

**THE EFFECTS OF PRESCRIPTION PATTERNS/PRACTICES ON THE
PERFORMANCE OF THE PHARMACY DEPARTMENT OF MBARARA
REGIONAL REFERRAL HOSPITAL**

BY

MANZI MBABAZIZE GERALD

REG NO: 22020054

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SUPERVISOR: Mr. Oloro Joseph

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MANZI MBABAZIZE GERALD

REG NO: 22020054



Mr Oloro Joseph

Research Supervisor

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ABSTRACT

Medicine use evaluations are structured, methodical and criteria-based medicines assessment systems which is key in assessing trends of medicines use in a defined setting. Poor drug prescription practices are inappropriate, result into irrational medicines use and most times leads to avoidable stock out of drugs. Medicine use evaluations are important in hospital settings that face challenges of serious stock outs. These are meant to study the patterns of drug use to change the prescription patterns accordingly.

On prescription by clinicians, patients are meant to pick drugs from the respective pharmacies in Mbarara RRH. The pharmacies can service prescription to a level that is commensurate to what they have in stock. This is what we see being transcribed as the prescription fill rate whereby some prescriptions are fully serviced, other are partially filled in terms of both the full prescription and servicing partial doses of individual medicines

Prescription in public health is guided by the Uganda Clinical Guidelines and the essential Medicines lists. Some hospitals have moved ahead to design their own institutional medicines lists to guide prescription. Clinicians are required to prescribe and keep within the guidance of the Uganda clinical guidelines, institutional medicines list and the essential medicines list since these are the mother documents to which orders for medicines are generated. Prescription outside the guidance of the latter means that the prescription will not be serviced thus the patient will be unable to access medicines.

Mbarara RRH being a high volume facility, receiving all sorts of health complications and with a wide range of prescribers is prone to having challenges involving access to medicines thus necessitating a medicine evaluation to be done as prescribed by this report so as to address the medicines funding gap in the institution. This will address the high health pocket expenditure by patients, majority of whom live below the poverty line

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LIST OF ABBREVIATIONS

AHSPR	Annual Health Sector Performance Report
BMAU	Budget Monitoring and Accountability Unit
CMS	Central Medical stores
EMHS	Essential Medicines and Health Supplies
F/Y	Financial Year
IICS	Integrated intelligent Computer Systems
IPD	Inpatient Department
JMS	Joint Medical Stores
MOH	Ministry of Health
MRRH	Mbarara Regional Referral Hospital
NMS	National Medical Stores
OAG	Office of the Auditor General
OPD	Outpatient Department
RRH	Regional Referral Hospital
USAID	United States Agency for International Development
WHA	World Health Assembly
WHO	World Health Organisation

TABLE OF CONTENTS

Contents

DECLARATION	i
APPROVAL	ii
ACKNOWLEDGEMENT	iv
LIST OF ABBREVIATIONS	v
CHAPTER ONE: INTRODUCTION	10
1.2 PROBLEM STATEMENT	11
1.3 JUSTIFICATION OF THE STUDY	12
1.4 OBJECTIVES OF THE STUDY	13
1.5 RESEARCH QUESTIONS	13
1.6 HYPOTHESIS	13
1.7 EXPECTED OUTPUTS OF THE STUDY	13
1.9 LIMITATIONS	14
1.8 DELIMITATIONS	14
CHAPTER TWO	15
2.1 INTRODUCTION	15
2.2 OVERVIEW OF THE LITERATURE REVIEW	22
2.3 CONCEPTUAL FRAMEWORK	23
CHAPTER THREE	24
3.1 INTRODUCTION	24
3.2 STUDY DESIGN	24
3.3 LOCATION OF STUDY	24
3.4 STUDY POPULATION	24
3.5 INCLUSION AND EXCLUSION CRITERIA	25
3.7 RESEARCH INSTRUMENTS	26
3.8 PRE-TESTING	26
3.9 STUDY PROCEDURE	26
3.10 DATA ANALYSIS	26
3.11 ETHICAL CONSIDERATIONS	27
CHAPTER FOUR	28
RESULTS	28

4.1 Descriptive characteristic of the study population	28
4.2 Prescribing patterns at OPD	29
4.3 Stock out rates at MRRH.....	32
CHAPTER FIVE:	36
DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS.....	36
5.1 Discussions.....	36
5.2 Conclusions.....	37
5.3 Recommendations	37
REFERENCES	39
APPENDIX 1 Consent form.....	43
: INFORMED CONSENT FORM – RUNYANKOLE VERSION.....	Error! Bookmark not defined.
APPENDIX V: CHILD ASSENT FORM – ENGLISH VERSION....	Error! Bookmark not defined.
APPENDIX VI: CHILD ASSENT FORM – RUNNYANKOLE VERSION	Error! Bookmark not defined.
APPENDIX 2: Time lines.....	Error! Bookmark not defined.
APPENDIX 3: BUDGET	Error! Bookmark not defined.
APPENDIX 4: DATA COLLECTION TOOL 1 Questionnaires on why prescribers prescribe drugs outside the Essential Drug list.....	50
APPENDIX 5: DATA COLLECTION TOOL 2: patient’s demography.	53
APPENDIX 5: DATA COLLECTION TOOL 3: The NMS drug catalogue of drugs meant to be available at MRRH pharmacy.....	Error! Bookmark not defined.
This will provide guidance on which drugs have been issued and those not dispensed as shown in the table below.....	Error! Bookmark not defined.

LIST OF FIGURES

Figure 1 factors influencing access to medicines at different levels	20
Figure 2 conceptual framework.....	23
Figure 3 cadre of prescribers	29
Figure 4 Shows number of medicines prescribed	30
Figure 5 shows proportions of prescriptions by generic names	30
Figure 6 shows adherence to EML	31
Figure 7 Shows number of medicines prescribed per cadre	31
Figure 8 Shows prescription by generic names per cadre.....	32
Figure 9 Stock out rates.....	32
Figure 10 Shows prescription fill rate for OPD patents	33
Figure 11 Shows number of medicines not dispensed per prescription serviced.....	33
Figure 12 Shows adherence to EML per cadre	34

LIST OF TABLES

Table 1 showing the descriptive characteristics of the prescribing study population.....	28
Table 2 Bivariate analysis of variables that influence prescription fill rate.....	34
Table 3 Multivariate analysis of variables that influence prescription fill rate.....	35

CHAPTER ONE:

INTRODUCTION

1.1 BACK GROUND

There has been a rise in medicine shortages in the recent years. This is a universal challenge, with noticeable supply failures of antibiotics, anaesthetics, chemotherapy e.tc. This challenge cuts across in the high to middle and low-income countries. (1) The World Health Assembly resolution WHA69.25, scores the reduction in stock outs of program items like HIV medicines. However, the meeting recognises the widespread drug shortages relating to manufacturing issues in the absence of comprehensive data on global trends on shortages of anticancers, antibiotics, paediatric dosage forms and vaccines (2)

Most countries in sub-Saharan Africa lack regular supply and access to essential medicine products. (3) With the noticeable rise in the economic status of the sub-Saharan citizens which translates to a higher purchasing power of drugs, majority of sub-Saharan Africa still struggles with managing supply chains.

In Uganda, the health sector budget for the financial year 2015/2016 versus the total government of Uganda budget was 6.4% which was below the 15% target as per the Abuja target. (4) In the same year, from the total government allocation to the health sector, only 18% was used to procure essential medicines and health supplies which is slightly below the target of 19% (5) thus creating a stock availability gap(1).

Mbarara regional referral hospital is found in south western Uganda and receives so many patients from the western region of Uganda and beyond. The patients include self-referred and complicated cases referred by other health facilities. The patients come from the 13 districts of south western region: Mbarara, Isingiro, Sheema, Ntungamo, Ibanda, Bushenyi, Buhweju, Mitooma, Rubirizi and Isingiro, Rwampara, Kazo, Kiruhura. In addition, the hospital receives patients from Congo, Burundi, Rwanda and Tanzania including the resident refugee communities from the Republic of South Sudan, Somalia and other neighbouring countries. (6)

The prescribers in the hospital are diverse in speciality ranging from interns, nurses, midwives, clinical officers, general doctors, specialist doctors, consultants, medical lecturers and professors with a medical background. These provide a mix of prescriptions with a wide range of medicines. These prescriptions are both in and outside the essential Medicines and health supplies (EMHS) list. The prescriptions outside the EMHS list are mainly due to the big number of specialised clinics translating to many specialised medicines being prescribed. Other reasons include clinicians who do not follow Uganda Clinical guidelines either due to ignorance or pressure from the multitude of drug promoters who ply the hospital daily.

1.2 PROBLEM STATEMENT

According to DHIS2 national database, MRRH receives averagely 28,812 Outpatients annually. These come to Mbarara RRH hoping to get drugs. Majority of the patients are poor and cannot afford buying drugs. (7)

The later can be justified by the fact that the least paid unskilled Ugandan government worker earns US \$ 1.31(4000 UGX)(2). 38% of the Ugandans live under the poverty line yet a large proportion of the Ugandans live worse off than the least paid government worker thus making purchasing power low. According to WHO, in 2018 Ugandans had a per capita out of health pocket expenditure of \$43 (156,950 UGX) which is way too high.(2)

Unfortunately, most residents of Ankole region come to Mbarara RRH after spending money elsewhere on transport, traditional medicines and self-medications. (8) On arrival at the hospital, they are vexed to be told that most of the drugs prescribed are out of stock. This is in spite of the fact that some drugs are available in the hospital store that could help the patients are not prescribed to them.

Without addressing this we shall see a continuous rise in the number of patients who leave the hospital without medicines thus translating to an increase in morbidity, mortality, health out of pocket expenditure and hospital stays in the people living in south-western Uganda. This research will be conducted to; Determine the EMHS funding gap, estimate the number of patients who come to Mbarara RRH and are unable to get medicines, Assess the prescription characteristics of prescribers, Non-adherence of prescribers to the EMHS list.

1.3 JUSTIFICATION OF THE STUDY

When a patient visits Mbarara regional referral hospital, he is received at different points i.e., at the outpatient department or emergency ward. The clients' details are captured in an OPD register and is given a number (outpatient department number) then proceeds to see a clinician who does the diagnosis and prescribes treatment which is recorded in the outpatient register. The patient is then sent to the pharmacy to pick medicines. In the pharmacy, the medicines dispensed are recorded in the dispensing log.

