FACTORS AFFECTING ACCESSIBILITY OF PHARMACEUTICAL SERVICES IN MERU COUNTY, KENYA

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DECLARATION

This research project is my original work and has not been presented for a degree or any other award in any other university

Signed………………………… Date………………………….. 19th October 2022

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DEDICATION

This project is dedicated to my family, supervisors and everyone who supported me during the study period. I wish you God's favor and protection.

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ABSTRACT

A stable and reliable health system gives equal opportunities for all the citizens to receive basic medical requirements, drugs, high quality technologies, and well-being, effective and cost-effective use. Accessibility of pharmaceutical services requires patients to get the appropriate drug for their disease condition at the convenient place and at affordable price. Worldwide, pharmaceutical services are not available to patients in adequate amount as required. A pharmaceutical service involves procurement, transport, storage, distribution and dispensing of medical products at the convenient place, for the right condition and at affordable price. The study focused on assessing the factors influencing accessibility of pharmaceutical services in Meru County and anchored on the Role Theory model. The study's specific objectives were to establish the effect of availability on the accessibility of pharmaceutical services in Meru County, to determine the influence of affordability on the accessibility of pharmaceutical services in Meru County, to investigate the effect of planning on the accessibility of pharmaceutical services in Meru County and to determine the effect of appropriateness on the accessibility of pharmaceutical services in Meru County. The study adopted descriptive survey design and quantitative in nature. Study population was all health professionals offering services in the county. There were 237 government health facilities in the county, whereby at least one health professional is offering health services i.e., prescribing and dispensing of drugs. A sample size is 237 health professionals' i.e., medical doctors, pharmacists, clinical officers, pharmaceutical technologists and nurses. Sampling technique was purposive sampling. Raw data was collected by the use of the questionnaire. Data analysis was done using SPSS V25. Further the study conducted correlations and multiple regressions. Tables and figures were used in the presentation of the results. The study found and concluded that appropriateness, availability, planning and affordability had significant influence on the accessibility of pharmaceutical services. Further study found and concluded that the four factors studied were significant in the accessibility of pharmaceutical services where appropriateness of the pharmaceutical services was the highly significant (sig.000) followed by planning, availability and affordability. This study recommends that the managements should install an electronic system that records all the transactions within it so as to prevent the occurrence of placing the wrong orders and with the system it would be easier to match the needs of the seekers of the pharmaceutical services; the management should focus in the management of the inventory as it would be easier to control the stocking in and out. In addition, the study recommends that the hospitals should heed to the guidelines set by government and the ministry of health in regard to the pricing of the pharmaceutical supplies and this will enable clients to access the service irrespective of the economic class or status. Further, recommends that hospital procurement teams should understand the health demands of the community where the facility is located so as to protect them.

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ABBREVIATIONS AND ACRONYMS

AIDS   Acquired Immunodeficiency Syndrome

APOC   African Program for Onchocerciasis Control

COVID-19   Corona Viral Disease -2019

EC   European Commission

ELF   European Lead Factory

EMLs   Essential Medicine List

GCP   Great Clinical Practice

GPP   Good Pharmacy Practice

HAI   Health Action International

HCW   Healthcare Workers

HIV   Human Immunodeficiency Virus

HMIS   Health Management Information System

INRUD   International Network for Rational Use of Drugs

KEMSA   Kenya Medical Supply Authority

KNPP   Kenya National Pharmaceutical Policy

KNPP   Kenya National Pharmaceutical Policy

LMICs   Low- And Middle-Income Countries

MDG   Millennium Development Goals

MOH   Ministry of Health

MoPHS   Ministry of Public Health

NCDs   Non-Communicable Diseases

NDI   Neglected Diseases Initiative

NTDs   neglected tropical Diseases

OOP   Out of Pocket

OTC   Over the Counter

OWH   One World Health

PPPs   Public-Private Partnerships

PQMS   Pharmaceutical Quality Management System

SARAM	Service Availability and Readiness Assessment Mapping
SDG	Sustainable Development Goals
UN	United Nation
WHO	World Health Organization
UHC	Universal Health Coverage s
KAP	Knowledge, Attitude and Practice
PFSA	Public Facilities Set- Aside

CHAPTER 1

INTRODUCTION

1.1 Background to the study

Many studies evaluating health quality approach the quality concept in different ways. A school of Medicine issued a report on health quality titled, Crossing the Quality issue on healthcare. The report suggested that effectiveness, safety, timeliness, efficiency, equitability and patient centeredness are the indicators of a high-quality healthcare system (Leape, 2020). Being safe and effective implies that the system is not injured by healthcare related services. Patient centeredness quality implies that the health services provided should be varied depending on the patients' needs and choices. Timely and efficient characteristics pay attention on the reduced time for waiting in lines and unnecessary delays. Equitable health system means that the services offered to clients for a specific reason should not be determined by the subjective individualities, relationships, locality, gender, race, ethnicity and economic & social status of the service seekers.

Pharmaceuticals play a key role in the healthcare services in providing medicines, healthcare supplies and other professional services as well as advising the society on the ultimate application/use of drugs (Federation of International Pharmaceutical [FIP], 2009). The responsibility of health experts for their activities plays a crucial role in providing the healthcare services. The natural connection between the prescribing doctor and the dispenser, that is the pharmacist, *is* where the doctor is responsible for any outcome of pharmacotherapy. The today's health systems have to a great extent evolved and the doctor-pharmacist relationship has rapidly changed. The pharmacists are always answerable for any client they are taking care of where the community does not only assume but always connect the profession directly to it (Developing

Pharmacy Practice [DPP], 2016). Services rendered by the pharmacies exist in conjunction with other healthcare services (Van Mil et al. 2004a, Van Mil & Schulz 2006). It should be offered in collaboration with the, clients, doctors, caregivers as well as other health care givers. Therefore, the pharmacists should be accountable to their clients in terms of quality, amounts paid for the service and the outcomes of the pharmacological services.

The Good Pharmacy Practice refers to an activity by the pharmacies that look at the requirements of the clients who apply to the pharmacists by offering the ultimate and evidence-based treatment(s). In supporting GPP it is basic that you develop a national structure defining the quality values and procedures (FIP, 2009). The guidelines were created to be used as a universal reference applied by government pharmacies as well as the international pharmacies operating within a country aiming at setting up countrywide standards that are acceptable by all stakeholders in the pharmaceutical industry.   The essential agenda of the GPP documents are to a large extent similar with the overall concept of pharmaceutical services. Also, GPP can as well be employed in the implementation of pharmaceutical care.

In the creation of quality assurance for the GPP, fundamental differences between nations must be acknowledged. Therefore, nations of the world should be focused in developing a universal objective for GPP. By its influences on the health status of a client, pharmaceutical services promote the quality of the products and cost efficiency of the health care systems. Innovations in the micro-level influences the general state of the macro-level; implying that society benefit when the persons inside it are beneficiaries of heath care of higher quality. In the end the entire society benefits from the progressive improvements of the whole system. The participation of the pharmacists' services in a system built around the patient has been directly connected to better health services and increased economic output, reduced corrosive effects of medicines, elevated

life quality, decreased cases of illnesses and deaths (Berenguer et al. 2014). Recently a study that aimed at the influence of pharmacist care expert based in the customer results and if possible economic returns was conducted. The study illustrated that there was value diversified services, to include the continuation of care subsequent to a patients' discharge as well as educating clients and staff. In general, the study shows that there exists high quality proof that support the significance pharmacy services by an expert in the promotion of customer results or the use of medicines at the community level (Wiedenmayer et al. 2017).

Majority of the pharmacies in different countries from different regions of the globe offers a diversified range of professional pharmacy services/products. In Finland, pharmacies play a key role in the relationship between the diagnoses, prescribing, preserving, extending care, as well as customized high-level counsel of patients with chronic illnesses. Uruguayan pharmacies offer counseling service for the dermo-cosmetics in detecting and treating the skin diseases. Philippines' pharmacies provide their customers with Daily Dose Packs with their prescription medicines and that there exists nutrition counseling published online. In addition, the Norwegian pharmacies provide services to other healthcare experts for example dentists, community health officers, private hospitals, clinics, and institutional services.

Quality of the pharmacy refers to realizing a certain level of perfection by offering pharmaceutical services that elevates the possibility of pleasing results and lowering the possibility of unpleasant results (Elsworth et al., 2014). The complete fundamentals of pharmacy quality comprise of practices that correlate to highly ranked guidelines and practices as well as offering care services that satisfy the patients' needs, wants, choices and preferences (missing in your reference list, 2012). Hence, as is done for general health of customers, the measuring of quality in pharmacies must include the large features of quality. In spite of this, researches did on

pharmacy quality measures the impacts of pharmacies along with the measuring of care thereby ignoring the effect of items for example efficiency, patient-centeredness, responsiveness and timeliness (Fischer, 2014; Pringle, 2014). These ideas are significant for a comprehensive understanding of the effect of pharmaceutical practices on the health quality and can never be measured simply by the use of managerial views databases and they are not part of the existing PQMS (Mascardo, 2016; Trygstad, 2015). A gap exists in the literature where there is need for deeper comprehension of the bigger effects of actors that affects the accessibility of pharmaceutical services and role played by pharmacies on the quality of healthcare the in Meru County, Kenya.

1.2 Statement of the Problem

Pharmaceuticals and supplementary medical supplies requires a well-defined supply chain which are important part of the network for management of pharmacies and pharmaceuticals which signifies the coordinated flow of undertakings with the aim of ensuring the correct and affordable quality drugs are available as this provides accessibility of pharmaceutical services in the hospitals. Dispensing drugs wrongly negatively influences the effectiveness of the treatment(s) which is likely to bring about drug resistance and this hinders or compromises accessibility of pharmaceutical services. Poor planning on pharmaceutical products acquisition makes it hard for the availability of these essential health commodities and subsequent access and many of the health facilities in the rural areas faces frequent shortages. High prices of pharmaceutical products in non-state facilities further hinder access of these products.

According to the Ministry of Medical Services (MoMS, 2018), availability of essential medicines in healthcare facilities, particularly hospitals, is vital in promotion of curative health of the population and in ensuring healthcare outcomes and goals are met though this is not the case in

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many rural health facilities. Essential medicines are supposed to be available in health facilities in correct quantities, dosage forms, and quality and at affordable prices for use by the population. Availability is dependent on existence of a functional pharmaceutical system that is characterized by: correct application and the choosing of important drugs, sustainable financing, affordable prices and reliable health supply systems.

Many Kenyans rely on public health hospitals which are considered affordable though availability of drugs is not guaranteed in many healthcare facilities in Meru County and this shortage of drugs leads to prescription of other appropriate drugs. However, low accessibility or availability of basic medical supplies in many health facilities in Meru County delays treatment thereby complicating outcome of diseases and this negatively affects access to health services. In Kenya health sector funding relies mainly on cash payment [OOP] for health services due to under-funding and regressive health care contributions (Chuma & Okungu, 2011). Study done in Meru by Mwobobia et al (2018) only surveyed the KAP on pharmaceutical care among pharmaceutical practitioners and thus did not address pharmaceutical services accessibility factors. In light of the above, this study sought to assess how availability, affordability, planning or appropriateness affects accessibility of pharmaceutical services in Meru County, Kenya.

1.3 Study Objectives

1.3.1 Main Objective

To investigate the factors influencing the accessibility of pharmaceutical services in Meru County, Kenya

1.3.2 Specific Objectives

The specific objectives of the study are as follows:

i). To investigate the effect of planning on the accessibility of pharmaceutical services in Meru County

ii). To examine the effect of availability on the accessibility of pharmaceutical services in Meru County.

iii). To assess the relationship between affordability and the accessibility of pharmaceutical services in Meru County.

iv). To investigate the influence of appropriateness on the accessibility of pharmaceutical services in Meru County.

1.4 Research Questions

The study addressed the following questions:

i). To what extent does planning affect the accessibility of pharmaceutical services in Meru County?

ii). How does availability influence accessibility of pharmaceutical services in Meru County?

iii). To what extent does affordability affect accessibility of pharmaceutical services in Meru County?

iv). To what extent does appropriateness influence accessibility of pharmaceutical services in Meru County?

1.5 Purpose of the Study

The purpose/aim of the study was the factors influencing the accessibility of pharmaceutical services in Meru County, Kenya. These factors included the planning, availability, affordability and appropriateness of pharmaceutical products. This was for academic purpose.

