.1
	No	370	79.9

4.3.1 Inferential analysis

The highlighted questions are potentially good proxies of adherence. This makes them the variables of primary interest in this study. The question of interest for the study is about how adherence to medication is potentially influenced by other variables, namely, biographical characteristics of participants, admission and discharge diagnoses, clinical management, investigations done, length of hospital stay and medications on discharge. This makes adherence the dependent/response variable and the rest of the other variables are independent/predictor variables. Adherence is defined by item C3 (days missing medication) where ‘not sure’ is a sure indication of having missed some doses and therefore, non-adherent.

Multiple logistic regression of adherence as measured by item C3 on the rest of the variables was carried out to determine the pattern of effects of the predictors on adherence. To determine the best model, automatic variable selection procedures were used. The forward, backward and stepwise variable selection procedures were used. The stepwise and the backward selection procedures identified exactly the same variables while the forward selection procedure replaced one of the variables (C8) with another (C5) and introduced one new variable (Bloods). The forward selection model slightly improved the coefficients of association of predicted probabilities with observed data. The Somer's D coefficients were exactly the same (62.7%), the coefficient was 0.1% higher (81.3% vs 81.4%), concordance was 1.3% higher (76.6% vs 77.9%) and discordance was 1.2% higher (14.0% vs 15.2%). A closer look at the model parameter estimates for the forward selection revealed that the new variable Bloods was borderline significant. Since there is not much benefit derived from adopting the forward selection solution as opposed to the stepwise selection solution, the stepwise solution was considered for onward analysis. All tests for statistical significance were carried out at a 5% significance level and the results are presented in the tables below.

Table 4.6 Estimated logistic regression model of adherence to medication

Parameter	Ref	Estimate	Std Error	Wald Chisq	p-value
Intercept		-0.422	0.415	1.0	0.309
HF admission diagnosis	1	-0.6917	0.289	5.7	0.017
PSYC admission diagnosis	1	-0.7191	0.332	4.7	0.030
HF discharge diagnosis	1	2.3649	0.746	10.1	0.002
HF discharge medication	1	-1.8716	0.697	7.2	0.007
BP and glucose testing	1	1.7291	0.329	27.6	<.0001
Staying without taking medication	0	-1.9527	0.232	71.1	<.0001
Disease history in family	1	0.3334	0.155	4.7	0.031
Sharing medication	1	-0.5605	0.182	9.5	0.002

The results in the above table show that the background odds of nonadherence is 0.66 which means the odds of nonadherence are low in the population of patients with chronic diseases. This is obtained by computing $e^{-0.422}$, where -0.422 is the estimate of the intercept parameter. Besides that, the results also show that HF and PSYC admission diagnoses, HF discharge medication, not taking medication even when it is there and sharing medication are associated with reduced odds of nonadherence. This is deduced from the negative parameter estimates for these variables. On the other hand, HF discharge diagnosis, BP and glucose testing and

disease history in the family are associated with increased odds of nonadherence. This is based on the positive parameter estimates corresponding to those variables. The resulting odds ratios for these variables and their 95% confidence intervals are shown in the tables below.

Table 4.7 Odds ratio estimates produced by the above estimated logistic model

Variable	Comparison	OR	95% confidence limits	
HF admission diagnosis	Yes vs No	0.3	0.08	0.78
PSYC admission diagnosis	Yes vs No	0.2	0.07	0.87
HF discharge diagnosis	Yes vs No	113.3	6.09	infinity
HF discharge medication	Yes vs No	0.02	0.002	0.364
BP and glucose testing	Yes vs No	31.8	8.74	115.42
Staying without taking medication	Yes vs No	0.0	0.01	0.05
Disease history in family	Yes vs No	1.9	1.06	3.57
Sharing medication	Yes vs No	0.3	0.16	0.66

The odds ratios in the above compare the odds of nonadherence among Yes compared to those of No as indicated in the comparison column. Note that the odds ratios for HF and PSYC admission diagnosis, HF discharge medication, staying without taking medication when it is available and sharing medications are all less than 1. This indicates that the odds of nonadherence in the ‘Yes’ category of these variables are lower than the odds of the ‘No’ category of the corresponding variable. This translates to the ‘Yes’ category being less likely to be non-adherent compared to the ‘No’ category. For the rest of the variables the odds ratio estimates are higher than 1, indicating that the odds of nonadherence in the ‘Yes’ category are higher than in the ‘No’ category.