A system called the Integrated Intelligent computer system (IICS) was introduced to aid in the capture of that data, though several steps must be made for it to be fully functional.

Many patients leave the hospital without prescribed drugs. This is a big problem as it puts their health at risk. This happens, despite some drugs being in stock and not prescribed.

The study was conducted to:

- Help identify part of health care financing gap in Mbarara regional Referral Hospital most especially in terms of financing the EMHS
- Help decrease the number of patients who go without prescribed drugs and improve their health.
- Change the prescription habits of the clinicians or increase the range of drugs the hospital procures

1.4 OBJECTIVES OF THE STUDY

1.4.1 Main objective

- To assess the effects of prescription patterns/ practices on quality of service delivery at the pharmacy department of Mbarara Regional Referral Hospital

1.4.2 Specific Objectives

1. To assess prescribing patterns for prescribers at OPD in Mbarara RRH
2. To assess prescription fill rate for OPD patients attending Mbarara RRH
3. To assess the adherence of prescribers to the essential medicines list and its impact on the prescription fill rate

1.5 RESEARCH QUESTIONS

1. What are the prescription patterns for prescriptions produced by prescribers at OPD in Mbarara RRH
2. What is the prescription fill rate for OPD patients attending Mbarara RRH
3. Do prescribers adhere to the EMHSL and how does this impact on the prescription fill rate

1.6 HYPOTHESIS

1. Prescription patterns among prescribers at MRRH differs by Professional Ranks.
2. The prescription fill rates for patients attending MRRH is inadequate
3. Prescribers at MRRH do not adhere to prescription of medicines in the Essential Drug list.

1.7 EXPECTED OUTPUTS OF THE STUDY

This research will ably:

- Help us understand how the prescription mix of various prescribers in the OPD affects prescription fill rates
- It will help us to know the rate of adherence of clinicians to the prescription guidelines

- It will help us understand the extent to which government fund EMHS and what the funding gap is.
- It will be used as a tool of advocacy in the ministry of health so as to increase the EMHS funding

1.9 LIMITATIONS

The study will be affected by the fluctuations in drugs stocks depending on the time of the delivery cycles.

Lack of previous studies done at Mbarara RRH in relation to the supply chain aspect.

1.8 DELIMITATIONS

Drug stock outs are experienced by all patients in the hospital both inpatients and out patients. However, this research focuses on only the out patients because the medicine procurement and planning in Mbarara RRH mainly focuses on the inpatients. Data collection will take 60 days following the whole NMS delivery cycle to ensure that we can obtain a clear picture on how medicine stocks fade away over the 2 months' cycle

More literature search will be done to obtain a picture of what happens in other settings that are similar to the Mbarara RRH in terms of supply chain.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Globally people die or get disabled every year due to diseases that have known pharmaceutical treatments. In order to reduce these avertible deaths, access to relevant medicines needs to be increased. With assumption that people visit health centers when sick, the provision of medicines at the health centres to treat noxious diseases is imperative. However, drugs are often not dispensed at facilities because of them being out of stock.

In this chapter, we get to have a picture of what details on what happens in the various parts of the world in relation to medicines accessibility. This entails:

- Prescription characteristics for prescriptions produced by prescribers at various Out Patients Departments in the world
- Prescription fill rate for Out Patients
- Prescribers adherence to the EMHSL and its impact on the prescription fill rate
- Medicines funding gap in different health systems worldwide
- Medicine stock out rate in Europe, United states of America, India and East Africa

Various strategies that have been put in place. These are categorised in three broad classes: educational, regulatory and managerial (25). Educational strategies like reports and face-to-face interventions, alongside managerial strategies such as cost restrictions and prescription limitations, are complemented by regulatory approaches like drug categorization and market approval evaluations in healthcare management..

WHO's 1977 Model List of Essential Medicines was a pioneering move, aiding countries in creating their essential drug lists, promoting rational prescription practices. WHO defines essential drugs as “those that satisfy the health care needs of the majority of the population and they should therefore be available at all times, in adequate amounts and in the appropriate dosage forms (26).” Essential drugs are key in fighting ill health and promoting access and rational use of drugs. (27).

WHO statistics show that 50% of all medicines are prescribed, dispensed, or sold improperly and not taken correctly across the globe. (8). In addition, about 33% of the population across the world lacks accessibility to essential medicines (8). Several states have come up with their own EML. For example, the Kenya Essential Medicines List (KEML) 2010 is the current EDL for Kenya. Various hospitals have developed formularies from the country's EDL. These strategies are geared towards promoting rational drug use.

The WHO uses medicines per prescription as a yard stick to measure polypharmacy and the acceptable values range from 1.6 to 1.8 (28). Various researches give varying outputs in terms of the mean number of drugs prescribed per prescription. Low values are common in some developing countries. Acceptable values were documented in Lebanon and Ethiopia. Numerous studies conducted in Dubai, Uganda, United Arab Emirates, Nigeria and Brazil, indicated higher average value.

High mean values indicate polypharmacy. This may be caused by various factors such as; facilitations by drug promoters or inadequate refresher courses of prescribers. These high values are discouraged as they are a risk factor for drug interactions and increased incidences of adverse drug reactions (29). Low availability of drugs and trained prescribers is always associated with low figures of average number of drugs prescribed per patient encounter.

Generic prescription is a key indicator in assessing the prescribers' adherence to prescribe using international non-proprietary names other than use of brand names. The WHO recommendation on this indicator is 100% (28). However, varying results emanating from 2.9 to 99.8% were presented in various studies done in numerous countries across the world. The percentage values of medicines prescribed with generic names was markedly low in studies conducted in Nepal, Dubai, Jordan, United Arab Emirates and Lebanon. On the other hand, high values were reported by studies done in Tanzania, Ethiopia, and other countries (55).

Prescriptions are legal statements consisting of instructions for medication from a qualified medical practitioner sent to the pharmacist. (9) In Uganda, prescriptions are guided by the British National Formulary, Uganda Clinical guidelines, WHO practical manual on prescribing. (10), (11), (12). Several studies show that several physicians do not stick to guidelines instituted by regulatory entities not putting into consideration that a valid and correct prescription has a big influence on good therapeutic outcomes. (13)

(14) Poor prescribing habits result into ineffective treatment, protraction of illness, patient distress, harm and high medication and treatment costs. These make the prescribers prone to influences that can lead to irrational prescribing i.e. patient pressure, high powered drug promoters, bad example from colleagues, and this can later be transferred to students being trained

According to WHO, appropriate prescription involves: -

- Defining the patient's problem
- Stipulating the therapeutic objective
- Selecting treatment of established efficacy and safety from the available alternatives
- Start treatment with appropriate patient information and instructions
- Monitor results of the outcomes.
- End treatment when objectives and outcome are achieved
- Change treatment when objectives or outcome not met by chosen therapeutic agents or refer for appropriate treatment to a higher level.

Medicine use evaluations are important aspects in patient care. These serve as a measure of the quality of care delivered by the institution. Prescription quality is a key dimension and process indicator requiring constant reviews in medicine use evaluations. (15) Irrational drug use is a global challenge and is common in developing countries due to inappropriate prescribing, dispensing and drug administration. This has led to wide spread health hazards such as drug interactions, increased drug interactions and adverse events, emergence of drug resistance. The World Health Organisation reports indicate that more than half of all drugs are prescribed, issued inappropriately (16)

Prescription pattern monitoring provide avenues for ascertaining prescribing, dispensing and medicines distribution in a defined locality with the aim of facilitating rational use of medicines.(17) Drug use indicators were established by the World Health Organisation in close collaboration with International network for rational use of drugs as a measure of the extent of rational prescription.(17),(18)

WHO drug use indicators exist in 3 categories: -

- Prescribing indicators
- Patient care indicators
- Quality of care indicators

These are standardised indicators thus do not need national adoption. However, they are not elaborate enough, though they are a simple and quick tool to reliably assess a few aspects on medicines use or prescription patterns in a health care setting.

In Ethiopia, poor compliance with standard prescription format practices are reported, mainly from public healthcare facilities (5,7). This is similar to the country's private healthcare sector (7),(9). However, globally irrational prescription is profound in the private sector.i.e, only a small percentage of medicines are prescribed by their non proprietary names, and gap is designated as abuse of WHO's drug use indicators (1, 41).

Medicine use evaluation indicators used in a cross sectional survey at various points in time to assess the changes in performance within a defined geographic area. These either describe drug use at a given point in time or monitor changes over a stipulated period of time. This research is designed to assess the drug prescription patterns at the out patient's department of Mbarara Regional Referral Hospital, using the 5 WHO prescription indicators: -

- Average/ mean number of drugs per patient encounter
- %age of drugs prescribed by generic name
- Adherence to essential drugs list or formulary.

These WHO indicators will be key in detecting the extent of polypharmacy, extent of generic prescription versus brand prescription which is a reason for poor prescription fill rate, whether

usage of antibiotics and parenterals is within the limits besides ascertaining the degree of adherence to the essential medicines list. (17)

The WHO and the National Health Policy of India has put emphasis on treatment of diseases with guidance of the essential medicines list, prescription by generic name. The prescription pattern monitoring studies are key in bridging areas of rational drug use, pharmacoeconomics, pharmacovigilance, pharmacogenetics and evidence based medicine. In India, prescription pattern studies are essentially conducted in every state in the bid to improve the quality of patient care in every state with the final goal of promoting rational drug use. (17)

Assessment using the WHO prescribing indicators in a private providers setting is less common unlike in public health settings. This makes the current study relevant to the setting where it is to be carried out. Unlike various Indian studies, the current study aims to analyse the entire list of prescription indicators in totality as advocated by the World Health Organisation in a teaching setting like Mbarara Regional Referral Hospital. Thus this will not only cover patients and prescribers who could be consultants, specialists, allied health professionals, Senior house officers and interns but also medical students since they are key in imbibing the norm of rational prescription hence breaking the generational deficiency of irrational prescription.

