ST.MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

The Perception of Physicians and Pharmacists Towards Non-Branded Medications in Tikur Anbessa Specialized Hospital

By
Fassika Abebe

February, 2016
ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST.MARYS UNVERSITY SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIRMENTS FOR THE DEGREEOF MASTER OF BUSINESS ADMINSTRATION.

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Declaration

I, the undersigned, declare that this thesis is my original work; prepared under the guidance of Asst. Professor Teklegiorgis Assefa. All resources of materials used for the thesis have been dully acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of learning any degree.

Name_____ Signature_____

St. Mary's University, Addis Ababa February, 2016

Endorsement

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a University Advisor.

Advisor_____ Signature_____

St. Mary's University, Addis Ababa February, 2016

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Acronyms

DHS	Demographic Health Survey
FDA	Food and Drug Administration
FMOH	Federal Ministry of Health
GMP	Good Manufacturing Practice
GP	General Practitioner
HSDP	Health Sector Development Program
INN	International Proprietary Name
NGO	Non-Governmental Organization
PBS	Pharmaceutical Benefit Scheme
PFSA	Pharmaceutical Fund and Supply Agency
PLMU	Pharmaceutical Logistic Management Unit
TASH	Tikur Anbessa Specialized Hospital
USA	United States of America

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Abstract

In many countries, including our country Ethiopia, health care expenditures have continuously grown during the past years. One way to reduce health care expenditures for household is physicians shift to prescribing less expensive comparable generic drugs instead of more expensive brand name drugs. This can reduce drug expenditures and make health care for households more affordable. The aim of the study was to assess the level of perception with physicians and pharmacists towards non branded (generic) medications use.The study design was a cross sectional descriptive study conducted from March, 2015 to April, 2015 in Tikur Anbessa Specialized Hospital (TASH), Addis Ababa.The study populations included physicians who were volunteers and available at the time of the survey. A descriptive analysis (percentage, cross tab) and bivariate correlation was used to describe demographic information and perception of physicians and pharmacists regarding non branded medications. The results were presented in the form of figures, tables and texts. A total of 223 physicians and 92 pharmacists were invited to participate in the study and only 197 physicians and 92 pharmacists filled and returned the questionnaire giving a response rate of 88.34% and 92% respectively.Both Physicians and pharmacists agreed about better affordability of generic medicines over brand ones. In conclusion, most of the respondent physicians and pharmacists relatively had good perceptions towards generic medicines use based on the result obtained. In addition to this, most of the respondent believed that generic medicines are affordable, and can save costs. As a recommendation it is encouraged to provide continuous educational intervention in order to encourage physicians and pharmacists to have the right information to benefit the patient.

Keywords: *Generic Medicine, Physician, Pharmacists, Perception*

Chapter one: Introduction

1.1 Background of the Study

In the observation of Chuna (2010) with the global escalating healthcare cost, governments in many countries have adopted ongoing series of cost containment attempts in an effort to spend their limited financial resources efficiently so that equitable access to healthcare can be provided. One of the many ways to control healthcare expenditure is to promote the useof cheaper generic drugs instead of the more expensive branded equivalents. Savings made by using generic medicines allow more patients to be treated with the same amount of money and mobilizes fund to finance other treatment modalities.

Kaplan WN et al (2005) noted that in developing countries there is a great disparity between the demand for medicines to treat endemic diseases and the lack of purchasing power of (or for) patients most at risk. The idea that local production of medicines should be encouraged in developing countries to provide increased access is attractive since many of the costs involved will be lower than in developed countries. It is clear, however, that investments in local medicine production will be efficient only if pharmaceuticals can be produced more cheaply locally than they can be imported on the open market. This sets up the inherent tension between a health policies directed to the access problem of making available low cost and quality assured medicines and an industrial (primarily private sector) policy of optimizing profits and growth by promoting a local industry whose products may be more expensive than those on the international market.

Kembhavi RS et al (2014) Observed while conducting studies on generic drugs that it is important to know some true facts about them. A generic drug (generic drugs, short: generics) is a drug defined as ‘a drug product that is comparable to brand/reference listed drug product in dosage form, strength, route of administration, quality and performance characteristics, and intended use’ . It has also been defined as a term referring to any drug marketed under its chemical name without advertising. Generic drugs are usually sold for significantly lower prices than their branded equivalents. One reason for the relatively low price of generic medicines is that competition increases among producers when drugs no longer are protected by patents. So companies are able to maintain profitability at a lower price. A brand name is a name given to a

drug by the manufacturer. The use of the name is reserved exclusively for its owner as it is explained by Zarowitz BJ (2008).

Kaplan WN et al (2005) noted that prescribing drugs by generic name and encouraging pharmacists to dispense prescriptions with generic medicines is one frequently suggested means for lowering the costs of healthcare. To the best of our knowledge, no studies are currently published reporting physicians' attitudes and knowledge towards generic medicines in Ethiopia. Although a few studies have been conducted in developed countries such the United Kingdom, the United States, Greek, Pakistan, and Australia, it is very difficult to extrapolate these results to the Ethiopian context because those countries have distinct healthcare as well as economic systems. Therefore, the aim of this study was to explore perception held by Ethiopian physicians and pharmacists towards the use of generic medicines.

1.2 Statement of the Problem

De CosterS (2006) as well as Mrazek M et al (2004) explains that generic medications use needs to be associated with notable monetary savings for society in several settings and represents one of several strategies aimed to curb pharmaceutical expenditure. Himmel W et al (2005) also noted that generic drugs, which contain the same therapeutic substance as the originalformulation, have to be available once the patent protection granted to the brand name drug has expired, leading to greater market competition and lower prices. To contain rising pharmaceutical costs, governmentsand health insurers should do more to promote genericmedication use.There are, however, different barriers to the wider use of generic drugs. The first is the concern of patients. Carthy P et al (2000) reported that about one third of patients expressed worries after generic substitution and some reported either a reduced effect or new or increased side effects. Gossell Williams M (2007) observed that chronically ill patients taking several drugs may feel unsettled; particularly when different generics are offered each time they buy their medication. Such brand to generic or generic to generic switches might be confusing (patients taking the same substance but in a new form), and problematic for certain medication classes with a narrow therapeutic margin like anti epileptics, where seizures and other negative outcomes have been reported. Generic substitution could be anadditional factor behind poor therapy adherence in chronic diseases.

De CosterS (2006) alluded to the fact that, generic substitution is generally met with skepticism by health professionals despite a lack of proven differences in the clinical outcomes of generics and original formulations. Kanavos P (2007) observed physicians who play a central role in the prescription decision have their individual prescribing habits and tend to prescribe by brand name, generally ignoring drug prices. Pharmacies may also influence the choice of medication by informing patients of the costs or by adopting procedures that increase generic use.

In the observation of Granlund D (2009) economic and regulatory conditions play a major role on the drugs market, with financial incentives for all parties (prescribers, pharmacists, and patients) being an important factor. Patients who face higher copayments purchase more generics on average, and they switch to a generic when the relative saving is high. Decollogny A et al (2011) determined market characteristics, as well as pricing and licensing policies also influence the use of generic drugs. The market share of generics varies widely from one country to another.

Granlund D (2009) stated in markets where the generics' share is large, switching should be more common place. However, brand name drugs tend to be heavily advertised and prescribers tend to remain loyal to brands, allowing them to keep their customers for long periods despite being more expensive.

This paper will examine the level of perception of Physicians and pharmacists towards non branded medications. The lack of such studies in Ethiopia has so far lead to the inadequate information when it comes to the impact of brand perception. In a developing country like Ethiopia where there is a lack of locally manufactured medicines, the perception of the health professionals towards brand medications is very crucial. Ultimately it directly affects the public choice of medications. In the bigger picture the procurement cost for the countries health budget will get its fair share of benefit.

Tikur Anbessa specialized hospital (TASH) is one of the largest teaching hospitals in Ethiopia, which gives service to a large number of patients. It accepts patients across the country including referred patients from other hospitals and regions. Focusing this study to this particular hospital which houses a large number of health professionals will enable us to get a very good picture of the current situation on perception of brand medications. The advantage of TASH is not only in numbers but also the range of medications used in the hospital is wide. Since there are various wards and special clinics it will help in identifying the matter from different areas.

1.3 Research Questions

1. What is the perception of physicians and pharmacists toward generic medications?
2. What factors affect perceptions of physicians and pharmacists in using generic drugs?
3. Is there a difference between physicians and pharmacists with regard to the use of non-branded medications?

1.4 Objective of the Study

1.4.1 General Objective

- The main objective of the study is to assess the level of perception with physicians and pharmacists towards non branded (generic) medications use.

1.4.2 Specific Objective

- To identify major determinates of perception towards generic medications.
- To examine the perception of physicians and pharmacists on the therapeutic equivalency of generic medicine.
- To compare and contrast the perception of physicians and pharmacists in relation to branded and non-branded medications.