Table 4.8 Length of stay

Length of stay in hospital			
	C3		
	0	1	
1	133	105	238 (51.4%)
2	118	101	219 (47.3%)
3	2	4	6 (1.3%)
Total	253	210	463

The above table indicates the number of days the respondents spent in hospital. The number of days were recorded as range, 1(0-10 days), 2(11- 29 days) and 3 (30 and more days). C3-0 indicates the number that is non-adherent and C3 – 1 indicates the number of respondents that are adherent. The result in the above table show that the majority of the respondents spent between 0 and 10 days in

hospital (51.4%: n=238, N=463). From this category 133 respondents were non-adherent to their chronic medication and 105 respondents were adherent to their chronic medication.

4.4 INVESTIGATIONS CONDUCTED

Table 4.9 Blood samples taken

Blood samples taken			
	C3		
	0	1	
1	230	177	407 (87.9%)
2	23	33	56 (12.1%)
Total	253	210	463

From the category of respondents whose bloods were taken, 230 males were non-adherent and 177 males were adherent to their chronic medication. (87.9%: n=407, N=463). This results correspond with other previous results that indicated that more males are non-adherent to their chronic medication and therefore end up being hospitalized.

Table 4.10 X-Rays taken

X-Ray			
	C3		
	0	1	
1	36	16	52 (11.23%)
2	217	194	411 (88.77%)
Total	253	210	463

The result from the table above indicates that more females than males had x-rays done. The majority of respondents who had x-rays done were non-adherent to their chronic medication 217 and 194 respondents were adherent to their chronic medication. (88.77%: n=411, N=463)

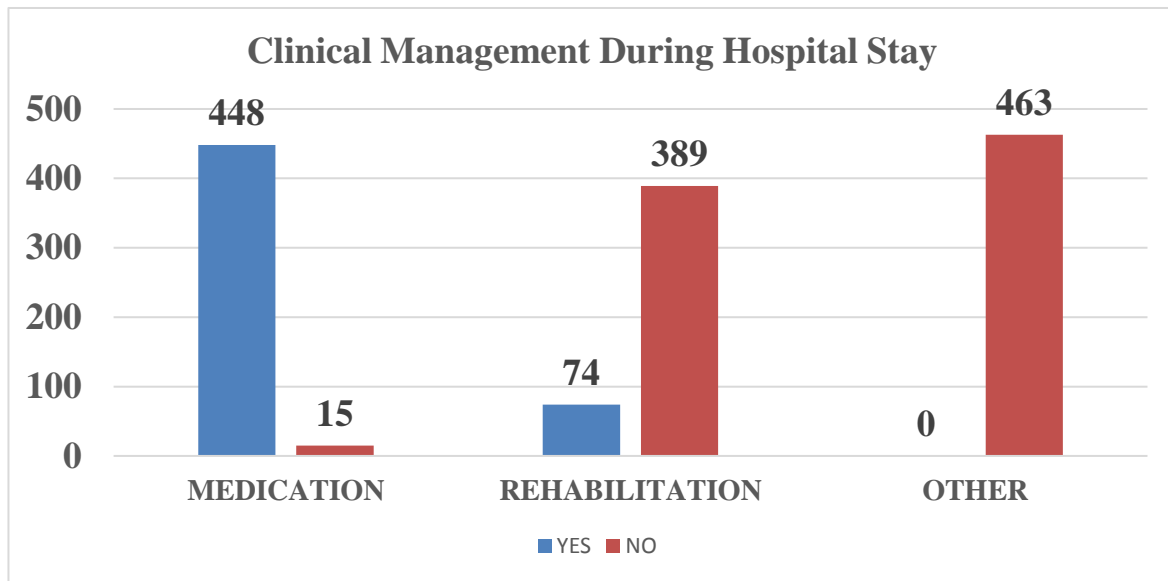
Table 4.11 CT Scan

CT Scan			
	C3		
	0	1	
1	39	23	62 (13.39%)
2	214	187	401 (86.61%)
Total	253	210	463

The CT Scan was conducted on the respondents who on admission presented with unspecified headache, epilepsy or stroke. The majority of females, 214 were non-adherent and 187 adherent to their chronic medication taken for CT Scan after hospitalization. (86.61%: n=401, N=463).

