# COMPARISON OF PHARMACY PRICES VERSUS NHIF REFERENCE PRICES FOR ANTIPYRETIC, ANTIHYPERTENSIVE AND ANTIDIABETIC MEDICINES ACROSS FOUR REGIONS IN TANZANIA

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**October 2015**

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**By**

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**A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of Master of Science (Pharmaceutical Management) of Muhimbili University of Health and Allied Sciences**

**Muhimbili University of Health and Allied Sciences (MUHAS)**
**October, 2015**

## CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled ***Comparison of Pharmacy Prices versus NHIF reference prices for Antipyretic, Antihypertensive and Antidiabetic Medicines across four regions in Tanzania,*** in fulfilment of the requirements for the Degree of Master of Science (Pharmaceutical Management) of Muhimbili University of Health and Allied Sciences.

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## DECLARATION AND COPYRIGHT

I **Rashid B. Kirua**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature …….**.....** Date……

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## DEDICATION

This work is dedicated to:

My beloved mother, who died due to delayed accessibility to medical care, rest in peace mom.

My beloved father, Bakari Kirua, for laying down a strong foundation for my education.

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## ABSTRACT

**Background**: Availability of essential medicines in the public health facilities is a major problem in developing countries, including Tanzania. As a result, private sector pharmacies and drug shops play an important role as sources of essential medicines for patients. Beneficiaries of the National Health Insurance Fund (NHIF) also utilize these premises as their sources of medicines. However, it is not known how pharmacy prices differ from NHIF reference prices across different regions.

**Objective:** This study aims to compare pharmacy prices and NHIF reference prices for antipyretic, antihypertensive and antidiabetic medicines across four regions in Tanzania.

**Methodology:** This was a cross-sectional study and employed both qualitative and quantitative methods of data collection. It was conducted in four regions of Tanzania, namely; Dar es Salaam, Dodoma, Morogoro and Kilimanjaro. A total of thirty three (33) pharmacies were surveyed. Qualitative data were collected using an interview guide while quantitative data were collected by using structured questionnaire, which was designed to capture the prices of 53 tracer medicines. Interviews were conducted with two NHIF officers who are responsible to set reference prices and other 33 personnel from the pharmacies performing similar roles. Quantitative data were analysed by using Statistical Package for Social Sciences (SPSS) software version 20.

**Results:** The study findings showed that 29 tracer medicines were available in more than 10 pharmacies and hence qualified for price comparisons. NHIF reference prices for 13 of them (4 antipyretics, 6 antihypertensives and 3 antidiabetics), which represents 45%, was lower than mean price at the pharmacies. A Price difference varies across regions; in some NHIF prices were higher than pharmacy prices and vice versa for the similar medicines. Majority of pharmacies (72.7%) set their retail prices by adding a profit margin ranging from 20% to 50% of the purchase prices. As for NHIF, the market retail price and inflation rates are used to determine the reference price for reimbursements. There was some consensus among the dispensers that when NHIF reference prices are lower than the pharmacy prices, then patients are requested to pay for the price difference, otherwise they will not get the prescribed medicines.

**Conclusion**: Pharmacy prices were higher than NHIF reference prices for about half of the antipyretic, antihypertensive and antidiabetic of the essential medicines which were readily available in the accredited premises in the study regions. Therefore, patients have high chances of incurring out-of-pocket expenses as copayments in order to access essential medicines even when they are fully covered with health insurance.

**Recommendation**: Tanzania needs to establish a regulatory body to control prices of medicines in retail premises. NHIF should also review their price annually, involving all stakeholders for the purpose of capturing fluctuation of medicine prices in the market. By considering that NHIF prices are lower than the retail pharmacy prices, patients are more likely to incur co-payments, and this needs further research to establish its implication on medicine accessibility.

## TABLE OF CONTENT

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF ABBREVIATIONS

| | |
|---|---|
| **ACE** | Angiotensin Converting Enzymes |
| **ADDO** | Accredited Drug Dispensing Outlets |
| **BOT** | Bank of Tanzania |
| **CDC** | Centre for Disease Control |
| **CHF** | Community Health Fund |
| **CRM** | Commission for Reimbursement of Medicine |
| **HTA** | Health Technology Assessment |
| **MoHSW** | Ministry of Health and Social Welfare |
| **MSD** | Medical store Department |
| **MUHAS** | Muhimbili University of Health and Allied Sciences |
| **NEMLT** | National Essential Medicine List |
| **NHIF** | National Health Insurance Fund |
| **OOP** | Out of Pocket |
| **SPSS** | Statistical Package for Social Sciences |
| **STG** | Standard Treatment Guideline |
| **TFDA** | Tanzania Food and Drug Authority |
| **WHO** | World Health Organisation |

## DEFINITION OF KEY TERMS

**Reimbursement** is the art of compensating someone for the expense made. The word may also be defined as; a repayment for money that has already been spent, or to pay back money to someone who has spent it for you or lost it because of you

**Out-of-pocket payments** mean any direct outlay by households, including gratuities and in-kind payments. It is a part of private health expenditure.

**Chronic disease** is a long-lasting health condition that can be controlled but not cured. More precisely defined, it is a disease that persists for a long time, usually three months or more.

**Health insurance** is the means of covering against the risk of incurring medical expenses among individuals, especially by pulling resources together in order to prevent catastrophic expenditures among the insured members.

**Price is** the monetary value that is acceptable for the exchange of the goods and services (goods).

**Pricing** is the process of determining what a company will receive in exchange for its product or service. The word also means the method adopted by a firm to set its selling price.

**Reference price** is a means of limiting expenditure on the reimbursement of medicine by making use of existence of equivalent medicine on the national market and setting a reimbursement tariff for groups of medicine which are considered to be interchangeable

**Accredited healthcare provider** is a health facility that has been approved by relevant authorities to provide healthcare services on behalf of that authority after meeting certain conditions.

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background

Price is a monetary value of a product, and for new innovative pharmaceutical products, it is largely influenced by the investment in Research and Development (R&D) [1]. It is for this reason that pharmaceutical industries are granted a 20 year patent period to guarantee them a market monopoly to ensure that they recover their R&D costs [2, 3]. As a consequence, new medicines are usually sold at very high prices, which often hinder their availability and access in developing countries. Pharmaceutical markets are also characterized by price inelasticity even for generic medicines; hence, most countries have systems in place to control the prices of medicines [4].

Pharmaceutical expenditures are increasing worldwide [5], hence; many governments especially in developed countries have designed and implemented cost-containing measures to prevent further hiking of healthcare costs. Some of the strategies being utilized include but not limited to the use of standardized treatment guidelines, price regulations and use of generics. Reference pricing is also one of the key strategies commonly used by health insurance organizations for reimbursement purposes. Generally, pricing of the medicine involves many key players, including pharmaceutical industry, government agencies, the private health care system and pharmacists [6].

### 1.2 Financial Expenditures in Chronic Conditions

Per capita health expenditures increase dramatically with the number of chronic conditions affecting the patient [7, 8]. Direct medical care expenditures for people with chronic conditions accounted for approximately 83 % of the health care budget in US in 2001, a per person average was five times higher than those without chronic conditions [9]. Some chronic conditions, especially diabetes, may not disable a person instantly, but may lead to severe disabling effects in the long term if not treated early and effectively. As the number of chronic conditions increases, the complexity of care to a patient encounters increases [9], causing an increase in medicine expenditure. Non-communicable diseases or chronic health problems are increasing in developing countries, hence; financial expenditures on medicines to treat these conditions are also expected to increase.

### 1.3 The Healthcare System in Tanzania

In Tanzania, the health system is organized in a pyramidal structure in which majority of services are delivered by the lower level facilities. At the base is the community level where health posts and Accredited Drug Dispensing Outlets (ADDO shops) offer limited health services. The village level is served by dispensaries and health centres, which form the backbone of the primary health care services in the country [10]. The district level is designated to have a district hospital that serves larger population, compared to the dispensaries and health centres, although in reality other districts have population as low as 1,000,000 that is expected to be served by district hospital [10]. At this level, there are also private owned pharmacies which operate in tandem with hospitals in delivering health care needs. These private pharmacies are expected to serve a population that fails to get pharmaceutical services from the public and private hospitals.

Consultant's hospitals including  The National and specializes hospitals such as Ocean road and Kibong'oto hospitals used as referral Hospitals which offers specialized health care services that are not offered in other consultant hospitals that are found at the zonal level where these hospitals serve as ultimate referral centres countrywide following treatment failures from lower referral levels [11].

### 1.4 The Pharmaceutical Supply System

The pharmaceutical sector in Tanzania is guided by the National drug policy of 1991 which was reviewed in 2007, together with the Standard Treatment Guideline (STG) and the National Essential Medicine List (NEMLT) of 2013 [12]. Medicines, medical equipment and other medical supplies for public health facilities are largely supplied by the Medical Store Department (MSD). Tanzania Food and Drug Authority (TFDA) is a legal institution which approves safety, efficacy and the quality of medicine that circulate in the Tanzanian market. Manufacturers or importers of pharmaceuticals who sale to pharmaceuticals wholesalers; MSD or directly to large private hospitals; specialized hospitals; and some private pharmacies must be registered by TFDA [13]. There are local pharmaceutical industries like Shelly and Keko pharmaceuticals which supply the private pharmaceutical sector as well as the public sector. The private sector is largely furnished by the private pharmaceutical sector with an exception of approved few items which are serviced by MSD.

Public health facilities also get medicines and other medical supplies through vertical programmes which are already paid for by bilateral and multilateral development partners.

### 1.5 Tanzania National Health Insurance Fund

In 1999, Tanzania established the National Health Insurance Fund (NHIF). Its operations began in 1st July 2001. The NHIF was established in order to improve accessibility to quality of health services by introducing competition among the health care providers from public, faith-based, Non Government Organizations and private health providers. According to the NHIF Act , employers and employees in the public sector are obliged to register themselves and contribute to the fund monthly [14]. The fund is also aimed to reduce the financing gap by supplementing the Government budgetary allocation to the health sector by contributions from formal sector employees. After the amendments of the NHIF Act (Act No. 8 of 1999) which amended on 2002, extension of membership coverage has been made possible which extended the coverage to include all public servants instead of the previous Central Government employees. As the scope of membership and beneficiaries increases, the scheme expected to assume its national role as the major universal social health insurance provider [14].

The membership size of the NHIF has increased from 373,326 in June 2010 to 586,369 in March 2014, an increase equivalent to 57.0% [15]. The beneficiaries have been increasing gradually from 1,971,251 in June 2010 to 3,236,757 in March 2014, equivalent to an increase of 64.2%. NHIF beneficiaries include that contributing member, spouse and up to four dependants who are legally identified [14]. Under the NHIF context, dependants include biological children or legally adopted children and parents. The Fund is also managing Community Health Fund (CHF) with a total of 4,010844 beneficiaries thus bringing the total size of beneficiaries for NHIF and CHF to 7,247,601 by the end of March 2014 equivalent to 16.6% of total population [16]. NHIF is currently providing a wide range of benefits packages which include pharmaceutical services. Because of this rapid increase of the beneficiaries and low availability of medicines in healthcare facilities, the National Health Insurance Fund decided to accredit private health facilities in an attempt to increase access to health care for all their beneficiaries. These accredited health care facilities under the Fund include private pharmacies and drug shops to provide medicines to its members. Up to the end of

March 2014, NHIF had already accredited 5,991 health facilities countrywide, of which 174 (2.9%) being private pharmacies and 349 being ADDO shops (5.83%) in Tanzania Mainland [17].

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

### 2.1 Expenditure on Essential Medicine in developing countries

Access to affordable medicines is a major challenge facing governments in developing countries, including Tanzania. Poor families depend on public facilities for affordable healthcare services, but often essential medicines are out-of-stock hence forcing them to incur out-of-pocket expenditures in private pharmacies and drug shops. Payments for essential medicines have been estimated to consume the largest proportion of out-of-pocket health care expenditures in developing countries [18]. Poor households devote 60% to 90% of their health care expenditures to medicines, which also consume between 25% to 65% of total public and private spending on health [19].

According to the World Health Report of 2000, one of the fundamental functions of a health system is to put in place a health financing system that protects the population against the financial risks associated with ill health [20]. Such risks can be health expenditure from medical expenses defined as out of pocket spending for health care that exceeds a certain proportion of a household's income with the consequence that households suffer the burden of disease [21]. The out of pocket price is high especially when it comes to prescription drugs. Before investing in a health care plan, it is very useful to examine the out of pocket prescription costs, as they may be very low or very high. The high out of-pocket costs may correlate with lowered prescription adherence [22]. This may cause some of the people in a group fails to get the required services due to lack of financial sources to pay, especially the vulnerable populations.

Access to health care varies across countries, groups, and individuals, largely influenced by social and economic conditions as well as the health policies in place. Some countries have different policies and plans in relation to the personal and population-based health care goals within their societies, established to meet the health needs of target populations. In some of the countries, health care planning distributed among market participants, whereas in others, planning occurs more centrally among governments or other coordinating bodies [23].

To address this problem, many countries decided to establish health insurance schemes to increase access to health care including affordable essential medicines. The National health

insurance (statutory health insurance) is one of the programs which enforced by the law. It insures that the costs of health care for the entire population are instituted as a program of healthcare reform. It may be administered by the public sector, the private sector, or a combination of both.

The national healthcare insurance programs differ both in terms of how the money is collected and also how the services are provided [24]. In countries such as Canada, payment is made by the government directly from tax revenue and the collection is administered by the government. In France, a similar system of compulsory contributions is made, but the collection is administered by non-profit organizations set up for the purpose. In the United States, this is known as single-payer health care. The provision of services may be through either publicly or privately owned health care providers [25].