1.6 Justification of the Study

Different nations have paid attention on the issue of shortage of skilled personnel in pharmaceuticals by offering preserve and in-service trainings for instance clinical officers/nurses and few have assessed the factors that hinder the accessibility of pharmaceutical services and this study seeks to address this gap.

A pharmaceutical management information system has to comprise of diversified data sources from the whole pharmaceutical industry which goes beyond the procurement and inventory management; client-specific information additional to management information system for logistics that would be product based; and the capability of triangulating the usage data with the clinical and client-specific information and as this would improve on the factors that affect accessibility of pharmaceutical services in the country. The most limiting factor is the lack of patient data or the available projections are inaccurate and hence a lot of wastage of shortages in the pharmaceutical services.

The government of Kenya has synchronized information on numerous product streams, consequently permitting program administrators to assess the steady inventory reporting and taking action before an emergency comes on as a result of stock out.

Meru County is underserviced as far as pharmaceutical services are concerned. Various factors which affect accessibility of pharmaceutical services will be explored in this research, in the

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county. Factors such as planning, availability, affordability and appropriateness will be explored. Literature review reveals that this research has not been done here and a model of it was done far away in South Africa. The study will reveal information which will be used to improve accessibility of pharmaceutical services in the county and far.

It is important to do such a study at Meru County as no similar studies had been conducted to assess drug labeling, prescribing patterns, drug availability and patients' satisfaction with pharmaceutical services and this would improve on the factors that hinder the accessibility of these pharmaceutical services. The patterns of prescription require to be assessed at specified time intervals with aim of promoting the therapeutic efficiency, lowering the negative effects as well as giving informed feedback from the clients. Understanding preferences and expectations, is essential to identify voids in the delivery of health care services and this may affect by the cost, availability and the accessibility of pharmaceutical services.

1.7 Significance of the study

There is the need to fully understand the implication of lack of access to essential medicines and the factors that impede the accessibility of the pharmaceutical services in Kenya and especially in Meru County.

Availability of essential medicines is majorly stated by healthcare clients as one of the most significant indicator of quality of the care given which if it is absent would lead to underutilization of healthcare services and the current study seeks to study factors influencing accessibility of pharmaceutical services in Meru County, Kenya. The findings will influence effective operational management of the pharmaceutical system particularly the procurement and inventory management units. Managers will be able to better plan and monitor activities related

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to procurement and inventory management of essential medicines; critical steps in enhancing availability and hence health care outcomes

1.8 Limitations of the Study

The study was carried out in Meru County and only those healthcare workers (HCW) involved in the prescribing and dispensing of drugs participated in the study and this includes the clinicians and pharmaceutical specialists. Only those willing to participate and those who gave their consent were involved in the study.

1.9 Delimitation of the study

Due to the small size of the target population, the study involved either a clinician or pharmaceutical specialist per facility and this was a total of 237 HCWs.

1.10 Assumptions of the Study

The first assumption made was based on the willingness of respondents [HCWs] to participate in the study in provide responses on the factors influencing the accessibility of pharmaceutical services in Meru County, Kenya and secondly that the respondents provided honest and reliable responses. The study assumed that the sample size of 237 respondents who participated in the study were representative of the larger population of patients.

1.11 Operational definition of Terms

Accessibility	The continuity in availability of medical supplies in health facilities in acceptable quantities, appropriate dosage and with assured quality for consumption by the population when needed.
Availability	The association that exists between the category and amount of medicines or pharmaceutical services required and necessary, and the category and quantity of medicines or pharmaceutical services provided.
Essential medicines	Drugs that address the most important medical requirements of a society. They are intended to be easily accessible and affordable.
Essential Medicines List (EDL)	A list of most efficacious and affordable medicines prioritized as treatment choices for health care needs of majority population. The list ensures consistent and uninterrupted supply of effective medicines in a health care system.
Quality	Level to which medical supplies administered to a patient give the expected results. It includes aspects such as effectiveness, efficiency, equity and safety
Pharmacy quality	Refers to the realization of a certain level of perfection by offering pharmaceutical services pointed at optimizing the possibility of favorable results and reduced chances of negative results.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This section provides literature review focusing on the factors influencing accessibility of pharmaceutical services. It also presents the theoretical and the conceptual framework that was adopted by the study.

2.2 Accessibility of pharmaceutical services

A maximized access to medicines, which is crucial, at an affordable price in the upcoming economies is majorly connected to deprived availability of the essential drugs especially in the public hospitals. Accessing the basic drugs without any kind of difficulty is in many instances pointed as the most basic unit of measuring the healthcare quality. Essential medicines refer to medicines that address the essential healthcare requirements of the citizens guided by the relevance of the public health; evidence on its safety, effectiveness and efficiency (World Health Organization, [WHO] 2015). Hospitals and other dispensing entities must ensure that such medicines are made available any time its needed, in the appropriate quality and form and of the certified quality. According to Rowe (2017) medicines costs can represent up to 66% of total health expenditures in many developing countries and this might he fundamental cause of many household poverty as between 50-90% of these are OOP. WHO (2019) indicate that approximately a third of global population are in poor Africa and Asia and many lack access to essential drugs (Rowe, 2017).

Drug organizations never again stick to customary medication advancement models to handle the gigantic wellbeing challenges in front of us. Being the central participant in the medication

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advancement process, the drug business is somewhat liable for tracking down arrangements (Kilcoyne, 2013). During the last many years, most of the 20 biggest examination-based drug organizations have expanded endeavors to give admittance to fundamental meds in agricultural nations, e.g., by supporting or taking part in item improvement associations. By and large, Personal Development Programs (PDPs) coordinated toward neglected tropical Diseases (NTDs) were the principal cooperative endeavors to handle disparities in the wellbeing area. In 1987, Merck and Co. give ivermectin (Mectizan®) to treat onchocerciasis or stream visual deficiency, first dispersed by the African Program for Onchocerciasis Control (APOC), an organization between the World Bank, the WHO, and non-governmental Organizations (NGOs) in West-Africa, and extended later to Africa and America (Mugo et al., 2018).

Product improvement organizations, like the Medicines for Malaria Venture (MMV), have filled in as a wellspring of motivation for the drug business to apply the Public - Private Partnership (PPP) model to sickness regions other than NTDs, like Non- Communicable Diseases (NCDs). The Innovative Medicine Initiatives (IMI), driven by European Federation of pharmaceutical Industries and Associations (EFPIA) and upheld by the European Commission (EC), has been a leader beginning stage research PPP. At first, IMI zeroed in on NCDs, yet as the PPP develops, it targets handling NTDs. The European Lead Factory (ELF), for instance, expressly postpones specific charges connected with non-benefit drug disclosure programs for NTDs (WHO, 2019).

The regularly recommended medications to patients stay obscure; notwithstanding, this can be induced from information of medication brought into Kenya. Unpublished reports from Pharmacy and Poisons Board (PPB) show that half of the medication piece of the pie is constrained by presence of invectives, immunological and cardiovascular specialists. Up until this point, the most apportioned prescriptions are likewise obscure separated from a concentrate

by Godman et al (2018), which showed that the normally apportioned anti-toxins from drug stores are penicillin (more than half), cephalosporins (12.6%), and fluoroquinolones (11.7%). Kenya imports more than 70% of prescriptions from India (37%), Europe (20%), China (9%), the US (6%), and South Africa (4%), with around 28% being privately created. Overreliance on imported prescriptions in Kenya increments medication detachment, drug production network disturbance, and erratic medication evaluating to patients, as shown during the ongoing COVID-19 worldwide pandemic. However the Government of Kenya has a plan to advance neighborhood drug fabricating, through its "huge four plan", there actually should be orchestrated approach intelligence and a sufficient supporting model that can spike the business into independence and guarantee clinical item security.

Public-private partnerships and PDPs specifically, are vehicles reasonable for conveying medical care and reinforcing medical care frameworks. Such multi-partner endeavors can guarantee item enlistment; increment neighborhood creation and circulation limit, and guarantee administration for worldwide wellbeing, e.g., reception of new wellbeing advances in public treatment strategies in sickness endemic nations. Along these lines, PDPs like the MMV, Drugs for Neglected Diseases Initiative (DNDi), and Institute for One World Health (WHO), advance general wellbeing. PDPs fortify exploration limit in LMICs by building frameworks at preliminary destinations, giving hardware and setting up preparations in great clinical practice (GCP) and committed sickness explicit examination stages in endemic nations. To accomplish its goals, PDPs cooperate with various partners, for example, top level salary country drug organizations, nearby makers, public sickness explicit control projects and stages, public state-run administrations and charitable associations (Babar, 2017).

Public-private partnerships influence information and innovation move of new clinical advancements to both advanced and agricultural nations. For instance, the portable wellbeing application (mHealth) Text4Baby, giving free wellbeing data to hopeful moms through instant messages, is a PPP that, through an organization of many accomplices, increases its administrations. Partnerships could work on the size of information and innovation move limit of African Institutions that end up being pioneers in their space of concentration. PPPs can work on both pharmaceuticals items and administrations conveyance by scaling their projects to a public level, including wellbeing laborers and networks (Rowe, 2017).

Medication obtainment in the Kenya public wellbeing sub-area is chiefly through KEMSA, a state company laid out under the Laws of Kenya, the KEMSA Act of 2013. "Obtainment" in this setting is characterized comprehensively as a bunch of cycles taken to request and buy a medication by any wellbeing office, including its circulation all through the production network (Bruckner, 2019). Medication acquisition at KEMSA is administered by the KEMSA Act, the Public Procurement and Asset Disposal Act of 2015, and MOH obtainment rules (Mogoatlhe, 2019). KEMSA acquires drugs utilizing assets from public and district state run administrations and contributors. All the 47 province branches of wellbeing have a legitimate commitment to get all their fundamental conventional drugs from KEMSA specially. When a medication has been obtained by a Kenya public wellbeing office, it is put away in the pharmacies, until it is ordered by the drug store unit of the public wellbeing office and administered to a patient. The patient might get to the medication either for nothing or at a sponsored cost from a short term or ongoing drug store inside a wellbeing office. On normal most area wellbeing offices secure 70% of their meds from KEMSA, 28% from MEDS, and 2% from private for-benefit merchants (Mulaki & Muchiri, 2019). In spite of the fact that KEMSA is the primary mark of obtainment call, some

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public wellbeing offices additionally request products from MEDS and other private providers. An unpublished report from the Ethics and Anti-corruption commission demonstrates that a few regions actually secure drugs from outside the KEMSA or MEDS framework. Right now, KEMSA is doing combating with debasement on the acquisition of Coronavirus Disease 2019 (COVID-19) related clinical items (Mackintosh et al., 2018). This shows that the ongoing public acquirement should be reinforced to pad it from defilement and blunder.

Medication obtainment in the private not-for-benefit wellbeing sub-area, particularly numerous religious associations, is primarily through MEDS, a Christian not-for-benefit organization. Medication obtainment in the NGO wellbeing sub-area, like Médecins Sans Frontières, the Red Cross, and other helpful associations, is finished through a muti-country pooled acquisition framework to sidestep the public obtainment framework because of their question in public acquisition frameworks (Huff-Rousselle, 2012). This implies that drugs secured in the NGO sub-area don't go through market endorsement from PPB however gain section to the country as gifts. A few NGOs likewise source their prescriptions from neighborhood private providers, like MEDS or straightforwardly from private for-benefit shippers, nearby makers, wholesalers, or retail drug stores. Prescriptions in the not-for-benefit wellbeing sub-area are then normally gotten to by patients for nothing or at a financed cost from the drug store unit inside a wellbeing office.