4.5 CLINICAL MANAGEMENT

Table 4.12 Distribution of participants by clinical management



The majority of participants (96.8%: n = 448, N = 463) were managed with their normal chronic medication during their hospital stay before they were discharged. The number of participants that required rehabilitation (16%: n=74, N = 463) to get back into the routine of taking their chronic medication regularly. It was the category that voluntarily stopped taking their chronic medication. The last category of participants (n=463) was close to the number n=389) that voluntarily became non-adherent to their chronic medication. They were educated about the fact that their chronic conditions are life-style modifiable but were resistant to change their life-styles in order to improve their health outcome. For instance, reducing the intake of salt, reducing the intake of sugar, improve their physical activity, stop smoking, reduce or stop their alcohol consumption.

The results in the above table indicates the majority of patients hospitalized were managed mainly by chronic medication of the confirmed admission diagnosis. (96.8%: n=448, N=466).

DISCUSSION OF THE RESULTS

PART A – BIOGRAPHICAL INFORMATION

Distribution of participants by gender.

The above figure indicates that more men than women were represented in the research sample (63.3%: n=293, N=463). Most chronic conditions are not necessarily related to gender. The result of 293 males being hospitalised for chronic conditions that they were already receiving treatment for, could be an indicator that more males are non-adherent with their chronic medication. The 36.7%, n=170 of women could indicate that women generally take their chronic medication. Women usually consult the health professional when they start to experience a new symptom in addition to the chronic condition they are being treated for. Therefore this reduces the chances of more women to be hospitalized.

There is no confirmed relationship between gender and the adherence to medication. However some literature suggests that there is tendency for men to discontinue treatment as soon as they feel better. Some studies indicates that men engage in risky behaviour of changing doses as soon as they no longer have symptoms. Men also seem to frequently forget to take their medication. Forgetfulness is sometimes a sign of denial about the disease. This suggests that men are generally non-adherent than women. (Sundbom & Bingefors. 2012: 211).

Distribution of respondents by age

The age distribution of the respondents was recorded using the range of 41 to 70 years and above. The majority of respondents were between the ages of 51 and 60 years (31.5%: n=146, N=463). The majority of respondents in this age range suffer from one or two chronic conditions for various reasons. Some could have inherited the chronic condition. Individuals in this age survive on state social grants. Combining the age range from 51 to 70 years and above result in 82.3%: n=381, N=463. This results could indicate that most individuals suffer from more than one chronic condition. Therefore they are hospitalised more often. In some instances, individuals take their chronic medication as instructed by the health professional. They develop new symptoms that lead to them to be hospitalized. That resulting in the second or third chronic condition being diagnosed. Most of the chronic conditions are lifestyle diseases that can be modified to improve one's health. The demands of life-style in recent years are increasing due to work pressures and other responsibilities.

The result of 82 in the age range of 41 to 50 years could be attributed to the fact that these individuals are still actively employed and can afford to belong to a health insurance. Therefore they prefer to access healthcare using private sector instead of public health facilities.

The growth of population at the age of 65 or older may bring about increased prevalence of chronic diseases. Managing older people with chronic diseases and preventing worsening requires detailed attention to self-management including taking multiple prescribed medication for comorbidity. Studies have reported that medication adherence is associated with poor outcomes, including mortality, hospitalization and healthcare costs in patients with chronic diseases. Despite evidence of the importance of medication adherence in helping older patients maintaining their health status and quality of life, great variance in adherence to medication has been reported, indicating poor or below average levels of adherence. Health literacy is an individual's ability to obtain and understand basic health information and services needed to make appropriate decisions regarding their health. Health literacy is affected by functional health status and health literacy level of older people is affected by lower health status. Therefore medication adherence in older people with chronic diseases is an important factor that contributes to therapeutic success. (Lee, Yu, You & Son. 2015: 12).