Tanzanian health care system is financed by various sources, including donor funding, out of pocket (OOP) payments, and pre-payment schemes [23]. Sometimes, the patients are required to make OOP payments at public health facilities. This has been the reason behind the introduction of a policy on exemptions and waivers in order to protect vulnerable groups from paying for health care. This is evidenced by the introduction of the National Health Insurance Fund (NHIF).

### 2.2 Pricing of medicines

There are different strategies which are used to set selling prices of medicines. Among these include adding charges associated with the dispensing of such medicines and the transport and storages charges to the buying price of the product from the manufacturer. All these determine the selling price of the medicine. The prices charged per item in different facilities vary for the same products. Before setting the price, the reasons for the price disparities must be understood. The final price paid for a medicine is the sum of the manufacturers' price and many different additional charges [26]. In some cases, the manufacturers' price is the major determinant of the final price, whereas in others these additional charges may be the major factor determining the final charge [27].

Majority of countries reimburse medicines used to manage life threatening conditions together with those medicines that are not in the health programs sponsored by different organizations. The medicines are categorized or classified into groups according to their therapeutic classification; each group is reimbursed with different percentage. In Portugal

and Belgium, reimbursement is through the classification of the medicine, and each class has its percentage in terms of reimbursement that the higher potency in terms of needed of such drug will determine which group to be assigned and usually Class A has higher percentage in reimbursement than class B [28].

Literature reveals that in some countries, the medicines that needed by the patient may exceed the reimbursement amount, but the amount exceeding must be paid by the patient [29]. The system of paying the exceeded amount will allow the patient to choose which brand to use. In Netherlands, those products which are therapeutically interchangeable, a reference price system exists and, within a group of comparable products a reimbursement limit is calculated. In contrast to the Medicinal Products Prices Act of Netherland, the price of a pharmaceutical product can exceed this reimbursement limit. The difference has to be paid by the patient. In reality, most products are priced above or below this limit, so although theoretically possible co-payment is almost non-existing. Nearly 96% of prescriptions are totally reimbursed [30].

Pharmaceutical products are prescribed to prevent illness, treat disease, and maintain health, so that one's quality of life is enhanced [31]. These medicine need to be used over a long period as the chronic disease needs prolong use of such medicines. The price of the medicine keeps on increasing regularly that may cause low income patients not afford to buy. Some of the countries control the price of medicine and hence the cost of the healthcare slow down. The Japanese government has implemented a price control scheme on pharmaceutical drugs, in order to prevent a rapid increase in drug disbursement and cost of healthcare. Past studies suggest that government price control negatively influences pharmaceutical research and development (R&D) incentives [32 - 34].

Different literature reveals that chronic diseases are a burden that may destroy the efforts that have been invested in reducing or preventing the infectious disease if political actions will not be coordinated. Globally, around 58 million people would die, and that 35 million of these deaths would be from chronic diseases [35 - 36]. By 2015, 36 million lives could have been saved worldwide if deaths from chronic diseases, such as heart disease, stroke and cancer could be reduced by 2% annually, and a public health approach for reducing the burden of chronic diseases in low and middle-income countries described [37].

Chronic diseases tend to slow down the economic growth of the individuals and the society in general. In a study by Barceló et al on the cost of diabetes in Latin America and the Caribbean, prevalence estimates of diabetes from 2000 were used to calculate direct and indirect costs of diabetes mellitus. In this study, it was concluded that diabetes imposed a high economic burden on individuals and society in all of the countries [38].

In 2000, Myhr compared the prices and availability of a selected number of essential medicines in different sectors of the health care system in four East African countries, Ethiopia, Kenya, Uganda and the United Republic of Tanzania [39]. The prices of different medicine were collected from rural and urban areas of the selected countries. In this study two counties (Ethiopia and the United Republic of Tanzania) had low or non availability of many of the observed medicines; the lowest availability was generally found in the public facilities [40]. Generic medicines were observed to be significantly cheaper than the originator medicines, and more generics were available. Each medicine had its own price, which caused large spread in prices between the cheapest generic and the originator brand.

Studies have shown that medicine in private facilities is highly available but with high price compared to the public facilities with the same products [41, 42]. Urban private health facilities offer a wider choice for the needs of diabetic patients but this advantage is compromised by higher prices as compared to public facilities. About 26% and 10% of patients in public and private facilities respectively are unable to afford anti-diabetic drugs.

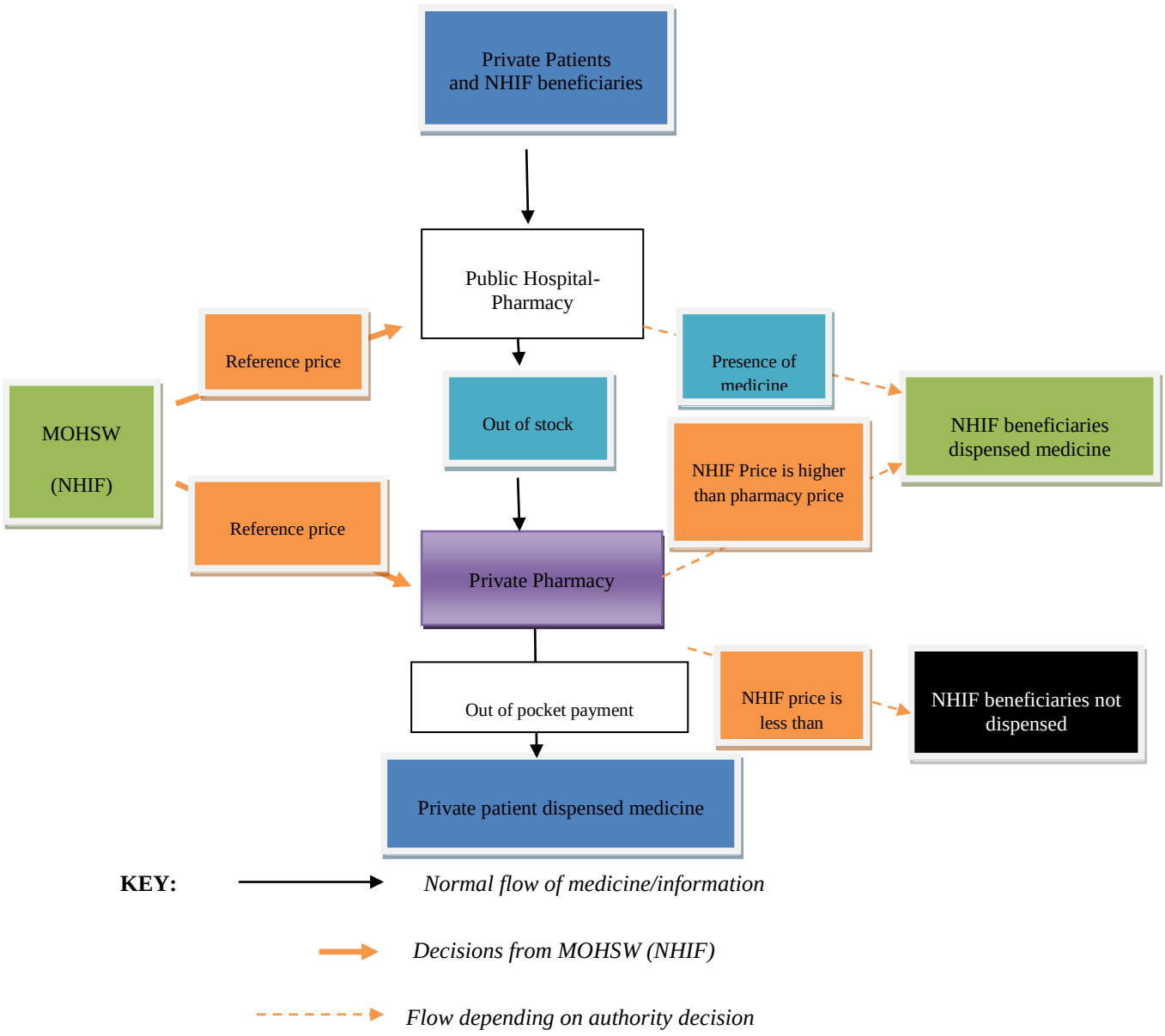
### 2.3 Problem Statement

Chronic disease require prolonged period of treatment, which can place a significant demand on health care services [43]. In Tanzania, about 67% of essential medicines have been estimated to be available in public healthcare facilities, which provide services to the majority of people [44]. Therefore, private for-profit premises have become important sources of essential medicines for patients because of frequent stock-outs in public facilities. Unfortunately, Tanzania does not have a system to regulate prices of medicines; and it is not known how retail prices are set. The lack of price regulation system could mean prices vary from one premise to another and across different regions, forcing patients to incur unnecessary large amount of co-payments for those covered by health insurances, especially for medicines used to treat chronic diseases.

## 2.4 Conceptual Framework

In any business, pricing of the goods is important to be considered, as one of the main factors that determine the buying and selling of goods or services. In this case, the service that patient need from the facility will depend on the ability of that patient to pay for that service. The flow of goods and information are usually controlled by different authorities.

Those patients who are NHIF beneficiaries access medical service on permission of the NHIF (as authority), depending on the criteria set by NHIF. The health provider delivers the service and is reimbursed by NHIF if adhered to regulations set by NHIF. NHIF sets the price (Reference Price) of the different services that the health provider has to consider during the service delivery. The criteria considered during the price setting, may affect accessibility of the service to the patient. So, setting of the price may result into patient accessibility of the medicine/service or otherwise. The difference in price setting between NHIF and the service provider may cause the patient not to get the required service or get the service which is not of acceptable quality. Also, knowing the type or brand of the medicine used frequently by their beneficiaries, NHIF may negotiate for the quality and price with manufacturers hence increase accessibility and quality of the service rendered to the patient. These price determinants and reimbursement in regard to NHIF are depicted out by Figure below.




**The Conceptual Framework showing consequences of using NHIF medicine price during Service Delivery at the private pharmacy.**

**Source:** Researcher (2015)

## 2.5 Objectives

### 2.5.1 Broad objective

To compare pharmacy prices and NHIF reference prices for antipyretic, antihypertensive and ant diabetic medicines across four regions in Tanzania.

### 2.5.2 Specific objectives

i. To explore how reference prices are set by the National Health Insurance Fund.
ii. To explore how prices are calculated by private pharmacies.
iii. To compare medicine prices between accredited pharmacies and NHIFs reference prices and their variations across different regions.
iv. To identify the challenges of using NHIF reference price in private pharmacies

## 2.6 Research Questions

i. How does NHIF set the reference price?
ii. How do private pharmacies set their prices?
iii. What is the difference of medicine prices between accredited pharmacies and NHIF reference prices and how do they differ across different regions?
iv. What are the challenges of using NHIF reference prices in private pharmacies?

## 2.7 Rationale of the Study

The findings of this study will be relevant for NHIF particularly in informing them how to review their pricing strategies, including the logical time of reviewing so that it matches with the current price in the community pharmacy. Moreover, the findings will sensitize NHIF to ensure that the prescribed medicine is dispensed to the patient. This will help reducing the adverse impacts such as patient missing some medicine because of the stock outs. The study will generate empirical knowledge on how to ensure quality of the service rendered by NHIF to their client. The results will enable NHIF to know the brand their client use in specific conditions which will make it easy to control the quality of such products.

The findings of the study will also be relevant for pointing the direction of change that NHIF can consider when setting price, and delivery of the service. Again the study may be a literature source for other researchers conducting academic researches on topics similar to this.

# CHAPTER THREE

## 3.0 METHODOLOGY

### 3.1 Study Design

The study was descriptive cross-sectional, which employed mainly qualitative method of data generation and small portion of the quantitative method of research. An interview guide was used as an instrument of data collection. Data were collected from those personnel involved in the price setting in both NHIF and the accredited health facilities. The data entry form was used to collect quantitative data on the price of the selected medicines from sampled private pharmacies.

### 3.2 Study Area

The study was conducted in four regions of Tanzania, Dar es Salaam, Morogoro, Dodoma and Kilimanjaro.

Dar es Salaam was selected on the ground that it is the main business city in Tanzania. It has a total population of 4.3 million people (based on the 2012 national census). Its area is about 1,393 $km^2$ (538 sq mi). Administratively, the region is divided into three Municipals: Kinondoni, Ilala, and Temeke. Among the 470 retail private pharmacies in Dar es Salaam, 57 pharmacies have been accredited to give service to NHIF beneficiaries, and only 20 pharmacies were surveyed during this study.

Morogoro Region located about 192 km from Dar es Salaam. It has a total population of 2.2 million people (based on the 2012 national census). The region covers about 70,624 $km^2$ (27,268 sq mi). Administratively, Morogoro is divided into six districts: Gairo Kilombero, Kilosa, Morogoro, Mvomero and Ulanga. Morogoro had 20 retail private pharmacies, and only 4 out of 6 accredited pharmacies were surveyed.

Dodoma region is the capital city of Tanzania. Administratively, the region is divided into seven districts, namely: Mpwapwa, Kongwa, Kondoa , Dodoma, Chemba, Chamwino and Bahi. According to the 2012 national census, the region had a total population of 2.1million people. The region has an area of about 41,311 $km^2$ (15,950 sq mi). Dodoma is the centre of educational activity with two universities, namely: The University of Dodoma (established in 2007) and St. John's University of Tanzania (established in 2008).

Dodoma is connected by trunk road to Dar es Salaam about 451 km via Coast Region. The central railway of Tanzania from Dar es Salaam passes through the city of Dodoma, which is also served by Dodoma Airport. Dodoma has about 23 retail private pharmacies. Five pharmacies out of the 9 accredited were surveyed during the study.