Something to note, is that most studies look at prescription monitoring on specific groups of medicines such as analgesics, antipsychotics, opioids and antihypertensives rather than evaluating the prescription indicators in totality irrespective of the diagnosis. Thus, our study will provide a 360 degrees' view of the current prescription trends in Mbarara RRH and other related settings. (19) The impact of such stock outs is very pronounced (20)

Competitive medical environments with supply factors were a significant determinant of prescription patterns in Korea (18). A cross-sectional survey done by Ndhlovu, (2009) in 4 districts of Zambia, assessed the prescription patterns at primary Healthcare providers. Out of 2206 prescriptions that were assessed, about 40% of were prescriptions requiring antibiotics. Of all encounters where a systemic antibiotic was prescribed, just slightly above a quarter were of appropriate to the indication and dosage (19).

Prescription fill rate is defined as the extent to which customer demand is met by immediate stock availability in the absence of stock outs, back orders, and lost orders. This affects medicines accessibility thus affecting therapeutic outcomes. Poor fill rates can be caused by mainly poor health financing mechanisms and drug distribution

Health care expenditure is a big burden in various countries i.e. it accounts for 17% of the GDP in the United states of America and its predicted to rise up to 33% by 2050s while in the Great Britain, its accounts for 17% of its government expenditure (21).

In Africa, the political will by the respective African leaders was reiterated at continental level as shown by the Abuja Declaration of 2001 in the bid to enhance government financing for health, Addis- Ababa Declaration of 2006 on community health, 2008 Ouagadougou declaration on primary health and health systems. The average health expenditure in the various African nations stood at US \$ 135 per capita as of 2010, which is a very small fraction of the US \$3150 spent on health by an average high income country. In approximately half of the African countries, 40% or more of the health expenditure in totality is constituted of household

out of pocket payments. This is the most regressive way of financing health care since it creates financial barriers to access to health services putting the Africans at risk of impoverishment (22)

The per capita expenditure as per locally generated resources on recurring health services varies athwart states in the East and southern Africa, this on average is 97 USD which is significantly above countries in the Sub Saharan Africa averages. The per capita expenditure rate has increased across board in developed, Low and middle income countries with the highest growth marked in the developed countries. However, this has widened the per capita health expenditure gap. The absolute expenditure on health has increased, thou slower than the GDP, and nationally financed government expenditure on health as a fraction of the gross domestic product is low and diminishing thus making it complicated to meet Abuja declaration of 15% of the government budgets to be spent on health. (23)

Uganda is amongst the low income countries, with relatively a small share of its national budget allocated to health. It has on average approximately allocated 8% of its national budget on health for the last 5 years. This is a fraction of the big 15% of the total health expenditure by both USAID and Ministry of Health. Uganda's annual GDP growth has been 5% - 7% on average for the last seven years yet the government has failed to cover the increasingly expanding pressures on the domestic budgets. (24). These challenges in health financing will directly affect the populations access to health services.

Essential Medicines availability is a chronic challenge in low and middle income countries where the average availability of medicines in the public health facilities within the World Health Organisation member states is as low as 29.4% (ranging from 29.4% to 54.4%) (25) The health consequences from such low levels of medicine availability are noticeable (20).

Access to essential medicines depends on a well-functioning supply chain system which has the capacity to distribute drugs from the manufacturer to the end user. Within the last few decades we see governments increasingly struggle to provide a number of products and funding for prioritised diseases. (26).

Several factors prevent the end user from being able to obtain the desired medication. These range from selective marketing decisions by companies to drugs being costly or pharmacy stock outs. This not only affects the low and middle income countries but also affects member states in the European Union. The European union was able tease out the factors that affect access to medicines at different levels as shown in the figure below.

Figure 1: Factors influencing access to medicines at different levels

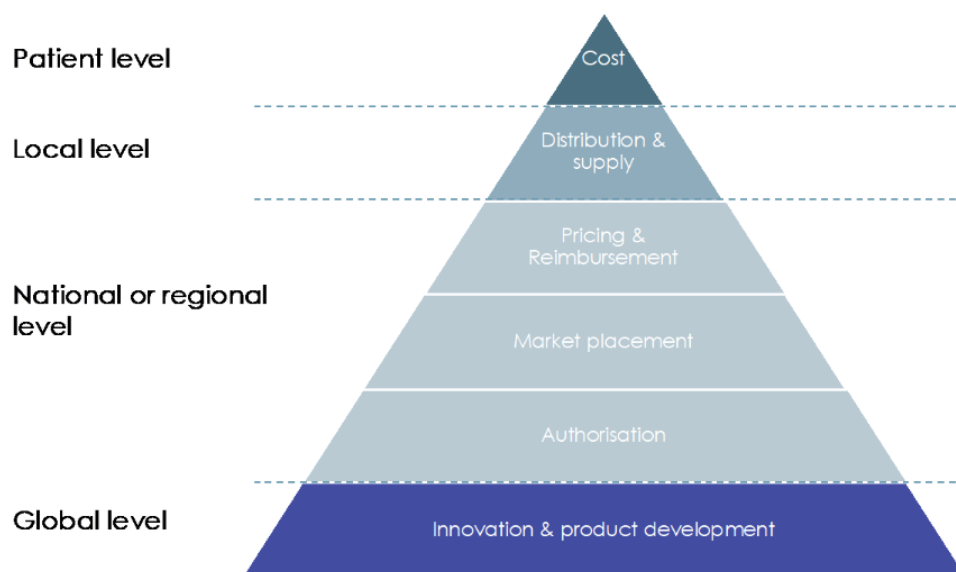


Figure 1 factors influencing access to medicines at different levels

In the bid to respond to the teased out challenges, the European Union parliament adopted a resolution containing 58 recommendations for action by the commission and member states. (27)

As of 2012, the united states of America had a total number of emerging and ongoing drug scarcities of over 450 (28). A study done amongst pharmacists in the USA reported that at least 99% of the pharmacist reported experiencing at least one stock out during the year of 2014, with 64% of the facilities reporting running out of at least one injectable oncology drug.(29) In a survey done in Europe in 2018, amongst hospital pharmacists we observe a rise in medicine shortages with 91.8% hospital pharmacists experiencing shortages versus the 86.2% in 2014 with 35% experiencing them daily and 38% weekly.(30)

In south Africa, frequent medicine shortages that different levels of health care. These stem from delayed supplier payments to poor order fulfilment by suppliers and Active pharmaceutical ingredient shortages. (31)

In East Africa, the public sector provides health services to the bulk of Tanzanian, Kenyan and Ugandan population (low and middle income countries). This remains a big challenge and erratic since the public sector does not adequately meet the needs of the population.(32)

Over the years, health services in Uganda have been affected by various challenges including non-availability of stocks of medical supplies in public health facilities. In the financial year 2009/10 only 21% of the health facilities stated no stock-outs of tracer medicines in the last six months. Tracer medicines are categorised into, Cotrimoxazole, measles vaccine, anti-malarials, Sulphadoxine / Pyrimethamine, Depo provera and Oral Rehydration Salts (ORS). With the FY2013/14, the number increased to 57% as reported by the Annual Health Sector Performance Report (5), the problem is still immense. Patients in public health facilities continue to suffer and die of avoidable diseases due to medical stock-outs. The Budget Monitoring and Accountability Unit (BMAU) reports have recurrently highlighted the issue of medical stock-outs at several levels of health care (33).

The Central Medical stores (CMS) an arm of Ministry of Health (MoH) under the pharmacy division was responsible for drug quantification, procurement and management through local governments. However, in December 1993, the MoH transferred the drug supply, storage and distribution role to National Medical Stores (NMS) by an Act of Parliament. (34) This policy shift was expected to increase procurement and management of health supplies at various levels. This has partially been achieved, however, continued stock-outs of medical supplies are reported at different levels. The value for Money Report 2015 by the Auditor general, highlighted a nationwide (Uganda) concern of citizens dying of treatable diseases such as malaria arising from patients' failure to access drugs in public health facilities. (35)

Medicines funding is a big challenge that is experienced every year at UTH (Pharmacy records, 2013) with antimicrobials representing the most expensive therapeutic group among medications used in health facilities, and their use carries an additional cost, not only the cost of medicine itself, but also the side-effects and promotion of the ever-growing bacterial resistance (33), (32).

During the annual monitoring for Financial year (FY)2013/14, the National Medical Stores (NMS) warehouse in Entebbe was identified to be fully stocked with drugs by 24th June 2014. However, absence of medical supplies existed at all levels of health facilities checked. 10 regional referrals, 2 national referrals, 3 general hospitals, and 13 districts were checked during the annual monitoring and semi-annual monitoring exercises of FY 2013/14 and FY 2014/15 respectively.

A situational analysis to find the causes and implications of these drug stock outs was performed and the following issues were identified:

- Poor planning and forecasting
- Limited budget allocations
- Inadequate data management and monitoring structures to track and trace amounts of medicines ordered, dispensed, prescribed and stocks on hand
- Poor order fulfilment by NMS

- Abuse of the referral system
- Poly pharmacy tendencies characterized by some prescribers prescribing more drugs than needed (5)

It's from the above, i.e. the stock outs and poor access to medicines that translate to poor prescription fill rates at dispensing points of medicines in various health facilities in Uganda and in the rest of the world. Poor access to medicines internationally and nationally, will automatically mean that the end user will be unable to get the medicines as recommended by the WHO standards thus leading to poor prescription fill rates thus, poor prescription patterns, adherence to medicines list resulting to irrational medicines use

2.2 OVERVIEW OF THE LITERATURE REVIEW

From the latter, we see that access to medicines is a challenge in the whole world most especially in developing countries which include Uganda. This stems from several factors such as inadequate health care financing, irrational medicines use, poor prescription practices and non-adherence to guidelines.