The principal factors that influence patient admittance to fundamental prescriptions in Kenya are stock outs or inaccessibility and exorbitance (Raskin & Wirtz, 2021). A fundamental not set in stone as need might arise of the general population, typically chose in light of evidential security, adequacy, public wellbeing significance, and cost-viability. Likewise, a patient ought to effortlessly get to the medication from a useful wellbeing office that is provided in a reasonable dose structure in an adequate sum at a reasonable cost. There is significant proof that

fundamental meds, particularly for the administration of non-transmittable sicknesses in Kenya, are as yet not promptly accessible to patients inside the public wellbeing area in contrast with the private (both for-and not-for-profit) wellbeing areas. The typical accessibility of fundamental medications in public healthcare facilities in 2018/9 was around 44%, in contrast with 72.4% in the private wellbeing offices (Onyango et al., 2018). The shortfall of fundamental drugs can prompt underuse, absence of fulfillment of care, and doubt of public medical services offices. Absence of medications in the public wellbeing sub-area likewise causes an expanded interest for medication related using out of pocket (OOP) consumption from the private wellbeing area that may hence improve a probability for a patient to buy an unsatisfactory and distorted medication from the private market that incorporates unlicensed and unlawful drug stores, medication outlets, or unregulated sites. An "unsatisfactory medication" is characterized by the WHO as an approved and truly accessible medication that neglects to meet either their quality necessities or norms, or both (Olaniran, 2021). An unsatisfactory medication might emerge from unexpected assembling mistakes and carelessness, dishonesty in obtainment and guideline, or unfortunate assembling and conveyance rehearses. On one hand, a "distorted medication" alludes to a medication that is purposefully and falsely or intentionally distorted regarding its personality, piece, or source (Ozawa et al., 2018). Science for Fiction (SF) drugs when taken by a patient represent a serious wellbeing chance to the patient as well as a gamble to the public since it subverts wellbeing frameworks. Prompt medication opposition, subsequently confusing administration of irresistible sicknesses and trouble in checking and the executives of persistent illnesses. This might prompt chronic frailty results, expanded grimness, and mortality. Furthermore, drug obstruction might prompt unfortunate patient adherence to treatment and

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inordinate endorsing of antimicrobials to patients by healthcare workers (McManus & Naughton, 2020).

Acquisition of drugs by a patient in Kenya changes inside the public and private wellbeing sub-areas in light of the distinction in medication valuing construction and absence of guideline (Ministry of Health, [MoH] 2020). Medication valuing studies led in Kenya have exhibited that medication costs in the public and private not-for-benefit wellbeing sub-area are seriously lower in contrast with global reference costs, in this manner making them reasonable to patients (Ghanem, 2019). The better medication valuing in public and private not-for-benefit wellbeing sub-areas is because of serious offering processes. Accordingly, unfortunate patients effectively access medicines from public and the private not-for-benefit wellbeing sub-areas. Then again, medication evaluating in the private for-profit medical services area is directed by an unregulated economy strategy utilizing a casual non-restricting and non-enforceable cultural cost increase, not moored in any regulation (Ongarora et al., 2019).

2.3 Availability of Pharmaceutical Services

Essential drugs' availability in healthcare facilities, particularly hospitals, is vital in promotion of curative health of the population and in ensuring healthcare outcomes and goals are met. This requires effective financing, procurement and inventory management systems; supported by timely and accurate pharmaceutical information for evidence-based decision making.

Burstein et al (2014) conducted a study on the pharmaceutical accessibility across levels of care: proof from office reviews in Ghana, Kenya, and Uganda. Results show that pieces of pharmaceuticals stock out fluctuated by nation and stage. As a rule, offices conveyed the more pharmaceuticals the more intricate the administrations they advertised. Medical clinics would in

general persist 80% of the pharmaceuticals over viewed, while local area level offices conveyed not exactly half. Community based Healthy Program Services (CHPS) intensifies in Ghana conveyed the least drugs on normal per office with 16 of the 54 studied pharmaceuticals regularly accessible. The investigation discovered that every one of the three nations confronted comparative examples of stock-out with the low-level local area public wellbeing offices confronting the most noteworthy extent of drugs loaded out. Drug stores confronted extremely low stock-out in every one of the three nations. Also, private clinical benefit suppliers, for example, private clinics and clinical facilities, confronted low stock-out contrasted with their public partners overall; stock-out of antimalarial drugs was lower than drugs to treat pneumonia and meningitis. Across the example, Ghana had the most reduced pace of Artemisin – based Combination Therapy (ACT) stock-out with just 2% of offices and Kenya the most elevated with 7%. Amoxicillin stock-out was likewise much lower in Ghana, at 5% contrasted and more than 14% in Uganda and 21% in Kenya. All nations confronted stock-out rates more noteworthy or equivalent to 10% for ceftriaxone and chloramphenicol, the drugs important to treat meningitis.

Ewen et al. (2017) conducted a study on the factors that affects the availability of pharmaceutical products. The study revealed the medication accessibility (T5) in substantial quality likewise showed a great deal of spaces for development, with mean scores lower than. The issue of low accessibility of drugs has been accounted for when APTS execution by different examinations directed somewhere else in Ethiopia. Low accessibility of prescriptions in public clinics authorized patients to buy medicine from private local area drug stores with significant expense, which would build patients' illness trouble. The review laid out that unfortunate stock administration and nonappearance of dependable providers dependable providers were viewed as two primary variables prompting this issue. To take care of this issue, different obtainment

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techniques other than direct acquisition from PFSA can be applied. In addition, proficient stock administration techniques can be utilized by emergency clinics

The Kenya National Pharmaceutical Policy's (KNPP) stated goal is offering of health services that are effective, equitable, accessible, efficient, safe, and affordable, certified quality and appropriately utilized (MoMs, 2008). This national goal resonates with the United Nation's Sustainable   Development

Goal (SDG) 3, Target 3.8: Achieving the universal care coverage that would as well comprising monetary protection of risks, accessibility to high quality basic health-care provisions, safe, effective, high quality, cost sensitive drugs/vaccines/medicines for all the citizens. The attainment of this SDG target would also contribute to the attainment of other targets under this goal mainly: improve maternal, neonatal and child health, combat new cases of communicable diseases as well as non-communicable diseases which comprises of Tuberculosis, HIV/AIDs and malaria (United Nations [UN], 2015). There have been improvements in Kenya's pharmaceutical industry in recent years; however, frequent medicines stock outs are common in Kenya's public health sector (Brown, 2012). Poor availability of medicines at facility level has been attributed to wrong choice, deprived distribution, insufficient funding and misplaced use (Mwathi, 2014). Additionally, conclusive local and regional data on sustainable access to affordable essential medicines are lacking. (UN, 2015). A survey in Pakistan by Hafeez et al (2013) in 2004 in regard to prescribing and dissension practices in the public health facilities revealed that on average 1.6 vaccines were dispensed out of the 2.7 prescribed.

A review in Western Nepal by Lamichhane et al (2021) and partners on recommending examples and dreariness profile zeroing in on short term patients at a showing office in 2004 detailed that the mean scores of drugs was 1.99 where just 19.5% and 39.5% of meds' remedy utilized the nonexclusive name and from the fundamental medicine list separately. Further the anti-microbial/infusions' solution in 26.4%/0.96% of cases. In addition Cetirizine, vitamins, amoxicillin were mostly prescribed when a patient was diagnosed with upper respiratory tract infection as well as acid peptic illness. A study performed at the drug store practice focal point of the University of Nairobi (UoN) by Karimi (2004) found up to 7 drugs were recommended at the same time and just 35.8% of solutions had one medication. A similar report noticed a comparative medical clinic based examinations that had revealed 3-5 drugs for every solution while concentrates on did in Ethiopia essential medical services communities showed a mean of 2.1.

In South African study on prescription behaviors with a focus on the private surgeries and government owned hospitals in 2006. The study findings shows that on average 1.9 drugs were prescribed in privately owned hospitals while an average of three were prescribed in the in government hospitals which was higher than the number recommended by WHO which is 1.6 per encounter. A medication use study in Eritrean wellbeing offices in September 1999 by Andom (2009) showed that the general level of drugs satisfactorily marked was half, patients who had sufficient information on the utilization of their drugs was 80% , accessibility of key drugs was 91% , and accessibility of fundamental rundown drugs was 83% . It additionally revealed that in 1995 key medication stock was 91%. Similar creators noticed a comparable study by WHO/INRUD which had uncovered patient information about drug use in Burkina Faso was 68% and in 12 other non-industrial nations was between 27 to 83%.

Ikechukwu (2018) studied the place of availability of pharmaceutical services in the accessibility of pharmaceutical services in Nigeria. The study used qualitative methods was used. Further, the study employed review of case studies were done to examine the connections between availability of pharmaceutical services in the accessibility of pharmaceutical services. The study established that availability of pharmaceutical services was significantly effective in the accessibility of pharmaceutical services.

2.4 Affordability of Pharmaceutical Services

Tetteh (2018) conducted a study on the effects of affordability of pharmaceutical services on the accessibility of the pharmaceutical services in Botswana. The study targeted patients who had Hydrochlorthiazide (HCTZ) (25 mg), Metformin (500 mg) or Salbumatol inhaler (100 µg) in their home, those in the most unfortunate quintile were to the least extent liable to have gotten the medication for nothing. Of the three drugs, salbutamol was gotten for nothing the least. Among the people who paid something for HCTZ, the middle cost paid for the two most unfortunate and two least unfortunate abundance quintile was $0.75; the middle cost paid in the center quintile was marginally lower at $0.50. The middle cost paid was high among the most unfortunate quintile for Metformin (US$2.67 per month-to-month portion; and salbutamol inhaler (US$6.00 per inhaler. For Metformin, the connection among abundance and middle cost paid is u-molded, with lower costs paid by those in the conveyance and greater costs paid by the least fortunate and the un-poor quintiles. For salbutamol, the most unfortunate quintile paid more than any remaining quintiles. Extra detail on medication value information is given in the web-based advantageous record. Consolidating the individuals who accepted their medications free of charge with the people who paid something, the most unfortunate quintile paid the most for all

drugs. The study established that there was a positive and significant correlation between the affordability and the accessibility of pharmaceutical services.

Danzon, et al. (2015) conducted a study on the effects of pharmaceutical pricing regulations on the accessibility in emerging markets. The study found that in low and middle income countries, medicine are not available and affordable resulted by weak regulatory authorities. Regardless of the fact that the United Nations Millennium development goals have elevated accessibility of essential medicines where less progress has been made for the past years. The World Health Organization indicates that medicines are being accessed more and high in private than in public sectors in low-income countries. Countries where national medicines authorities are poor, the increasing number of private medicine dispensers hence affecting the population to access the medicines suppressing the establishment of public pharmaceutical systems to afford. Private pharmacies help to fill the gap in accessing essential medicines in health systems with inadequate public delivery frameworks. The study concluded that the effects of pharmaceutical pricing regulations on the accessibility of pharmaceutical products in emerging markets.

Dutta et al. (2018) conducted a study on the effects of affordability of pharmaceutical services on the accessibility of pharmaceutical services in sub-Saharan Africa. The Data was collected through quantitative and qualitative, semi-structured questionnaire for the family planning service seekers and an in-depth interview guide with 26 purposively selected heads of selected hospitals that were involved in the dissemination of pharmaceutical services. The study established that affordability of pharmaceutical services significantly affected the accessibility of pharmaceutical services in sub-Saharan Africa.

Dhiman (2018) conducted a paper on the role of effects of affordability of pharmaceutical services on the accessibility of pharmaceutical services in New Delhi, India. Descriptive research design was employed by the study with the aim of fulfilling the purpose of the study. Study population was all the employees working within New Delhi Public hospitals. Descriptive and inferential statistics were used in analyzing the data. The study established affordability of pharmaceutical services significantly influenced accessibility of pharmaceutical services in New Delhi.

Luthuli and Kalusopa (2020) did a study on the role played by affordability of pharmaceutical services in the accessibility of pharmaceutical services in Zimbabwe. The study utilized case study design. The study employed semi-structured questionnaire to realize the raw data. The target population consisted of all the healthcare workers in all public hospitals within Harare. The evidence showed that affordability of pharmaceutical services to a great extent influenced the accessibility of pharmaceutical services in Zimbabwe.

The essential medicines/drugs remain high and scarce resources in low- and middle-income countries (LMICs) (Cameron et al 2018). It is well established that the essential medicines vary among and within countries in various parts of the world in prices (Cameron et al., 2017). Buying medicines from private pharmacies paid 9 to 25 more than the actual price for the cheapest generic goods 20 times more price for originator products across WHO regions, (Millennium Development Group Gap Task Force Report as per study (Cameron et al., 2012) There was significant variation in price and availability of medicines across countries in the study done in 52 LMICs (Millennium Development Group Gap Task Force Report, Baber et al., 2012).

There are complex factors that affect the prices of medicines in the global market in LMICs both directly and indirectly (WHO and Health Action International (HAI) 2013). The payment of medicines at the cost of other necessities are high hence the poor being forced to poverty. The international community has made substantial efforts for affordable medicines in LMICs, including the promotion of differential pricing and generic competition (WHO, 2014). They are laws made by the government to solve issues at the country level in LMICs, for example medicines list, price lists and appropriate drug policies (Niëns et al 2014, Laing et al 2016).