Kilimanjaro Region is one of 30 administrative regions in Tanzania. It has a total area of about 13,250 $km^2$ (5,120 sq mi) and population of 1.6 million people basing on 2012 national census. The region is located about 566 km from Dar es Salaam. The region is the home to a portion of Kilimanjaro National Park. It is bordered to the North and East by Kenya. Administratively, the region is divided into seven districts, which are: Hai, Moshi Municipal, Moshi District, Rombo, Siha District, Mwanga District and Same District. Kilimanjaro had about 23 retail private pharmacies, out of which, four pharmacies out of 6 accredited pharmacies were surveyed during the study.

### 3.3 Study Population

The study population are all accredited pharmacies found in the four regions (Dar es Salaam, Morogoro, Dodoma and Kilimanjaro) where sample of this study was taken.

### 3.4 Study Participants

This study involved a total of thirty five (35) participants. Two participants were from NHIF head office involved in the process of setting the reference price. Thirty three (33) participants were drawn from different pharmacies within the study population (sample) which set the price and dispense medicine at their pharmacies. One patient who was coincidently met during the interview in one of the pharmacies was also interviewed but did not include in the study.

### 3.5 Sampling and Sample Size

A total of 33 private pharmacies were selected purposively from the list of the Accredited private pharmacies in four regions for the in- depth interview and collection of price for the selected medicine. The list of accredited pharmacies which include hospitals and pharmacies for each region were obtained from NHIF head office. Three Regions were selected basing on its variation in distance from the Dar es Salaam, where most of the pharmaceutical wholesalers and NHIF head office is located. Each region had different number of pharmacies that had been accredited by NHIF to give service to their beneficiaries that

makes the number of pharmacies selected for the data collection to vary from one region to another.

### 3.6 Sampling Procedure

Purposeful sampling technique was used to select facilities and participants of the study within the area of study. Purposeful sampling seeks information-rich cases which can be studied in depth [45]. Accredited private pharmacies located near Regional or District Hospitals within the four regions (Dar es Salaam, Morogoro, Dodoma and Kilimanjaro) were surveyed because of the highest number of patients from hospitals who frequently experience situations in which they need to access prescribed medicines which are out of stocks**.**

Also, a survey was conducted in the accredited private pharmacies which were not near the hospitals but save a lot of patients, because of, either their location, or tendency of having a reasonable number of stocked products, or being the urgent suppliers of products that need approval of the NHIF office before they are issued.

#### 3.6.1 Inclusion criteria

i. Personnel who was working in the selected facilities and responsible for either setting price or dispensing of medicine and consented to participate in the research.

ii. The price of medicine that found in ten or more pharmacies was also included

#### 3.6.2 Exclusion criteria

i. Personnel who were working in the selected facilities but they are not responsible in setting the price or dispense medicine.

ii. Those Personnel who did not consent to participate in the research.

iii. The price of medicine that found in less than ten pharmacies was also excluded.

### 3.7 Data Collection, Management and Analysis

In-depth interviews and medicine price collection were the main methods of data collection after a pilot study which was done at Kibaha District Council. The data collections were carried out between February and April 2015, while the revisions of the NHIF price and reimbursement list were ongoing.

Qualitative data were collected using the interview guide (Appendix Ia & Ib**).** An interview guides were used to administer in-depth interviews to total of thirty five (35) personnel involved in the price setting in both NHIF and the accredited health facilities, whereby two of them were from NHIF and thirty three from the private facilities. The price of 53 selected medicines was collected from 33 private pharmacies by using structured questionnaires and during analysis; the price of medicine that found in more than ten premises was entered into SPSS. The selection of medicine was based on three criteria;

i. The most prescribed medicine in the treatment of most leading cause of death and disability worldwide [46].

ii. The selected medicines were listed in the Standard Treatment Guideline as Essential medicine, and recommended for treatment of some chronic conditions [47].

iii. They were also in the list of medicines that have been approved by NHIF for reimbursement (Appendix III).

The interview guide allows probing and exploration within predetermined inquiry areas [48]. The interviews were recorded and notes were taken during the interviewing time. After each interview, the audio data were transcribed into text and translated immediately to obtain the meaningful information.

The interviews were recorded with permission from the informants. The digital voice recorder and their transcripts were kept confidentially. Translation of the data collected was done within 48 hours after data collection to uncover the information required. Data analysis was done manually by organizing data, breaking them into manageable units, synthesizing them, searching for patterns, discovering what is important and what is to be learned [49]. Data managed by ensuring that filled questionnaires and interview guides were locked by the investigator in a safe place. Questionnaires were checked for completeness before entered into SPSS for analysis.

The price of medicines collected were analysed by using Statistical Package for Social Sciences (SPSS Version 20). The price was combined by calculating the average price of the individual medicine. The twenty four (24) selected medicines which were found in less than ten pharmacies ($N<10$) were not included in the analysis. Prices differences for 29 medicines were analysed with SPSS using students t-test for paired samples. A p value of $<0.05$ was used as a level of significance.

### 3.8 Study Variables

#### 3.8.1 Independent variables

i. Factors determining price setting of medicines: Use of any specific guidelines in setting price and source of supplies.

#### 3.8.2 Dependent variables

i. Price of Medicine: The prices of medicines depends on other variables like purchase price, tax, distance from the source and other running costs like salaries and electricity.

ii. Stock status: Presence of the medicine in a facility.

### 3.9 Limitations of the Study

This study involved thirty three accredited pharmacies selected from four regions of Tanzania namely; Dar es Salaam, Morogoro, Dodoma and Kilimanjaro. Selection of the pharmacies considered its distance from the hospitals or its potential in supply of the products that needs approval from NHIF before supply of product. The findings of this survey may show larger variation as accessibility of medicines to other distant remaining regions where there are few or no private pharmacies is difficult, and among them few have been accredited for the providing service to NHIF beneficiaries. This could be more challenging compared to these four regions. This was overcome by selecting regions which are distant from business centre, Dar es Salaam which had larger number of accredited pharmacies (57pharmacies out of 187pharmacies) and can be visited in less than one hour and can provide a reasonable number of representations to others. Some participants tried to keep secrets for some information by reporting wrong data compared to the reality of the situations. The information of price which seems to be wrongly reported, that do not reflect the reality, it was not recorded.

### 3.10 Ethical Considerations

The ethical clearance form allowing conducting the study was sought from The Muhimbili University of Health and Allied Sciences Ethical Review Board.

Permission to conduct the study in the selected areas was sought from the Director General, NHIF, and Pharmacy Council which regulates pharmacy business in Tanzania.

The study participants were informed of the purposes of the study. They were also requested if they would be willing to participate in the study. The written consent was obtained from the study participants. No names of study participants or pharmacies were recorded in the questionnaires. Only the code numbers were assigned to each questionnaire. The selected study participants signed on an informed written consent. The consent form addressed the purpose of the study and their willingness to participate in the study. It was also made clear that, acceptance or refusal to participate in the study had no consequences and that they were free to withdraw from the study any time. They were also free not to answer any question they did not wish to. They were also assured of the confidentiality about the information they provided. The benefits and risks of the participants were stated clearly in the information sheet. All participants were informed that, there would be no direct financial gain obtained by participating in this study, but they will benefit following the improvement of accessibility to medicine from pharmacies. They were given the contacts of the principal investigator as well as the contacts of the Director for Research and Publication Committee at MUHAS.

# CHAPTER FOUR

## 4.0 RESULTS

### 4.1 Description of Study Participants

A total of thirty five (35) in-depth interviews were conducted, two with NHIF officials and thirty three (33) with participants working in different pharmacies in four regions of Tanzania mainland. The study established that eighty percent (80%) of the participants had educational backgrounds in health sciences. About sixty three percent (63%) of the respondents were found to have working experience ranging between one to ten years as shown in Table 1 below.

**Table 1: Demographic information (n=35)**

| **Characteristics** | **Frequency & Percentage** |
|---|---|
| **Qualifications** | |
| Medical doctor | 1 (2.8%) |
| Pharmaceutical Personnel | 15 (42.8% ) |
| Nurses | 12 (34.2%) |
| Non health professionals | 7 (20% ) |
| **Positions** | |
| General Manager | 4 (11.4%) |
| Supervisor | 1 (2.8%) |
| Manager | 6 (17.1%) |
| Owner | 14 (40.0%) |
| Dispenser | 10 (28.6%) |
| **Working experience (years):** | |
| 1 – 10 | 22 (62.9%) |
| 11 – 20 | 10 (28.6%) |
| Above 20 | 3 (8.5%) |

### 4.2 Pricing of medicines

Pricing of a selected list of antipyretic, antihypertensive and antidiabetic medicines was assessed from the perspective of the NHIF. The insured patients are served by private community pharmacies accredited by NHIF mandated to set the reference prices. Furthermore, the section explores how the reimbursement list is formulated.

### 4.2.1 National Health Insurance Fund

NHIF sets reference prices for individual medicine by considering the prevailing medicine prices in the private pharmacies, which they collect through routine market surveys. The reimbursed amount is considered as reference for service delivery to the client, that control either the quantity or cost of the service provided. In calculating the reference prices for relatively more expensive medicines, they use the MSD Price Catalogue, which does not include marginal profit in medicine prices. From the prices quoted in the MSD Price Catalogue, NHIF adds a 30% profit margin to calculate the reference prices.

Reference price was set by conducting routine survey on private pharmacies whereby market unit price of the medicine were collected. Addition of the inflation rate at that particular time was done and then considered as reference price. NHIF use combination of the market retail price plus inflation rate from Bank of Tanzania at a particular time in order to get the reference price, as narrated by one of the NHIF officials:

*"Actually, NHIF collects the market retail price directly from the retail pharmacies, which is simple compared to that of the wholesale price. Then we add inflation rate at that particular time, and used as reference price to private pharmacies" (*Key informant no. 2*)*

### 4.2.2 Development of Reimbursement List

The study found that NHIF use the National Essential Medicine List (NEML) as a reference document to develop their reimbursement list. The process of developing the reimbursement list passes through different stages, as described below:

Firstly, the Technical Department proposes the list of the medicine based on the NEML. Most often, they consolidate their formulary by adding or deleting some medicines listed on the NEML. Usually, any medicine which is not in the list is not prescribed, and all expensive medicines need special control by being approved by NHIF before issued to the beneficiaries.

Secondly, the proposed draft of medicine list is submitted to the management which may approve it after discussing in their meetings. After approval, they request market surveys in order to know the market price of those medicines.

Thirdly, the NHIF Board members from different authorities including Chief Medical officer from Ministry of Health and Social Welfare, member from Ministry of Finance and Economic affairs, and member from Attorney General Office reviews the list of medicine and proposed reference prices. The Board may approve the reimbursement list of medicines or may request that some amendments be made. One informant was quoted saying:

"*After discussion in the Board meeting and reaching an agreement on the type and price of medicines as proposed by the management, the reimbursement list is approved and authorized for use"* (Informant no. 2)

### 4.2.3 Review Time for Service and Price List

It was stated that since the market is not stable, the reimbursement list is supposed to be annually reviewed. In the last three years, it has not been revised. One key informant said:

*'The reimbursement list and the benefit package are supposed to be reviewed after every three years based on the actual recommendations i.e. sustainability of the fund may determine additional or removal of a certain kind of benefit. The last review was done in 2012, three years ago"* (Informant no. 1)

During the time of review NHIF relies more on the decisions made by Regulatory Authorities, TFDA. NHIF considers affordability of the product. The implementation aspect remains a responsibility of Regulatory Authorities. TFDA and distributors are only stakeholders that are involved during the review process. Patients and manufacturers are not involved, as narrated by another key informant**:**

**"***If the Ministry of Health and Social Welfare has already reviewed, then we do not have any other alternative. We look for the cheap product rather than the efficacy. For example, Most of the Literatures which compare Losartan and Irbesartan, recommended for Losartan. Therapeutically, there is no change except affordability*." (Informant no. 2)

### 4.2.4 Pricing in Accredited Private Pharmacies

All the informants from the visited premises said that they calculate the prices of medicines by considering purchasing price. Then, they add a certain profit margin on it depending on the operational costs of the pharmacy business. The profit margin is expressed in percentage,

varying from one pharmacy to another. This is the main source of price differences for some medicines between pharmacies and regions as shall be seen later in this dissertation.

In four (4) out of thirty three (33) visited premises, informants said they did not have specific profit margin to add on the purchasing price. Some of them reported to have stayed for a period of three months without price change because the changes in price during purchasing within three months was small that it could not bring reasonable changes in price determination as narrated by the following informant:

"*Since the beginning, all the medicine contained in the shelf had its prices. Small variations on the purchasing price are not applied in our shop. This is due to the fact that sometimes price may be low or higher than the previous one.*" (Informant 1)

Another participant from a different premise was quoted saying:

*"When buying the medicine like candistat at 650/-, if multiplied by two, the total price will be 1300/-.To avoid disturbances related to change to be returned to customer, we decided to sell at 1500/-. Likewise, the type of medicine supposed to be sold at 2100/- then sold at 2000/-* (informant 11)

In 24 (72.7%) premises out of the 33 visited premises, the price for medicine are set by adding a profit margin ranging from 20% to 50% of the purchasing prices. The profit margin also takes into account perspectives on the value of the medicine in the market, including country it was manufactured. The medicines used to manage priority diseases such as malaria are considered fast moving, hence commanding small profit margins compared to slow moving medicines. This was narrated by one participant as follows:

*"The market price depends on the market competitiveness. The medicines which treat malaria differ from those which are slow moving. Usually, 20 to 50% are added for fast moving and slow moving, respectively"* (Informant 4)

Another participant was quoted saying:

"*Most of the medicine manufactured locally in Tanzania and those imported from India are added 35%. Those from UK and the branded are added 40%, before it was 30% for Tanzanian and Indian products. Since last year, we started adding 35%."* (Informant 6)

Another informant narrated that:

"*There are medicines which everyone is selling at the same price. These do not change the price margin too much. In that case we check purchasing price and add 50% or sometimes 100% depending on the product"* (Informant 22).