Thus this study will be able to determine extent to which these aspects have affected the supply chain of medicines in Mbarara RRH. The results obtained will be used as an advocacy tool to Ministry of Health and the Ugandan government as a basis to address the identified gap so as we can improve the livelihood of the people living in the Ankole region and beyond which is the catchment area of Mbarara RR

2.3 CONCEPTUAL FRAMEWORK

Poor health financing (funding gap), influence of drug promoters, non-adherence to prescribing standards such as use of UCG and EMHSL and a wide range of prescribers combined provides a wide range of prescriptions which are received at the pharmacy department. Depending on the time at which the National Medical Stores has delivered its commodities and other related factors as latter stated, it leaves patients leaving the hospital without medicines

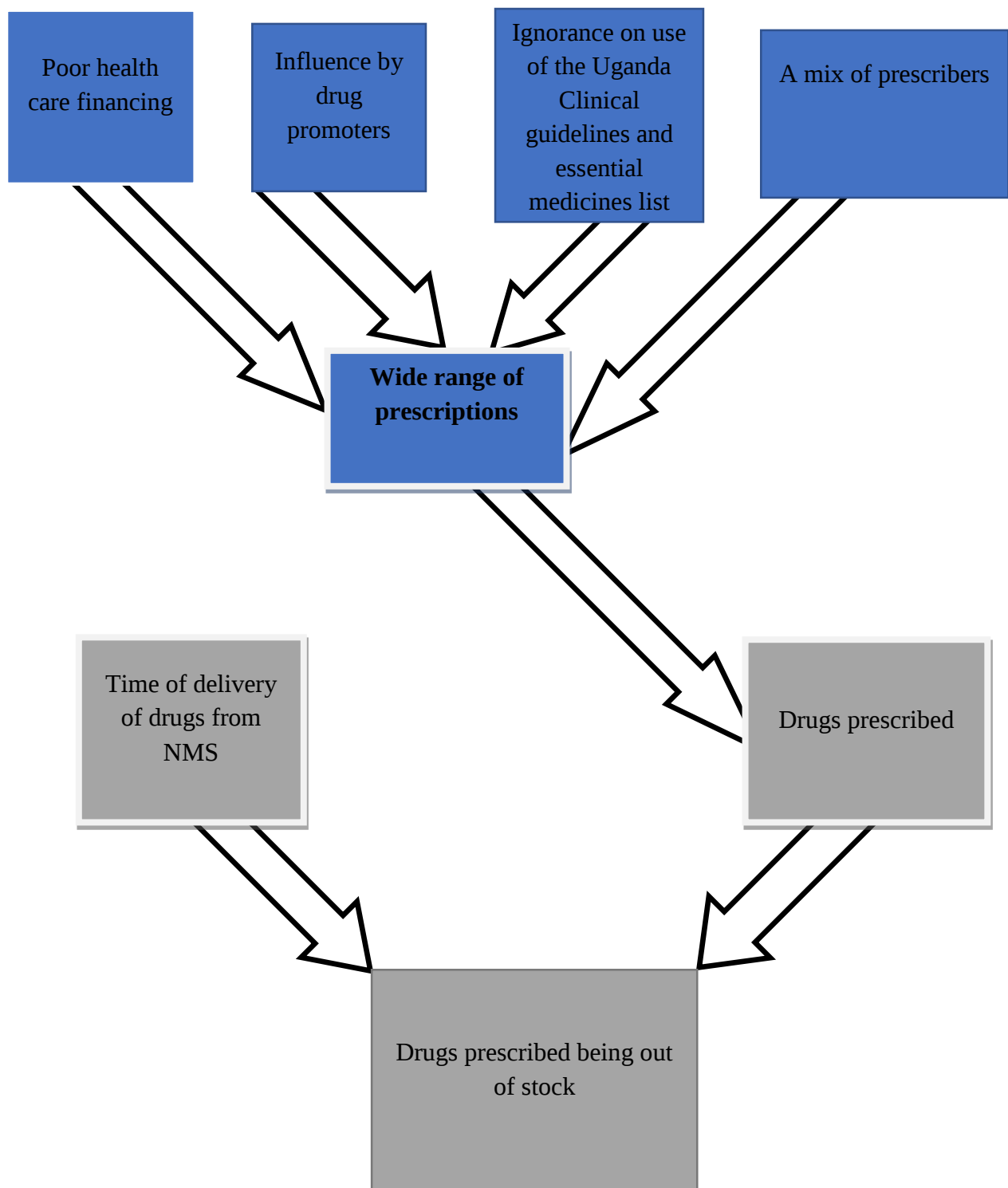


Figure 2 conceptual framework

CHAPTER THREE

3 METHODOLOGY

3.1 INTRODUCTION

This mainly spells out how the study will be conducted. It includes:

- Study design
- Location of study
- Study population
- Inclusion and exclusion criteria
- Sample size determination
- Research instruments
- Pre-testing
- Study procedure
- Data analysis
- Ethical considerations

3.2 STUDY DESIGN

This was a prospective quantitative study. We used a descriptive cross sectional method of study, where the study subjects were patients who had been prescribed medicines by clinicians at OPD and clinicians who prescribe medicines for patients at outpatient department in Mbarara Regional Referral hospital for the month of February and march 2023

This study Was quantitative because the data collected was numerical in nature focusing at variables such as prescription fill rates, common prescribers and stock outs for a defined period of time with focus on only patients who are seeking services from OPD.

3.3 LOCATION OF STUDY

The study was conducted in MRRH at the OPD pharmacy and the outpatient department. When patients who were prescribed medicines at the OPD, these are sent to the OPD pharmacy to pick medicines. At the OPD pharmacy, they were required to present their prescriptions, and these were served by the dispensers filled the prescription and indicated which medicines have been supplied and which ones have not been supplied.

3.4 STUDY POPULATION

The target population were patients from Ankole region (which is the catchment area of MRRH) and beyond who are approximately 4,000,000 and the 86 prescribers in Mbarara RRH OPD. These patients are the probable clients to seek for pharmaceutical services at the OPD pharmacy of MRRH. However, the study population of interest were Outpatients including hospital staffs who had been given prescriptions from OPD of Mbarara Regional referral hospital. These are 2401 out patients per month on average.

3.5 INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria

The study subjects were:

- Patients seeking for pharmaceutical services in Mbarara RRH
- Patients possessing a prescription from the OPD
- Patients willing to sign the consent form
- Clinicians who provide prescriptions at OPD

Exclusion criteria

These subjects possess the following characteristics:

- Those unable to sign the consent form
- In-patients who have been discharged.
- inpatients on Treatment in Mbarara RRH

3.6 SAMPLE

3.6.1 Sample size

The hospital receives averagely 2401 Out patients a month as of the last 5 years(2018-2022). In this study, given that we have no previous study on the number of patients who leave the hospital with no drugs, thus we had to use Solvin's formula to estimate the sample size.

<https://hmis.health.go.ug/dhis-web-pivot/>

$$n = N / (1 + Ne^2) \text{ and}$$

adjusting the population size by using the following formula

$$n = (\text{estimated sample size}) / ((1 + (\text{estimated sample size} - 1) / \text{population size}))$$

hence obtaining the sample population to be 300 patients.

<https://www.statisticshowto.com/probability-and-statistics/how-to-use-slovins-formula/>

3.6.2 Sampling technique

A systematic sampling technique was used on patients who fell within our inclusion criteria of the study. By simple probability method, We shall use the 3rd sampled prescription. as our Prescription number one and all prescribers at OPD were interviewed.

3.7 RESEARCH INSTRUMENTS

The research will use the following items as indicated below. These were adopted from the WHO standardised tools for drug use indicators and the medicines and therapeutics manual of 2018 by the Uganda Ministry of Health. These were further customised to fit the research we are undertaking:

- Questionnaires as attached in appendix 4, 5 and 6
 - Appendix 4: checking on Clinicians adherence to the EMHS list
 - Appendix 5: checking on patient demographics
 - Appendix 6: checks on the different medicines prescribed by clinicians, those that have been issued by the pharmacy and those that were unable to be fulfilled.

3.8 PRE-TESTING

Pretesting of the study was done for 3 days before the beginning of the study and those study subjects were not be included in the main study. This took place at Out patient department where 15 study subjects coming to pick medicines were chosen. Consent was obtained. Data was collected using the questionnaires.

3.9 STUDY PROCEDURE

The study was done with the aid of questionnaires. Research assistants were trained to fill the questionnaire. These were deployed at the various OPD dispensing points. Data was collected from the participants after obtaining formal consent. For clinicians, data was obtained from their respective workstations in the absence of patients to avoid interruption during work and ensuring confidentiality was maintained. All the above activities were performed under supervision of the principal investigator.

3.10 DATA ANALYSIS

This was done with the support of a biostatistician using the SPSS software where by results are being presented in form of graphs, charts and tables

The data was extracted from excel and exported to IBM Statistical Package for Social Sciences research software (SPSS) version 26 for analysis. Descriptive statistics was generated and summarized as proportions and means objectives were analysed descriptively and presented in frequency tables and graphs as well as pie charts. To establish the variables that influence prescription fill rate, bivariate and multivariate logistic regression analysis was done. Factors with p value less than 0.05 at bivariate analysis were further subjected to multivariate analysis. Factors with p value less than 0.05 at 95% confidence interval were considered statistically significant. Odds ratios were determined to show the strength of the associations.

3.11 ETHICAL CONSIDERATIONS

The research proposal was submitted for approval to Mbarara University Research and Ethics Committee for approval and Uganda National Council for Science and Technology for Registration.

Final authorisation to do the study was obtained from the Hospital Director, Mbarara Regional Referral Hospital.

The questionnaires used didnot disclose the patients' names and data was and is being kept under key and lock.

Data collection, this was done in privacy, to avoid breach of confidentiality.

3.12 Dissemination of results

Results obtained out of the study will be disseminated through CME's and through research articles since it will be published

CHAPTER FOUR

RESULTS

4.1 Descriptive characteristic of the study population

Table 1 showing the descriptive characteristics of the prescribing study population

Variables	Frequency n	Percentage %
Designation		
Clinical officers	3	3.5
Dentists	3	3.5
Medical officers	11	12.8
Medical interns	29	33.7
Midwives/nurse	13	15.1
Senior House officer	15	17.4
Specialists	12	14.0
Highest level of qualification		
Bachelors	54	62.8
Diploma	13	15.1
Masters	17	19.8
Others	2	2.4
Current clinic deployment		
General OPD	25	29.1
Pediatric	12	14.0
Special clinics	26	30.2
MCH	8	9.3
NCD clinics	4	4.7
Emergency	11	12.8
Years of experience		
0-5 years	29	33.7
6-15 years	15	17.4
>15 years	42	48.8
Years worked at the facility		
0-5 years	34	39.5
6-15 years	14	16.3
>15 years	38	44.2
Awareness of the existence of UCG and EML		
No	10	11.6
Yes	67	88.4
Access to UCG and EML if you need		
No	26	30.2
Yes	60	69.8
Refer to UCG and EML while making prescription		
No	25	29.1
Yes	61	70.9
Frequency of referring to UCG and EML while making prescription		
Case by case	15	17.4
Every prescription	3	3.5
Never used	16	18.6
Once in a while	52	60.5
Attended a CPD on appropriate medicine use in the last 6 months		
No		
Yes	53	61.6

	33	38.4
Get updates on stock status from the pharmacies stores		
No	25	29.1
Yes	61	70.9
Frequency of receipt to stock status updates		
Not referred to	24	27.9
Every fortnight	4	4.7
Every month	22	25.6
Every week	31	36.0
Every day	5	5.8
Reference to the updates		
No	24	27.9
Yes	62	72.1

One in every three, 33.7% of the participants were medical interns, most 62.8% had bachelors, 30.2% were from special clinics, 48.8% had years of working experience of more than 15 years, 44.2% had worked in the facilities for more than 15 years, 88.4% were aware of the existence of UCG and EML, 69.8% had access to UCG and EML if they need, 70.9% refer to UCG and EML while making prescription, six in every ten (60.5%) of the participants used UCG and EML once in a while when making prescription, 61.6% had not attended CPD on appropriate medicine use in the last 6 months, 70.9% get updates on stock status from the pharmacy stores and of those 36% get the updates every week and 72.1% refers to the updates.