Studies suggest interventions to improve quality pharmacy service (Holloway and Henry -2014). However, in some countries, government regulations efforts for private markets seem not resulting into better affordability (Maïga, and Williams-Jones 2010; Zaidi et al 2013). At a country level, they are scarcity of evidence to understand the factors affecting the affordability of medicines in relation to the pharmacy services. Quality of pharmacy services is a fundamental part to access medical care that includes four dimensions: availability, affordability, acceptability, and geographic accessibility as for the study done by Peter and colleagues' (Bertoldi et al 2012; Wafula et al 2014). The government prioritized maintaining and improving the pharmacy service quality of private pharmacies, so the metrics of quality pharmacy service supported in the Afghanistan.

2.5 Appropriation of Pharmaceutical Services

Induka (2016) conducted a study on the relationship between distance to the nearest health facility and the accessibility of pharmaceutical services in Imo state, Nigeria. The study established that here was a critical negative connection among riches and distance to the closest wellbeing office (p=0.050). Families in the most unfortunate abundance quintile were on normal 8.1 km from their closest wellbeing office while family's at all poor quintile was 5.2 km away.

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The least fortunate families were likewise bound to be closest to a public instead of non-benefit office. There was no connection between family riches and the likelihood that the closest office had key NCD medications in stock. There was a huge positive connection among riches and the likelihood of buying drugs from private area source for patients with hypertension, diabetes and asthma.

Lagarde and Blaauw (2015) investigated the role of appropriation of pharmaceutical services in the accessibility of pharmaceutical services. The study used a descriptive survey methodology and a quantitative continuous research strategy. A questionnaire was utilized to collect data from 128 people. The essential data was gathered from the target audience using stratified and primary simple random sampling methods. The research concluded that appropriation of pharmaceutical services significantly influenced the accessibility of pharmaceutical services.

Makahlolo (2017) investigated the impact of appropriation of pharmaceutical services on the accessibility of pharmaceutical services in Lesotho. A self-managed questionnaire and interviews were used in a descriptive and analytical study design approach to collect information. The survey's study population included 120 medical professionals. SPSS was used in the coding and analysis of the raw data realized from the field. According to the findings, appropriation of pharmaceutical services significantly influenced the accessibility of pharmaceutical services in Lesotho.

Danso (2018) did a study on the role of distance to pharmacy on the accessibility of pharmaceutical services in Ghana. Mixed research approach was employed to realize study purpose. Structured questionnaires were used to collect data from the field. In addition, the study employed stratified random sampling technique to realize the study sample. The paper found that

distance to pharmacy significantly affected on the accessibility of pharmaceutical services in Ghana.

Muchelule (2019) carried out a study on the effects of appropriation of pharmaceutical services in the accessibility of pharmaceutical services. The study population was all the healthcare workers working in public hospitals. The study used the descriptive research design. The raw data from the field was done by the use of structured questionnaires. The study collected the data for a period of two weeks in order to allow for sufficient time to realize the required data. The study found that appropriation of pharmaceutical services significantly influenced the accessibility of pharmaceutical services.

Lou, et al. (2020) did a study on the role of effects of appropriation of pharmaceutical services in the accessibility of pharmaceutical services in Shanghai, China. The study targeted the health workers within Shanghai, China. The data was coded by the use of SPSS version 25. Figures and tables were used in the presentation of results while explanation and interpretation done by the use of prose. The study revealed that the appropriation of pharmaceutical services was effective in enhancing the accessibility of pharmaceutical services.

The WHO in its medium-term strategic plan recommended 80% availability of medicines in all sectors (WHO, 2011). However, studies in subsequent years have shown poor availability of medicines in low- and middle-income countries (LMICs). Availability of 15 basic drugs in 36 developing countries was undertaken (Cameron, 2009). Generic medicines were sub-optimally present in both the government owned hospitals and privately owned hospitals (median availability 38% and 64%, respectively). However, significant differences were noted in public and private sectors. A health facility survey on essential medicines in Kenya's public, faith based and private sectors established that; a majority of essential medicines for common ailments at

primary care level were available and fairly affordable to citizens. However, stock outs for medicines including essential medicines for priority health needs were significantly reported at hospital levels (MoMs, 2009). This was attributable to a number of factors including: irrational prescription, inadequate storage infrastructure, and an acute shortage of qualified pharmaceutical staff to manage medicines supply, dispensing and use.

Procurement of pharmaceutical supplies ought to be guided by drug selection. The selection and quantification team identifies the drugs to be purchased through evidence-based decision making. The process of drug selection is also routinely facilitated by the availability of a national essential medicines list (MoMs, 2010) or more-specific drug formulary lists. Selection and quantification are principally undertaken by pharmacists. However there is emerging need to ensure procurement matches demand by harmonization of medicine quantification with prescribing habits and preferences of consumers (Josephine, 2010). Quantification of medicines is usually based on consumption patterns; however, morbidity patterns are used as well. Recommended by W.H.O as the most precise method, consumption based approach requires complete, accurate and properly adjusted data sources. However the method does not address suitability of past consumption patterns, which may or may not match public health priorities and needs. Morbidly based approach is most complex and time consuming and is chiefly dependent on availability of valid morbidity data (WHO, 2012) The Kenya Service Availability and Readiness Assessment Mapping (SARAM) 2013 established generally availability of health commodities for primary care services in most health facilities. The mean availability of general tracer medicines in Nairobi County was 34% (national mean, 49%). Notably and of concern were essential medicines for Non-Communicable Diseases, maternal health services and child health which were generally not available. The report

recommended the need to prioritize financial resources by aligning quantification of the health products at health facilities with disease burden, and decentralization of procurement to lower levels to increase coverage and access to services. It also recommended the need to operationalize an information management system for pharmaceutical supplies to improve efficiency (MoH, 2013).

This study determined the influence of appropriateness of essential medicines at Public Hospitals. The results are expected to influence effective operational management of the pharmaceutical system particularly the procurement and inventory management units at County referral facilities. Managers were able to better plan and monitor activities related to procurement and inventory management of essential medicines; critical steps in enhancing availability and hence clinical care outcomes.

Tuwei and Tarus (2017) conducted a study on impact of appropriation of pharmaceutical services on the accessibility of pharmaceutical services. The study used a descriptive research methodology. With a random sample of 367 respondents, the research identified a demographic of 431 workers. They used segmented and essential random selection. Information was examined using descriptive and inferential statistics, and assumptions were tested using multiple regression analysis. The results revealed that the appropriation of pharmaceutical services was significantly influential on the accessibility of pharmaceutical services.

2.6 Planning for Pharmaceutical Services

Godman et al. (2018) conducted a study on the effects of planning on the accessibility of pharmaceutical services in Uganda. The study was a cross-sectional in nature. The study established that the major purpose of pharmacy and pharmaceutical planning practices is assessing the local requirements for the communal pharmacy services where the mismatches are

identified in comparison with the existing aiming at giving information in regard to developing of these services which would be effect for clinics as well as the costs. The study established that planning significantly influences the accessibility of pharmaceutical services in Uganda.

Dixon et al. (2019) explored the relationship between Planning for pharmaceutical services and accessibility of pharmaceutical services. This study used data from the National Assessment of Intermediary Care Facilities to do a multiple regression. Among 337 and 303 elderly patients were enrolled in 14 various intermediaries patient care, and their analysis was performed. The different categories of personnel in a group and the proportion of support personnel to technically competent employees in groups were independent factors. The analysis revealed that competence has a considerable positive impact on the accessibility of pharmaceutical services.

Ashigbie et al. (2020) conducted a study on the influence of planning for pharmaceutical services on the accessibility of the pharmaceutical services in West Africa. The study employed the descriptive research approach in fulfilling the purpose of the study. The study outcomes revealed that prior planning to initiate, invest and expand was key for the accessibility of pharmaceutical services.

Lori (2015) conducted a study on the influence of pharmaceutical services planning on the accessibility of pharmaceutical services. The study was descriptive qualitative approach research. A sequence of interviews was conducted using a questioning procedure to gather data regarding pre-service, ongoing professional development, and on-the-job education. The data was utilized to discover the ideal techniques in nurse training for extended role switching positions. Nurse Managers were interviewed in semi-formal supervised discussions, over the telephone, and via

the internet. The study established that pharmaceutical services planning significantly affected the accessibility of pharmaceutical services.

The plan is laid in such a way that it defines the health requirements of the community as well as the current situation of the pharmaceutical services or the upgrades necessary that would satisfy the notified health requirements (Zaidi et al., 2013). The Project Management Information System (PMIS) must comprise of verifiable information sources focusing on the whole pharmacy industry; the specific information about patients should be combined with the product information as well as the capability to combining this data with the specific data in regard to clinic and patient (Zaidi et al., 2013). Further the lack of information regarding patients has been severally pointed as the main cause of erroneous projections/ predictions hence shortages or wasting of medical supplies. In the long run, the pharmacy data must be fed into a nation's general Healthy Management Information System (HMIS); though developing this link is still hard for majority of the countries. Proper and complete planning must focus on being the backbone of the PMIS which gives crucial information for the planners of the program (Wafula et al., 2014).

2.7 Theoretical Framework

2.7.1 Role Theory

The role theory was put forward and defined by Conway as the collection of various concepts and the variety of the hypothetical formulations that tend to predict how actors such as the pharmacists, nurses, clinical officers etc. will perform in a given role or under that circumstances certain types of behaviors can be expected of them and this includes the prescribing and dispensing drugs in healthcare facilities. This role theory can act as conceptual framework which can be used to make relation to the properties of an individual or organization. The
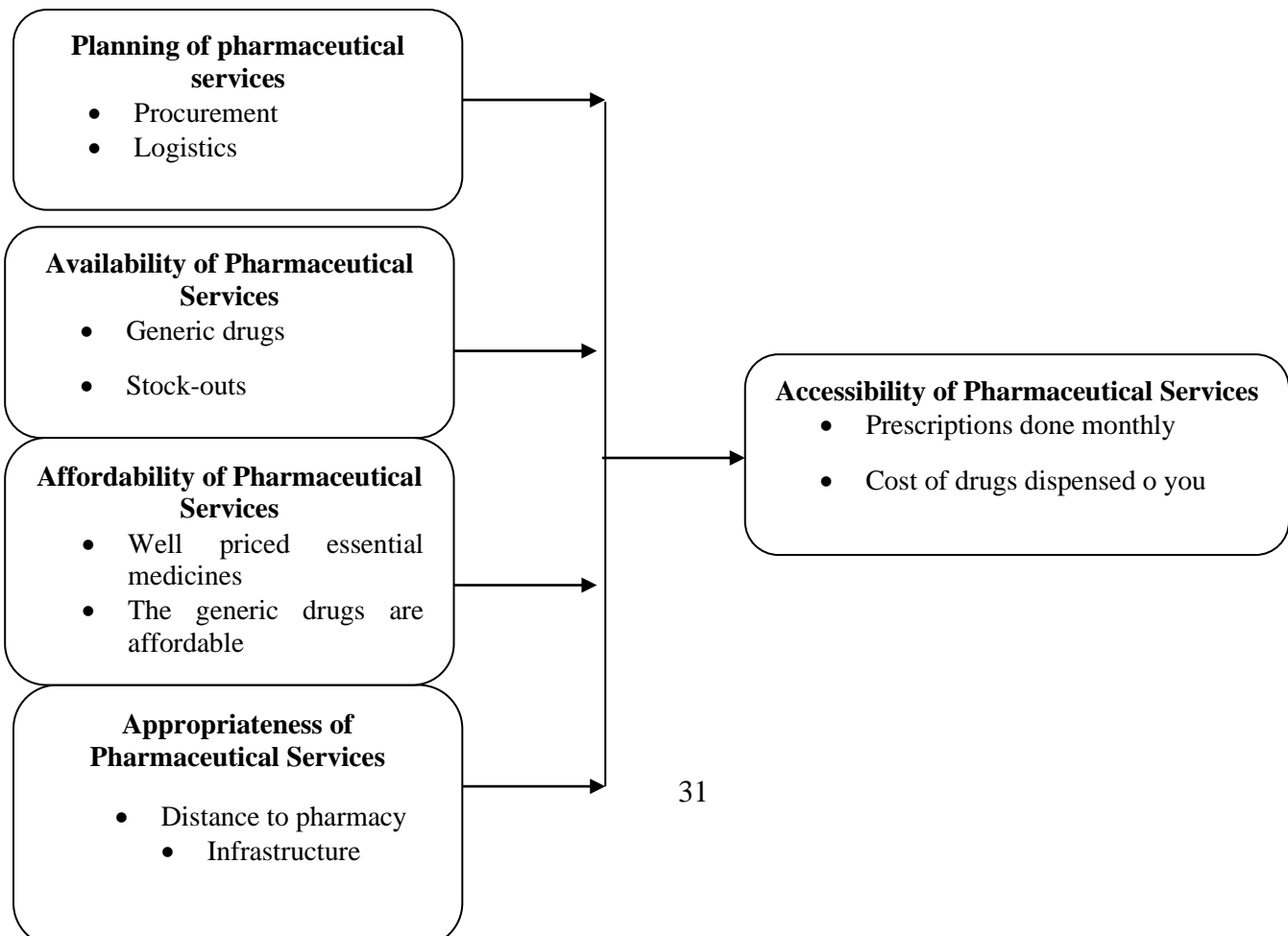
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description of behaviors, norms, characteristics as well as norms and values of the persons such as the clinicians, pharmacists in dispensing and prescribing drugs and in this context of the role theory can provide a valuable framework to examine role perceptions. This makes the role theory applicable in provision of conceptual framework to explore the factors influencing the accessibility of pharmaceutical services in Meru County, Kenya.