### 4.3 Comparison of Pharmacy Prices versus NHIF Reference Prices

Only 29 out of the 53 selected tracer medicines were available in more than 10 accredited pharmacies in the study regions. The mean price of the surveyed medicines in accredited community pharmacies were compared with the reference prices set by NHIF as this determines the expenditures incurred by the NHIF beneficiaries in the form of co-payments. The surveyed tracer medicine was classified into three classes, antipyretics, antihypertensive and anti diabetics. The price variations were further disaggregated across the four study regions, namely; Dar es Salaam, Morogoro, Dodoma and Kilimanjaro.

#### 4.3.1 Antipyretic medicines

Table 2 below shows how prices for antipyretics differ between NHIF and private pharmacies across the study regions. For Diclofenac 100mg, prices in the pharmacies were higher than NHIF references in Dodoma and Morogoro regions but lower in Dar es Salaam and Kilimanjaro.

**Table 2: Variation of price (in Tsh.) of antipyretic medicines by region**

| Region | Diclofenac 50 mg | Diclofenac 100mg | Ibuprofen 200mg | Indomethacin 25mg | Ketoprofen 50mg | Ketotifen 1mg | Mefenamic acid 250 mg | Tramadol 50mg | Paracetamol 500mg |
|---|---|---|---|---|---|---|---|---|---|
| D'salaam | 55.00 | 157.06 | 195.56 | 53.18 | 337.50 | 250.00 | 190.00 | 213.16 | 30.38 |
| Morogoro | 55.00 | 250.00 | 42.75 | 44.00 | 400.00 | 250.00 | 116.67 | 268.00 | 26.25 |
| Dodoma | 62.50 | 225.00 | 66.67 | 43.33 | 400.00 | 160.00 | 100.00 | 166.67 | 43.75 |
| K'njaro | 56.25 | 150.00 | 50.00 | 42.50 | 250.00 | 212.50 | 116.67 | 218.75 | 22.50 |
| Mean price | 57.19 | 195.51 | 88.74 | 45.75 | 346.88 | 218.13 | 130.83 | 216.64 | 30.72 |
| NHIF price | 60.00 | 200.00 | 20.00 | 25.00 | 200.00 | 260.00 | 195.00 | 390.00 | 15.00 |
| **%Difference** | (4.92) | (2.29) | 77.46 | 45.36 | 42.34 | (19.20) | (49.04) | (80.02) | 51.17 |

Mean Pharmacy prices of ibuprofen, indomethacin, ketoprofen, and paracetamol were higher than the NHIF reference prices. However, NHIF reference prices for tramadol, mefenamic acid and ketotifen were higher than the mean prices in private pharmacies

(Figure 1 below). The difference was statistically significant ($p < 0.05$) for indomethacin, ketoprofen, paracetamol and tramadol (Appendix v).

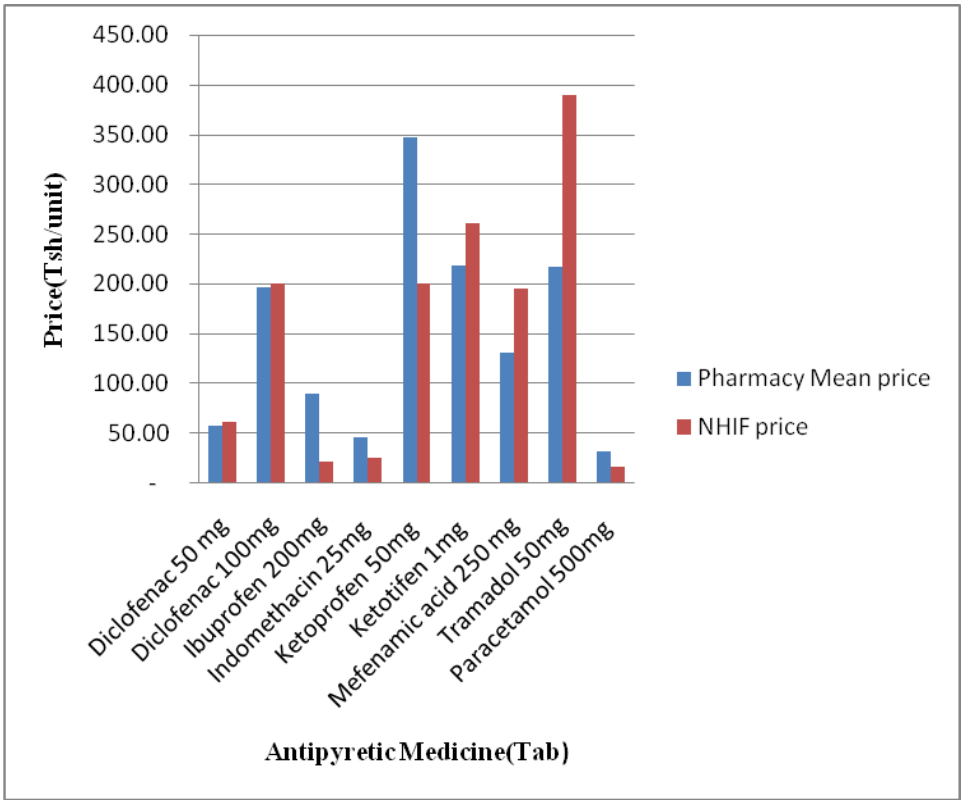



**Figure 1: Price variation for antipyretic medicines**

### 4.3.2 Antihypertensive medicines

NHIF prices were consistently higher than mean pharmacy prices across the study regions for atovarstatin 10mg and atovarstatin 20mg. However. For atovartstain 20mg, mean prices in Kilimanjaro and Morogoro region were lower than the mean price of the private pharmacies. For enalapril, furosemide  amlodipine, , and methyldopa, NHIF prices were consistently lower than pharmacy prices across the study regions although there were variations among them. Atenolol and bendrofluazide showed mixed picture.

**Table 3: Price variation for antihypertensive across study regions (Tshs/unit)**

| S/No | Medicine(antihypertensives) | D'salaam | Dodoma | Morogoro | K'njaro | Pharmacy mean price | NHIF Price | %age Differ |
|---|---|---|---|---|---|---|---|---|
| 1 | Amlodipine 5mg | 222.35 | 300.00 | 125.00 | 162.50 | 202.46 | 130.00 | 35.79 |
| 2 | Amlodipine + Atenolol 50/20mg | 383.33 | 300.00 | 250.00 | 366.67 | 325.00 | 380.00 | (16.92) |
| 3 | Atenolol 25mg tab | 105.00 | 100.00 | 250.00 | 250.00 | 176.25 | 100.00 | 43.26 |
| 4 | Atenolol+Nifedipin 50/20mg | 322.78 | 300.00 | 100.00 | 283.33 | 251.53 | 320.00 | (27.22) |
| 5 | Enalapril 5mg | 444.67 | 400.00 | 250.00 | 325.00 | 354.92 | 195.00 | 45.06 |
| 6 | Hydrochlorothiazide 50mg | 154.55 | 120.00 | 400.00 | 83.33 | 189.47 | 195.00 | (2.92) |
| 7 | Lisinopril 10mg | 331.50 | 375.00 | 283.33 | 250.00 | 309.96 | 390.00 | (25.82) |
| 8 | Methyldopa 250mg | 216.25 | 225.00 | 242.50 | 200.00 | 220.94 | 100.00 | 54.74 |
| 9 | Nifedipine Retard 20mg | 131.58 | 150.00 | 137.50 | 150.00 | 142.27 | 190.00 | (33.55) |
| 10 | Atorvastatin 10mg | 481.25 | 500.00 | 466.67 | 566.67 | 503.65 | 700.00 | (38.99) |
| 11 | Atorvastatin 20mg | 753.75 | 700.00 | 550.00 | 625.00 | 657.19 | 800.00 | (21.73) |
| 12 | Bendrofluazide 5mg | 62.50 | 50.00 | 75.00 | 66.67 | 63.54 | 50.00 | 21.31 |
| 13 | Furosemide 40mg Tab | 61.00 | 50.00 | 62.50 | 50.00 | 55.88 | 38.00 | 31.99 |

Mean pharmacy prices for amlodipine, atenolol, enalapril, methyldopa, bendrofluazide and furosemide were higher than the NHIF reference prices and vice versa for amlodipine+atenolol, atenolol+nifedipine hydrochlorothiazide, lisinopril, nifedipine and atovarstatins (Figure 2 below). These differences in prices were all statistically significant ($p < 0.05$) except for amlodipine+atenolol, atenolol, atenolol+nifedipine and hydrochlorothiazide (appendix v).

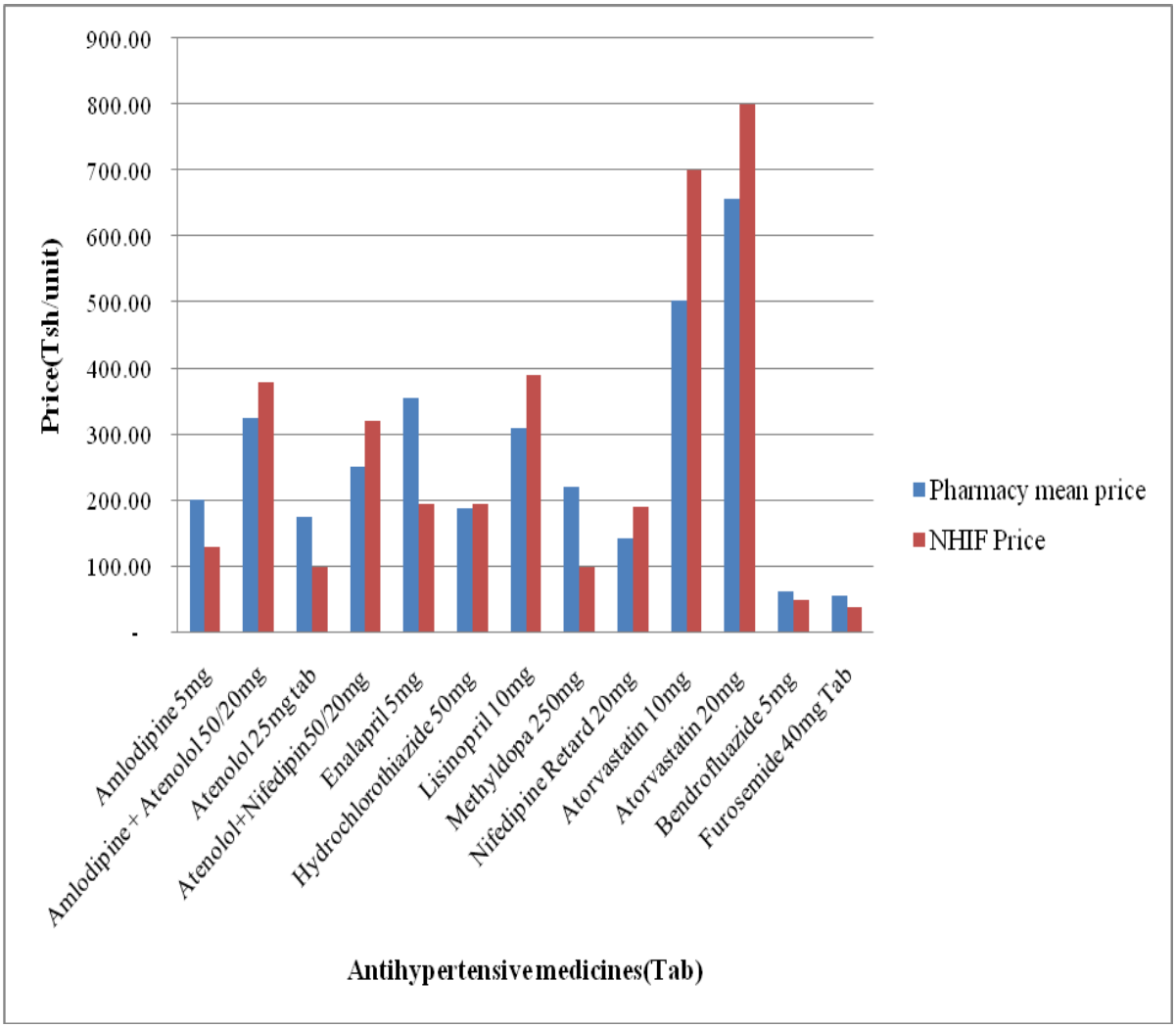



**Figure 2: Price variation for antihypertensive medicines**

### 4.3.3 Antidiabetic medicines

The picture was not the same when observed across the regions. Pharmacy price of Chlorpropamide 250mg in Morogoro region was the same as the NHIF prices. Also, for Glibenclamide 5mg and Metformin 850mg private pharmacies in Kilimanjaro and Morogoro regions showed lower mean price compared to that of NHIF price, respectively. Table 4 shows variation of antidiabetic medicines in the study region.