1.5 Significance of the Study

Prescribing drugs by generic name and encouraging pharmacists to dispense prescriptions with generic medicines is one frequently suggested means for lowering the costs of healthcare. The fundamental significance of the study is seen in the fact that, there is hardly any research work available locally on the perception of physicians and pharmacists on non-branded medication. As such, the finding of the study will serve as a contribution to fill the research and knowledge gap. Although a few studies have been conducted in developed countries such the United Kingdom, the United States, Greek, Pakistan, and Australia, it is very difficult to extrapolate these results to the Ethiopian context because those countries have distinct healthcare as well as economic systems.

The study will also be of an immense significance to the current practice of health professionals. By this study the true picture of practice which is directly impacted by perception will be evaluated. And a new improved direction of understanding will be generated. Of all the health care costs the amount taken by medications take a significant share, posing a major economical impact on the patients and the public in general. This will make this research topic further important as it will lead the way to minimize unnecessary medication cost.

The change in practice will lead to the need for further study to evaluate the situation more deeply. Based on this study further study focusing on patient can also contribute a lot in order to understand the non-branded medications profoundly. As this study is affected by the ever increasing understanding of the public towards the medical world, it deemed necessary to be performed in the future.

1.6 Operational Definition of Terms

- **Perception**: is a physician's awareness and feeling towards the generic medicines utilizations. In this study physicians have good perception regarding the generic medicine, if they express their feeling according to the asked questions (Gossell M., 2007).
- **Non Branded medicines (Generic medicine):** Is a drug product that is comparable to brand/ drug product in dosage form, strength, route of administration, quality, side effects and performance characteristics, and intended use (US FDA,2015).

Chapter two: Literature Review

The chapter is intended to present the theoretical and empirical foundation for this research topic. While the first part concerns itself to the purely theoretical foundation, the second part presents a review of several empirical studies on the perception of physicians and pharmacists on the use of Non-Branded medications.

2.1 Pharmaceuticals Manufacturing and Importation of Products

Kembhavi RS et al (2014) has explained that Ethiopia is one of the most populated countries in Africa with a high demand for pharmaceutical products and yet has annual health expenditure per capita of only US$30. The manufacturing for pharmaceutical products in Ethiopia is quite small. There are actually 9 main private local manufacturers of various pharmaceutical products including medical supplies, finished product formulation using imported raw materials, and empty gelatin capsules. The local production represents less than 10% of the total market for pharmaceutical products. The industrial base is not well developed and the manufacturing companies have relatively low production capacities. Usually local manufacturers tend to be given preference in the case of procurement from the government. The prices of the locally manufactured products are actually higher than imported products. With respect to standards, none of local manufacturers meet the World Health Organization's basic Good Manufacturing Practice (GMP) standards. This explains that most of them have low level of technical capabilities. In terms of personnel, Ethiopia seems to have enough trained pharmacists.

In the opinion of Garattini L (2010) one of main issues that ought to be addressed by local manufacturers is the need to produce products with the help of updated technology with expanded ranges. The import and distribution of pharmaceutical products is done through public sector, private sector, NGO's and international organizations. The Pharmaceutical Logistic Management Unit (PLMU) of the Ministry of Health and the Pharmaceutical Fund and Supply Agency (PFSA), which is a quasi-governmental organization, are responsible for importation and distribution to the public sector. The public procurement is done through international and local tenders as well as by direct purchasing or negotiation. Private companies import directly but have to abide by the list of Authorized products.

2.2 Generic Medications

Chua GN et al (2010) has defined a non-branded (generic) drug as 'a drug product that is comparable to brand/reference listed drug product in dosage form, strength, route of administration, quality and performance characteristics, and intended use'. It has also been defined as a term referring to any drug marketed under its chemical name without advertising. Non branded drugs are usually sold for significantly lower prices than their branded equivalents. One reason for the relatively low price of non-branded medicines is that competition increases among producers when drugs no longer are protected by patent. So companies are able to maintain profitability at a lower price .Garattini L et al (2000) noted that generics can be classified in three types of categories: branded generics that are copies of pharmaceutical specialties with their own brand; semi banded generics products marked under the international nonproprietary name (INN) followed by the name of the manufacturer; and unbranded generics drugs that are just promoted under the INN.

Paraponaris A et al (2004) explained that when the patent expires for a brand name drug, the U.S. Food and Drug Administration (FDA) allow drug companies to produce a comparable drug and call it by its generic name. The FDA requires a generic drug to be chemically equivalent to the brand name drug from which it was cloned. It also expects that virtually all generic drugs have the same therapeutic effect as the original brand name drug. Generic drug manufacturers must demonstrate to the FDA that their generic drug is bioequivalent to its brand name counterpart. They must have the same active ingredient, strength, dosage form, and method of administrating (US FDA, 2015).Nonetheless, there are a few drugs that have a narrow therapeutic index. A narrow therapeutic index refers to the "difference between the drug's effective amount in the body and the level at which the drug causes an undesirable or toxic effect". When a drug with a narrow therapeutic range is needed, substituting a generic may not be appropriate.

Therapeutic and safety equivalence between drug products is assumed, from a regulatory perspective, on the basis of quality equivalence. This is evidenced from bioequivalence and chemical data. Products are considered to be bioequivalent if their rates and extent of absorption do not show a significant difference. In the United States, marketing approval for generic drugs is subject to successful submission of an Abbreviated New Drug Application. Generic drug

applications are termed "abbreviated" because they are generally not required to include reclinical and clinical data to establish safety and efficacy (US FDA, 2015).

Shrank WH et al (2006) reported that by 2003 generic drug prescriptions represented 43 percent of all prescriptions written and 47 percent of new (non-refill) prescriptions. Generic drugs were also one of the fastest growing sectors of the pharmaceutical industry. Given the rise in direct-to-consumer advertising, the use of formularies to control costs, and continued concern about drug safety, it is time to revisit physicians' opinions and practices regarding generic drug substitution.

2.3 Ethiopia's Health Status and Health Policy

According to Health Sector Development Program IV (2010/11-2014/15), Ethiopia's population still face a high rate of disease related morbidity and mortality and the health status remains relatively poor. Vital health indicators from the demographic health survey (DHS) of 2005 showed a life expectancy of 54 years (53.4 years for male and 55.4 for female) and an infant mortality rate (IMR) of 77/1000. Less than five mortality rate has been reduced to 101/1000 in 2010. In terms of women health, the maternal mortality rate (MMR) has declined to 590/100,000. Although these rates have declined in the past 15 years, they are still very high levels. The major health problems of the country are largely preventable communicable diseases and nutritional disorders (Federal Democratic Republic of Ethiopia Ministry of Health, 2010).

To alleviate this problem the Ethiopian federal ministry of health (FMOH) developed the health policy which emphasized achieving access for all segments of the population, to a basic package of quality primary health care services, via decentralized state system of government. In order to attain this goal, health sector development program (HSDP-IV) has introduced a three tier health care delivery system (Federal Democratic Republic of Ethiopia Ministry of Health, 2010).

Looking at the health care financing mechanism in Ethiopia, one can easily observe the significant contribution of out of pocket payment by households. As per the fourth National Health Account study conducted in 2009/10, household out of pocket payments constituted about 37% of the total health expenditure. Such financing is regressive & impedes access to health services (5). The total drug expenditure of the Ministry of Health in 2002 G.C. was estimated at ETB 257.9 million (USD 30 million) representing a per capita drug expenditure of ETB 3.8 (US$ 0.44). No reliable data is available on the drug expenditure of the private sector and other

sectors**.** According to the National Bank of Ethiopia, the total value of import of "medical and pharmaceuticals"in 2001/02 G.C was ETB 421.3 million (US$ 49 million). However, this category includes non-drug items as well and the value for drugs alone is lower than this figure (Federal Democratic Republic of Ethiopia Ministry of Health and World Health Organization, 2015)

In order to address this problem & create equitable financing mechanism, the government of Ethiopia is currently undertaking a number of activities to introduce health insurance with the overall objective of achieving universal access (Federal Democratic Republic of Ethiopia Ministry of Health, 2010).

2.4 The Benefit of Generic Medicines use

Zarowitz BJ (2008) noted according to a report by the United States Food and Drug Administration (FDA), that each year, Americans save an estimated $8 billion to $10 billion at retail pharmacies by purchasing generic drugs rather than brand name medications .Generic drugs typically cost 30% to 60% less than their brand name counterpartsand widespread use of generics has the potential to reduce the price of other brand name drugs by creating more competition.The basic reason why these drugs are of lower cost is due to the fact that they do not have to undergo the large, expensive clinical trials that are required for the approval of brand name medications. However, such fact gives rise to questions about the quality and safety of generics.

Wazana A (2000) reported that many studies are conducted to test the therapeutic bio-equivalence of generic drugs prior to marketing and there is a wealth of available published studies assuring the safety and efficacy of these generic drugs. In the U.S. generic drugs are 80% less expensive than brand-name drugs. Shrank WH et al (2006) alluded to the fact that prescribing brand-name drugs when there are bio-equivalent generic drugs unnecessarily increases household healthcare and drug expenditures both in developing and developed countries.