2.8 Conceptual Framework

This section sets out the study's conceptual framework. The conceptual framework is the structure used to explain the natural progression of research work. A conceptual framework links concepts, empirical research and the theories related to the study.

Figure 2.1:

Conceptual Framework

```
┌──────────────────────────┐
│ Planning of pharmaceutical│
│         services          │
│  • Procurement            │────────────┐
│  • Logistics              │            │
└──────────────────────────┘            │
                                          ▼
┌──────────────────────────┐    ┌─────────────────────────────────┐
│ Availability of Pharmaceutical│  │ Accessibility of Pharmaceutical │
│         Services          │──▶ │           Services              │
│  • Generic drugs          │    │  • Prescriptions done monthly   │
│  • Stock-outs             │    │                                 │
└──────────────────────────┘    │  • Cost of drugs dispensed o you│
┌──────────────────────────┐    └─────────────────────────────────┘
│ Affordability of Pharmaceutical│
│         Services          │──▶
│  • Well priced essential  │
│    medicines              │
│  • The generic drugs are  │
│    affordable             │
└──────────────────────────┘
┌──────────────────────────┐
│    Appropriateness of     │
│  Pharmaceutical Services  │──▶
│                           │
│  • Distance to pharmacy   │
│    • Infrastructure       │
└──────────────────────────┘
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Independent Variables   Dependent Variable

The dependent variable of the study was the accessibility of pharmaceutical services (prescription and dispensation of drugs) and the independent variables [IV] included appropriateness of pharmaceutical services, planning of pharmaceutical services, and affordability of pharmaceutical services and availability of pharmaceutical services.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the outline of the methodological approach that was used in fulfilling the purpose of this study. Therefore it comprises of the study design that was used, target population, the sample size and the techniques used in sampling. Further the section outlined the process of collecting the data, as well as analysis of the data realized from the field.

3.2 Study design

It refers to the framework that was used in fulfilling the purpose of this study. A design identifies and stipulates the significant processes aimed at realizing the data required in solving the research problems. A design can as well be identified as the strategy employed in fulfilling the purpose of the study (Coldwell & Herbst, 2004; Kothari, 2004). The study adopted the descriptive design. Further the study employed the quantitative approaches in analyzing the data from the field. The design was deemed suitable in fulfilling the purpose of this study as it covers data collection at a specific point in time and that it promotes the objectivity of the data collection process as the researchers has no control of the activities that follow. The researcher cannot subjectively alter the variables.

3.3 Target population

Population refers to a well definite set of elements, people, events, services or households but the definition is applicable only when the study target population is homogeneous (Ngechu, 2004). The target populations were the clinicians or pharmaceutical specialist in the 237 MoH facilities [public] that provided pharmaceutical service in Meru County.

3.4 Sample Size Determination and Sampling Technique

3.4.1 Sample Size Determination

The population of concern was healthcare workers in 237 (MOH) public healthcare facilities that provided pharmaceutical services. In every facility in Meru County, at least a HCW is responsible for addressing pharmaceutical services i.e., prescribing and dispensing drugs. Thus the study sample was 237 HCWs.

3.4.2 Sampling Technique

The researcher used purposive sampling method and census sampling method to obtain the 237 healthcare workers. These sampling methods were applicable and relied on the researcher to make personal decision(s) at the time of selecting the study participants within a population that would take part in the completion of the study tools [questionnaire] and in this study it was all 237 health care workers.

3.5 Data Collection Methods

Questionnaire was the main data collection instrument. A questionnaire refers to a series of questions that are aimed at fulfilling the collective purpose of a study and they are completed by study respondents (Brace, 2008). It also refers to a list of questions (closed ended) aimed at realizing specific raw data from the field that is the population of interest to the study. Questionnaire method is great in the collection of data because it allows the respondent to give answer without being influenced. The study used questionnaires as they are mostly used for their cost effectiveness in acquiring enormous data/information from the field particularly when the target population is large or covers a huge geographical area. Further, the study chose questionnaires as they allow for anonymity. Further it was an appropriate tool to use as the target

population was located in a huge geographical area.   All the respondents were required to fill the questionnaire. Data collection was done systematically and closely monitored.

Raw data or information was collected by the use of a structured questionnaire comprising of closed items. The 'drop and pick later' technique was employed in the distribution and administration of the questionnaires. Further a period of one week was given to the respondents so as to allow the respondent's ample time to read, understand and respond to the questions. The researcher will administer the instruments personally to ensure return rates.

3.6 Reliability and Validity of Questionnaires

3.6.1 Validity of Instruments

Validity alludes to the level that the study device estimates what is pointed toward estimating. Likewise alludes to the sum dissimilarities laid out by the study device duplicates the right aberrations among the contemplated (Kothari, 2004).

The researcher undertook a pretest study on 11 clinical officials and drug specialist at Embu level five Hospitals fully intent on guaranteeing that the study device to be utilized in the acknowledgment of crude information is substantial and gather the information required. Directed by the results of the pretests, the study device was adjusted by refining or disposing of the inadmissible things (Creswell, 2009). In the current study, this was finished through the pretesting of instruments and mentioning to supervisor at KEMU to peruse the instruments and make proposition for development. Creswell (on the same page) brings up that in subjective examination validity can be guaranteed through reliability, legitimacy and validity. The analyst tended to this by telling the truth in information assortment and utilizing credible and trustworthy members.

3.6.2 Instrument Reliability

In relation to the reliability of the research study tool, Creswell (2003) suggests that the analyst ought to really take a look at the instruments and guarantee records are without blunders. The researcher two-fold really checked at every one of the instruments to guarantee correctness/ exactness and furthermore pilot them.

3.7 Analysis of Data and Presentation

The collected data was sorted, cleaned, coded and entered into SPSS version 25. The study utilized descriptive statistics to examine the quantitative data and further introduced it as tables, diagrams and visual charts while the understanding was finished by the utilization of composition. The study likewise utilized Pearson's coefficient of connection and numerous relapses to lay out the connection between the autonomous factors and the reliant factors. The regression model was: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Whereby the variables were identified as follows: -

Y = Accessibility of Pharmaceutical services

X_1 = Planning

X_2 = Availability

X_3 = Affordability

X_4 = Appropriateness

While $\beta_1, \beta_2, \beta_3$ and β_4 are coefficients of determination and ε is the error term.

3.8 Ethical Considerations

As per Creswell (2003), any delicate study embraced, the respondents/members ought to be safeguarded which is targeting fostering a decent and solid compatibility which would direct the members to trust the specialist and honestly answer the things contained in the surveys. Investment was willful through informed assent after the respondents have been made to figure out the justification for leading the study. The security and classification of the respondents was ensured. The specialist clarified for the members that the reactions that they would give was utilized for scholarly reasons alone and present a letter of endorsement from the branch of wellbeing studies. The study included just those members who marked the assent structure which suggested their ability to partake.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

The chapter presented the study analysis and the results. The results realized were for the purpose of the study which was to establish the factors influencing the accessibility of pharmaceutical services in Meru County. The data as presented in tables and figures. The researcher made use of frequency tables and figures to present the data.

4.2 Pretest Results

The study undertook pilot test at Embu level five Hospitals to test reliability and validity of questionnaire. The researcher utilized Cronbach's alpha as the measure of internal consistency as presented below

Table 4.1

Cronbach Coefficient

Variable	Number of Items	Cronbach Alpha
Overall	38	0.819
Accessibility Of Pharmaceutical Services	5	.741
planning on the accessibility Pharmaceutical Services	8	0.760
availability of Pharmaceutical Services	9	0.710
affordability and the accessibility	8	0.797
appropriateness on the accessibility	8	0.801

According to the Table 4.1, a Cronbach alpha value of 0.819 was obtained and this indicated high internal consistency indicating good reliability as 0.70 was the threshold for good and acceptable rates.

4.3 Response Rate

Out of 237 questionnaires administered, 194 HCWs completed the questionnaires contributing to 82% response rate as shown in Table 4.2 below. The response rate in this study was at 82% as 43(18%) failed to fill the questionnaires as result of work related commitments.

Table 4.2

Response Rate

Response	(N)	(%)
Completed questionnaires	194	82
Uncompleted questionnaires	43	18
Total	237	100

4.4 Social-Demographic Data

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Figure 4.2

Respondents Gender

As per the results in figure 4.2 shows that majority (54%) of the respondents were female while 46% were male. The results imply that the pharmaceutical industry in Meru County is not reserved for any gender where both genders have proportionally invested themselves in it.

**4.4.2 Respondents' Age**

Table 4.3

Respondents' Age

Age Bracket	Frequency (N)	Percent (%)
25 years and below	31	15
26-35 years	60	31
36-45 years	69	36
Above 45 years	34	18
Total	194	100

As presented, a third (36%) of the respondents was aged between 36-45 years; 31% were aged between 26-35 years. Further, 18% were aged above 45 years while 15% of the respondents we aged 25 years and below. The results show that majority (67%) were 26-45 years of age implying that the pharmaceutical workforce in Meru county were at the prime age of productivity if provide with the right working conditions.

4.4.3 Education Level

Figure 4.3

Education Level of the Respondent
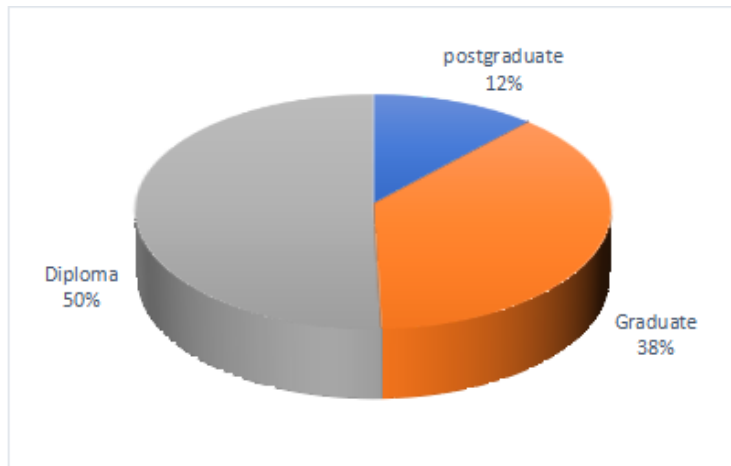
As illustrated in the Figure 4.3, most (50%) of the research participants had a college level as the highest education level, 38% were graduates, while 12% of the respondents had a post graduate level of academic qualifications. This indicated that most respondents were knowable enough to provide the required data. Also, the result implies that professionalism was a key factor during the recruitment of clinicians and pharmaceutical specialists in Meru County.

4.4 Respondents Cadre

Table 4.4

Respondents Cadre

Cadre	Fr	%
Medical Doctors	14	7
Clinical Officers	40	21
Nurses	32	16
Pharmaceutical Technologists	70	36
Pharmacists	38	20
Total	194	100

The Table 4.4 presents the various cadres distribution of the study participants in Meru County.

It was evident that majority [70, 36%] were pharmaceutical technologists involved in dispensing

of drugs, 40[21%] were clinical officers involved in prescribing drugs and 38[20%] were Pharmacists.

4.4.5 Duration of Service at the current facility

Table 4.5

Duration of Service at the Current Facility

Duration	Frequency (N)	Percent (%)
Less than 1 year	5	3
1-5 years	104	53
6-10 years	67	35
Over 10 years	18	9
Total	194	100

Most of the respondents (53%) had served at their facility for 1-5 years and 35% had served for 6- 10 years. Further, 9% and 3% of the respondents had served for over 10 years and less than 1 year respectively. This implies that the respondents were conversant with the pharmaceutical practices at their respective hospitals as the majority of the respondents had served for over one year.

4.4.6 Duration of Service with Ministry of Health

As per the results in table 4.6 above, most (43%) of the respondents had worked with the ministry of health for a period of 6-10 years and 29% had served between 1-5 years. Further, 28% had provided their service more than a decade. This implies that the respondents were a rich background on the factors that affect the performance of pharmacies and pharmaceutical service delivery. Hence the study reached the right target respondents.
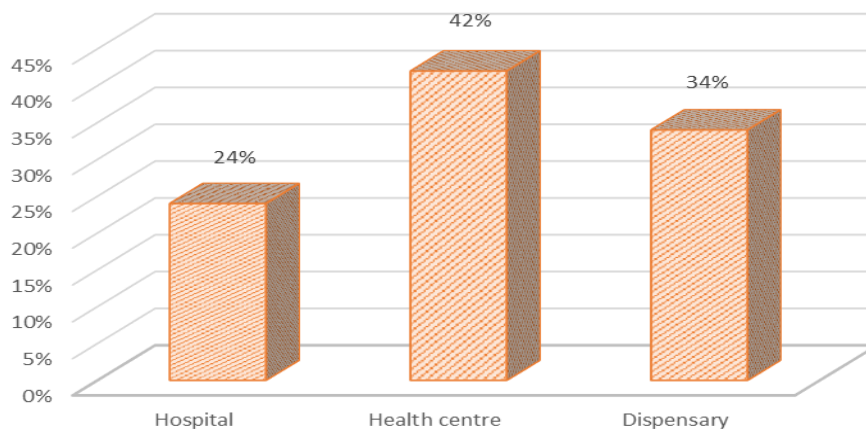
Table 4.6

Duration of service with Ministry of Health

Duration	(N)	Percent (%)
Between 1-5	57	29
Between 6-10 years	83	43
More than 10 years	54	28
Total	194	100

4.4.7 Facility level

The study requested the respondents to indicate the level at which their current facilities are. The results in Figure below;

Figure 4.4

Facility Type