**Table 4: Variation in Mean price for antidiabetic across study regions**

| S/No | Antidiabetic medicines | D'salaam | Dodoma | Morogoro | K'njaro | Mean price | NHIF price | %age Differ |
|---|---|---|---|---|---|---|---|---|
| 1 | Chlorpropamide 250mg Tab | 128.13 | 166.67 | 100.00 | 112.50 | 126.82 | 100.00 | 21.15 |
| 2 | Glibenclamide 5mg Tab | 117.25 | 125.00 | 143.75 | 97.50 | 120.88 | 130.00 | (7.55) |
| 3 | Glimiperide 1mg Tab | 397.78 | 300.00 | 80.00 | 397.14 | 293.73 | 580.00 | (97.46) |
| 4 | Metformin 500mg Tab | 220.83 | 163.33 | 132.50 | 162.50 | 169.79 | 95.00 | 44.05 |
| 5 | Metformin 850mg Tabs | 418.00 | 316.67 | 125.00 | 337.50 | 299.29 | 195.00 | 34.85 |
| 6 | Metformin +Glibenclamide 500/5mg Tab | 475.00 | 525.00 | 462.50 | 481.25 | 485.94 | 500.00 | (2.89) |
| 7 | Metformin+Glimipride 500/1mg Tab | 721.88 | 800.00 | 766.67 | 637.50 | 731.51 | 775.00 | (5.95) |

Study indicated that three medicines had slightly lower NHIF price than the prevailing mean prices of private phamacies. That implies patients are forced to co-pay for the difference. Five antidiabetic medicines show significantly difference ($p = 0.007$) between the price of NHIF and the mean price of private pharmacy (Appendix v). Three medicines out of five, had signifinantly lower NHIF than mean price of the private pharmacies price ($p = 0.02$) . Figure 3 shows the differences in prices of seven common antidiabetics between private pharmacies and NHIF.

NHIF reference prices for chlorpropamide and metformin were lower than the mean prices in the pharmacies, howerver were higher for glibenclamide, glimeperide and their combinations with metformin. The differences were statistically significant except for glimenclamide and its combination with metformin 500 mg. (Appendix v)

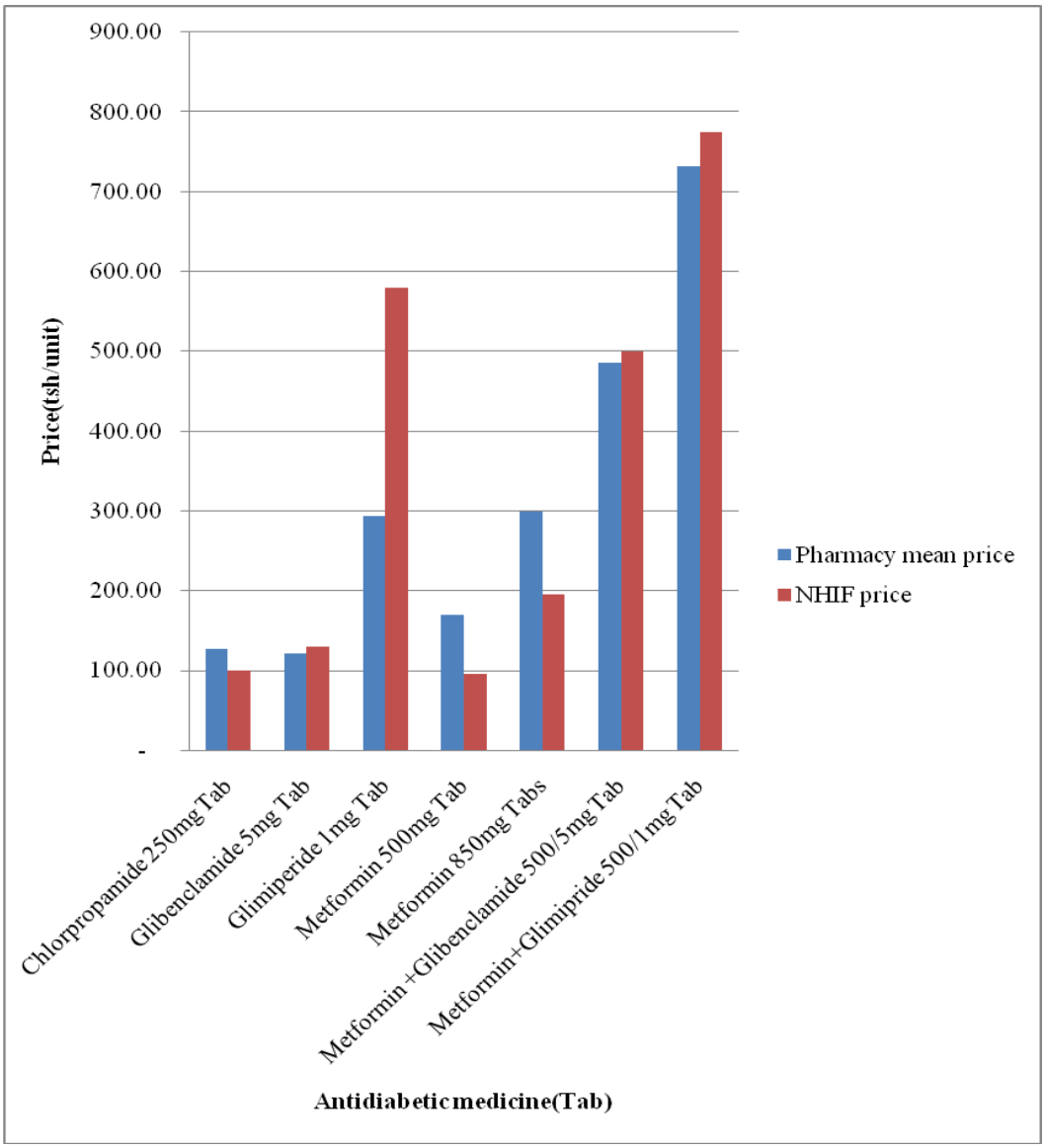



**Figure 3: Price variation for antidiabetics**

In summary, among 29 selected tracer medicine from 53 selected tracer medicine, four (4) antipyretic, six (6) antihypertensives and four (3) antidiabetics making a total of 13 (44.8 %) medicines shows to have lower NHIF price than mean price at the Private pharmacy as shown in table 5 below

**Table 5: Medicines with lower NHIF price compared to mean price of private pharmacies**

| S/No | Name of Medicine | Pharmacy mean price | NHIF Price | %age Difference |
|---|---|---|---|---|
| 1 | Amlodipine 5mg | 202.46 | 130.00 | 35.79 |
| 2 | Atenolol 25mg tab | 176.25 | 100.00 | 43.26 |
| 3 | Enalapril 5mg | 354.92 | 195.00 | 45.06 |
| 4 | Methyldopa 250mg | 220.94 | 100.00 | 54.74 |
| 5 | Bendrofluazide 5mg | 63.54 | 50.00 | 21.31 |
| 6 | Furosemide 40mg Tab | 55.88 | 38.00 | 31.99 |
| 7 | Chlorpropamide 250mg Tab | 126.82 | 100.00 | 21.15 |
| 8 | Metformin 500mg Tab | 169.79 | 95.00 | 44.05 |
| 9 | Metformin 850mg Tabs | 299.29 | 195.00 | 34.85 |
| 10 | Ibuprofen 200mg | 88.74 | 20 | 77.46 |
| 11 | Indomethacin 25mg | 45.75 | 25.00 | 45.36 |
| 12 | Ketoprofen 50mg | 346.88 | 200.00 | 42.34 |
| 13 | Paracetamol 500mg | 30.72 | 15.00 | 51.17 |

### 4.4 What Happens when the Reference Price is lower than the retail Price?

The reference prices of a medicine may be lower than the retail selling price in the accredited private pharmacies in the regions. A majority of the participants argued that dispensing of medicines to NHIF beneficiaries is the contractual agreement between the premises and NHIF. This implies that failure to give medicine is considered the breach of contract. Most of them said that they dispense medicine to patients regardless of the price, as quoted by a participant below:

"*We have entered into contract with NHIF. Some NHIF medicine prices are higher and others lower than our selling prices, meaning that they compensate to each other. We usually dispense medicine to every NHIF beneficiaries. We are not allowed to return a*

*patient or take money from the NHIF patients. If the price is very low, we dispense medicine with the same value with the prescription submitted to us"* (Informant 6)

The study reveals that the service provider consider the value of the medicines prescribed by using their individual pharmacy price. The total amount of money supposed to be collected from such prescription if those medicines were to be sold by cash was more considered. One medicine may have low price and one higher than the reference price. This was narrated by one informant as follows:

**"***This is business and also service. The small difference should not be considered as one medicine can be compensated with another. We consider prescriptions in their totality."* (Informant 15)

It was reported that purchasing price was considered, if NHIF price is lower than the selling price but not below the purchasing price. NHIF officers advised to provide the prescribed medicine because there are some medicines which their prices are above while others are below the NHIF price. Usually, NHIF knows that most of their prices are low. An informant had this to say:

"*We usually consider the purchasing price. If the price of NHIF is lower than our selling price but not below the purchasing price, normally we dispense. If it is lower than the purchasing price, then we do not issue the medicine. NHIF knows that their prices are low."* (Informant 2)

Interviewees reported that they inform patients that the medicines prescribed are out of stock. Sometimes, it is difficult to differentiate between the patient who can pay the difference and the one who cannot. Some of the patients know that they are missing due to price differences between the facility and that of NHIF. They said that they were ready to top up but still missed the medicine prescribed, as quoted from one customer who coincidently met with the interviewer at one of the facilities being prescribed with one of the antihypertensive as narrated below:

"*I know the medicine is there but the price is very low. I will top up on the price of NHIF*. (Patient prescribed with one of antihypertensive).

It was reported that few patients pay the difference if the reference price is lower than the selling price. The value of that medicine using the selling price in that facility were

calculated and deducted from the value contained in NHIF form. The remaining balance is paid by a patient on cash so that she/he can get the full course of the medicine as prescribed. This was narrated by different informants as follows:

*"They are supposed to contribute a little. Some of them agree and some do not agree to pay, claiming that they are using the NHIF card. When we explain that the brand prescribed is not in the list of NHIF, if they agree then they contribute a little"* (informant 17)

Another informant narrated that:

"*Either I explain to patients regarding the NHIF price to be less than that of the facility. If the patients understand he tells me to give him the medicine and fill the form together with some amount of money. If the patient does not understand we tell him/her that the medicine is out of stock to make the story short"* (Informant 31).

Few interviewees reported to dispense patients with half of the medicines prescribed. The service providers negotiate with patients and calculate the cost of the medicine prescribed. They divide the cost of medicine by selling price of the medicine at that facility to get the number of medicines that will be given to patient depending on the NHIF form. The remaining amount has to be prescribed again. Usually, this happens very rarely. It was reported that most of the medicines **(**especially those which are so import) are normally dispensed regardless of the differences in price. This was narrated by one of the informants as follows:

"*If the price is very low, we explain to patients that we will be able to give few medicines. The remaining medicines have to be prescribed again. Usually, the most typical medicines we provide are those which we are importing ourselves.* (Informant 6)

### 4.5 Challenges of Reference Pricing System

The contract that guides the service provider and the reimbursement authority is not followed. Most of the time NHIF works without considering the contract, as may decide to initiate the changes in between the contract and deduct some payment which has been done according to the agreement. It was narrated by informant that:

*"NHIF are not following the contract of agreement. Payments go up to seven month, against two months agreed upon in the contract. They deduct payment that is within the agreement. They are also not educating the service provider and their beneficiaries."* (Informant 26)

It was reported that although the payment of NHIF is delayed, still they pay on installments without any clarification. The service providers may wait for three months payment out of contract and on payment, only the payment of two months approved. It was reported that the new system of sending report to NHIF is on line, which may reduce the time of payment. This is as narrated by one informant below:

*"The payments of NHIF go up to three months without being paid, when paid, only two months are paid while one remains. Another system has been through on line. May be it will reduce the time of payment as each premise should have a computer. Regarding payment, proper arrangements are needed.*" (Informant 11)

Reimbursement goes through some process, including filling of forms. Part of these forms has to be filled by prescriber and then dispenser and patient. One of the personnel may cause the person who dispensed the medicine not to be paid. Due to overcrowding in the working stations, prescribers may wrongly code the disease with the right medicine. Reduction due to wrong coding will make loss to dispenser. This was narrated as follows:

*"The disease code may cause one not to be paid. For example, 112 is the disease code of candidiasis. Most prescribers cannot differentiate between candidiasis and fungal infection, hence prescribing Griseofulvin aiming to treat candidiasis. Patient pressure may cause to dispense. This wrongly coded may lead one not to be paid*." (Informant 20)

Another participant reported that prescribers may cause the medicine dispensed not to be paid by incorrect prescribing. For those with more than one strength, if dispensed at the lowest strength or lowest amount, and claimed the same amount, NHIF deduct that amount, the reason being dispensed incorrect prescribed medicine. This was reported by one informant as follows:

*"For the Prescription medicine with more than one strength, and no any strength included on the prescription, the medicine is dispensed in low strength to avoid disturbances to the patients, but that medicine would not be paid due to incorrect prescribing". (Informant 18)*

The price list of NHIF exists for more than a year without being reviewed. That causes most of the medicine price to be different from those in the market. After setting the price, NHIF leaves it over years without reviewing, as quoted from a participant:

"*NHIF takes a long time before reviewing their price. For example, the NHIF price of ALU is 1000/- per course. But the wholesale price of this ALU is 2000/- per course. Every medicine has its own price. No way can one medicine be compensated with another. The slogan that your card is your money disturbs the patients. If the market retail price of Isosorbide mononitrate is 700/- in community, but NHIF directs to sell it at 190/- usually the patient will suffer and will not get the medicine. If NHIF sponsor Laboratories and Hospitals to get medical equipment, why do they not open their own pharmacies or supporting community pharmacies?"(*Informant 31)

Due to wrongly prescriptions, sometime patient may not be dispensed with the medicine due to either incomplete prescription or a combination of the generic and brand names in the same prescription. Sometimes patients requesting for brand name which are very expensive. Failure to give the requested medicine may cause misunderstanding between the two. This was narrated by a participant as follows:

"*Sometime patients need medicines of higher price and higher* amount. *For example, prescriptions written (Zestril*$^{R)}$ *10 mg TDS for two months. I.e. prescription is already a barrier to patient. Also, patient prescribed with mixture of generic and brand name and patient request for the brand medicine, for example Albendazole (Zentel*$^{R}$*) 400mg stat."* (Informant 31)

Most participants reported to receive less than fifteen prescriptions in a month. This was due to the fact that certain ranges of medicine are not in the list. The fast moving and new medicine are coming to the market while they are not included in the NHIF list. Due to pharmaceutical promotion, prescriber prescribe the frequently promoted medicine and direct them where to get them without considering its present in the NHIF list. Informant narrated below:

"M*ost of the patients think every medicine prescribed must be given. They do not know that some of them are not in the list, although they are present in the facility. For example Cefixime injection, oracure gel, and Joint support are out of reimbursement list but usually*

*they are prescribed due to pharmaceutical promotions through medical representatives"* (Informant 31)

Few participants were not ready to provide real data. They said that they had no data. The frequency of medicines that are out of reimbursement list was decreasing, as narrated below:

**"***It happens but not frequently. In the past it was high, but now it has been very low. I do not have any data, but we can say it is very low."* (Informant 3)

# CHAPTER FIVE

## 5.0 DISCUSSION

## 5.1 Introduction

This chapter discusses the results of this study, mainly the procedures followed during the price setting in private pharmacies and reference price and reimbursement list as set by NHIF. The chapter also presents stock outs and the co payments.