In order to reduce the growth in national healthcare spending, generic drugs are being increasingly used in most countries worldwide. Treatment of many patients is now possible because of low-cost generic drugs. However, drug control routines vary between countries, as do

the number of drugs available. A brand name or reference drug can only be substituted by a generic drug when the latter contains the same active ingredient and strength as the reference drug, and is administered in the same dosage form. (William H et al, 2011)

It is important to note that many generic medications are produced under the license of the manufacturer of the original brand name product, with the lower cost equivalent often introduced after the drug's patent has expired. Even when different manufacturers produce the branded product and the generic, strict standards exist to guarantee the quality of generic drugs. It's noted that patients taking generic drugs appear to be more willing to continue therapy than those taking brand name medications because of the economic advantage they provide. (Shrank WH et al, 2006).

2.5 Measurement to Improve Generic Medications use

Kanavos P (1999) observed that a wide range of policies have been or can be employed to maximize the use of generic medication in both developed and developing countries. These, to improve the use of generic medications, broadly can be categorized as pertaining to the supply side and the demand side.Supply side measures relate to market entry and penetration of generic medicines, as well as issues around pharmaceutical pricing, setting an imbursement price, and determining pharmaceuticals available in a reimbursement (positive) list. Demand side measures are associated mostly with interventions at prescribing and dispensing levels and less so at purchasing level. It is difficult, however, to quantify the savings for the health care system attributable to any one of these broad categories, let alone a single policy measure. No country has introduced policies and followed their impact without making further changes to their health system, but some research evidence has been produced that attempts to estimate the savings of specific policies .Direct price controls are a common phenomenon, even in generic markets, and several examples are in place to demonstrate this. Countries such as France, stipulate that prices of generics should be 30% lower than the equivalent branded product.

Through generic substitution a pharmacist is authorized to dispense the generic version of a medicine even when a GP has prescribed it by brand name. There are various levels of generic substitution. Pharmacists may have wide substitution rights, in other words they can substitute freely for a generic, but their rights may also be limited, which may mean that they need to

obtain authorization to dispense a generic or be allowed to dispense a generic in emergencies only. Generic substitution is potentially a significant policy tool in increasing the market share of generic medicines and is allowed in some form in Canada, Denmark, Germany, the Netherlands, and the US .Typically, the physician is given some control to prevent substitution where a particular situation warrants this. Generic substitution rights and pharmacy reimbursement incentives through regressive margins are two different facets of the same policy that would promote generic use more widely (Bee croft G, 2007).

Abratt R et al (2000) reported that the prescribing behavior of physicians is considered to be crucial for generic utilization as they determine whether their patients need originator drugs or generic drugs. A generic medicine may not always be suitable for the patient. Moss G (2003) observed that several factors may play a significant role in influencing the physicians 'prescribing behavior such as the "trust" and the "quality image" of the pharmaceutical company. Physicians' prescribing behavior can also be influenced by pharmaceutical companies through a variety of incentives such as high-end education programs or even some cash payment for prescriptions . In addition, free samples and gifts that include financing for domestic and international conference participation, travel and accommodation, medical education, meals, honoraria and small gifts like pens can also influence prescribing. However, one cannot state that physicians prescribe only on the basis of the rewards that they receive from the company, but the rewards certainly help physicians to remember the company brands. Therefore, these incentives may indirectly affect the patients, by encouraging them to use higher priced originator products instead of equally effective, lower-cost generics (Wazana A, 2000).

2.6 Factor Associated with Generic Medications Use

Simoens S (2006) explains generic medications use has been associated with notablemonetary savings for society in several settings and represents one of several strategies aimed to curb pharmaceutical expenditure. Mrazek M (2004) also noted that generic drugs, which contain the same therapeutic substance as the originalformulation, become available once the patent protection granted to the brand name drug has expired, leading to greater market competition and lower prices. To contain rising pharmaceutical costs, governmentsand health insurers should do more to promote genericmedication use.There are, however, different barriers to the wider use of

generic drugs. The first is the concern of patients. About one third of patients expressed worries after generic substitution and some reported either a reduced effect or new or increased side effects (Himmel W et al, 2005). Chronically ill patients taking several drugs may feel unsettled; particularly when different generics are offered each time they buy their medication (Carthy P et al, 2000). Such brand to generic or generic to generic switches might be confusing (patients taking the same substance but in a new form), and problematic for certain medication classes with a narrow therapeutic margin like anti epileptics, where seizures and other negative outcomes have been reported. Generic substitution could be anadditional factor behind poor therapy adherence in chronic diseases (Paraponaris A et al., 2004).

McGuire C et al (2009) alluded to the fact the generic substitution is generally met with skepticism by health professionals despite a lack of proven differences in the clinical outcomes of generics and original formulations. Kanavos P (2007) noted that physicians who play a central role in the prescription decision have their individual prescribing habits and tend to prescribe by brand name, generally ignoring drug prices. Pharmacies may also influence the choice of medication by informing patients of the costs or by adopting procedures that increase generic use.

Steinman MA et al (2007) noted that in most countries, including Armenia, physicians decide which drug to prescribe; physicians have the power to determine the particular drug to be taken by a patient. Physicians often refer to drugs by their brand-names, resulting in brand-name drugs being dispensed even when less expensive bioequivalent generic alternatives are available. Rodin HA et al (2009) observed that by prescribing generic drug physicians reduce household expenditures spent on drugs, thus reduce the burden on families and allowing more family resources to be spent on food, clothing, transportation, and other products and services.

Granlund D (2009) determined that brand name drugs tend to be heavily advertised and prescribers tend to remain loyal to brands, allowing them to keep their customers for long periods despite being more expensive.

In 2012, Hakonsen and Toverud published a review on patient perspectives on generic substitution. This review was exclusively based on studies from the developed world given the perceived limitations on the applicability of generic substitution in developing countries.

Explanatory factors were high illiteracy rates, low educational levels, and limited access to healthcare, as well as large differences between rural and urban areas. It has been further suggested that patients in countries with mature healthcare systems are, in general, treated with medically adequate generic drugs.

Toverud EL (2011) observed the challenges mentioned above can lead to reduced drug adherence or double dosing, and the issue of confusion can become even more severe if patients are treated by several physicians and attend different pharmacies. Additionally, physicians and pharmacists respectively prescribing and dispensing drugs also face important challenges in relation to generic drug use. Exploring their perspectives and perceptions may thus increase the understanding of said challenges. Furthermore, by focusing on healthcare professionals with knowledge of their healthcare systems, it should be possible to obtain a broader international perspective of these challenges.

Andersson K et al (2005) noted that economic and regulatory conditions play a major role on the drugs market, with financial incentives for all parties (prescribers, pharmacists, and patients being an important factor. Patients who face higher copayments purchase more generics on average, and they switch to a generic when the relative saving is high Market characteristics, as well as pricing and licensing policies also influence the use of generic drugs. In the observation of Garattini L et al (2000) the market share of generics varies widely from one country to another and in markets where the generics' share is large, switching should be more common place.

According to the literatures, there are at least four main promoting or hindering determinants of the use of generics: Cost, Quality, efficacy and availability.