The result shows that majority (42%) of were realized from health centre in Meru county. Further, 34% were realized from dispensaries while 24% of the respondents were realized from the hospitals in Meru County. The results imply that the study reached the institutions that are directly involved in allowing the general public accessibility of pharmaceutical supplies and services.

4.5 Accessibility of Pharmaceutical Services

Table 4.7

Accessibility of Pharmaceutical Services

Statements	Mean	Std. Deviation
There is strengthened service delivery framework	2.4515	.56442
There is reduced rate of morbidity	2.4268	.46938
There is increased pharmaceutical services' seekers	2.4113	.62684
There is increased monthly prescriptions	2.3856	.56596
There is reduced costs for drugs dispensed	1.1794	.55950

The respondents disagreed that there was a strengthened service delivery framework (Mean=2.4515) and that there was reduced rate of morbidity (Mean=2.4268). Further the findings indicates that there was increased pharmaceutical services' seekers (Mean=2.4113) and that there was increased monthly prescriptions (Mean=2.3856). Finally, the results shows that the respondents strongly disagreed that there was reduced costs for pharmaceutical services (Mean=1.1794). The results indicates that the delivery of pharmaceutical services was far from becoming perfect and hence this study focused on factors that affect the accessibility and delivery of pharmaceutical services in Meru county.

The findings are in line with the findings of a study by UNIDO (2010) that frequent medicines stock outs are common in Kenya's public health sector. Further, study findings shows a picture that is against the WHO (2015) guidelines that the pharmaceutical products offered to the citizens should be in the appropriate quality and form and of the certified quality. Also, the discoveries were in accordance with the discoveries of Ahmed (2012) availability and moderateness of fundamental medications are significant for working of any wellbeing framework and that rational access and utilization of medications is key to the arrangement of widespread wellbeing inclusion (UHC). What's more, the discoveries are in accordance with Harper (2011) that deficient or wrong data about medications and absence of standard treatment rules prompts ill-advised treatment and unreasonable utilization of medication. Furthermore, the review discoveries were in accordance with findings of Raskin and Wirtz (2021) that the fundamental factors that influence patient admittance to fundamental drugs in Kenya are stock outs or inaccessibility and exorbitance. Further, the review discoveries concurred with the discoveries of a study by the MoH (2020) purchase of medications by a patient in Kenya changes inside people in general and confidential wellbeing sub-areas as a result of the distinction in medication estimating design and absence of guideline.

4.6 Planning for Pharmaceutical Services

This was to establish the extent to which the planning influenced accessibility of pharmaceutical services in hospitals within Meru County. The study findings are provided in the following.

Table 4.8

Effects of Planning of Pharmaceutical Services

Extent	N	%
Low	5	3
Moderate	16	8
Great	67	35
Very great	106	55
Total	194	100

Majority (55%) indicated that to a very great extent planning influenced accessibility of pharmaceutical services in hospitals within Meru County and 35% indicated that planning influenced accessibility of pharmaceutical services to a great extent. Further, 8% held that planning influenced accessibility of pharmaceutical services to a moderate extent while 3% of the respondents indicated that planning influenced accessibility of pharmaceutical services to a low extent. The results imply that planning aspect has key role to the accessibility of pharmaceutical services.

4.6.1 Planning for Pharmaceutical Services

Table 4.9

Planning for Pharmaceutical Services

Statements	Mean	SD
Orders/procures medicines frequently	3.9495	.59429
Procurement and transportation of pharmaceutical supplies is timely done to meet specific medical needs for the clients	3.9258	.61447
The planning focuses on being the backbone of the PMIS	3.8608	.65674
All key stakeholders in the pharmaceutical services are involved in the planning	3.7825	.51496
Inventory management controls the cycle of placing orders	3.6918	.59674
Planning practices assesses the local requirements for the communal pharmacy services	3.6340	.51413
Specific information about patients is combined with the product information	3.5804	.61998
Planning is guided by verifiable information sources focusing on the whole pharmacy industry	3.5103	.71432

The responses as presented in the Table 4.9 showed that respondents were in agreement that orders/procurement of medicines was frequently at the facilities (Mean=3.9495) and that procurement and transportation of pharmaceutical supplies was timely done to meet specific medical needs for the clients (3.9258). In additionally, most of the respondents agreed that the planning focused on being the backbone of the PMIS (Mean=3.8608) and that all key stakeholders in the pharmaceutical services were involved in the planning (Mean=3.7825). Further, the respondents agreed that inventory management controlled the cycle of placing orders (Mean=3.6918) and planning practices assessed the local requirements for the communal pharmacy services (Mean=3.6340). Finally the results indicates that specific information about patients was combined with the product information (Mean=3.5804) and that planning was guided by verifiable information sources focusing on the whole pharmacy industry (Mean=3.5103). The results imply that planning was a major component in the accessibility of pharmaceutical services.

Study findings are in agreement with view by Wafula et al. (2014) that the lack of information regarding patients has been severally pointed as the main cause of erroneous projections/ predictions hence shortages or wasting of medical supplies. Further the findings supports the view by Zaidi et al., (2013) that the plan is laid in such a way that it defines the health requirements of the community as well as the current situation of the pharmaceutical services or the upgrades necessary that would satisfy the notified health requirements. Moreover, the study findings agreed with the findings of Ashigbie et al (2020), Dixon et al. (2019), Godman, (2018) and Lori (2015) that pharmaceutical services planning significantly affected the accessibility of pharmaceutical services.

4.7 Availability for Pharmaceutical Services

The study used a Likert scale to assess the extent to which availability of drugs affects the accessibility of pharmaceutical services;

Table 4.10

Availability of Pharmaceutical Services

Extent	Frequency (N)	Percent (%)
Low	10	5
Moderate	24	9
Great	23	15
Very great	105	54
Total	32	17

Most (54%) indicated that availability influenced accessibility of pharmaceutical services to a great extent. Further, 17% indicated that availability affect accessibility of pharmaceutical services to a very great extent and 15% indicated availability influenced accessibility of pharmaceutical services to a moderate extent. In addition, the results show that 9% and 5% of the respondents held that availability affected accessibility of pharmaceutical services to low extent

and very low extent respectively. The outcome implies that the respondents were aware of the role played by availability of medical supplies in the accessibility of pharmaceutical services.

4.7.1 Availability Pharmaceutical Services

According to the results tabulated in table 4.11 below the respondents agreed that the generic drugs were always available at the hospital e.g. pain relievers (Mean=3.8557) and that the decentralization of procurement to lower levels aimed at increasing coverage and access to services (mean-3.8454). The HCWs agreed that that the pharmacies made sure that the drugs order covered the entire period until the next delivery (Mean=3.7062) and that the storage facilities affected the availability of the drugs (Mean=3.6907). Further the respondents agreed that that consumption-based approach had complete, accurate and properly adjusted data sources (Mean=3.6443) and that quantification of the health products at health facilities was aligned with disease burden (Mean=3.6186). Moreover, the respondents agreed that procurement matched demand by harmonization of medicine quantification with prescribing habits and preferences of consumers (Mean=3.5928). The results imply that the respondents observed all the basics aimed at ensuring the availability of drugs in hospitals.

Table 4.11

Availability of Pharmaceutical Services

Statements	Mean	Std Deviation
The generic drugs are always available at the hospital e.g., pain relievers	3.8557	.94939
Decentralization of procurement to lower levels to increase coverage and accessibility of pharmaceutical services	3.8454	.58194
The pharmacies make sure that the drugs order covers the entire period until the next delivery	3.7062	.66071
The storage facilities affect the availability of the drugs	3.6907	.52622
Consumption based approach has complete, accurate and properly adjusted data sources	3.6443	.54086
Quantification of the health products at health facilities is aligned with disease burden	3.6186	.54712
Procurement matches demand by harmonization of medicine quantification with prescribing habits and preferences of consumers	3.5928	.57056

The findings of the results agrees with the findings by Mwathi (2014) that poor availability of medicines at facility level has been attributed to wrong choice, deprived distribution, insufficient funding and misplaced use. The study findings agree with and support the findings by Hafeez et al. (2004) that in the public health facilities and average of 1.6 vaccines were dispensed out of the 2.7 prescribed. The findings further concur with MoMs MoPHS, (2009) that stock outs for medicines including essential medicines for priority health needs were significantly reported in public hospitals.

The study agreed with the findings of the Ewen et al., (2017) that low accessibility of prescriptions in open emergency clinics caused patients to buy medicine from private local area drug stores with significant expense, which would expand patients' sickness trouble. The review laid out that unfortunate stock administration and nonattendance of dependable providers were viewed as two principal factors prompting this issue. What's more the review discoveries are in accordance with discoveries of Ikechukwu (2018) that availability of pharmaceutical services was significantly effective in the accessibility of pharmaceutical services.

4.8 Affordability of Pharmaceutical Services

The study used Likert scale indicates the extent to which affordability of pharmaceutical services in the hospital influenced accessibility of pharmaceutical services.

Table 4.12

Affordability of Pharmaceutical Services

Extent	Frequency (N)	Percent (%)
Very Low	11	6
Low	21	11
Moderate	28	14
Great	86	44
Very great	48	25
Total	194	100

Approximately (44%) suggested that affordability influenced accessibility of pharmaceutical services to a great extent and 25% indicated that affordability influence accessibility of pharmaceutical services to very great extent while affordability influence accessibility of pharmaceutical services in the hospital 14%, 11% and 6% to a moderate extent, low extent and

very low extent respectively. The results imply that affordability of the pharmaceutical supplies

was a key determinant in the accessibility of the pharmaceutical services.

4.8.1 Affordability Pharmaceutical Services

The study used Likert Scale to assess the effects of affordability of pharmaceutical services;

Table 4.13

Affordability of Pharmaceutical Services

Statements	Mean	Std. Deviation
The increased private medicine dispensers affects the accessibility as the drugs are expensive and few can afford them	4.0165	.59969
With low-incomes medicines are being accessed more and high in private than in public sectors	3.9753	.51173
Private pharmacies bridge the gap in accessing essential medicines in health systems with inadequate public delivery frameworks	3.8948	.64581
Government regulations efforts for private pharmacies seem not resulting into better affordability	3.7732	.55766
There is significant variation in price and availability of medicines depending on the location of the pharmacy	3.7082	.63665
Regulatory authorities make sure the drugs are available and affordable	3.3041	.71460
In the public pharmacies, there is promotion of differential pricing and generic competition	3.0938	.61817

The results presented in table 4.13 indicated that the respondents agreed that the increased private

medicine dispensers affected the accessibility as the drugs were expensive and few could afford

them (Mean=4.0165) and that with the low-incomes medicines were accessed more and high in

private than in public sectors (Mean=3.9753). In addition, that respondents agreed that private

pharmacies filled the gap in accessing essential medicines in health systems with inadequate

public delivery frameworks (Mean=3.8948) and that government regulations efforts for private pharmacies failed to result into better affordability (Mean=3.7732).Also, agreed there was significant variation of price and availability of medicines depending on the location of the pharmacy [mean=3.7082] there as moderate agreement that regulatory authorities made sure the drugs were available and affordable (Mean=3.3041) and that in the public pharmacies, there was promotion of differential pricing and generic competition (Mean=3.0938). The results imply that the prices of the pharmaceutical services were key determinant of its accessibility.

 The findings agree with WHO (2015) that medicines are being accessed more and high in private than in public sectors in low-income countries. In addition, findings supports the WHO (2015) view on Africa that countries where national medicines authorities are poor, there is increasing number of private medicine dispensers hence affecting the population to access the medicines suppressing the establishment of public pharmaceutical systems to afford. Private pharmacies help to fill the gap in accessing essential medicines in health systems with inadequate public delivery frameworks. The findings support the findings by Cameron (2018) that the prices of essential medicines/drugs remain high in scarce resources in low- and middle-income countries (LMICs).