4.2 Prescribing patterns at OPD

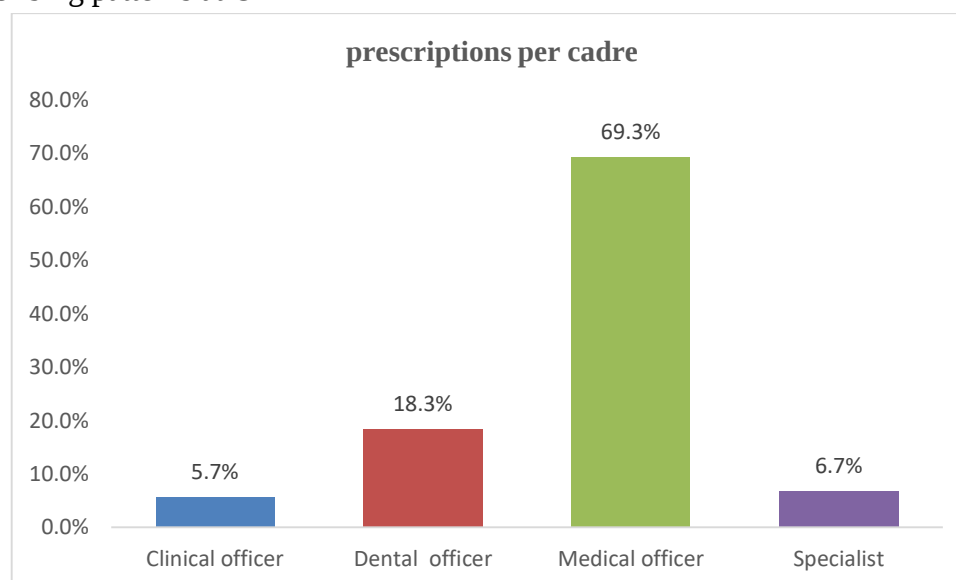


Figure 3 cadre prescribing

Figure 3 shows that most of the prescriptions received at OPD cadres were from medical officer (69.3%), followed by dental officer (18.3%), specialists (6.7%) and clinical officers (5.7%).

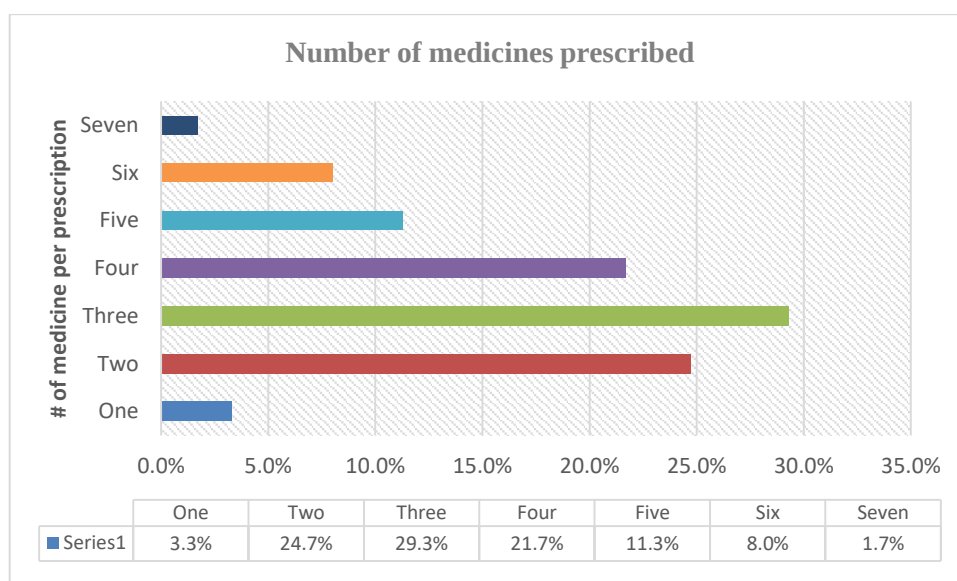


Figure 4 Shows number of medicines prescribed

Mean=3.437, SD=1.361

On the number of medicines prescribed per prescriptions, nearly three in every ten (29.3%) of the prescription had three medicines, two medicines (24.7%), four medicines (21.7%). Five medicines (8.0%), one medicine (3.3%) and seven medicines (1.7%).

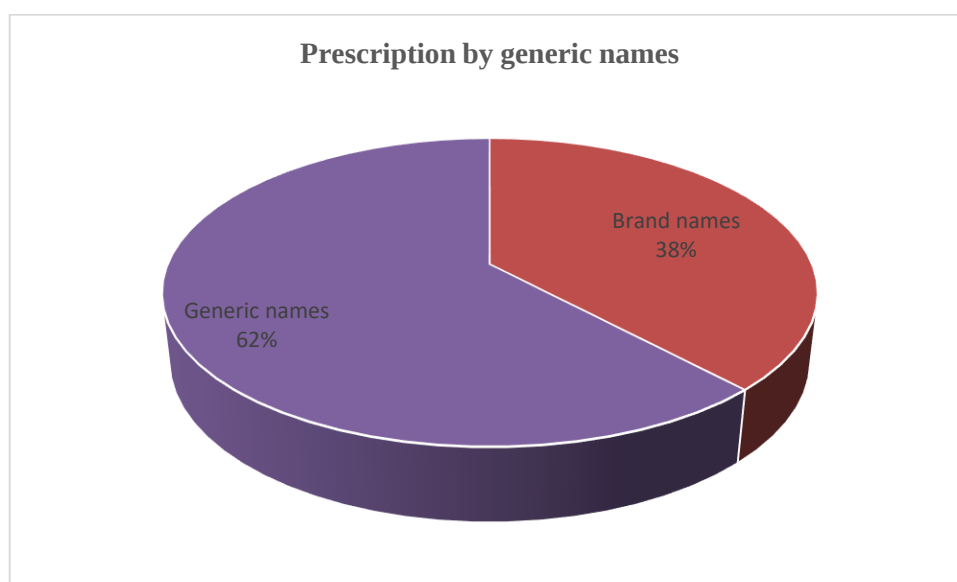


Figure 5 shows proportions of prescriptions by generic names

Figure 5 shows that most (62%) of the medicines were prescribed using generic names while (38%) of the medicines were prescribed using brand names.

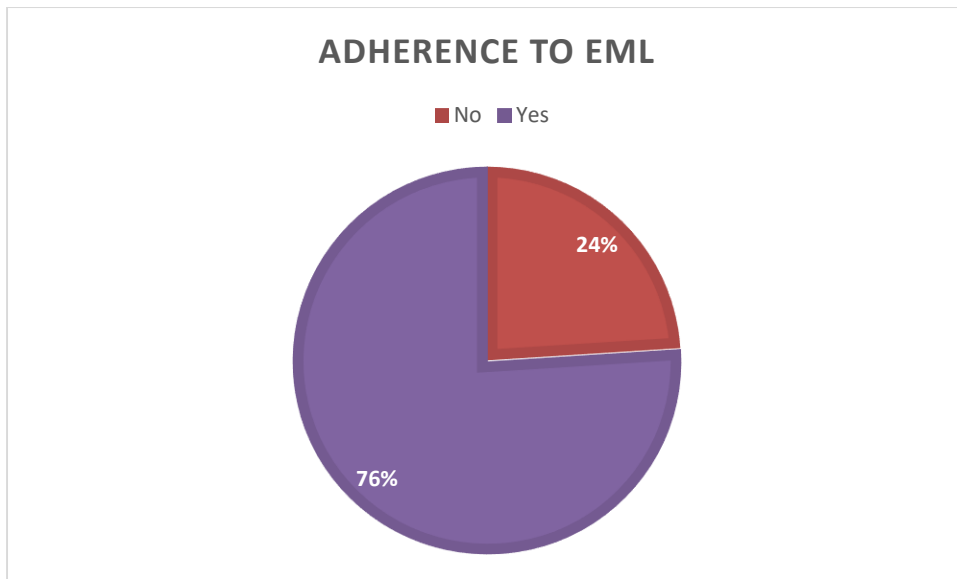


Figure 6 shows adherence to EML

Figure 6 indicates that most (76%) of the prescribers adhered to the EML guideline while (24%) did not adhere to the EML guideline.