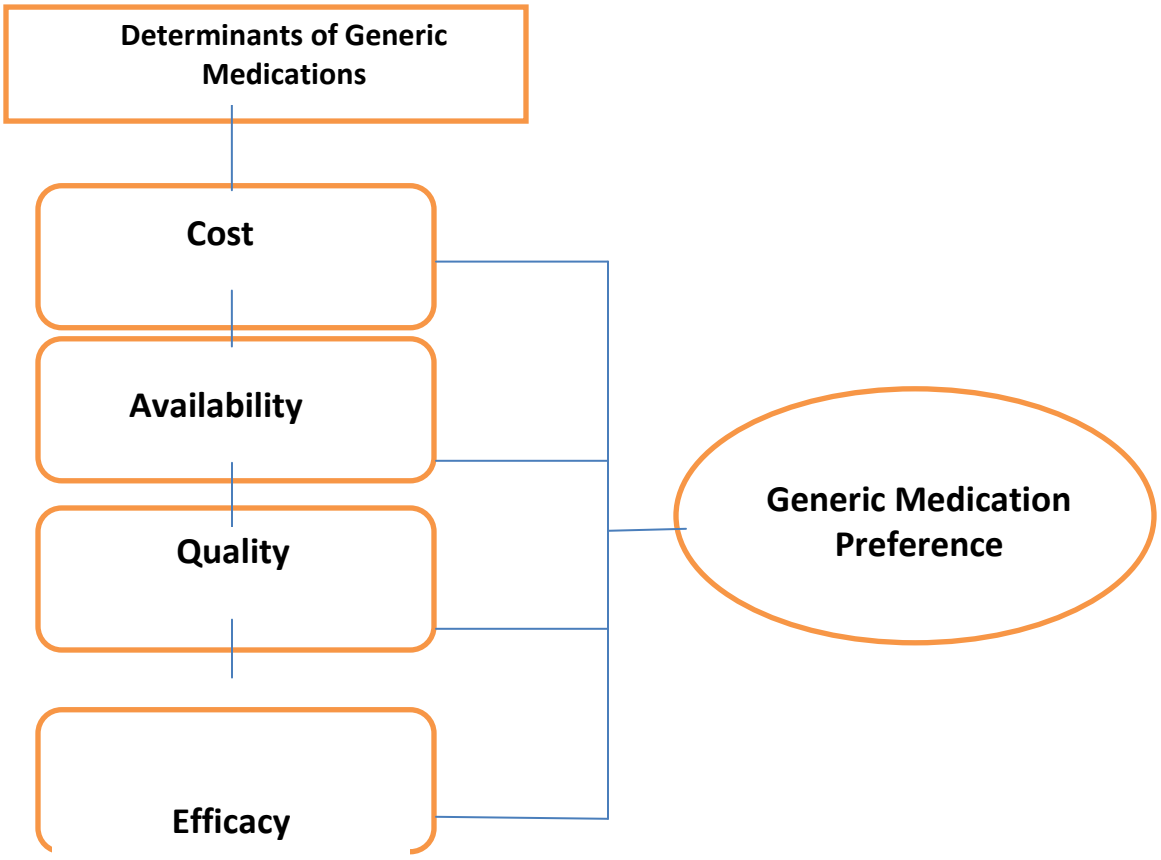

Fig 1: Conceptual framework and assumed determinants of generic use

Chapter Three: Research methodology

Tikur Anbessa Specialized Hospital (TASH) is a large public specialized teaching hospital located in Addis Ababa, Ethiopia. The hospital has over 800 beds and gives services for over 300,000 patients annually. Moreover, it serves as a training center for health science students. The major service it provides broadly includes consultation at an outpatient level, emergency service, inpatient services, and a pharmacy service.

3.1 Research Approach

A cross sectional descriptive study was conducted from March, 2015 to April, 2015.It is described as a cross sectional study because the study involves the administration of the research instrument(questionnaire) once only to the sample and the data generated on the measured characteristics are limited only to the specific period of the study. The research is quantitative and exploratory. On the quantitative side, the study tried putting numerical findings and perspective to the questions assessing perception. Also using the different questions factors related to standing perceptions were explored from the participants. To perform the quantifying and exploration a self-administered questionnaire were used to assess the physicians and pharmacists on non-branded medications use. Questions related to cost, quality, efficacy and availability of medications, both brand and non-branded, were assessed.

3.2 Sampling Design

3.2.1 Population

The source population for the current study was all physicians and pharmacists who are working in TASH. The physicians include general practitioners, residents, specialists and all high ranking doctors including consultants. When it comes to pharmacists, it included all hospital employed pharmacist working across the different departments of the hospital, including inpatient, outpatient, and different ambulatory clinics.

3.2.2 Sampling Size

The study population included physicians and pharmacists who were volunteers and available at the time of the survey (i.e. March to April, 2015). A total of 223 physicians and 92 pharmacists were invited to participate in the study and 197 physicians and 92 pharmacists filled and returned the questionnaire.

3.2.3 Sampling Technique

A census sampling approach is employed. The sampling frame work is constructed to include all practitioners that are actively prescribing and dispensing within the study period. This was done by distributing the self administrated questionnaires to physicians and pharmacists who were involved in the study period by final year pharmacy students. Purposive sampling method was used for selecting the study setting. TASH was selected purposively because of; the high consistent flow of patients, large number of physicians and pharmacists with various discipline.

3.3 Sources and data

The inclusion criterion for the study includes physicians and pharmacists who are actively involved in the prescribing and dispensing process with in the study period. Those physicians and pharmacists who are not available or not willing to participate were excluded.

- Dependent variables: perception of generic medications.
- Independent variables: cost, quality, efficacy, availability, sex, age, qualification, years of service, patients seen per day, and visit by medical representative, education level of patients.

3.4 Research Instrument

Self-administered questionnaire were used to assess the perception of physicians and pharmacists on non-branded medications use. The questionnaire contains two parts which includes; demographic information and questions that assess perception. The response format is a yes/no types or a scale types (from strongly agree to strongly disagree). After pre testing the instrument and informing the study participants about the study's objective, the questionnaire was distributed and collected in the respective days.

3.5 Data analysis Method

After checking for data cleanness and consistency, it was entered into SPSS version 20 for analysis.A descriptive analysis (percentage, cross tab) and bivariate correlationwas used to describe demographic information and perception regarding non branded medications. The results are presented in the form of figures, tables, and texts.

3.6 Reliability and Validity

The data collected from self-administered questionnaire was checked for reliability and validity. One of the steps taken to ensure that was to thoroughly explain the questioner and the study objective to the study participants. To do that final year pharmacy students who had a very good understanding of the concept were collecting the data. This measure enabled us to get the maximum validity of our data. On the other had the pre-test performed prior to the study help ensure the reliability of the data collection tool and the information obtained. Additionally the questions asked in the questionnaire were simple and straightforward which made it easy for the respondents to understand and answer.

3.7 Ethical Issues

In the design of the study, careful consideration was given to ethics. In the questionnaire design and pre-test, care was also taken to ensure that questions asked were simple and straightforward. As far as possible, questions that would stir up emotions were avoided. The pre-test particularly availed the final year students the opportunity to closely observe expressions and sentiments both verbal and non-verbal which accompanied certain questions. Those questions, which had a personal and privacy prying touch, were modified in the final questionnaire design. Questions that also required more clarity were so amended to provide simple and precise meaning .Prior information was sent to the hospital about the nature and purpose of the study through a letter from St.Mary's university school of graduate studies. Informed consent will be obtained from every participant..

Chapter Four: Data analysis and Interpretations

After pre testing the instrument and informing the study participants about the study's objective, the questionnaire was distributed and collected in the respective days. After checking for data cleanness and consistency, it was entered into SPSS version 20 for analysis. A descriptive analysis (percentage, cross tab) and bivariate correlation was used to describe demographic information and perception regarding non branded medications. Demographic profile of respondents

4.1 Demographic Profile of Respondent

4.1.1 Physicians

The sample is comprised of 63.5% males and 36.5% females. Most of the respondents lie at the age group which ranges 18-30 years. About 28% of the respondents are between the age group 31-40 which amounts to the second highest in percentage whereas 4% and 3% are the respondents age group among 41-50 and >50 respectively. With regard to their qualification, most of the respondents were general practitioners (58.4%) followed by Specialists (41.6%). The total year of services for 78% of the respondents was less than 15 years and nearly 16% of the respondents had served for 16 to 30 year. The lowest portion, 5.6%, worked for more than 30 years.

Table 1: **Background Information of Physicians (N=197)**

Variables	N (%)
Gender	
Male	125(63.5)
Female	72(36.5)
Age (years)	
18-30	127(64.5)
31-40	56(28.4)
41-50	8(4.1)
>50	6(3)
Qualification	
General practitioners (GP)	112(58.4)
Specialists	85(41.6)
Others	-
Total years of service	
Less than or equal to 15	155(78.8)
16-30	31(15.7)
>30	11(5.6)

"N=Number of Respondents"

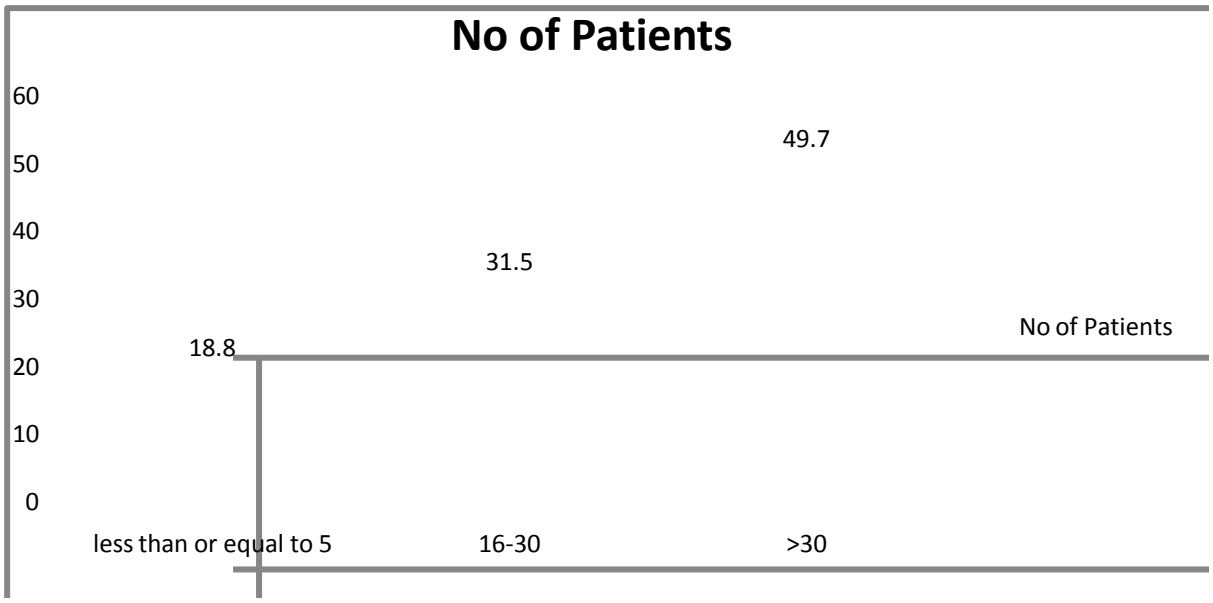

Fig 2: Number of Patients Received, Diagnosed and Treated per day by Respondents

A greater proportion of the respondents (49.7%) had received, diagnosed and treated on average greater than 30 patients per day.31.5% of the respondents received, diagnosed and treated 16-30 patients per day whereas only 18.8% of the physicians received, diagnosed and treated less than or equal to 5 patients per day.