 In additionally the study supports the findings by Tetteh (2018) that there was a positive and significant correlation between the affordability and the accessibility of pharmaceutical services. Further the findings are in line with the findings of Danzon et al. (2015), Dutta, et al (2018), Dhiman (2018) and Luthuli and Kalusopa (2020) that affordability of pharmaceutical services to a great extent influenced the accessibility of pharmaceutical

4.9 Appropriateness of Pharmaceutical Services

A Likert scale that ranged from 1-5 to assess the extent to which appropriateness influence the accessibility of pharmaceutical services in the hospital. The results are tabulated in table 4.13 below;

Table 4.14

Appropriateness of Pharmaceutical Services

Extent	Frequency (N)	Percent (%)
Very Low	13	7
Low	20	10
Moderate	45	23
Great	91	47
Very great	25	13
Total	194	100

Majority of the respondents (47%) suggested that that appropriateness influence accessibility of pharmaceutical services to a great extent and 23% indicated that appropriateness affects accessibility of pharmaceutical services to a moderate extent. Further, 10% and 7% of the respondents indicated that appropriateness affects accessibility of pharmaceutical services to a low extent and very low extent respectively. The results imply that the availability pharmaceutical supplies that match the needs of the clients played a key role in the accessibility of drugs.

4.9.1 Appropriateness of Pharmaceutical Services

The study used a Likert scale aiming establishing the influence of appropriateness and accessibility of Pharmaceutical services.

Table 4.15

Appropriateness of Pharmaceutical Services

Statements	Mean	Std. Deviation
Staff working in the pharmaceuticals have sufficient skills in the dispensing of medicines/drugs	4.8814	.43353
There is no chances of mismatching the drugs prescribed	4.6289	.59042
The pharmaceutical products are arranged in the stores in categories	3.9804	.58560
The pharmaceutical Specialists advice the clients on the dormant/drugs no longer in use and tell them to stop taking them as no longer effect on a certain illness.	3.8557	.64366
Clients with specific needs are attended by a specific pharmacist best qualified in dispensing specific drugs	3.7062	.63675
The staff at the pharmacies take their time to explain to the clients the procedures and times of medicine administration	3.5619	.75412
The pharmaceutical centers are available within a five-kilometer radius	3.0825	.70226

In most of the study, participants strongly agreed that the staff working in the pharmaceuticals had sufficient skills in the dispensing of medicines/drugs (Mean=4.8814) and that there were no chances of mismatching the drugs prescribed (mean obtained 4.6289). most respondents agreed that the pharmaceutical products were arranged in the stores in categories (Mean=3.9804) and that the pharmaceutical specialists advised the clients on the dormant or drugs no longer in use and tell

them to stop taking them (Mean=3.8557). Also, respondents agreed that clients with specific needs were attended by a specific pharmacist best qualified in dispensing specific drugs (Mean=3.7062) and that the staff at the pharmacies took their time to explain to the clients the procedures and times of medicine administration (Mean=3.5619). Finally the respondents moderately agreed that the pharmaceutical centers were available within a five-kilometer radius (Mean=3.0825). The results imply that the specifications of pharmaceutical services were a key factor in the accessibility of the pharmaceutical services. Further the geographical location of the facility to a great extent determined by the pharmaceutical services available in the facility as the order placed are guided by the needs of the community around.

The study result   concurs with Cameron (2009) generic medicines were sub-optimally present in both the government owned hospitals and privately owned hospitals (median availability 38% and 64%, respectively). The study results agree with the findings of a study by MoMs and MoPHS (2019) that a majority of essential medicines for common ailments at primary care level were available and fairly affordable to citizens. However, stock outs for medicines including essential medicines for priority health needs were significantly reported at hospital levels. In addition, the study findings agree with the findings of Induka (2016) that the appropriation of pharmaceutical services was significantly influential on the accessibility of pharmaceutical services.

4.10 Normality test

Sustainability measures were subjected to normality test. The study variables were subjected to a

One-Sample Kolmogorov-Smirnov and Shapiro-Wilk Tests to test the normality.

Table 4.16

Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Planning	.095	107	.018	.981	107	.125
Availability	.096	107	.017	.964	107	.005
Affordability	.104	107	.007	.986	107	.306
Appropriateness	.121	107	.001	.968	107	.012
Accessibility of Pharmaceutical services	.108	107	.004	.978	107	.079
a. Lilliefors Significance Correction						

The sample of the study was n ≥50 and therefore the most appropriate test was Kolmogorov–

Smirnov test. The Kolmogorov-Smirnov[a] indicated that p-value ere <0.05 an indicated that the

data were for normally distributed.

4.11 Linearity Test

Table 4.17

Linearity Test

	F-Statistics (Deviation from Linearity)	**p-value**
Accessibility of Pharmaceutical services*Planning	.590	.845
Accessibility of Pharmaceutical services*Availability	1.511	.134
Accessibility of Pharmaceutical services*Affordability	1.064	.399
Accessibility of Pharmaceutical services*Affordability	1.486	.143

The result in the above Table 4.17 indicates that the p values of the variables were significant and thus there were insignificant deviations from the linearity and this showed that there existed linear relationship between the repressor predictor variables.

4.12 Inferential Statistics

Correlations

The following responses provide the relationship between the variables.

Table 4.18

Bivariate Logistical Analysis

		Planning	Availability	Affordability	Appropriateness
Planning	Pearson Correlation	1	.445**	.373**	.239**
	Sig. (2-tailed)		.000	.000	.001
	N	194	194	194	194
Availability	Pearson Correlation	.445**	1	.351**	.197**
	Sig. (2-tailed)	.000		.000	.006
	N	194	194	194	194
Affordability	Pearson Correlation	.373**	.351**	1	.380**
	Sig. (2-tailed)	.000	.000		.000
	N	194	194	194	194
Appropriateness	Pearson Correlation	.239**	.197**	.380**	1
	Sig. (2-tailed)	.001	.006	.000	
	N	194	194	194	194

**. Correlation is significant at the 0.01 level (2-tailed).

According to the results, planning have significant positive correlations with availability, affordability and appropriateness coefficient values of .445**, .373** and .239** respectively. In addition, the results shows that availability have significant positive correlations with affordability and appropriateness with coefficient values of .351** and .197** respectively. In addition, the results shows affordability had significant positive correlation with appropriateness with coefficient value .380**. The results imply that the independent variables influence each other positively.

Table 4.19

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.856a	.733	.710	.02261

a. Predictors: (Constant), Appropriateness, Availability, Planning, Affordability.

The study's predictor variables explained 71% on the factors that affect accessibility of pharmaceutical services in Meru County. Other factors not captured by the regression model explained the rest of 29% of the accessibility of pharmaceutical services in Meru County and thus exists the need for more study to be done to assess the rest of the 29% that explained accessibility of pharmaceutical services in Meru County.

Table 4.20

Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.979	4	.745	9.325	.000b
	Residual	15.095	189	.080		
	Total	18.074	193			

a. Dependent Variable: Accessibility of Pharmaceutical services
b. Predictors: (Constant), Appropriateness, Availability, Planning, Affordability

The model was significant as the p value obtained as significant [<0.05]. The Fcal was less that Fcritical and thus the model good in prediction of how appropriateness, availability, planning, affordability influenced the accessibility of pharmaceutical services in Meru County.

4.10.2 Coefficient

The study conducted regression model to examine the extent IVs affected the DV i.e., accessibility of Pharmaceutical services in Meru County. The Table 4.21 below all study variables was significant predicators of accessibility of pharmaceutical services.

Table 4.21

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.923	.388		4.782	.000
	Planning	.681	.083	.168	2.177	.001
	Availability	.534	.082	.332	4.416	.002
	Affordability	.663	.089	.355	3.709	.003
	Appropriateness	.747	.081	.420	5.799	.000

a. Dependent Variable: Accessibility of Pharmaceutical services

Substituting the model ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$) translates to $Y = 1.923 + .681 X_1 + .534 X_2 + .663 X_3 + .747 X_4 + \varepsilon$

According to the regression equation, taking all factors (appropriateness, availability, planning, and affordability) constant, accessibility of pharmaceutical services will be 1.923. A unit increase in planning leads to a .681 increase in accessibility of pharmaceutical services; a unit increase in availability leads to a .534 increase in accessibility of pharmaceutical services. In addition, a unit increase in affordability leads to a .663 increase in accessibility of pharmaceutical services; a unit increase inappropriateness leads to a .747 increase in accessibility of pharmaceutical services. The results depicts that the four factors studied were significant in the accessibility of pharmaceutical services where appropriateness of the pharmaceutical services was the most significant factor (sig.000) at 95% level of confidence followed by planning, availability and affordability [$p < 0.05$]

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the study summary on the data findings on the factors influencing accessibility of pharmaceutical services in Meru County. The section also includes the study conclusions and study recommendations.

5.2 Summary

Further, the study found that appropriateness, availability, planning, affordability had significant influence on the accessibility of pharmaceutical services.

Planning: The study found that orders/procurement of medicines was frequent at the facilities and that procurement and transportation of pharmaceutical supplies was timely done to meet specific medical needs for the clients. In addition, the study found that the planning focused on being the backbone of the PMIS and that all key stakeholders in the pharmaceutical services were involved in the planning. Further, the study found that inventory management controlled the cycle of placing orders and planning practices assessed the local requirements for the communal pharmacy services. Moreover, the study found that specific information about patients was combined with the product information and that planning was guided by verifiable information sources focusing on the whole pharmacy industry.

Availability: The study found that generic drugs were always available at the hospital e.g., pain relievers and that the decentralization of procurement to lower levels aimed at increasing coverage and access to services. In addition, the study found that the pharmacies made sure that the drugs order covered the entire period until the next delivery and that the storage facilities

affected the availability of the drugs. Further the study found that consumption based approach had complete, accurate and properly adjusted data sources and that quantification of the health products at health facilities was aligned with disease burden. Moreover, the study found that procurement matched demand by harmonization of medicine quantification with prescribing habits and preferences of consumers.

Affordability: The study found that the increased private medicine dispensers affected the accessibility as the drugs were expensive and few could afford them and that with the low-incomes medicines were accessed more and high in private than in public sectors. In addition, the study found that private pharmacies filled the gap in accessing essential medicines in health systems with inadequate public delivery frameworks and that government regulations efforts for private pharmacies failed to result into better affordability. Also, the study found that there was significant variation of price and availability of medicines depending on the location of the pharmacy. Moreover, the study found that moderately regulatory authorities made sure the drugs were available and affordable and that in the public pharmacies, there was promotion of differential pricing and generic competition.

Appropriateness: The study found that staff working in the pharmaceuticals had sufficient skills in the dispensing of medicines/drugs and that there were no chances of mismatching the drugs prescribed. In addition, the study found that the pharmaceutical products were arranged in the stores in categories and that the pharmaceutical specialists advised the clients on the dormant or drugs no longer in use and tell them to stop taking them. Also, the study found that clients with specific needs were attended by a specific pharmaceutical specialist best qualified in dispensing specific drugs and that the staff at the pharmacies took their time to explain to the clients the

procedures and times of medicine administration. Finally, the study found that moderately the pharmaceutical centers were available within a five-kilometer radius.

Accessibility of Pharmaceutical services: The study found that there was no a strengthened service delivery framework and that there was no reduced rate of morbidity. Further, the study found that there were no increased pharmaceutical services' seekers and that there were increased monthly prescriptions. Finally, the study found that there were no reduced costs for pharmaceutical services. From the inferential statistics the study found that study variables were significant in explaining accessibility of pharmaceutical services where appropriateness of the pharmaceutical services was the most significant factor (sig.000) at 95CI closely followed by planning, availability and affordability with significance values of .001, .002 and 0.003 in that order.