Distribution of respondents by educational qualification

The least category of respondents in the research sample was the respondents with post matriculation qualifications (16.2%: n=75, N=463) while the majority of the respondents were the ones with matric qualification (56.4%: n= 261, N=463). The least number of the respondents could indicate that the respondents with post-matric are adherent to their medication. This category understands their chronic conditions and also understands the consequence of not taking their chronic medication. The persons who understands their chronic conditions are able to notice other symptoms that may arise and consult health professional before it becomes a complication that would require hospitalization. The category with post-matric educational qualification in most cases have a better socio-economic status that could allow them to modify their life-style as part of self-management. The individual with higher education might influence their ability to understand the information regarding disease condition, diet modification and life style modification that must be adopted. They will also understand the complications that will arise from non-adherence. Lower education might impair access to health education, adoption of healthy living behaviour, social mobilization for

improvement of living conditions as well as adherence to treatment of chronic conditions. (Bhandari, Bhusal, Takma & Lawot, 2016: 382).

Knowledge include recognition of the drug, knowledge of the drug indication, the side effects, the daily dose and what action to take if you have missed the dose. Patients are considered adherent if they follow the instructions of their health professional. Adherence slows the disease prognosis by avoiding unwanted complications and reducing avoidable hospitalizations. (Amro, 2015:3).

Distribution of respondents by home language

The above figure shows that the majority of respondents have Xhosa as their home language (61.6%: n=285, N=463). The high number of respondents in this category could be because the research site is situated in an area where Xhosa is predominantly spoken. The other contributing factor could be language barrier. The majority of the doctors and pharmacists are not Xhosa speaking. Therefore it is highly probable that patients leave the consultation room not fully understanding their chronic condition or conditions and the importance of taking their medication as instructed by the doctor. The counselling in the dispensary is done by non-Xhosa speaking pharmacists who might not be able to ascertain that the patient clearly understands how they should take their medication. Poor adherence or non-adherence and incorrect taking of chronic medication could lead to complications and hospitalization. Demographic characteristics may help identifying patients who are at risk for non-adherence whereby inadequate or marginal health literacy is a contributing factor. Health literacy is defined as the ability to read, understand and act on health information (MacLaughlin, Rael & Treadway, 2005: 231).

Significant research has provided compelling evidence of the negative impact of the language barrier on health care access, patient satisfaction and experience as well as the disparities that those who use English as their home language will always have advantage over others. Some of the interventions in addressing the risk of language barrier include the introduction of linguistic framework, that involves translation. Failure to translate adequately will not improve the patient's understanding of their disease and adherence. Language barrier could be detrimental that, from the moment the physician makes a diagnosis, informs the patient about the chronic condition he has, the need for long-tern therapy, until the patient receives the medication from the pharmacist, the level of

understanding is below average. The patient will do what s/he believes is right in taking the medication for his/her chronic condition. (Bowen, 2015: 5)

PART B – DISCHARGE SUMMARY REPORT

DISTRIBUTION OF PARTICIPANTS BY ADMISSION DIAGNOSIS, DISCHARGE DIAGNOSIS AND THE CHRONIC MEDICATION TO TAKE HOME.

The number of participants who were admitted with known diagnosis of hypertension, n=188, increased to n = 252 on discharge. Sixty-four participants in the category of n = 177 that presented with acute symptoms on admission, were not aware that their acute symptoms were complications of their underlying chronic condition. The total number of prescriptions with medication to treat chronic hypertension was n = 266. The attributing factor in this case could have been that some patients could have been on treatment for other chronic conditions but hypertension had been confirmed during the investigations conducted during the patient's hospital stay.