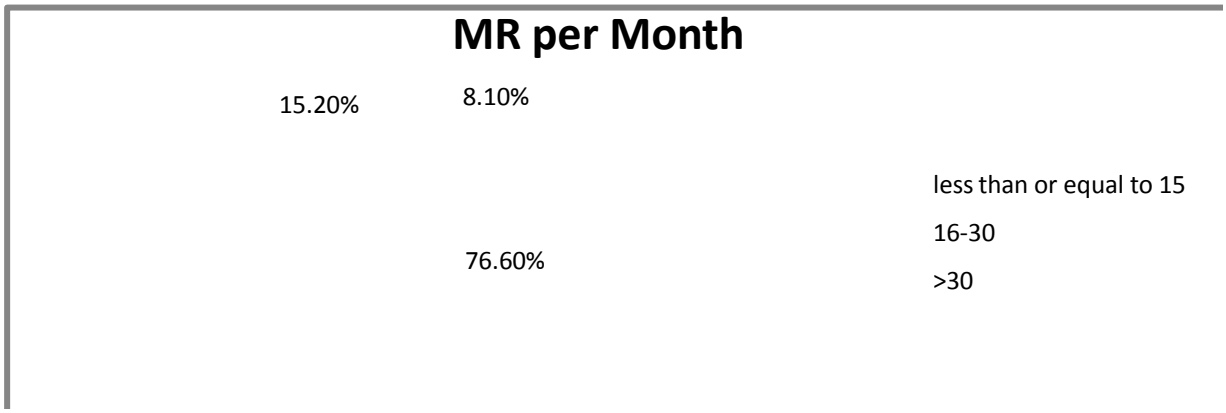

Fig 3: Number of Medical Representative Visits Respondents Office per Month

More than 76.6% of the participants have had received a visit by 16-30 medical representatives per month whereas 15% had received more than 30 medical representatives on a monthly base. Only 8% of the respondents entertained less than or equal to 5 Medical representatives within a month (Fig.3).

4.1.2 Pharmacists

The sample is comprised of 64.7% males and 35.3% females. Most of the respondents lie at the age group which ranges 18-30 years. Only 1.2% of the respondents are within the age range of 41-50 and about 14% are within the 31-40 age range. The total year of services for 34% of the respondents was less than 15 years and more than 25% of the respondents had served for 16 to 30 year. The rest amounting to 35.3% worked for more than 30 years.

Table 2: Background Information of Pharmacists (N=85)

Variables	**N (%)**
Gender	
Male	55(64.7)
Female	30(35.3)
Age (years)	
18-30	72(84.7)
31-40	12(14.1)
41-50	1(1.2)
Others	
Total years of service	
Less than or equal to 15	29(34.1)
16-30	26(30.6)
>30	30(35.3)

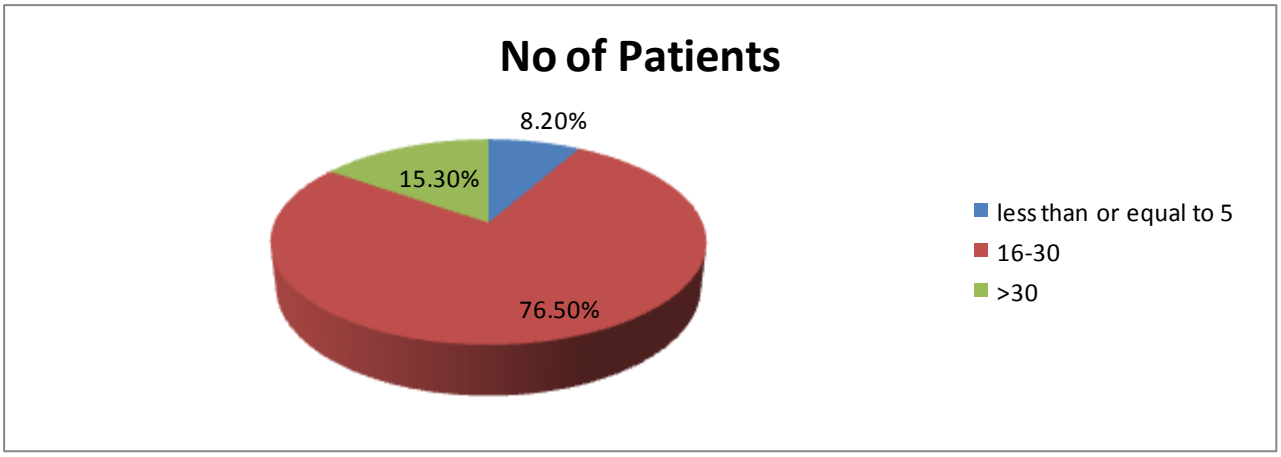

Fig 4: Number of Patients Received and Dispensed per day by Pharmacists

A greater proportion of the respondents ,more than 75%, had received and dispensed 16-30 patients per day.15.3% of the respondents received and dispensed for more than 30 patients per day whereas only 8.2% of the respondents dispensed for less than or equal to 5 patients per day.

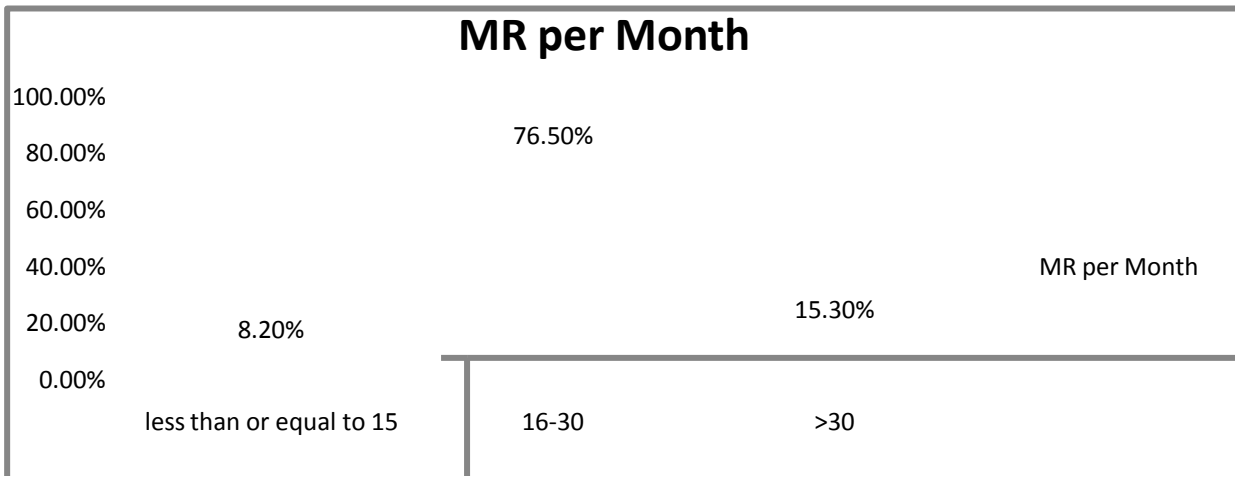

Fig 5: Number of Medical Representative Visits Pharmacies per Month

More than 75% of the participants have had received a visit by 16-30 medical representatives per month whereas 13% had received more than 30 medical representatives on a monthly base.

4.2 Perception of Pharmacists and Physicians towards generic medications

Each table shows the response of the respondents on various statements regarding their perception towards generic medicines. Information regarding the perception of the Physicians and pharmacists towards generic medicine can be found here under.