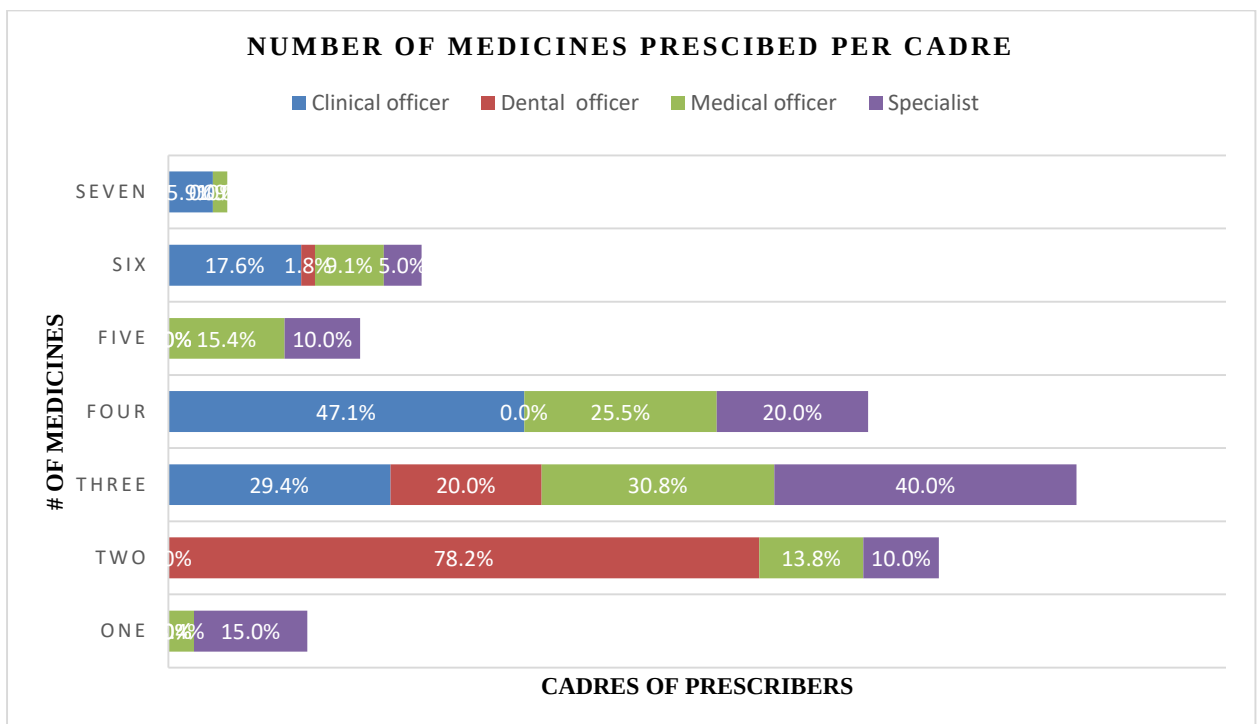


Figure 7 Shows number of medicines prescribed per cadre

Figure 7 shows that 15% of the prescription with one medicine were prescribed by specialists, 78% of the prescription of two medicines were prescribed by dental officers, 40% of the prescription with three medicines were prescribed by specialists, 47.1% of the prescriptions with four medicines were prescribed by clinical officers, 15.4% of the prescriptions with five medicines were done by medical officers and 17.5% of the prescription with six medicines were done by clinical officers.

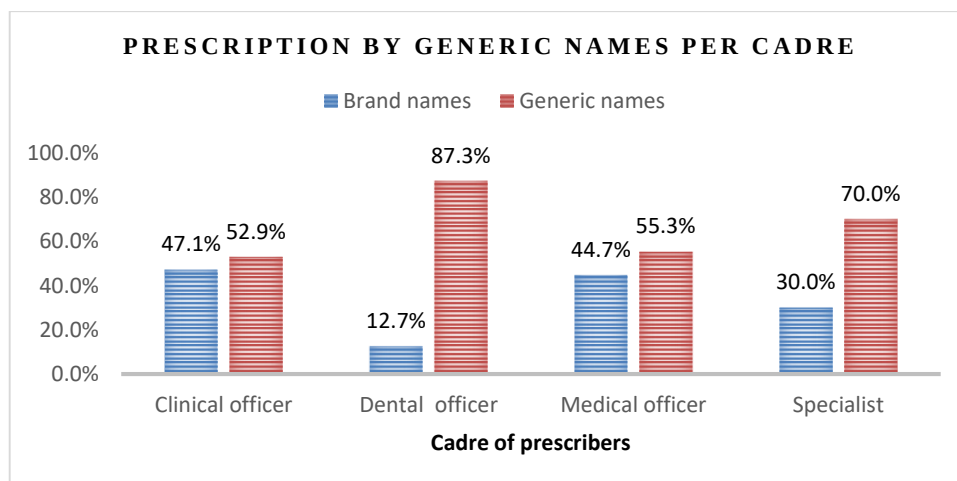


Figure 8 Shows prescription by generic names per cadre

Figure 8 shows that 87.3% of the prescription done by dental officers had generic names, 70% of the prescription done by specialists had generic names, 55.3% of the prescription done by medical officer had generic names and 52.9% of the prescription done by clinical officers had generic names

4.3 Stock out rates at MRRH

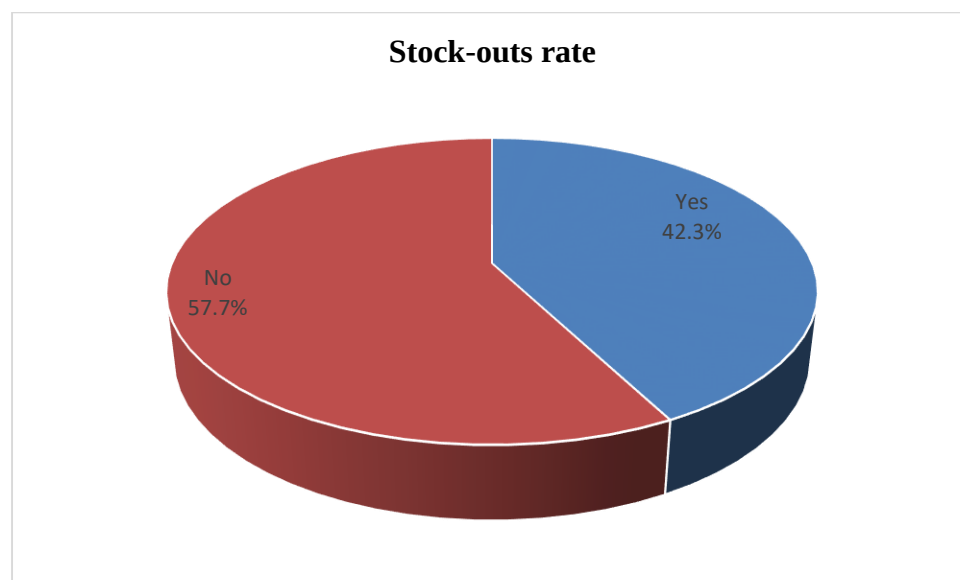


Figure 9 Stock out rates

The finding indicates that the stock-outs rate was at 42.3%

4.3 Prescription fill rate for OPD patients

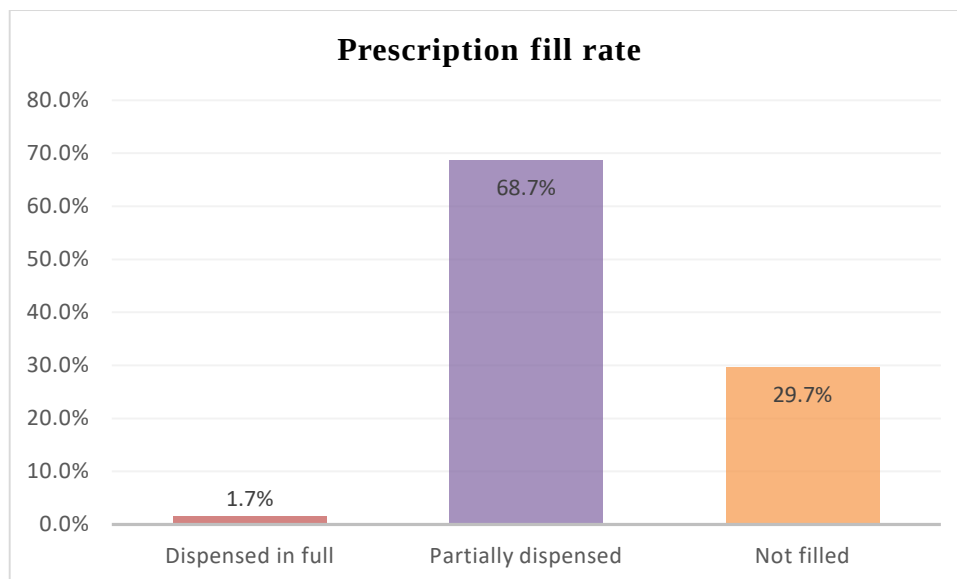


Figure 10 Shows prescription fill rate for OPD patents

Figure 10 shows that 68.7% of the prescriptions were partially dispensed, 29.7% were not filled and 1.7% were fullyfilled .

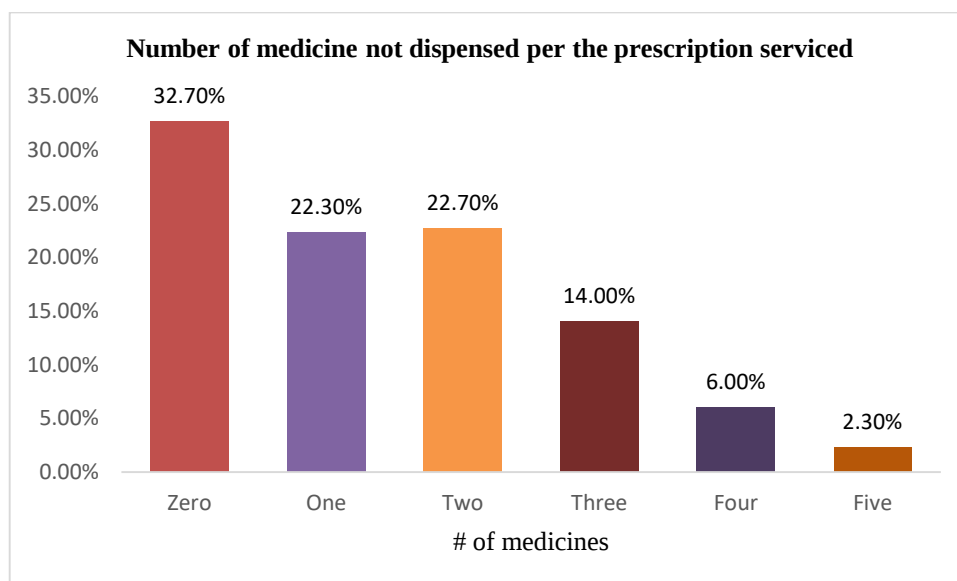


Figure 11 Shows number of medicines not dispensed per prescription serviced

It is noted that 32.7% of the prescribed medicines were fully dispensed, 22.3% of the prescription which had one medicines not dispensed, 22.7% were two, 14% had three medicines, 6% had four medicines from the prescription not dispensed.