5.3 Conclusions

From the inferential statistics the independent variables were significant in explaining the factors that affected the accessibility of pharmaceutical services where appropriateness of the pharmaceutical services was highly significant closely followed by planning, availability and affordability. The study concludes that there was no a strengthened service delivery framework and that there was no reduced rate of morbidity. Further, the study concludes that there were no increased pharmaceutical services' seekers and that there were increased monthly prescriptions. Finally, the study concludes that there was no reduced cost for pharmaceutical services.

The study concludes that orders/procurement of medicines was frequently at the facilities and that procurement and transportation of pharmaceutical supplies was timely done to meet specific medical needs for the clients. In addition, the study concludes that the planning focused on being

the backbone of the PMIS and that all key stakeholders in the pharmaceutical services were involved in the planning. Further, the study concludes that inventory management controlled the cycle of placing orders and planning practices assessed the local requirements for the communal pharmacy services. Moreover, the study concludes that specific information about patients was combined with the product information and that planning was guided by verifiable information sources focusing on the whole pharmacy industry.

The study concludes that generic drugs were always available at the hospital e.g. pain relievers and that the decentralization of procurement to lower levels aimed at increasing coverage and access to services. In addition, the study concludes that the pharmacies made sure that the drugs order covered the entire period until the next delivery and that the storage facilities affected the availability of the drugs. Further the study concludes that consumption-based approach had complete, accurate and properly adjusted data sources and that quantification of the health products at health facilities was aligned with disease burden. Moreover, the study concludes that procurement matched demand by harmonization of medicine quantification with prescribing habits and preferences of consumers.

The study concludes that the increased private medicine dispensers affected the accessibility as the drugs were expensive and few could afford them and that with the low-incomes medicines were accessed more and high in private than in public sectors. In addition, the study concludes that private pharmacies filled the gap in accessing essential medicines in health systems with inadequate public delivery frameworks and that government regulations efforts for private pharmacies failed to result into better affordability. Also, the study concludes that there was significant variation of price and availability of medicines depending on the location of the pharmacy. Moreover, the study concludes that moderately regulatory authorities made sure the

drugs were available and affordable and that in the public pharmacies, there was promotion of differential pricing and generic competition.

The study concludes that staff working in the pharmaceuticals had sufficient skills in the dispensing of medicines/drugs and that there were no chances of mismatching the drugs prescribed. In addition, the study concludes that the pharmaceutical products were arranged in the stores in categories and that the pharmaceutical specialist advised the clients on the dormant or drugs no longer in use and tells them to stop taking them. Also, the study concludes that clients with specific needs were attended by a specific pharmaceutical specialist best qualified in dispensing specific drugs and that the staff at the pharmacies took their time to explain to the clients the procedures and times of medicine administration. Finally, the study concludes that moderately the pharmaceutical centers were available within a five-kilometer radius.

5.4 Study Recommendations

1. There exists the need to promote the planning within the pharmaceutical department in the healthcare facilities across Meru County by County Government and the various healthcare facilities managements should install an electronic system that records all the transactions within it so as to prevent the occurrence of placing the wrong orders and with the system it would be easier to match the needs of the seekers of the pharmaceutical services.

2. In order to promote the availability of the pharmaceutical supplies, the management of the healthcare facilities in Meru County should focus in the management of the inventory as it would be easier to control the stocking in and out. With this input, the basic pharmaceutical services would be available.

3. In order to promote the affordability of the pharmaceutical services, the hospitals management team should heed to the guidelines set by government and the ministry of health in regard to the pricing of the pharmaceutical supplies and this will clients to access the service irrespective of the economic class or status.

4. In order to promote the availability of the pharmaceutical supplies appropriateness the hospital procurement teams together with the Health Management Teams (HMT) should understand the health demands of the community where the facility is located so as to protect them from seeking services from facilities that are far from their locality which implies that the health costs would rise in proportion to the transport expenses incurred.

5.5 Suggestion for Future/Further Research

There are some areas that need to be addressed. A similar study should be done to determine the other factors explained 29% that were not explained; on the accessibility of pharmaceutical services in Meru County. In addition, a similar study can be done on the effectiveness of the traditional herbal drugs in the treatment of diabetes with a focus on the Pokot community. Further, a study should be conducted on the effects of conditioned health grants from the World Bank, USAID or the IMF.

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Appendix I: Research Questionnaire

SECTION A: Demographic Information

1. What is your gender?

    Female ( )   Male ( )

2. What is your age bracket?

    Less than 25 years ( )   26-35 years ( )

    36-45 years   ( )   Above 45 years ( )

3. What is your highest education level?

    Certificate level ( )   Diploma level ( )   Graduate/Degree   ( )

    Postgraduate ( )   Others-specify……..… ( )

4. What is your cadre?

    Medical doctor ( )   Pharmacist ( )   Clinical officer ( )

    Nurse ( )   Pharmaceutical technologist ( )

5. For how long have you worked in your current station?

    Less than 1 year ( )   1-5 years ( )

    6-10 years ( )   Over 10 years ( )

6. For how long have you worked in MOH before?

    Less than 1 year   ( )   1-5 years   ( )

6-10 years   ( )   Over 10 years ( )

7. Which facility level are you currently deployed in?

Hospital ( )   Health center ( )   Dispensary ( )

SECTION B: PLANNING AND ACCESSIBILITY OF PHARMACEUTICAL SERVICES

8. To what extent does planning influence accessibility of pharmaceutical services in the hospital?

Very low extent   ( )   Low extent   ( )

Moderate extent   ( )   Great extent   ( )

Very great extent   ( )

9. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to training.

Statements	1	2	3	4	5
All key stakeholders in the pharmaceutical services are involved in the planning					
Orders/procures medicines frequently					
Planning practices assesses the local requirements for the communal pharmacy services					
Planning is guided by verifiable information sources focusing on the whole pharmacy industry					

Specific information about patients is combined with the product information				
The planning focuses on being the backbone of the PMIS				
Inventory management controls the cycle of placing orders				
Procurement and transportation of pharmaceutical supplies is timely done to meet specific medical needs for the clients				

SECTION C: AVAILABILITY AND ACCESSIBILITY OF PHARMACEUTICAL SERVICES

10. To what extent does availability influence accessibility of pharmaceutical services in the hospital?

   Very low extent   ( )   Low extent   ( )

   Moderate extent   ( )   Great extent   ( )

   Very great extent   ( )

11. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to availability.

Statements	1	2	3	4	5
The generic drugs are always available at the hospital e.g pain relievers					
The pharmacies makes sure that the drugs order covers the entire period until the next delivery					
The storage facilities affects the availability of the drugs					
Procurement matches demand by harmonization of medicine quantification with prescribing habits and preferences of consumers					
Consumption based approach has complete, accurate and properly adjusted data sources					
Quantification of the health products at health facilities is aligned with disease burden					
Decentralization of procurement to lower levels to increase coverage and access to services					

SECTION D: AFFORDABILITY AND ACCESSIBILITY OF PHARMACEUTICAL SERVICES

12. To what extent does affordability influence accessibility of pharmaceutical services in the hospital?

Very low extent   ( )   Low extent   ( )

Moderate extent   ( )   Great extent   ( )

Very great extent   ( )

13. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to affordability.

Statements	1	2	3	4	5
Regulatory authorities makes sure the drugs are available and affordable					
With low-incomes medicines are being accessed more and high in private than in public sectors					
The increased private medicine dispensers affects the accessibility as the drugs as the drugs are expensive and few can afford them					
Private pharmacies bridge the gap in accessing essential medicines in health systems with inadequate public delivery frameworks					

There is significant variation in price and availability of medicines depending on the location of the pharmacy					
In the public pharmacies, there is promotion of differential pricing and generic competition					
Government regulations efforts for private pharmacies seem not resulting into better affordability					

SECTION E: APPROPRIATENESS AND ACCESSIBILITY OF PHARMACEUTICAL SERVICES

14. To what extent does appropriateness influence accessibility of pharmaceutical services in the hospital?

    Very low extent   ( )   Low extent   ( )

    Moderate extent   ( )   Great extent   ( )

    Very great extent   ( )

15. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to appropriateness.

Statements	1	2	3	4	5
The pharmaceutical centers are not far from home					
Staff working in the pharmaceuticals have sufficient skills in the dispensing of medicines/drugs					
There is no chances of mismatching the drugs prescribed					
The staff at the pharmacies take their time to explain to the clients the procedures and times of medicine administration					
The pharmaceutical products are arranged in the stores in categories					
Clients with specific needs are attended by a specific pharmacist best qualified in dispensing specific drugs					
The pharmacists advice the clients on the dormant/drugs no longer in use and tell them to stop taking them as no longer effect on a certain illness.					

SECTION F: ACCESSIBILITY OF PHARMACEUTICAL SERVICES

16. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to accessibility of pharmaceutical services.

Statements	1	2	3	4	5
Increased monthly prescriptions					
Reduced costs for pharmaceutical services					
Increased pharmaceutical services' seekers					
Reduced rate of morbidity					
Strengthened delivery framework					

THANK YOU FOR PARTICIPATING

Appendix II: Research Permit (NACOSTI)

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 879936

Date of Issue: 12/January/2022

RESEARCH LICENSE

This is to Certify that Mr.. FREDRICK MUTAI MBWIRI of Kenya Methodist University, has been licensed to conduct research in Meru on the topic: FACTORS INFLUENCING ACCESS OF PHARMACEUTICAL SERVICES IN MERU COUNTY, KENYA. for the period ending : 12/January/2023.

License No: NACOSTI/P/22/15006

879936

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

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Scan the QR Code using QR scanner application.

Appendix III: Research Authorization Letter

KENYA METHODIST UNIVERSITY
P. O. BOX 267 MERU - 60200, KENYA   FAX: 254-64-30162
TEL: 254-064-30301/31229/30367/31171   EMAIL: serc@kemu.ac.ke

November 22, 2021   KeMU/SERC/HSM/55/2021

Fredrick Mutai Mbwiri
Kenya Methodist University

Dear Fredrick,

SUBJECT: FACTORS INFLUENCING ACCESS OF PHARMACEUTICAL SERVICES IN MERU COUNTY, KENYA.

This is to inform you that Kenya Methodist University Scientific Ethics and Review Committee has reviewed and approved your above research proposal. Your application approval number is KeMU/SERC/HSM/55/2021. The approval period is 22nd November 2021 – 22nd November 2022.

This approval is subject to compliance with the following requirements

I.   Only approved documents including (informed consents, study instruments, MTA) will be used.

II.   All changes including (amendments, deviations, and violations) are submitted for review and approval by Kenya Methodist University Scientific Ethics and Review committee.

III.   Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KeMU SERC within 72 hours of notification.

IV.   Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KeMU SERC within 72 hours.

V. Clearance for export of biological specimens must be obtained from relevant institutions.

VI. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal

VII. Submission of an executive summary report within 90 days upon completion of the study to KeMU SERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

Dr. A. WAMACHI
Chair, SERC

Appendix IV: Plagiarism Report

FACTORS AFFECTING ACCESSIBILITY OF PHARMACEUTICAL SERVICES IN MERU COUNTY, KENYA