Hypertension is a significant public health problem. It remains an important public health challenge and one of the risk factors for coronary heart disease and stroke. Management and control of hypertension are possible with a combination of medication and strict life-style changes. Published studies indicate that approximately 60% of patients treated for hypertension discontinue treatment within 6 months. Apart from adverse effects, the most common causes of non-adherence include lack of involvement in the treatment process, lack of motivation to continue with the treatment and lack of information on the disease. An important component to control hypertension is knowledge which is at lower rates. Observations indicate that patients with hypertension are least knowledgeable on normal blood pressure values and on life-style changes required during the treatment process. Poorly controlled or untreated hypertension causes gradual irreversible organ damage, leading to life-threatening complications or even death. Therefore knowledge, education and health literacy are considered crucial for hypertension control. Better patient education and communication with health care professionals could improve some factors that decrease adherence. Health literacy is defined as the ability to read, understand and act on health information (MacLaughlan, Rael & Treadway, 2010: 216).

Distribution of respondents by Length of Stay in the Hospital

The number of days were recorded as range, 1(0-10 days), 2(11- 29 days) and 3 (30 and more days). C3-0 indicates the number that is non-adherent and C3 – 1 indicates the number of respondents that are adherent. The result in the above table show that the majority of the respondents spent between 0 and 10 days in hospital (51.4%: n=238, N=463). From this category 133 respondents were non-adherent to their chronic medication and 105 respondents were adherent to their chronic medication. The respondents in the largest category did not stay for more than 10 days most probably because non-adherent respondents had to be rehabilitated and be observed that they are stable again on their chronic

Distribution of respondents by investigations done (Bloods, X-Rays and CT-Scan)

The bloods was taken to establish the diagnosis of the respondents. In some instances analysis of the laboratory reports would assist the health care professional to detect a condition that was not diagnosed before. From the category of respondents whose bloods were taken, 230 males were non-adherent and 177 males were adherent to their chronic medication. (87.9%: n=407, N=463). This results correspond with other previous results that indicated than more males are non-adherent to their chronic medication and therefore end up being hospitalized.

The result from X-rays taken indicates that more females than males had x-rays done. The majority of respondents who had x-rays done were non-adherent to their chronic medication 217 and 194 respondents were adherent to their chronic medication. (88.77%: n=411, N=463)

The CT Scan was conducted on the respondents who on admission presented with unspecified headache, epilepsy or stroke. The majority of females, 214 were non-adherent and 187 adherent to their chronic medication taken for CT Scan after hospitalization. (86.61%: n=401, N=463).

A significant number of respondents (n=177; N=463) was admitted with acute symptoms. The investigations were conducted to establish the cause of the acute symptoms and to make the final discharge diagnosis.

CONCLUSION

This chapter focused on presenting the results of the study and also on interpreting the results. The data abstracted indicates that non-adherence to chronic medication is a major contributing factor to the re-hospitalization of chronically ill patients who were declared stable by the doctor. It also highlighted the varying degree of gender regarding the adherence to chronic medication. Down-referral chronic medication distribution system was implemented as an intervention to improve accessibility and availability of medicines to the chronically ill patients. The availability of medicines to patients on its own does not necessarily improves adherence to medication.

Chapter 5 will focus on discussing the conclusion and the recommendations about the results in relation to the aim and objectives of the study.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter focused on the presentation of the results of the study, analysis and interpretation of such results. This chapter sets out to review the aim and objectives of the study, to discuss the conclusions and establish if they are in line with the research aim and thereafter make recommendations about the study and for possible future research.

This section will provide a brief overview of the study.

5.2 Review of the aim and objective of the study

The aim of the study was to determine and describe the effect of the down-referral chronic medication distribution system on patient's adherence to chronic medication in the Buffalo City sub-district by ensuring that chronically ill patients receive their correct medication on time and in correct quantities every month so that they can take their medication as recommended by the health professional.

The objective of the study was:

To determine the effect of down-referral chronic medication distribution system on the adherence to medication by the chronically ill patients in the Buffalo City sub-district in the Eastern Cape.

With this objective in mind the researcher will focus on the conclusions and recommendations to be made to the Buffalo City sub-district health management team about the effect of down-referral chronic medication distribution system on adherence to chronic medication.