## 5.2 Pricing of medicine in NHIF

### 5.2.1 Reference Prices for Medicines

National Health Insurance Fund (NHIF) sets the price by considering the prevailing uncontrolled retail prices from the private pharmacies. This implies that they sometimes overpay for some medicines. Since NHIF rely on prices from retail pharmacies to re-set their reference price, NHIF may be driven by market price to hike their price during the review time. Some countries try to control values of mark ups on the procurement price, which makes the medicine in the private facility to be affordable to the community [50] [51].

In the market, retail price of medicine is determined by assessing the product in two different perspectives. Firstly, the value based perspective in which medicine depends on how the patient values the product and secondly, the company competitive perspective in which the medicine depends on the same type of medicine in the market. The owners set the price based on the product values rather than therapeutic effects delivered. Basically, principles that underlie the pricing of pharmaceutical products are similar to those of other products or services [52]. NHIF uses these prices in the market to prepare their reference prices which is contrary to some other countries that use ex-factory cost to calculate and fix the reference prices [51]. In other countries, reference price is fixed in such a way that within the group there is adequate number of drugs which remain to be reimbursable, thus ensuring the degree of choice and sufficient availability of drugs falling within the selected reference price level enough to supply the national market [53]. Price is considered as a major factor in determining the accessibility of the product. In order to increase accessibility of medicine in Tanzania, it is important that price control mechanism in the private pharmacies is established.

### 5.2.2 Reference Prices for More Expensive Medicines

This study showed that, NHIF controls expensive medicines through the use of Medical Store Department (MSD) price catalogue. The MSD as mentioned earlier, is an autonomous department of the Ministry of Health and Social Welfare that is responsible for procurement, storage and distribution of essential medicines by using Public Procurement Act (PPA). This Act enables MSD to procure the quality medicines at affordable prices [54]. The public facilities receive most of their required medicines from MSD without any addition of the profit. Literature show that once patients fail to get their prescribed medicines in the public facilities, they go to private pharmacies where they purchase them at a much higher price [48, 55]. Using the MSD prices as the reference to handle the expensive medicine in the private pharmacies causes some barriers to patients because MSD purchase medicine at affordable price from different sources whereby the private pharmacies purchase the same product from other sources at higher prices. On the other hand, using the MSD price which has no marginal profit to calculate the reference price, still the reference price calculated will be lower to that of the private facilities. Therefore, using MSD price as reference to dispense expensive medicine in private pharmacies creates hindrance for the patient to access medicine in the private pharmacies.

## 5.3 Reimbursement list

Results have shown that dispensers were receiving most of the prescriptions which were not included in the list of reimbursement or prescribed in brands cheering the use of that brand. A pharmaceutical promotion makes the prescribers to assign the first priority to the incoming product in market, these promotions causes the medicine to have more value in the market compared to the existing product [49].

NHIF prepare reimbursement list by combining National Essential Medicine List (NEML) together with either additional or deletion of some products without considering the manufacturer of the products. This system of preparing reimbursement list is contrary to other countries like Belgium and Republic of Czech, whereby the manufacturer that intend their medicine to be included in the reimbursement list has to apply to the Commission for Reimbursement of medicinal product (CRM) for their products to be included into the reimbursement list [51]. During the application, manufacturers must state the price (minimum and maximum) at which they intend to make the product available in the market

as one of the criteria to be considered. This system of applying for the inclusion in the reimbursement list helps the government to control the price and quality of medicine in the market.

Furthermore, the results show that medicines in the reimbursement list are pharmacologically classified which is consistent to other developing countries [51]. However, all classes of medicines are reimbursed equally contrary to other countries whereby each class of medicine has its own level of reimbursement [56]. The classes help out to take care of the expensive medicinal products. Medicines in each of the class categorized with their own price of reimbursement in terms of percentage depending on its therapeutic effects and takes care of sending the patient to insurance offices for approve of some special medicine that needs control because of their price [56]. Due to this type of reimbursement, basing on classification of medicine, co-payment is allowed under control of the law [51].

### 5.4 Review time of service and price list

The review time of the benefit package and that of price list differs. Addition or removal of a medicine from the list depends on the actuarial of the fund. Medicinal products may be introduced or removed from the existing list depending on the situational analysis of the fund, the practice which opposes the meaning of the insurance that ensure the patients to get continuous service after their contributions. Currency fluctuations in the market cause the retail pharmacy price to increase regularly because most of the medicines in Tanzania are imported. It is clear that the price that has been set three years ago contains most of medicine price with lower prices compared to recent market prices. The time interval and dollar fluctuation keeps the difference in price between the NHIF and private pharmacy to increase, causing more patients not to be dispensed with medicine.

Usually, the review of any system is expected to be beneficial to both the service provider and the beneficiary. On the other hand this study revealed that some of the private pharmacies are not providing the service to NHIF beneficiaries due to the widely difference in price and hence waiting for the price to be reviewed. Also, during the review, NHIF rely on the affordability of the medicine only and leave safety and efficacy decision to the registration Authority as narrated by one of the key informants. In this study, the results showed that regulatory board and distributors are only the stakeholders that are involved

during the review time. Patients who consume the service provided by these private pharmacies are not participating during the time of price setting or review. In some of developed countries patients are one of the stakeholders during the review time [57].

### 5.5 Pricing in Accredited Private Pharmacies

This study found that, in the retail pharmacy price relies mainly on the procurement price added with a certain percentage to cover the running cost of the business. The running cost of pharmacy business includes different mark ups from different levels of the business [58]. Sometimes expired products have to be considered as the cost of the business. All these costs have to be covered by the payments collected from the patients or clients. Furthermore, this study has shown that price calculation in the accredited private pharmacies consider all these factors. However, these factors tend to change regularly depending on the economy of the country [59], hence causing fluctuation in the prices of essential medicines which is a strong barrier to accessibility of effective health care [50]. In addition, any change in either purchasing price or running cost, causes the owners of the private pharmacies to change the medicine prices. Since there is no authority that regulates medicine prices in Tanzania, every distributor may set the selling price as they wish, which gives negative impacts on the retail price to patients or clients. The lack of regulatory authority to control price mark-ups is the reason that causes the patients to spend up to 60% of their total health care expenditure on medicines in developing countries [60, 61].

### 5.6 Stock Out in Public Pharmacies

NHIF beneficiaries are all entitled to access essential medicines which are prescribed in generic names [62]. When the generic medicines are out of stock at the public facilities, the NHIF beneficiaries has to fill the prescriptions in any of the accredited private pharmacy that has contractual agreements with NHIF. NHIF beneficiaries with prescriptions expect to get the prescribed medicine from public hospital pharmacies, but with some reason they fail to access the medicine. The reasons for not being able to access medicines may be caused by the prescription itself or stock out status of that medicine in the public hospital pharmacy. Study done in Dar es Salaam accessing medicinal stock out and inventory management problems in public hospitals, shows that, 89% of the study participants, were pharmaceutical personnel and most of them (65%) were not aware of the methods which could be used to ensure that they had medicine all the time in the premises [63]. Failure to have medicine in

their premises causes some NHIF beneficiaries to suffer from getting the prescribed medicines. In developing countries, including Tanzania, the average availability of essential medicines three years ago was 57% in public sector facilities and 65.1% in private facilities [64]. Private pharmacies tend to have better availability of essential medicines, although they are usually significantly more expensive than those available at public facilities, and quality assurance is a problem in some private facilities [65]. The results further showed that, most of the interviewees in private pharmcies reported that they send the NHIF beneficiaries to other service providers when they experience out of stock in their pharmacies. Other reasons to refer patient to other facilities include the irrational prescription; lower NHIF prices compared to individual pharmacies; prescribed medicines not found in the list of reimbursement; and mistakes in the prescription that causes beneficiaries to be returned to prescribers for correction. These are attributed by lack of education by beneficiaries since NHIF do no educate service providers and beneficiaries regarding their services. In some cases it is caused by the misunderstanding of the contract agreement between the involved parties. As a result prescribing and dispensing patterns of the medicine appeared to cause disturbances to the patients who lose the hope of accessing the medicine [66, 67]. The two studies indicate that the patient fail to adhere to the prescribed medicines.

### 5.7 Price Comparisons

The findings of this study showed that most of the service providers use NHIF Price as reference to dispense the prescribed medicine to NHIF beneficiaries. Some of the surveyed tracer medicine showed that there is a difference in price between the private pharmacy and NHIF (Appendix v).

For the medicines that had higher NHIF price than the private pharmacies prices (Table 2-4), it means that the NHIF beneficiaries will be able to access the medicine prescribed in the private pharmacy, and NHIF pays more than the market retail price. On the other hand, those medicines where NHIF prices are lower than the private pharmacy price (Table 5), patients end up not being dispensed with the prescribed medicine because private pharmacies realize losses. NHIF knows that some of their prices are lower but basing on the legal agreement they expect the patients to be dispensed with medicine, but they are told that the medicine is out of stock.

Further the study has revealed that there are variations of price in private pharmacies across the study region and the NHIF. Some medicines have higher NHIF price than the private pharmacy in general, indicating that patients will access medicine from any of the regions. Also the study shows that NHIF price in one of the regions could be low but higher to other regions. This means that beneficiaries in the region with the higher NHIF price will get the medicine, while those with the low NHIF price will not access the service. Thus a certain medicine can be accessed in one region of the country, but not in other regions depending on different reasons such as location and economic activities in that place.

It was also found that patient are sent to other service providers or back to prescribers when they missed the medicines from one provider that causes disturbances to the patients or clients. One of the study shows that the delay of the patient to get medicine, affect the level of treatment, with direct and indirect consequences for the overall health care cost [63].

Some of the beneficiaries know that sometimes they do not get the prescribed medicine because the price set by NHIF was below that of the private facility. These beneficiaries said that they were ready to pay the difference since they needed the medicine. Some of service providers agreed and some not. The status of paying the difference in medical by beneficiary (co-payment) is allowed in some countries and this procedure is controlled by the law [54]. Different studies show that most of health expenditure was financed mostly by household out of pocket [68-70]. If the process of co-payment will not be controlled, it may cause the whole process of Health insurance to be useless.

Again the results showed that, when the prescribed medicine has lower NHIF price compared to that of the private pharmacies, prescriptions were considered in their totality value rather than each medicine separate. Most of the prescriptions come with single medicine, especially that medicine which is known to have lower NHIF price than that of the private pharmacy. The private pharmacies receive prescriptions from both public and private hospitals mainly when the hospital pharmacies are out of stock. Most of the prescriptions from private hospital fail to be dispensed due to some reasons including irrational prescriptions. It was noted that the medicine prescribed by private hospitals have lower NHIF price than purchasing prices in the market, hence intentionally prescribed after failing to dispense from their hospitals. A study done in India shows that private hospital generates more irrational prescriptions than public hospitals [71].

During dispensing, three prices were considered which includes purchase price, NHIF price and private pharmacy retail price. When NHIF price becomes lower than that of the pharmacy no medicine were dispensed. Some of the pharmacies dispensed medicine if the NHIF price is lower than private pharmacy selling price, but greater than the purchasing price. Most of these private pharmacies have no computers that can assist quickly to compare the three prices. Due to few numbers of staff in these pharmacies it is not an easy task to compare all three prices manually. Most of the dispensers end up telling the patient that the medicine is out of stock. In this case, setting the price affects accessibility to the medicine as it is an easy factor to consider before dispensing.

### 5.8 Challenges of using NHIF Price List

There are a lot of challenges that arise due to the use of the price as indicator to dispense. Results showed that the main challenge is violation of the contract of Agreement. NHIF has provided the contract of agreement to both public and private health providers. The contract includes the process and duration of the reimbursement from the date of submitting the claims.