4.3 Adherence of prescribers to the essential medicines list and its impact on the prescription fill rate

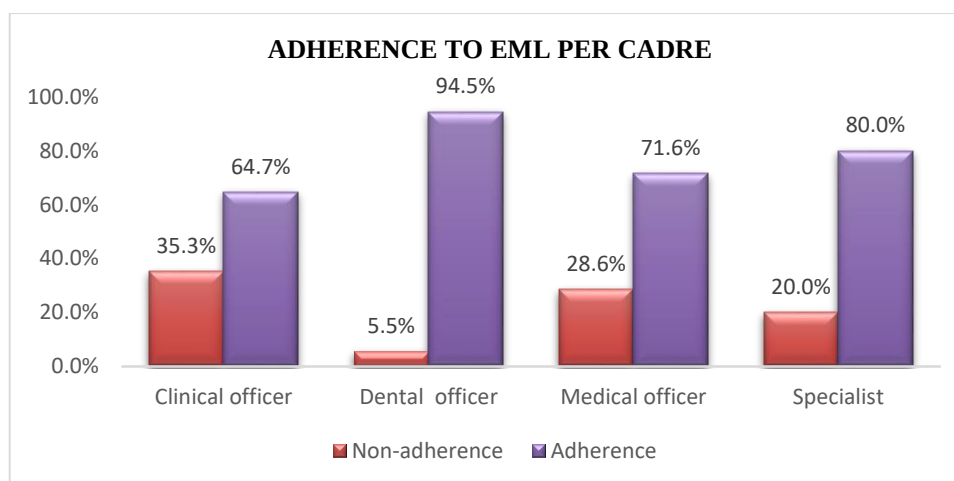


Figure 12 Shows adherence to EML per cadre

Figure 12 shows that 94.5% of the dental officers adhered to EML while prescribing, followed by 80% of specialists, 71.6% of medical officers and 64.7% of clinical officers.

Table 2 Bivariate analysis of variables that influence prescription fill rate

Variables	Got all prescribed medication		COR(95% CI)	p-value
	Yes (%)	No (%)		
Cadre of the prescribers				
Clinical officers	16(7.7%)	1(1.1%)	0.094(0.010-0.854)	0.036
Dental officers	13(6.2%)	42(45.7%)	4.846(1.630-14.408)	0.005
Medical officers	167(80.3%)	41(44.6%)	0.368(0.141-0.959)	0.041
Specialists	12(5.8%)	8(8.7%)	1.0	
Prescribing by generic names				
No	94(45.2%)	20(21.7%)	0.337(0.191-0.593)	<0.001
Yes	11(54.8%)	72(78.3%)	1.0	
Adherence to EML				
No	60(28.8%)	12(13.0%)	0.370(0.188-0.728)	0.004
Yes	148(71.2%)	80(87.0%)	1.0	

Prescription fill rate was high among dental officer (COR: 4.846, 95% CI: 1.630-14.408, P-value=0.005) as compared to specialists. While low prescription fill rate was registered by clinical officers (COR: 0.094, 95% CI: .010-0.854, P-value=0.036), medical officer (COR: 0.368, 95% CI: .141-0.959, P-value=0.041) compared to specialists. Furthermore, low prescription fill rate was registered among those who did not use generic names (COR: 0.337, 95% CI: 0.191-0.593, P-value<0.001) and those who did not adhere to EML (COR: 0.370, 95% CI: 0.188-0.728, P-value=0.004).

Table 3 Multivariate analysis of variables that influence prescription fill rate

Variables	COR(95% CI)	p-value	AOR(95% CI)	p-value
Cadre of the prescribers				
Clinical officers	0.094(0.010-0.854)	0.036	0.105(0.011-0.970)	0.047
Dental officers	4.846(1.630-14.408)	0.005	4.303(1.426-12.989)	0.010
Medical officers	0.368(0.141-0.959)	0.041	0.403(0.152-1.064)	0.067
Specialists	1.0		1.0	
Prescribing by generic names				
Yes	0.337(0.191-0.593)	<0.001	0.569(0.298-1.083)	0.086
No			1.0	
Adherence to EML				
Yes	0.370(0.188-0.728)	0.004	0.714(0.336-1.520)	0.383
No	1.0		1.0	

When the factors that were at bivariate level were model for confounding and interactions, cadre of the prescribers was significantly found to be associated with prescription fill rates. Being dental officer (COR: 4.303, 95% CI: 1.426-12.989, P-value=0.010) was associated with good prescription fill rate compared to specialist however, being clinical officer (COR: 0.105, 95% CI: 0.011-0.970, P-value=0.047) was associated with low prescription fill rate.

CHAPTER FIVE:

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Discussions

In the current study, the percentage value of medications prescribed by generic name in the assessed prescriptions was substantially low at 62% as compared to WHO standard of 100% prescription by generic drugs (41). Whereas, according to many Ethiopian studies, prescription by generic names makes up the majority of Ethiopian prescriptions. i.e, according to a review study, the pooled percentage value of pharmaceuticals supplied by generic name was found to be 93.5% (89.13%–97.96%) in Ethiopian public healthcare centers (42). Similarly, studies from public healthcare centers in Addis Ababa (88.5%) [33], Hawassa (98.7%) (5), among chosen healthcare centers in eastern Ethiopia (97%) [23], North-west Ethiopia (88%) (34, and South-west Ethiopia (77.3%) (18, also showed higher percentage values of generic prescribing than the present study. (35). Similar studies in Vietnam, India, Pakistan, Saudi Arabia, South Africa, and Sudan also reported that private healthcare facilities prescribed more trade names than public sector (4, 25). This could be attributed to a range of circumstances in our context. For example, there is no compulsory policy forcing private healthcare providers to prescribing by generic names, which leads to prescribers easily being influenced by other factors, the cost of the medicine, available stocks and drug promoters (36).

The study found that 76% of the prescribers adhered to the EML guideline while (24%) did not adhere to the EML guideline. This is similar to study by dos Sandos et al (2014) found that the drugs prescribed in 83.4% of prescription were part of the list of reference drug list indicating the acceptance of the list by health workers. However, on the contrary Asmamaw et al, (2022) found that 25.8% of the prescriptions were contained in essential list. This implies that EML should be availed to all health facility staff to aid in prescription.

The study findings indicate that the average number of medications ordered per prescription from the prescription was 1.36. This is slightly lower than the WHO standard comparison (1.6–1.8) (10). This result is inconsistent with two prior systematic reviews at the country level which found that the pooled number of drugs per prescription exceeded WHO standards in the public healthcare facilities, accounting for 1.96 and 2.14, respectively (19, 42). Moreover, a polypharmacy was also recorded in this study where 29.3% of the prescription had three medicines. For example, the average number of medicines per prescription was found to be 1.89 (21). On the contrary, according to studies from other parts of the Ethiopia country, drug per prescription amounts 1.9, 2.34, 2.2, and 2.13 in the southern, eastern, northern and southeast respectively (5, 22, 23) and Ilyaz et al found that the average drug prescribed were 6.25 per prescription.

Level of professionalism (Cadre) was also significantly associated with prescription fill. Being dental officer (COR: 4.303, 95% CI: 1.426-12.989, P-value=0.010) was significantly associated with good prescription fill compared to specialist. However, being clinical officer (COR: 0.105, 95% CI: 0.011-0.970, P-value=0.047) was highly associated with low prescription fill rate. This may be explained by the observation that most of the clinical officers were stationed in outpatient department where most of the medical representatives visited and

low level of professionalism is low amongst clinical officers due to their level of training and prescription of more medicines. This is consistent with Hangoma (2014) who found that the association between prescribers' position and factors influence prescribing tendencies and fill rate was not statistically significant ($p=0.084$)

The study found that the stock-outs rate was 43.2% of all medication prescribed during the study time frame. This is probably because funding gaps for medication from NMS. This is inconsistent with Lugada et al. (2022) who stated that 84% of the health facilities reported stockouts of essential medicines. In addition, Jjuuko et al (2020) found that the average number of days of stockouts was approximately 14 days. The average number of days out of stock of individual classes of drug was 12, 43, 29, 30, 38 days for analgesics, penicillins, cephalosporins, hydroxyurea and anti-malarial respectively. On the contrary, Karkkainen et al (2013) found lower percentage that 8.3% of average overall stock-outs rate of 8.3%.

5.2 Conclusions

The study found that most of the prescribers had prescribed three medicines per prescription, 62% of the prescription were on generic names, and 76% of the prescriptions adhered to EML. In addition, the stock-out rate was at 42.3% as 68.7% of the prescriptions were partially dispensed. The study finding indicates that cadre of the prescribers was significantly associated with prescription fill rate, higher among dental officers and low among clinical officers.

5.3 Recommendations

CMEs, workshops and mentorships on prescribing are recommended in the bid to keep prescribers up to date with good prescribing practices. Timely prescription surveys and drug utilization audits are recommended to support in identifying any practices of irrational prescribing. The results of such studies should be widely disseminated to healthcare workers with emphasis on prescribers. This can then be followed by relevant interventions to remedy any challenges identified.

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MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY
P.O. Box 1410, Mbarara, Uganda. Tel: +256 485433795, Fax: +256 4854 20782
RESEARCH ETHICS COMMITTEE
E-mail: sec.rec@must.ac.ug



03/02/2023

To: MANZI GERALD

UNIVERSITY OF RWANDA
0701457658

Type: Initial Review

Re: MUST-2022-685: THE POWER OF PRESCRIPTION PATTERNS ON QUALITY OF SERVICE OFFERED BY PHARMACY DEPARTMENT OF MBARARA REGIONAL REFERRAL HOSPITAL, clean copy, 2023-02-03

I am pleased to inform you that at the **150th** convened meeting on **01/12/2022**, the MUST Research Ethics Committee, committee meeting, etc voted to approve the above referenced application.
Approval of the research is for the period of **03/02/2023** to **03/02/2024**.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **03/02/2024** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

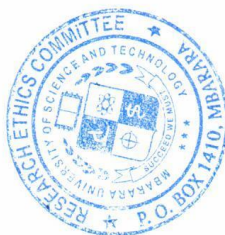
The following is the list of all documents approved in this application by MUST Research Ethics Committee:

No.	Document Title	Language	Version Number	Version Date
1	Protocol	English	clean copy	2023-02-03
2	Informed Consent forms	ENGLISH	1	2022-10-27
3	Data collection tools	ENGLISH	1	2022-10-27
4	Protocol	English	1	2022-10-27

Yours Sincerely

Edile Paulo

Assoc. Prof. Paul Alele
For: MUST Research Ethics Committee



APPENDIX 1 Consent form



MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY
RESEARCH ETHICS COMMITTEE

P.O. Box 1410 Mbarara, Tel: +256-48-543-3795, Fax: +256-48-542-0782

E-mail: irc@must.ac.ug, mustirb@gmail.com

INFORMED CONSENT FORM

Study title

The power of prescription patterns on the quality of service offered by the pharmacy department of Mbarara Regional Referral Hospital

Principal Investigator(s)

Manzi Mbabazize Gerald

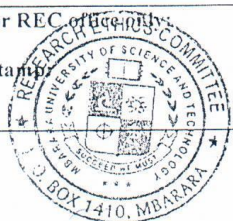
Introduction

What you should know about this study:

1. You are being asked to join a research study.
2. This consent form explains the research study and your part in the study.
3. Please read it carefully and take as much time as you need.
4. You are a volunteer. You can choose not to take part and if you join, you may quit at any time. There will be no penalty if you decide to quit the study.