5.3 The medical records review study

The data abstraction form developed by the researcher was used to record the information from the chronic patient's medical records, mostly the discharge summary report and the notes of the history taken. The medical records used were from Frere Hospital in East London. The down-referral chronic dispensing unit is situated at Frere hospital. The patients registered on the down-referral system are the patients that were clinically managed at Frere Hospital. The medical records that were requested from the filing department were 600. Only 463 medical records were used to record the chronic patient's information. The remaining 137 medical records were not used because some of the patients were

also on ARVs and some were younger than 40 years of age. Those files were returned to the filing department in order to maintain the confidentiality and anonymity of the process.

5.4 Biographical Information

The study result indicated that more males were hospitalized for chronic conditions that they were already receiving treatment for, than females. This result could indicate that more males are non-adherent with their chronic medication. The majority of respondents were between the ages of 51 and 60 years. This result could indicate that most individuals suffer from more than one chronic condition. The lower number of respondents in the age range of 41 to 50 years of age could be attributed to the fact that these individuals are still actively employed and can afford to belong to a health insurance. Therefore they prefer to access health care using private sector instead of public health facilities.

The least category of respondents in the research sample was the one with post matriculation qualifications. The least number of the respondents could indicate that the respondents with post matriculation qualification are adherent with their chronic medication. Therefore they understand their chronic conditions and the consequences of not taking their chronic medication.

The majority of respondents have Xhosa recorded as their home language. The high number of respondents in this category could be because the research site is situated in an area where Xhosa is predominantly spoken. The majority of doctors and pharmacists are not Xhosa speaking. Therefore it is highly probable that majority of patients leave the consulting room not understanding their chronic conditions. The counselling in the dispensary is done by non-Xhosa speaking pharmacists who might not be able to ascertain that the patient clearly understand how they should take their medication. Poor adherence or non-adherence and incorrect taking of chronic medication could lead to complications and hospitalization.

5.5 Discharge summary report information

The majority of respondents were admitted with known hypertension. The second highest number of respondents presented with acute symptoms and known chronic condition when hospitalized.

The clinical management during hospital stay was recorded as medication administration or rehabilitation. The result of respondents who were managed with the administration of medication indicates poor management of chronic conditions.

The clinical investigations were done to confirm the diagnosis of the patients who presented with acute symptoms. The highest number of respondents had bloods samples taken followed by the number of respondents who had their blood pressure monitored.

The majority of respondents were discharged with hypertension followed by diabetes mellitus. The results are indicating poor adherence to chronic medication is a major contributing factor in the hospitalizing of chronic patients.

5.6 History taken during hospital stay

This section focused on the questions asked during the respondent's hospital stay that determined the adherence. The response for the following questions was recorded as 'not sure': Number of days missing medication (C3), last time medication was collected (C5), availability of medication (C6), pharmacist-patient communication regarding medication availability (C7) and family history of the disease (C8). If the respondent does not remember how many days she/he missed their chronic medication, the respondent is non-adherent to their medication.

5.7 LIMITATIONS

The study had some limitations. The patients who are on ARVs and those who were diagnosed after admission were excluded from the study. The reason for the exclusion was that patients on anti-retroviral medication get admitted to hospital more often because of opportunistic infections. These patients suffer from more than one chronic condition. It would have been more significant to assess their adherence to chronic medication other than ARVs.

5.8 RECOMMENDATIONS

Most of the chronic patients that access health care through the public health facilities are dependent on the government grants. The down-referral chronic medication distribution system was implemented to improve patient adherence to chronic medication therefore improving the clinical outcomes. The patients do not have to travel long distances to spend the whole day at the hospital every month to collect their medication. Through the down-referral chronic medication distribution system, chronic medication is dispensed every month and delivered to the clinic that is close to patient's home.

There are several types of non-adherence to medication. The first one is primary non-adherence, the patient does not fill the prescription that is given by the healthcare professional. This type of non-adherence is the one that is addressed by the down-referral chronic medication distribution system. The second type of non-adherence is called non-persistent in which a patient decides to stop taking the medication after they started taking treatment without being advised by the healthcare professional. Unintentional non-adherence arises from the capacity and resource limitations of the patient. Non-conforming non-adherence includes various ways in which the medication is not taken as prescribed. This behaviour can include skipping doses, taking medication at incorrect times or taking incorrect doses. The consequence of non-adherence is wastage of medication, disease progression, reduced functional abilities, poor quality of life and hospital re-admissions. Medication non-adherence has got negative consequence not only on the patient but also on the prescriber/provider and on the healthcare service delivery system. Physicians, pharmacists and nurses all have significant role to play in improving medication adherence in their daily practice. (Jimmy & Jimmy, 2011: 155).