4.2.1 Perception of physicians

Table 3: Perception of Physicians towards Generic Medicines regarding Cost(N=197)

Items	SA	A	N	DA	SDA
Cost					
I believe that generic medicines are more affordable than brand name medicines	167(84.8)	23(11.7)	1(0.5)	3(1.5)	3(1.5)
I believe that doctors should be educated more about prices of medicines	44(22.3)	117(59.4)	20(10.2)	7(3.6)	9(4.6)
I believe that generic medicines are only meant for poor	3(1.5)	17(8.6)	16(8.1)	58(29.4)	103(52.3)
I think that confidence should be built in the patient about the low-cost brand	83(42.1)	96(48.7)	-	3(1.5)	15(7.6)
I wish to prescribe low cost medicines in my practice	119(60.4)	56(28.4)	18(9.1)	4(2)	-

When the physicians were asked about better affordability of generic medicines over brand ones, close to 84.8% of the respondents favored generic products over brand name medicines. On the contrary only 1.5% of the participating physicians disagree on generic medicines affordability. This one way or another relates to the fact that generic medicines are manufactured after the patent right by the original manufacture expires. More than 59.4% of practitioners believed that doctors should be educated more about prices of medicines and 48.7% agreed on the thought that confidence should be built in the patients about the low-cost brand.

Regarding educating physicians on medicine pricing, the participants' tendency to believe that they need more education is correct. A price of an item depends not only on the ingredients and manufacturing process but also on the brand name it bears. Internationally well known drug manufacturers tend to have higher prices as compared to the less known counterparts. Also the cost of manufacturing drug x in the developed countries will be much higher than manufacturing the same drug in a developing country like Ethiopia.

When it comes to confidence building in patients, it is true that the most in the community associate higher prices with higher quality, which is not necessarily true. Because of this perception more than 60% of the physicians expressed their wish to prescribe low cost medicines in their practice. As this studies result shows it is important to consider organizing some sort of brain storming sessions for physicians and patients when it comes to the pricing of medications.

Table 4: Perception of Physicians towards Generic Medicines regarding Quality (N=197)

Items	SA	A	N	DA	SDA
Quality					
I believe that branded products are of good quality than generic company products	16(8.1)	90(45.7)	23(11.7)	32(16.2)	36(18.3)
I believe that all the generic companies are not following Good Manufacturing Practices (GMP) guidelines as the Originators	20(10.2)	29(14.7)	112(56.9)	30(15.2)	6(3)

Around 45.7% of the respondents agreed with the notion that generic medicines are of low quality and less safe than brand name medicines. This is a big misconception by most of the participants on the quality of generic medicines. As it's tried to explain earlier the price difference not always indicates a defect in the quality of a certain drug. Despite this almost half of the respondents believed that multinational products are of good quality than generic company products.

The lack of understanding in the drug manufacturing process is well reflected again when it comes to GMP. Nearly 60% of the participants' were neutral that generic manufacturers do not follow GMP guidelines. These generic manufactures are not only following guidelines in the manufacturing process but they also had several regulations and follow-ups from the responsible regulatory bodies. Without the GMP certificate it's impossible for these companies to market their products in the first place. Therefore the issue of quality is not based on whether a certain company is generic manufacturer or brand manufacturer.

Table 5: Perception of Physicians towards Generic Medicines regarding Efficacy (N=197)

Items	SA	A	N	DA	SDA
Efficacy					
I believe that generic medicines are of same effectiveness as brand name medicines	81(41.1)	54(27.4)	21(10.7)	30(15.2)	11(5.6)
I think generic medicines produce more side effects than brand name medicines	-	20(10.2)	33(16.8)	66(33.5)	78(39.6)
I believe low-cost generic medicines are as safe as high-priced brand name medicines	76(38.6)	56(28.4)	23(11.7)	18(9.1)	24(12.2)
I am concern about the therapeutic failures that are serious problems with generic medicines	15(7.6)	36(18.3)	110(55.8)	32(16.2)	4(2)

The majority of the practitioners tend to disagree on the presence of a difference in effectiveness (41.1% agreed on same efficacy) as well as unfavorable side effects (39.6%) between generic and brand medicines. These two points are very crucial to note of. Even if the number is not much but the majority of them agree that both generic and brand medicines has the same effectiveness. Again the effectiveness of a medicine depends on the active ingredients, meaning the raw materials, which is the same if a certain medicine is produced by a generic or brand manufacturer. Such attitudes may arise primarily from lack of knowhow and prior experience.

Coming to the well being profile of low cost generic medicines most physicians strongly agreed about their safety. A greater number of participants (55.8%) were neutral with regards to therapeutic failures that could be present with generic medicines. The lack of good knowledge on the overall drug manufacturing process is reflected in the majority of participants being neutral or agreeing with a concern with the possibility of a therapeutic failure and serious problems with generic medicines. This largely points out the lack of confidence in generic medicines, which need to change to better improve the practice in the future.

Table 6: Perception of Physicians towards Generic Medicines regarding Availability (N=197)

Items	SA	A	N	DA	SDA
Availability					
I believe that my prescribing decision is influenced by medical representatives	20(10.2)	64(32.5)	55(26.4)	25(12.7)	36(18.3)
I believe that it is easier to remember a brand name	10(5.1)	53(26.9)	16(8.10	53(26.9)	65(33)

Only 5% of the respondents strongly agreed the presence of difficulty in remembering brand name medicines. The name of a certain item has a strong relation with its marketability, as to a more familiar name has the advantage of being chosen repeatedly. Despite this most of the participants shy away from associating a certain name with selection decisions. This is a very good point to note, as it's very important to stay neutral when choosing a drug for a patient.

As a marketing strategy almost all companies send medical and sales representatives to physicians to gain a competitive age on their competitors. Using different techniques and repeated visits to the doctor's office they try to influence the decision towards their products. This study shows that such strategies are working, because 65.9% of the respondents felt that their prescribing decision is influenced by medical representatives on contrary only 12.7% responded otherwise. From the companies perspective this is good news, since the primary

objective is to increase the sales of their product. But this has a very dangerous side to biasing the physician to a certain product. It affects the patient also in becoming a victim of 'doctor office advertisement'.

4.2.2 Perception of pharmacists

Table 7: Perception of Pharmacists towards Generic Medicines regarding Cost(N=85)

Items	SA	A	N	DA	SDA
Cost					
I believe that generic medicines are more affordable than brand name medicines	75(88.2)	6(7.1)	4(4.7)	-	-
I believe that doctors should be educated more about prices of medicines	16(18.8)	42(49.4)	19(22.4)	6(7.1)	2(2.4)
I believe that generic medicines are only meant for poor	-	17(20)	53(62.4)	8(9.4)	7(8.2)
I think that confidence should be built in the patient about the low-cost brand	19(22.4)	37(43.5)	13(15.3)	13(15.3)	3(3.5)
I wish to prescribe low cost medicines in my practice	47(55.3)	31(36.5)	5(5.9)	1(1.2)	1(1.2)

The results obtained from the pharmacists when asked about better affordability of generic medicines over brand ones, close to 88.2% of the respondents favored generic products over brand name medicines. This reflects the reality of generic medicines being less expensive to the brand ones. At the dispensing counter pharmacist face a big challenge in adjusting medication price with the income of their patients. Patients tend to be more open on their situation with the pharmacist than the physicians. To help the patient pharmacists will prefer the generic

medications. More than 55% of the pharmacists expressed their wish to dispense low cost medicines in their practice.

In line with this, more than 48% of the pharmacists believed that doctors should be educated more about prices of medicines and 43.5% agreed on the thought that confidence should be built in the patients about the low-cost brand. Because a more knowledgeable physician about the drug manufacturing process as well as the economic situation of his or her patients will greatly optimize the treatment process for every patient.

Table 8: Perception of Pharmacists towards Generic Medicines regarding Quality (N=85)

Items	SA	A	N	DA	SDA
Quality					
I believe that branded products are of good quality than generic company products	4(4.7)	29(34.1)	33(38.8)	14(16.5)	5(5.9)
I believe that all the generic companies are not following Good Manufacturing Practices (GMP) guidelines as the Originators	3(3.5)	25(29.4)	39(45.9)	18(21.2)	-

Around 39% of the respondents were neutral that generic medicines are of low quality and less safe than brand name medicines. The miss conception about generic medicines is clearly seen among the pharmacists, who were supposed to be the major catalyst for change. This wide spread perception is also reflected by most of the respondents who believed that multinational products are of good quality than generic company products. In terms of GMP, nearly 46% of the participants' neither agreed nor disagreed that generic manufacturers do not follow GMP guidelines. Over all its clear that a wide spread educational program needs to be given for pharmacists also to alleviate existing wrong perceptions.

Table 9: Perception of Pharmacists towards Generic Medicines regarding Efficacy (N=85)

Items	SA	A	N	DA	SDA
Efficacy					
I believe that generic medicines are of same effectiveness as brand name medicines	4(4.7)	7(8.2)	51(60)	20(23.5)	3(3.5)
I think generic medicines produce more side effects than brand name medicines	2(2.4)	16(18.8)	22(25.9)	36(42.4)	9(10.6)
I believe low-cost generic medicines are as safe as high-priced brand name medicines	5(5.9)	18(21.2)	18(21.2)	33(38.8)	11(12.9)
I am concern about the therapeutic failures that are serious problems with generic medicines	-	12(14.1)	29(34.1)	44(51.8)	-

Around 60% of the pharmacists were neutral on the presence of a difference in effectiveness while 42.2% of the respondents disagreed on the unfavorable side effects between generic and brand medicines. Again the effectiveness of a medicine depends on the active ingredients, meaning the raw materials, which is the same if a certain medicine is produced by a generic or brand manufacturer. Such attitudes may arise primarily from lack of knowhow and prior experience.