Payment from NHIF was declared by informants to be the main problem. The NHIF beneficiaries are entitled to take medicine from the accredited health facilities, and at the end of the month the private pharmacy prepare the claims and submit to NHIF offices for reimbursement. These claims usually take more than the time allocated to the contracts. Some study showed that, most of the patients get their medicine from private pharmacies at higher price [72]. Failure of NHIF to reimburse at stated time causes a lot of disturbances in the business, including facility failure to pay their suppliers, out of stock of some medicine in a pharmacy that causes patients to suffer due to lack of capital that has been accumulated at NHIF. During the time of payment, only half of the actual amount is paid due to reasons that are out of the contract. All these factors generate disturbances to the patients and owners of the pharmacy especially for the business that has low capital.

Review time for NHIF price list was another challenge. The period of three years is much longer in business especially for the business that depends on medicine importation where the currency fluctuation may affect the price of the products [56]. Most of pharmaceuticals in Tanzania are imported using foreign currency. Dollar fluctuation causes the whole system of pricing from wholesale to retail to fluctuate. The medicine imported a year ago, differs in

price compared to a recently one. The recently imported will have higher price compared to the previous. These prices are essential since most of the medicine price will vary depending on the cost of importation. The accessibility to the medicine depends on many factors, including right medicine in the right time. Visiting more than two accredited pharmacies with no medicine creates disturbance to patients. If the prescribed medicine needs continuation of use of such medicine, then the patient may lose continuity of medicine, which is a dangerous condition to patient who takes antihypertensive or ant diabetics medicines.

## 5.9 Limitations of the study

This study faced some limitations. Some of the limitation includes the wrongly answers which was stated by the participants. Some of the participants was giving data that greatly deviate from the reality. This happens mainly when the sales price of medicine stated to be below of that of the purchase. Also some of the participants thought that he study intends to investigate whether they sale the medicine in a reasonable price that can match with that of NHIF. Due to this they tend to give false information avoiding that NHIF contract can end up because of the price. This scenario was taken care during the data analysis that those present in few premises was not included in the analysis.

Limitations if not cared; always causes the researchers not to perform their duties properly as a result act as hindrances to the results, which cause the researcher to give bias results. Usually the researcher should take care of the limitations to avoid the biasness.

# CHAPTER SIX

## 6.0 CONCLUSION AND RECOMMENDATIONS

### 6.1 Conclusion

The study has identified a number of factors that are considered by NHIF and private pharmacies during the process of setting price.

NHIF reference prices are set using retail market prices, MSD prices and inflation rates at that particular time.

NHIF has its formulary, referred as reimbursement list which prepared from the NEML as the guideline, on which some components are added or removed and reviewed after three years, and on setting price to this list then send it to the private pharmacy to be used as reference in delivering service to their beneficiaries

Purchasing prices and profit margins (based on operational costs) were the main factors considered by private pharmacies when setting medicine prices

About 72.7% of the private pharmacies set their medicine prices by adding a profit margin ranging from 20% to 50% of the purchase price, and 44.8% of the selected medicine showed that NHIF reference prices were lower than the retail pharmacy prices.

Divergence from the contractual agreements between NHIF and the private pharmacy was the main challenge observed during the service delivery to the NHIF beneficiaries using reference price.

## 6.2 Recommendation

i. NHIF has to establish Commission for pricing and reimbursement of medicine, in which price and quality of the medicine will be controlled.

ii. NHIF has to establish scheme of co-payment that will facilitate the access to different brands of medicine that will give chance to patients to decide the brand required to be dispensed.

iii. NHIF should review their price list annually for the purpose of ensuring accessibility of the medicine to their patients.

iv. Considering that NHIF prices are lower than the retail pharmacy prices, patients are more likely to opt co-payments which needs further research to establish its implication on medicine accessibility.

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# APPENDICES

## Appendix Ia: Interview guide for Health facilities (English version)

### Introduction

The main objective of this study is to assess pricing of medicines in four regions in Tanzania. Your involvement in the study is important to the research output. Please feel free that, the information collected is only for academic purpose, and for that matter, any part of the information being secured from you will be treated STRICTLY and highly CONFIDENTIAL.

Would you allow for me to continue an interview with you? 1. Yes 2. No

**Thank you for agreeing to talk to me.**

**To assess the strategies of pricing of the medicine in accredited health care facilities**

Code No ……..

Type of facility: 1. Pharmacy. 2. Hospital

District……..... Region ..... Date of interview: …… time.....

1. What is your qualification and position in the premise?

2. How long have you been working in this premise?

3. How do you calculate the prices of medicine stocked in your premise?

4. Which factors do you consider in calculating the prices?

5. If it happens that one of the medicines prescribed is available and others are out of stock what do you do?

6. What do you do when a reference price of a medicine is lower than your selling price?

7. How often are patients prescribed medicines that are not on the reimbursement list of NHIF?

**Appendix Ib: Interview Guide - Kiswahili Version**

MWONGOZO WA DODOSO YA MAHOJIANO KWA AJILI YA KUTAFITI MAMBO YANAYOZINGATIWA WAKATI WA KUPANGA BEI YA DAWA KATIKA MADUKA BINAFSI YA DAWA YALIYOIDHINISHWA KUTOA HUDUMA KWA WANACHAMA WA MFUKO WA TAIFA WA BIMA YA AFYA.

Naitwa Rashid Kirua, mwanafunzi wa shahada ya udhamili Chuo Kikuu cha Afya na Sayansi Shirikishi cha Tiba, Muhimbili. Nafanya utafiti ili kufahamu mambo yanayozingatiwa wakati wa kupanga bei ya dawa katika maduka ya Dawa yaliyoidhinishwa kutoa huduma kwa wanachama wa mfuko wa Taifa wa Bima ya Afya .

**Utangulizi.** Madhumuni ya utafiti huu ni kuangalia upangaji wa bei na ulipwaji wa huduma ya dawa kwa vituo binafsi vilivyopendekezwa na Mfuko wa Taifa wa Bima ya Afya kuwahudumia wanachama wake. Ushiriki wako katika utafiti huu ni wa muhimu sana kwani utasaidia kutatua baadhi ya changamoto unazokabiliana nazo wakati wa kutoa huduma kwa wanachama wa Mfuko huu. Hivyo naomba uwe huru, na taarifa utakazozitoa hapa ni kwa ajili ya shughuli za taaluma na zitahifadhiwa kwa usiri mkubwa.

Je, unakubali kuhojiwa na mimi? 1. Ndiyo 2. Hapana

**Asante kwa kukubali.**

Kuangalia mambo yanayozingatiwa wakati wa kupanga bei ya dawa katika maduka ya dawa.

Namba ya utambulisho……

Wilaya……..... Mkoa.....

Aina ya Sehemu ya kutolea huduma 1. Pharmacy. 2. Hospital

Tarehe ya mahojiano: …… Muda.....

1. Kwenye duka hili, unafanya kazi kama nani na una taaluma gani?

2. Umefanya kazi kwenye duka hili kwa muda gani?

3. Bei ya dawa kwenye duka lako huwa zinakokotolewa kwa kuzingatia nini?

4. Ni mambo gani yanazingatiwa wakati wa kukokotoa hizo bei?

5. Ikitokea mojawapo ya dawa alizoandikiwa mgonjwa haipatikani hapa dukani kwako, huwa unafanya nini?

6. Ikitokea bei elekezi (iliyotolewa na mfuko wa Taifa wa bima ya afya) kwa dawa aliyoandikiwa mgonjwa ni ndogo kulinganisha na unayouzia dawa hiyo hapa dukani kwako, huwa unafanya nini?

7. Ni mara ngapi (kwa mwezi) wagonjwa wamekuwa wakiandikiwa dawa ambazo haziko kwenye mkataba wa kulipwa kati yako na mfuko wa Taifa wa Bima Afya?

**Appendix IIa: Interview guide for NHIF officers**

**Introduction**

The main objective of this study is to assess pricing of medicines in four regions in Tanzania, Your involvement in the study is important to the research output. Please feel free that, the information collected is only for academic purpose, and for that matter, any part of the information being secured from you will be treated STRICTLY and highly CONFIDENTIAL.

Would you allow for me to continue an interview with you? 1. Yes 2. No

**Thank you for agreeing to talk to me.**

**To assess the strategies of pricing of the medicine. NHIF Staffs**

Code No …… Department.....

Date of interview: …… and time.....

1. What is your qualification and position?
2. What trainings did you participate about preparation of formularies?
3. How do you calculate the reference price for each medicine?
4. Which factors influence the reference prices?
5. How is the reimbursement list prepared? probe who prepares the list, how decisions are made etc
6. How often do you revise the reimbursement list and reference prices of the medicine? Probe when was the last revision
7. Which properties of a drug do you consider for it to be listed? Probe about efficacy, safety, effectiveness, cost-effectiveness, affordability etc.
8. How do you involve the stakeholders in preparing the list? probe about patient involvement, industries, healthcare providers etc

**Appendix IIb: Interview Guide - Kiswahili Version**

MWONGOZO WA DODOSO YA MAHOJIANO KWA AJILI YA KUTAFITI MAMBO YANAYOZINGATIWA NA MFUKO WA TAIFA WA BIMA YA AFYA WAKATI WA KUPANGA BEI ELEKEZI YA DAWA KWA MADUKA BINAFSI YA DAWA YALIYOIDHINISHWA KUTOA HUDUMA KWA WANACHAMA WA MFUKO HUO .

**Utangulizi.** Madhumuni ya utafiti huu ni kuangalia upangaji wa bei na ulipwaji wa huduma ya dawa kwa vituo binafsi vilivyopendekezwa na Mfuko wa Taifa wa Bima ya Afya, kuwahudumia wanachama wa mfuko huu. Ushiriki wako katika utafiti huu ni wa muhimu sana kwani utasaidia kutatua baadhi ya changamoto zinazojitokeza wakati wa kutoa huduma kwa wanachama wa Mfuko huu. Hivyo naomba uwe huru, na taarifa utakazozitoa hapa ni kwa ajili ya shughuli za taaluma na zitahifadhiwa kwa usiri mkubwa.

Je, unakubali kuhojiwa na mimi? 1. Ndiyo 2. Hapana

**Asante kwa kukubali.**

Kuangalia mambo yanayozingatiwa wakati wa kupanga bei elekezi ya dawa (**NHIF Staffs)**

Namba ya utambulisho……..... Idara..... .....

Tarehe ya Mahojiano: …… Muda.....

1. Katika Mfuko wa Taifa wa Bima ya Afya, unafanya kazi kama nani na una taaluma gani?

2. Ni mafunzo gani umewahi kuhudhuria yanayohusiana na utayarishaji wa kanuni mbalimbali?

3. Bei elekezi kwa dawa mbalimbali huwa zinakokotolewaje?

4. Ni mambo gani yanayopelekea ukokotoaji wa bei elekezi ya dawa?

5. Orodha ya dawa zitakazolipwa baada ya kupewa mwanachama huwa inaandaliwaje? Nani huandaa orodha hiyo, na maamuzi ya maandalizi hayo yanafikiwaje?

6. Orodha ya dawa zitakazolipwa pamoja na bei elekezi huwa zinarekebishwa kila baada ya muda gani? Kwa mara ya mwisho zilirekebishwa lini?

7. Ni sifa gani za dawa ambazo hupewa kipaumbele wakati wa kutayarisha orodha hii ya dawa za kulipwa? [Vipi kuhusu Ubora, Usalama, matokeo chanya ya dawa, Gharama ya dawa kulinganisha na matokeo yake, Uwezo wa wagonjwa kuinunua , n,k.]

8. Unawashirikisha je wadau wakati wa kutayarisha hiyo orodha ya dawa? Vipi ushiriki wa wagonjwa, wenye viwanda vya dawa, watoa huduma mbalimbali wa dawa kama waagizaji, wauzaji wa rejareja, wasimamizi wa mifumo ya usambazaji wa dawa kama TFDA, na Baraza la Famasi.etc

**Appendix III: Medicine Data Collection Form**

Code No …….. Type of facility: 1. Pharmacy. 2. Hospital

District……..... Region.....