Strengthening and integration of Health Promotion

The ministry of health needs to acknowledge the urgency of placing the chronic disease management at the top of public health agenda. There are programmes that have been developed to improve the quality of health care but they are not strengthened to improve management of the chronic diseases. One such programme is the health promotion. Chronic conditions like hypertension and diabetes are life-style modifiable diseases. Health promotion and PHC could work together in developing patients' education about their chronic conditions. For instance, allocating one chronic condition a month and run the campaigns at

PHC facilities. It should also not be taken for granted that chronic patients know how to change their life-styles to improve the quality of their lives. There are community radio stations whereby slots can be arranged to have health care officials interacting with the patients, giving them opportunity to ask any question regarding their chronic condition. Every month the department of social development pays social grants at specific public places. The health care official should utilize these opportunities to talk to the communities about the chronic conditions.

On-going training of health care professionals

The health education regarding chronic conditions should not only focus on the patients. The health care officials should also be send for refresher courses to empower them to assist patients in the management of their chronic conditions. Medication is critical in managing chronic conditions. As treatment changes, health care officials should be able to identify drug-to-drug interactions as well as drug-disease interactions. Patients that suffer from more than one chronic condition should have more focused approach. Sometimes medication to treat one chronic condition has the potential to worsen the other chronic condition. The negative effect of medication is also a contributing effect in non-adherence. It is the responsibility of health care officials to inform patients about possible side-effects and how to manage them. Healthcare practitioners should be adequately educated and embrace the importance of addressing adherence behaviour in patient care. Healthcare practitioners should be educated on the most recent findings regarding treatment adherence. Practitioners need resource tools to improve adherence behaviour (Reist, Dogin, Halderen, Peregrin & Surles, 2008: 2).

Patient self-management programmes

The health reform policies developed must consider the input of chronic patients as stakeholders, to understand their challenges regarding their workload in managing their chronic conditions for improved health outcomes. The impact of pill burden on patients who are suffering from more than one chronic condition is understood better by the patients themselves. Self-management is therefore defined as day-to-day management of chronic conditions over the course of an illness. Self- management of chronic conditions does not exist in the vacuum but within the context of other people and influences. Family is an important source of support (Grady & Gough, 2014: 25).

Self-management denotes active participation of patients in their treatment. The aim of self-management is to minimise the impact of chronic disease on physical health status and functioning and to enable patients to cope with the psychological

effects of the illness. It is a collaborative activity between patient and health care professional. Self-management activities are undertaken by the patient between planned contacts with the health care professional. It should therefore not be an option but an integral part of patient care. Self-management support expands the role of the health care professional from delivering information and traditional patient education to include helping patients build confidence and make choices that lead to improved self-management and better outcomes. Patient education includes the collaborative use of wide-range behavioural techniques to foster life-style changes and adoption of health-promoting behaviour. Patients are also trained on problem-solving, goal setting as well as skills to manage the emotional impact of living with a chronic condition. (Nolte & Mckee. 2008: 117).

The patients should be encouraged to utilize self-administered monitoring tool of their daily life-style change activity and medication taking patterns. This could be a 30-day table where a patient ticks yes/no under different activities undertaken. The tool is then discussed during a follow-up, planned visit with the health care professional. The commitment to self-monitoring tool could be motivated by having the patient to give input in the activities to be monitored.

5.9 FUTURE RESEARCH

This study has given some indication of re-hospitalization of chronically ill patients due to poor adherence or lack of adherence to chronic medication. It would make sense to conduct a study to analyse the cost of re-hospitalization of chronically ill patients. It will assist the ministry of health in allocating the resources to manage this epidemic.

5.10 DISSEMINATION OF THE STUDY RESULTS

An oral presentation of the study will be done to the management team of Frere Hospital and Buffalo City sub-district. Hard copies of the study will be made available to the Frere Hospital, Buffalo City sub-district and Eastern Cape Department of Health.