Leave blank for REC stamp

MUST-REC Stamp



REC OFFICE USE ONLY:

APPROVAL DATE: 02/02/22

APPROVED CONSENT IRB VERSION NUMBER: 2022-10-22

PI NAME: MANZI MBABAZIZE GERALD

IRB NO: MUST-2022-485

Brief background to the study

Medicine use evaluations are structured, methodical and criteria-based medicines assessment systems which is key in assessing trends of medicines use in a defined setting. Poor drug prescription practices are inappropriate, result into irrational medicines use and most times leads to avoidable stock out of drugs. Medicine use evaluations are important in hospital settings that face challenges of serious stock outs. These are meant to study the patterns of drug use to change the prescription patterns accordingly.

Mbarara RRH being a high volume facility, receiving all sorts of health complications and with a wide range of prescribers is prone to having challenges involving access to medicines thus necessitating a medicine evaluation to be done as prescribed by this proposal so as to address the medicines funding gap in the institution. This will address the high health pocket expenditure by patients, majority of whom live below the poverty line

Purpose of the research project

Many patients leave the hospital without prescribed drugs. This is a big problem as it puts their health at risk. This happens, despite some drugs being in stock and not prescribed.

The study that will have 348 participants who an average will be interviewed for 15 minutes will:

- Help identify part of health care financing gap in Mbarara regional Referral Hospital most especially in terms of financing the EMHS
- May decrease the number of patients who go without prescribed drugs and improve their health.
- Change the prescription habits of the clinicians or increase the range of drugs the hospital procures

Why you are being asked to participate?

You are being asked to participate in this study because one of our target population who are patients from Ankole region (which is the catchment area of MRRH) and beyond who are approximately 4,000,000. You thus fall among the probable clients to seek for pharmaceutical services at the OPD pharmacy of MRRH. In general, we are conducting the study people in the Outpatients department including hospital staffs and clients who have been given prescriptions from OPD of Mbarara Regional referral hospital.

Procedures

This study is not experimental and does not involve any use of biological or body specimens

Leave blank for REC Office only MUST-REC Stamp		REC OFFICE USE ONLY:
		APPROVAL DATE: 03/02/2022
		APPROVED CONSENT IRB VERSION NUMBER: 2022-R-27
		PI NAME: MURILI MBABALIZE GELAMP IRB NO: MUST-2022-655

Risks or discomforts

We anticipate this to be a minimal risk study. In the event that you feel uncomfortable during the interview, please inform the team administering the questionnaire. To this questionnaire are details of the key contact performs to whom you can make further consultations

Benefits

This study will not directly benefit you but will be used to influence policy when it comes to issues concerning medicines supply chain management in Mbarara Regional Referral Hospital

Incentives or rewards for participating

There is no incentive or reward for participating in this study. This study is designed to address the most touching issue in health care that has affected the Ankole region for several years.

Protecting data confidentiality

Information obtained from the participants in the study will be kept confidential and anonymous in reference with the international and local ethical standards governing research involving human participants. Your personal identity will be concealed and your name will not appear anywhere on the coded forms with the information. It is only the study team that is authorized to access the collected data. An exception can also be given the Rwanda University College of Medicine and health sciences research and ethics committee, Mbarara University of Science and Technology Research Ethics Committee and the national council for science and technology (UNSCT) to privately access information that identifies the research participants by name where applicable. The filled questionnaires and other filled data collection tools will be kept under key and lock and data in soft copy will be passworded to avoid unauthorized access. For any further inquiries, one can reach out to the chairman research and ethics committee Dr. Francis Bajunirwe Tel: 0485433795/0772 576 396 Or Uganda National council of sciences and Technology on Tel +256-041-4705500

Protecting subject privacy during data collection

All documents that you will be using in this interview will not bear your name and the interview will be conducted in a secure location.

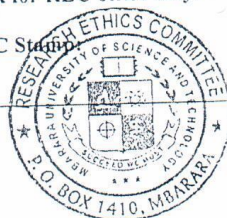
Right to refuse or withdraw

Your participation in the study is voluntary, you have a right to withdraw from the study at any time you feel uncomfortable. There will be no consequences for withdrawal. You are not obliged to answer questions that you are not comfortable with.

Feel free at any time during the interview to stop me if you feel uncomfortable.

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MUST-REC Stamp



REC OFFICE USE ONLY:

APPROVAL DATE: 02/02/23

APPROVED CONSENT IRB VERSION NUMBER: 2022-0-27

PI NAME: NUNZI MBABALIZE GERALD

IRB NO: MUST-2022-688

Who do I ask/call if I have questions or a problem?

Include contact for the researcher and Chairperson. MUST-REC.

Dr Manzi Mubazize Gerald

Researcher, Mbarara Regional Referral Hospital and University of Rwanda

+256701457658

Ass prof Paul Alele

Chairman, MUST-REC

P.O. Box 1410 Mbarara

Contact: 0773573372

What does your signature or thumbprint on this consent form mean?

Your signature on this form means

- You have been informed about this study's purpose, procedures, possible benefits and risks
- You have been given the chance to ask questions before you sign
- You have voluntarily agreed to be in this study

Dr. Hyakab
Name of adult participant

[Signature]
Signature/Thumbprint of participant/

22/03/23
Date

Parent/Guardian/Next of Kin

Name of person obtaining consent

Signature

Date

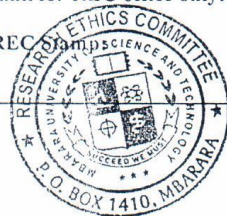
Print Name of witness

Signature or thumbprint or mark

Date

Leave blank for REC office only:

MUST-REC



REC OFFICE USE ONLY:

APPROVAL DATE: 03/02/23

APPROVED CONSENT IRB VERSION NUMBER: 2022-10-22

PI NAME: MANZI MUBAZIZE GERALD

IRB NO: MUST-2022-655

APPENDIX 4: DATA COLLECTION TOOL 1 Questionnaires on why prescribers prescribe drugs outside the Essential Drug list.

Questionnaires on why prescribers prescribe drugs outside the Essential Drug list.

Tel contact:

Designation

1) Nurse

4) Special grade

✓ 2) Medical officer

5) Consultant

3) Medical Intern
Officer

6) Senior House

Highest level of qualification?

1) Diploma

✓ 2) Bachelors

3) Masters

4) PHD

Current clinic deployed?

..... Oncology Adult

Years of experience?

✓ 1) 1-10

2) 10-20

3) 20-30

4) 30-40

Years Worked at the facility?

✓ 1) 1-10

2) 10-20

3) 20-30

4) 30-40

Are you aware of the existence of the UCG and EML?

1) Yes

2) No

only UCG

Do you have access to them when you need them (check for both electronic and hard copy)?

1) Yes

☒ 2) No

Do you refer to them while making prescriptions?

☒ 1) Yes

2) No

How frequent do you refer to them

1) Every prescription

☒ 2) Once in a while

3) Never Used

4) Case by case basis

In the last 6 months, have you attended a CPD on Appropriate Medicine Use?

1) Yes

☒ 2) No

Do you get updates on stock status from the pharmacy stores?

☒ 1) Yes - once in while

2) No

How often do you get these updates?

1) Everyday

2) Every week

3) Every fortnight

4) Every month

Do you refer to them during prescription?

1) Yes - Once in while

2) No

APPENDIX 5: DATA COLLECTION TOOL 2: patient's demography.

DATA COLLECTION TOOL 2:

Patient's demography.

1. Patient OPD Number..... OPD 0084/2023.....
2. Patient Tel Number.....
3. Age of the patient..... 63.....
4. What is the sex of the patient
 - a. Male ☐
 - b. female ☒
5. District of residence of the patient..... KIRUHURA.....
6. Patient is within the catchment area
 - a. YES =1 ☒
 - b. NO =0 ☐
7. Patient diagnosis..... CELLULITIS.....
8. Have you gotten all the medicines you have been prescribed
 - Yes
 - ☒ No
9. If no, did you get an explanation to why you did not receive all the medication
 - ☒ Yes
 - No
10. If yes, What was the reason?
..... Out of stock.
11. Are you satisfied with the explanation
 - ☒ Yes
 - No

12. Any suggestion to ensuring that all your drug needs should be met by the hospital ?

Increase Amt of drugs

The NMS drug catalogue of drugs meant to be available at MRRH pharmacy.

This will provide guidance on which drugs have been issued and those not dispensed as shown in the table below

SOURCE OF PRESCRIPTION (ie ENT, Neurology, General OPD)	<i>OPD</i>	
CADRE OF THE PRESCRIBER	SPECIALIST	
	MEDICAL OFFICER	✓
	CLINICAL OFFICER	
NO. OF PRESCRIBED MEDICINES		<i>02</i>
GENERIC NAME	YES=1, NO=0	<i>0</i>
PRESENCE IN THE EML	YES=1, NO=0	
DISPENSING (checks the extent to which the prescriptions were filled)dispensed	FULL	
	PARTIAL	✓
	NOT FILLED	
PRESCRIPTION FILL RATE	NO. OF MEDICINES FULLY DISPENSED	<i>01</i>
	NO. OF MEDICINES PARTIALLY DISPENSED	<i>0</i>
	NO OF MEDICINES NOT DISPENSED	<i>01</i>

List of other combination of drugs found in use but not listed on the EML

Amoxiclav

List of other single formulation drugs prescribed and not listed in the EML