Coming to the wellbeing profile of low cost generic medicines, 40% of the pharmacists disagreed about their safety compared to the branded medications. A greater number of participants (52%) disagreed with regards to therapeutic failures that could be present with generic medicines. The lack of good knowledge on the overall drug manufacturing process is reflected in the majority of participants being neutral or agreeing with a concern with the possibility of a therapeutic failure and serious problems with generic medicines. This largely points out the lack of confidence in generic medicines, which need to change to better improve the practice in the future.

Table 10: Perception of Pharmacists towards Generic Medicines regarding Availability (N=85)

Items	SA	A	N	DA	SDA
Availability					
I believe that my prescribing decision is influenced by medical representatives	12(14.1)	56(65.9)	10(11.8)	7(8.2)	-
I believe that it is easier to remember a brand name	4(4.7)	27(31.8)	38(44.7)	15(17.6)	1(1.2)

Among the respondents, 65.9% felt that their dispensing decision is influenced by medical representatives on contrary only 8.2% responded otherwise. Only 5% of the respondents strongly agreed the presence of difficulty in remembering brand name medicines while most of the respondents remained neutral.

Again the effect of medical and sales representatives is higher on the pharmacist. As a marketing strategy almost all companies use medical and sales representatives to gain a competitive age on their competitors. Using different techniques and repeated visits to the doctor's office they try to influence the decision towards their products. This study shows that such strategies are working, because 0% of the respondents strongly disagree that their dispensing decision is influenced by medical representatives. From the companies perspective this is good news, since the primary objective is to increase the sales of their product. But this has a very dangerous side to biasing the pharmacist to a certain product.

4.3 Factors affecting perception of physicians and pharmacists towards generic medications

Table 11: Cross tabulation and bivariate analysis of factors affecting perception of Physicians

Items	Sex	Age	Level of Education	Year of service	No of patients	No of MRs
Q1	.107	.243	.305	.907	.326	.303
Q2	.959	.980	.361	.740	.189	.610
Q3	.697	.838	.603	**.046**	.347	.985
Q4	.157	**.002**	.115	.262	.802	.920
Q5	.400	**.038**	.194	.168	.980	.472
Q6	.916	.603	.106	.632	.450	.883
Q7	.533	.797	.247	**.036**	.275	.402
Q8	.190	.430	.200	.473	.390	.225
Q9	.862	.464	.893	.862	.479	.512
Q10	.406	.766	**.016**	.795	.419	.837
Q11	.440	**.013**	.889	.364	.909	.840
Q12	.108	.925	.725	.305	.471	.953
Q13	.793	.562	.397	.224	.622	.488

Based on the bivariate analysis year of service has shown a significant correlation with the statement of Q3: I believe that generic medicines are only meant for poor. Meaning as the year of service increases the physicians strongly agreed with the statement. Age has shown a significant correlation with the statement of Q4 and Q5: I believe that generic medicines are only meant for poor and I wish to dispense low cost medicines in my practice respectively. Year of service has shown a significant correlation with the statement of Q7: I believe that all the generic companies are not following Good Manufacturing Practices (GMP) guidelines as the Originators. Level of education has shown a significant correlation with Q10 which is I think generic medicines produce more side effects than brand name medicines. Q11, which states: I think generic produce more side effect than brand medicines, was significantly related to age.

Table 12: Cross tabulation and bivariate analysis of factors affecting perception of Pharmacists

Items	Sex	Age	Year of Service	No of Patients	No of MR
Q1	.190	.134	.098	.061	.061
Q2	.051	.461	.754	.541	.541
Q3	.972	.939	**.016**	.910	.910
Q4	.451	.850	**.047**	.676	.676
Q5	.088	.750	.924	.318	.318
Q6	.789	.549	.487	.470	.470
Q7	.504	.962	.064	.248	.248
Q8	.448	.158	.762	.618	.618
Q9	.951	.211	.566	.318	.318
Q10	.125	.731	.620	.857	.857
Q11	.792	.521	.772	.818	.818
Q12	.473	.158	.179	.964	.964
Q13	.173	.512	.851	.641	.641

Based on the bivariate analysis year of service has shown a significant correlation with the statement of Q3 and Q4; which are I believe that generic medicines are only meant for poor and I think that confidence should be built in the patient about the low-cost brand respectively.

4.4 Marked differences in perception between Physicians and pharmacists using generic medications

Both Physicians and pharmacists agreed about better affordability of generic medicines over brand ones. In addition, more number of physicians believed that confidence should be built in the patients about the low-cost brand and doctors should be educated more about prices of medicines compared to pharmacists. Even if the significance is very low most physicians wish to prescribe low cost medicines compared to the dispensers who would like to sell branded product which hopefully is to support their profit margin.

Around 45.7% of the physicians agreed with the notion that generic medicines are of low quality and less safe than brand name medicines while 39% of the pharmacists were neutral that generic medicines are of low quality and less safe than brand name medicines. Most of the respondents (physicians and pharmacists) believed that multinational products are of good quality than generic company products. In terms of GMP, nearly 60% of the physicians' were neutral that generic manufacturers do not follow GMP guidelines where as 46% of the pharmacists neither agreed nor disagreed that generic manufacturers do not follow GMP. Therefore the perception of pharmacists to generic medications regarding GMP is better.

The majority of the physicians disagree on the presence of a difference in effectiveness as well as unfavorable side effects between generic and brand medicines; when 60% of the pharmacists were neutral. Coming to the wellbeing profile of low cost generic medicines most physicians strongly agreed about their safety while pharmacists disagreed about their safety compared to the branded medications. A greater number of physicians were neutral with regards to therapeutic failures that could be present with generic medicines although more than half of the pharmacists disagreed with regards to therapeutic failures that could be present with generic medicines. The marked difference here is that more physicians are comfortable with therapeutic effects of generics and not with the safety profile while the vice versa works for the pharmacists.

Pharmacists prescribing decision is influenced by medical representatives on contrary less physicians are influenced by medical representative. Only 5% (physicians and pharmacists) of the respondents strongly agreed the presence of difficulty in remembering brand name medicines.

4.5 Discussion

The use of generics has increased significantly in the last two decades. Since generics are available at a lower cost, they provide an opportunity for savings in health care expenditure. Therefore, use of generic drugs is encouraged especially in developing countries. The study tries to evaluate the perception of physicians and pharmacists towards generic medicines use. Out of 223 physicians and 92 pharmacists invited to fill and return the self-administered questionnaire, 197 physicians and 85 pharmacists responded which gave a 88.3% and 92.3% response rate respectively .

Surprisingly, three fourth of the respondents expressed that brand name medicines produce lesser side effects than generic medicines and are more effective than low priced generic medicines. These may be related with the constant visits that the physician entertain from pharmaceutical promoter which may have influenced the product choice. More than 75% of the respondents expressed that generic medicines are as safe as with brand name medicines**.** This finding is similar with the study conducted in Pakistan (Jamshed SQ et al, 2012).

Most of the respondents favored generic products over brand name medicines in case of affordability and at the same time believed that generic medicines are of same effectiveness as brand name medicines. Interestingly, however, more than half of the respondents believed on the superior quality of branded products over generic products. This might be associated with the belief of the lack of quality checks in generic medicines. This finding is similar in a sense but less number wise with a study carried out in India which identified that more than two third (91.67%) of the respondents viewed that branded products are of better quality than generic products .

With respect to Good Manufacturing Practices (GMP) guidelines, most participants were ‘neutral’ in their perception towards whether generic companies follow GMP as the originators where as 15.2% of the respondent’s disagreed that none of the generic manufacturers meet the basic GMP standards. This explains that the physicians’ doubt on the technical capabilities of the generic manufacturers. This finding is similar with the study carried by Garattini L et al (2000) which assessed the Ethiopian Pharmaceutical Industry in Ethiopia and found out than none of the generic manufactures meet GMP requirements.

Safety wise, majority of the respondents believed on the similarity between generic and brand medicines with regards to effectiveness but generic medicines exhibit more side effects compared to the branded medications. Chua GN (2010) previous have reported the need for more information on the issues pertaining to the safety and efficacy of generic medicines. According to the participants of these studies, such information is vital to make them confident in prescribing generic medicines. The current study identified that the prescribing decision of most physicians were influenced by medical representatives. On the contrary, McGuire C.et al (2009) conducted a study in the United Kingdom denied any undue impact of drug representatives on their prescribing. Such attitude could be associated with the thought that receiving information from medical representative may increase their knowledge on drug information. Moreover, representatives of pharmaceutical companies that market generic medicines might influence the respondents prescribing behavior positively.