5.11 CONCLUSION

This chapter reviewed the aim and objective for the study. The results were discussed in detail in chapter 4. The recommendations of how to improve the adherence to chronic medication and reduce re-hospitalization of chronic patients are highlighted. The availability of medication does not necessarily translate to adherence on its own.

The process of giving feedback to health managers was addressed.

PATIENT SELF-MONITORING TOOL

Day	Smoked	Exercised	Consumed Alcohol	Checked BP	Checked Blood glucose	Took Prescribed medication
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
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RESEARCH INSTRUMENT

DATA ABSTRACTION FORM

CODE :

PART A - BIOGRAPHICAL INFORMATION

GENDER :	<input type="text" value="Female"/>	<input type="text" value="Male"/>		
AGE (years) :	<input type="text" value="41-50"/>	<input type="text" value="51 - 60"/>	<input type="text" value="61 -70"/>	<input type="text" value="70+"/>
EDUCATION :	<input type="text" value="Pre - Matric"/>	<input type="text" value="Matric"/>	<input type="text" value="Post - Matric"/>	
LANGUAGE :	<input type="text" value="English"/>	<input type="text" value="Afrikaans"/>	<input type="text" value="Xhosa"/>	<input type="text" value="Other"/>

PART B – DISCHARGE SUMMARY REPORT

1. Admission Diagnosis:
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.....
2. Clinical Management:
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3. Investigations conducted:
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.....
.....
4. Length of stay:
.....
.....
5. Discharge Diagnoses:
.....
.....
.....
.....
6. Medication given to take home:
.....
.....
.....
.....
.....
.....

PART C – HISTORY TAKEN BY PROFESSIONAL NURSE DURING HOSPITAL STAY

1. Are you taking any other medication except the ones given to you at the hospital?

2. Do you check your blood pressure and blood glucose when you fetch your chronic medicines from the clinic?

3. How many days did you stay without taking your chronic medicines?

4. Even if you have medicines, do you sometimes stay without taking chronic medicines?

5. When last did you fetch your chronic medicines from the clinic?

6. Are all the chronic medicines that have been prescribed for you by thy doctor always in the parcel that you collect from the clinic?

7. Did the pharmacist from the down-referral unit at the hospital phone you to inform you that you chronic medicines that have been sent to the clinic is short?

8. Do you have any member of your family or relative who suffer from the same chronic disease as you?

9. Do you share medicines with them?

10. Do you understand what is chronic disease?



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25 May 2016

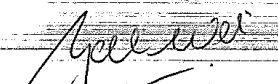
Mariam Ndwandwe
Department of Health Science
University of Fort Hare
East London Campus
South Africa

Dear Mariam

~~This is to acknowledge receipt of your application for Ethical Clearance for your research project titled: *Assessment of the effect of the down-referral chronic medication distribution system on patients adherence to chronic medication in the Buffalo City Sub-District.*~~

On behalf of the University Research Ethics Committee (UREC) we have checked your proposal and would like to let you know that there is no need to issue an ethical clearance certificate even though in desktop research where secondary data is being reviewed that does not involve collecting data from humans and animals directly researchers are strongly urged to observe good ethical conduct when using information by others (acknowledge sources and avoid plagiarism).

Yours



Professor Gideon de Wet
Dean of Research

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Eastern Cape Department of Health

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Mrs. MM Ndwandwe

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Amalinda
East London, 5202

Re: Assessment of the Effect of the Down-Referral Chronic Medication Distribution System on Patient's Adherence to Chronic Medication in the Buffalo City Sub-District (EC_2016RP8_965)

The Department of Health would like to inform you that your application for conducting a research on the abovementioned topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Department of Health in writing.
2. You are advised to ensure, observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants.
3. The Department of Health expects you to provide a progress on your study every 3 months (from date you received this letter) in writing.
4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Epidemiological Research & Surveillance Management. You may be invited to the department to come and present your research findings with your implementable recommendations.
5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Your compliance in this regard will be highly appreciated.

SECRETARIAT: EASTERN CAPE HEALTH RESEARCH COMMITTEE