Date of collection: …… and time.....

| S/N | Generic Name, Strength & dosage form | Brand Name | Manufacturer &Country | Basic Unit | Unit Price |
|---|---|---|---|---|---|
| 1 | Diclofenac Potassium 50 mg tab | | | | |
| 2 | Diclofenac Sodium 50mg tab | | | | |
| 3 | Diclofenac SR 100mg tab | | | | |
| 4 | Ibuprofen 200mg tab | | | | |
| 5 | Indomethacin 25mg tab | | | | |
| 6 | Ketoprofen 50mg tab | | | | |
| 7 | Ketotifen 1mg tab | | | | |
| 8 | Mefenamic acid 250mg tab | | | | |
| 9 | Tramadol Hcl 50mg cap | | | | |
| 10 | Paracetamol 500mg tab | | | | |
| 11 | Amlodipine 5mg tab | | | | |
| 12 | Amlodipine 10mg tab | | | | |
| 13 | Amlodipine + Atenolol 50mg/20mg tab | | | | |
| 14 | Amlodipine+Losartan TABS tab | | | | |
| 15 | Atenolol 100mg tab | | | | |
| 16 | Atenolol 25mg tab | | | | |
| 17 | Atenolol 50mg Tab | | | | |
| 18 | Atenolol+Nifedipine 50mg +20mg tab | | | | |
| 19 | Captopril 25mg Tab | | | | |
| 20 | Captopril 12.5mg Tab | | | | |
| 21 | Carvedilol 6.25mg, Tabs | | | | |

| S/N | Generic Name, Strength & dosage form | Brand Name | Manufacturer &Country | Basic Unit | Unit Price |
|---|---|---|---|---|---|
| 22 | Enalpril 5mg tabs | | | | |
| 23 | Hydralazine Hcl 25mg tabs | | | | |
| 24 | Hydrochlorothiazide 5mg Tabs | | | | |
| 25 | Hydrochlorthiazide + Losartan 12.5mg + 50mg tab | | | | |
| 26 | Lisinopril 10mg Tab | | | | |
| 27 | Losartan Potassium 50mg Tab | | | | |
| 28 | Losartan Potassium 25mg Tab | | | | |
| 29 | Methyldopa 250mg Tab | | | | |
| 30 | Nifedipine Retard 10mg Tab | | | | |
| 31 | Nifedipine Retard 20mg Tab | | | | |
| 32 | Propranolol 40mg Tab | | | | |
| 33 | Atorvastatin 10mg Tab | | | | |
| 34 | Atorvastatin 20mg Tab | | | | |
| 35 | Bendrofluazide 5mg Tab | | | | |
| 36 | Furosemide 10mg/mL 2mL | | | | |
| 37 | Furosemide 40mg Tab | | | | |
| 38 | Spironolactone 25mg Tab | | | | |
| 39 | Chlorpropamide 250mg Tab | | | | |
| 40 | Glibenclamide 5mg Tab | | | | |
| 41 | Gliclazide 80mg Tab | | | | |
| 42 | Glimiperide 1mg Tab | | | | |
| 43 | Glipizide 2.5mg Tab | | | | |
| 44 | Glipizide 5mg Tab | | | | |
| 45 | Insulin (Penfil Mixterd)-P/ 5 30IU | | | | |
| 46 | Insulin Neutral 100 IU/mL 10mL | | | | |

| S/N | Generic Name, Strength & dosage form | Brand Name | Manufacturer &Country | Basic Unit | Unit Price |
|---|---|---|---|---|---|
| 47 | Insulin Zinc(l/ acting) 100U/mL 10mL | | | | |
| 48 | Insulin Zinc (l/ acting) 40 IU/mL 10mL | | | | |
| 49 | Metformin 500mg Tab | | | | |
| 50 | Metformin 850mg Tab | | | | |
| 51 | Metformin+ Glibenclamide 500mg + 5mg Tab | | | | |
| 52 | Metformin+ Glimipride 500mg + 1mg Tab | | | | |
| 53 | Metformin+ Glimipride 500mg + 2mg Tab | | | | |

**Appendix IVa: Informed Consent English Version**

**ID NO ……..**

CONSENT TO PARTICIPATE IN THE STUDY OF INTERVIEWING FOR THE PRICING OF MEDICINE IN FOUR REGIONS IN TANZANIA, BY NATIONAL HEALTH INSURANCE FUND

Greetings! I'm Rashid Kirua, a resident of MSc Pharmaceutical Management, from the Department of Pharmaceutics, School of Pharmacy at MUHAS. I am conducting a Research to assess Price differences between the National Health Insurance Fund and Accredited Healthcare providers for medicines against chronic diseases in Tanzania.

**Purpose of the Study**

Purpose of this study is to assess criteria that considered during the price setting in NHIF and the accredited health facilities

The findings of this study will enable the Ministry of Health to develop polices aiming to regulate the prices of pharmaceuticals in the country in order to increase access to essential medicines

**Selection of participants**

If you agree to participate in this study, you will be needed to sign this consent form.

**Confidentiality**

All information provided in this study will be confidentially stored that No names will be used and that entered into computer programmed with only the study identification numbers or codes.

**Risks**

No harm is anticipated to you because of joining this study. You will need to devote your time for at least 45 minutes in order to respond to few questionnaires.

**Rights to Withdraw and Alternatives**

Taking part in this study is completely your choice, if you choose not to participate in the study or if you decide to stop participating in the study you will continue to receive all services that you would normally get from the society. You can stop participating in this study at any time, even if you have already given your consent.

Refusal to participate or withdrawal warrants neither penalty nor loss of benefits to which you are otherwise entitled.

**Benefits**

If you agree to take part in this study, the information we learn from this study will benefit you and others in the society in near future.

**Who to Contact**

If you have questions about this study, contact the Principal Investigator Rashid Kirua, Muhimbili University of Health and Allied Sciences, P.O. Box 65001, Dar es Salaam.

Mobile: Number 0715 309767

If you ever have questions about your rights, you may contact Chairman of the College Research and Publications Committee, Prof. M.J Moshi.

P.O. Box 65001, Dar es Salaam Telephone Number: 2150302-6.

**Do you agree to participate in this study**?

……I agree …… I do not agree.

I have read and understood the contents in this form. My questions have been answered, and I agree to participate in this study.

Signature of the participant ……. Signature of the Researcher……

Date of signed consent ……

**Appendix IVb: Informed Consent-Kiswahili Version**

Nambari ya Usaili……

IDHINI YA UKUBALI WAKO KUSHIRIKI KATIKA UTAFITI WA KUTAFITI JINSI BEI ZINAVYOPANGWA NA MFUKO WA TAIFAWA BIMA YA AFYA NA VITUO BINAFSI VILIVYORUHUSIWA NA MFUKO HUO KUTOA HUDUMA YA DAWA KWA WANACHAMA WA MFUKO HUO PAMOJA NA JINSI MFUKO HUO UNAVYOFANYA MALIPO KATIKA KUTOA HUDUMA YA DAWA KWA MAGONJWA YANAYOHITAJI MATIBABU YA MUDA MREFU HAPA TANZANIA

Habari Ndugu!

Naitwa Rashid Kirua, mwanafunzi wa shahada ya udhamili Chuo Kikuu cha Afya na Sayansi shirikishi cha tiba, Muhimbili. Nafanya utafiti ili kufahamu jinsi bei inayopangwa kati ya Mfuko wa Taifa wa Bima ya Afya na vituo vya afya vya binafsi inavyoweza kuathiri mfumo mzima wa utoaji huduma ya dawa kwa wagonjwa wanaotumia dawa kwa muda mrefu hapa Tanzania.

**Madhumuni ya utafiti huu**

Ni kutaka kuangalia uwepo wa mambo yanayoathiri utoaji wa huduma ya dawa katika maduka yaliyopendekezwa na Mfuko wa Taifa wa Bima ya Afya kwa kuzingatia bei elekezi za Mfuko huo na bei za duka binafsi za kutolea huduma hiyo ya dawa na jinsi malipo yanavyofanyika.

**Usajili :** Unaombwa ruhusa yako kwa ajili ya usaili wako, ukikubali jaza fomu hii ya kukubali kushiriki.

**Utunzaji wa siri:** Taarifa zote utakazotoa katika utafiti huu, zitatunzwa kwa usiri mkubwa, na hakuna matumizi ya majina sehemu yoyote na badala yake namba maalum bila majina ya muhusika zitatumika.

**Madhara na athari:** Hakuna athari zinazotegemewa kutokana na utafiti huu. Utatakiwa kujitolea muda wako wa takribani dakika arobaini na tano ili kuweza kuongea na mimi.

**Uhuru wa kushiriki:** Ni hiari yako kushiriki au kutoshiriki kwenye utafiti huu na pia unaweza kuamua kujitoa wakati wowote. Hata hivyo kutoshiriki au kujitoa kwenye utafiti huu hakutakunyima haki za kupata huduma zozote za kijamii pale utakapozihitaji.

**Faida za utafiti**

Ukikubali kushiriki katika utafiti huu, wewe pamoja na jamii nzima mtanufaika nayo kwa kuweza kutatuliwa baadhi ya changamoto zitakazogundulika kwa wale wanaopatiwa huduma ya dawa kwenye maduka haya ya watu binafsi.

**Taarifa**

Endapo utahitaji kupata maelezo kuhusu haki zako au kutoa taarifa ya madhara ambayo unahisi yametokana na utafiti huu wasiliana na Mtafiti Mkuu, Rashid Kirua, (simu 0715 309767) Mwanafunzi wa shahada ya udhamili Chuo Kikuu cha Afya na Sayansi shirikishi cha tiba, Muhimbili au unaweza kuwasiliana na Prof. M.J Moshi, Mwenyekiti wa kamati ya utafiti, P.O Box 65001, Dar es Salaam. No ya simu: 2150302-6.

**Je unakubali kushiriki kwenye utafiti huu?**

Ndiyo.....

Hapana.....

Nimeelezwa/nimesoma maelezo haya, nimeelewa na maswali yangu yote yamejibiwa.

Sahihi ya Mshiriki..... Sahihi ya Mtafiti.....

Tarehe……

## Appendix V: Statistical Comparison

### Statistical comparison for the mean price differences between Private pharmacy and NHIF

| Paired Samples Test | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| | | Mean difference | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | Upper | | | |
| **ANTIPYRETIC MEDICINES** | | | | | | | | | |
| 1 | Diclofenac Sodium SR100mg | -23.20000 | 70.10231 | 14.02046 | -52.13681 | 5.73681 | -1.655 | 24 | .111 |
| 2 | Ibuprofen 200mg | 124.32143 | 325.48415 | 61.51072 | -1.88815 | 250.53101 | 2.021 | 27 | .053 |
| 3 | Indomethacin 25mg | 23.22727 | 26.06024 | 5.55606 | 11.67281 | 34.78174 | 4.181 | 21 | .000 |
| 4 | Ketoprofen 200mg | 132.50000 | 111.53829 | 24.94072 | 80.29847 | 184.70153 | 5.313 | 19 | .000 |
| 5 | Diclofenac Sodium 50mg | -3.93939 | 14.76573 | 2.57038 | -9.17509 | 1.29631 | -1.533 | 32 | .135 |
| 6 | Ketotifen1mg | -27.36842 | 118.12621 | 27.10001 | -84.30343 | 29.56659 | -1.010 | 18 | .326 |
| 7 | Mefenamicacid 250mg | -30.83333 | 130.28119 | 26.59354 | -85.84626 | 24.17959 | -1.159 | 23 | .258 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | Tramadol Hydrochloride 50mg | -171.77419 | 57.93025 | 10.40458 | -193.02318 | -150.52521 | -16.509 | 30 | .000 |
| 9 | Paracetamol 500mg | 15.60000 | 20.73242 | 4.14648 | 7.04208 | 24.15792 | 3.762 | 24 | .001 |
| **ANTIHYPERTENSIVE MEDICINES** | | | | | | | | | |
| 1 | Amlodipine 5mg | 77.50000 | 81.57419 | 16.65126 | 43.05424 | 111.94576 | 4.654 | 23 | .000 |
| 2 | Amlodipine + Atenolol 50/20mg | -19.47368 | 95.12995 | 21.82431 | -65.32485 | 26.37748 | -.892 | 18 | .384 |
| 3 | Atenolol25mg | 16.66667 | 44.38127 | 12.81177 | -11.53185 | 44.86518 | 1.301 | 11 | .220 |
| 4 | Atenolol + Nifedipine | -13.60000 | 86.01744 | 17.20349 | -49.10625 | 21.90625 | -.791 | 24 | .437 |
| 5 | Enalapril 5mg | 207.80000 | 152.98475 | 30.59695 | 144.65100 | 270.94900 | 6.792 | 24 | .000 |
| 6 | Hydrochlorothiazide | -38.33333 | 164.60631 | 42.50117 | -129.48927 | 52.82260 | -.902 | 14 | .382 |
| 7 | Lisinopril 10mg | -72.61905 | 77.25961 | 16.85943 | -107.78720 | -37.45089 | -4.307 | 20 | .000 |
| 8 | Methyldopa 250mg | 118.79310 | 56.05570 | 10.40928 | 97.47066 | 140.11555 | 11.412 | 28 | .000 |
| 9 | Nifedipine 20mg | -48.92857 | 36.14162 | 6.83012 | -62.94283 | -34.91431 | -7.164 | 27 | .000 |
| 10 | Atorvastatin10mg | -207.69231 | 197.32831 | 38.69927 | -287.39494 | -127.98968 | -5.367 | 25 | .000 |
| 11 | Atorvastatin20mg | -89.51613 | 200.91190 | 36.08484 | -163.21121 | -15.82105 | -2.481 | 30 | .019 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | Bendrofluazide 5mg | 11.90476 | 21.82179 | 4.76190 | 1.97160 | 21.83792 | 2.500 | 20 | .021 |
| 13 | Frusemide 40mg | 20.70968 | 30.84822 | 5.54050 | 9.39446 | 32.02490 | 3.738 | 30 | .001 |
| **ANTIDIABETIC MEDICINES** | | | | | | | | | |
| 1 | Chlorpropamide 250 mg | 28.00000 | 56.05057 | 11.21011 | 4.86346 | 51.13654 | 2.498 | 24 | .020 |
| 2 | Glibenclamide 5mg | -10.75758 | 39.88501 | 6.94309 | -24.90019 | 3.38504 | -1.549 | 32 | .131 |
| 3 | Glimiperide 1mg | -240.00000 | 185.30640 | 49.52522 | -346.99273 | -133.00727 | -4.846 | 13 | .000 |
| 4 | Metformin 500mg | 84.20619 | 111.83166 | 24.40367 | 33.30103 | 135.11135 | 3.451 | 20 | .003 |
| 5 | Metformin 850mg | 172.50000 | 169.91686 | 34.68413 | 100.75040 | 244.24960 | 4.973 | 23 | .000 |
| 6 | Metformin+Glibenclamide500/5 mg | -12.50000 | 88.11596 | 23.54998 | -63.37664 | 38.37664 | -.531 | 13 | .605 |
| 7 | Metformin +Glimipride 500/1 mg | -58.33333 | 96.30868 | 19.65893 | -99.00092 | -17.66574 | -2.967 | 23 | .007 |