In addition, patient's socio economic status was claimed to be a major factor that influence medicine prescribing be it generic or brand medicine. Similarly Paraponaris A et al (2004) observed that in France, the socio-economic status of patients was also found to play a key role in the willingness to prescribe generic medicines. Also Gossell Williams M (2007) reported that in Jamaica, physicians were more obligated to prescribe generics in patients with chronic illnesses in view of their long-term financial burden. Physicians might prescribe generics more easily in patients with lower socio economic status because they imagine that these patients face a major budget constraint.

One of the convincing findings in this study was the doctor's expectations to be educated more about the prices of medicines. This is in concordance with the previous studies by Paraponaris A et al (2004) done in USA and Ireland in which physician's understanding of the cost is an important determinant in prescribing. In addition, the need of interventional strategies and educational activities are prerequisites to make doctors cost effective prescribers.

It was identified that most respondents were not comfortable with generic substitution. This is an indicator for concerned regulatory bodies of Ethiopia and other policy makers on process on how and when to perform brand substitutions for their clients, by establishing standard guideline for both physicians and pharmacists. In Australia, generic drug use has been supported by prescribing guidance and financial incentives issued by the Pharmaceutical Benefit Scheme

(PBS). Andersson K et al (2005) observed that the generic prescribing policy in Australia allows the pharmacist to dispense any brand of drug whenever the non-proprietary (generic) name of the drug is written. In addition, generic substitution policy also enables the pharmacist, without consulting the prescriber, to dispense a different brand of the drug even when the prescriber has prescribed a particular brand.

Most of the respondent physicians and pharmacists relatively had acceptable perceptions towards generic medicines use based on the result obtained. In addition to this, most of the respondent believed that generic medicines are affordable, and can save costs. Moreover, majority of the respondents viewed that all the time physicians should be educated about prices of generics and hence this should be encouraged through continuous educational intervention in order to encourage prescriber to prescribe generic medicines rather than brand name medicines since cost is the main factor that affect the health outcome of the patients (clients). On the other hand, respondents are not comfortable that the brand name medicine in prescription is changed by drug seller or pharmacist. This result indicated that pharmacists or drug seller had less influence on physicians' generic medicine prescribing behaviors. So that, this can alarm policy maker to endorse new standard guideline for both physicians, other prescribers and pharmacists for brand substitutions.

Regarding the limitations, the study was conducted in one hospital because of time and budget limitations, and may not be generalized for other hospitals in Ethiopia. In addition, the sample size may be labeled inadequate make population generalization.

4.6 Summary of Findings

When the physicians were asked about better affordability of generic medicines over brand ones, close to 84.8% of the respondents favored generic products over brand name medicines. A price of an item depends not only on the ingredients and manufacturing process but also on the brand name it bears. Internationally well known drug manufacturers tend to have higher prices as compared to the less known counterparts. When it comes to confidence building in patients, it is true that the most in the community associate higher prices with higher quality, which is not necessarily true.

As it tried to explain earlier the price difference not always indicates a defect in the quality of a certain drug. Around 45.7% of the respondents agreed with the notion that generic medicines are of low quality and less safe than brand name medicines. Despite this most of the respondents believed that multinational products are of good quality than generic company products. The lack of good knowledge on the overall drug manufacturing process is reflected in the majority of participants with a concern with the possibility of a therapeutic failure and serious problems with generic medicines. This largely points out the lack of confidence in generic medicines, which need to change to better improve the practice in the future.

As a marketing strategy almost all companies send medical and sales representatives to physicians to gain a competitive age on their competitors. From the companies perspective this is good news, since the primary objective is to increase the sales of their product. But this has a very dangerous side to biasing the physician to a certain product. It affects the patient also in becoming a victim of ‘doctor office advertisement’.

Chapter Five

5.1Conclusion

This study found out that most of the respondent physicians and pharmacists relatively had right perceptions towards generic medicines. This was concluded because most of the respondent believed that generic medicines are affordable, and can save costs. In addition, majority of the participants see generic medicines as effective as the brand ones and medical representatives' play a major role in their decision of choice between brand and generic medicines.

5.2 Recommendation

Based on the results on this study the following can be recommended:

- Training/education should be organized in order to improve the knowledge of physicians regarding medications cost.
- Policy maker should endorse new standard guideline for physicians, and pharmacists for brand substitutions.
- Since clients need affect the prescription of physicians, so that Confidence should be built in the patient about the low cost generic medicines.
- The generic medications in Ethiopia do not meet Good Manufacturing Practices (GMP); therefore, technical support should be given from the government or other stockholders in order to maximize client's acceptability.
- Further studies should be conducted to maximize the use of generic medicines.

5.3 Future area of research

Since I have faced a greater challenge in finding related journals for the perception of pharmacists I would say a lot can be done on the pharmacists' perception. The perception of the patient can also contribute a lot in order to understand the non-branded medications profoundly. Therefore, further study on them will have a positive impact and makes the study complete. The study was conducted in one hospital because of time and budget limitations, and may not be generalized for other hospitals in Ethiopia. Hence, I would say a greater knowledge on the perception of pharmacists and also physicians can be obtained if performed in different hospitals and even in regions to have a more reliable picture about the perception of physicians and pharmacists in Ethiopia.

References

- Abratt R, Lanteigne J. Factors influencing general practitioners in the prescription of homeopathic medicines. (2000). Afr J Bus Mgmt.31:91–97.
- Andersson K, Bergström G, Petzold MG, Carlsten A. (2007). Impact of a generic substitution reform on patients' and society's expenditure for pharmaceuticals. Health Policy.81:376-384
- Andersson K, Sonesson C, Petzold M, Carlsten A, Lönnroth K. (2005). Patients and pharmacies during the first year of generic substitution in Sweden. Pharmacoepidemiol Drug Saf*e*. 14,341-348.
- Bee croft G (2007). Generic drug policy in Australia: a community pharmacy perspective. Australia and New Zealand. Health Policy.4,77-86
- Carthy P, Harvey I, Brawn R, Watkins C. (2000). A study of factors associated with cost and variation in prescribing among GPs. FamPract. 17, 36-41.
- Chua GN, Hassali MA, Shafie AA, Awaisu A. (2010). A survey exploring knowledge and perceptions of general practitioners towards the use of generic medicines in the northern state of Malaysia. Health Policy. 95, 229-235.
- Decollogny A,Eggli Y,Halfon P,Lufkin TM.(2011). Determinants of Generic Drug Substitution in Switzerland. BMC Health Services Research. 11, 1-12.
- Federal Democratic Republic of Ethiopia Ministry of Health and World Health Organization.AssessmentofthePharmaceuticalSectorinEthiopia.http://www.who.int/medicines/areas/coordination/Ethiopia pharmaceutical.pdf (accessed 21 Feb 2015).
- Federal Democratic Republic of Ethiopia Ministry of Health (2010) . Health Sector DevelopmentProgram2010–2015.http://Ethiopia.org/admin/uploads/attachment-721-HSDP%20IV%20Final%20Draft (Accessed on 21Feb 2015).
- Garattini L, Tediosi F (2000). A comparative analysis of generic markets in five European countries. Health Policy. 51, 149-62.
- Gossell Williams M. (2007) .Generic substitutions: a 2005 survey of the acceptance and perceptions of physicians in Jamaica. med *j*.56,458–63

- Granlund D. (2009). Are private physicians more likely to veto generic Substitution of prescribed pharmaceuticals? SocSci Med. 69, 1643-1650.
- Hassali MA, Shafie AA, Jamshed S, Ibrahim MI, Awaisu A. (2009). Consumers' views on generic medicines: a review of the literature. Int J Pharm Pract. 23, 105-116
- Hakonsen H, Toverud EL. (2012). A review of patient perspectives on generic substitution: what are the challenges for optimal drug use? GaBI J.1,28–32.
- Himmel W, Simmenroth-Nayda A, Niebling W, Ledig T, Jansen RD,Kochen MM, et al. (2005) .What do primary care patients think about generic drugs?Int J ClinPharmacolTher.43,472-479.
- Jamshed SQ, Ibrahim MIM, Hassali MA, Masood I, Low BY, Shafie AA, et al. (2012) Perception and attitude of general practitioners regarding generic medicines in Karachi, Pakistan: A questionnaire based study. Southern Med Review. 5, 22-30.
- Kanavos P. (2007). Do generics offer significant savings to the UK National Health Service? Curr Med Res Opin. 23, 105-116.
- Kanavos P. (1999). Pharmaceutical pricing and reimbursement in Europe. Richmond (UK): *PJB* Publication.
- Kaplan WN, Liang R. (2005). Local Production: Industrial Policy and Access to Medicines, the International Bank for Reconstruction and Development / The World Bank.10January.
- Kembhavi RS, Shinde RR,Hagawane T, Jadhav RA, Khairnar RR,Darade BD. (2014) Cross Sectional, Observational Study to Assess Prescription Practices of Physicians with Respect to Use of Generic Medicines. Int J Pharm Sci Rev Res . 25, 90-96.
- McGuire C, King S, Roche Nagle G, Barry M. (2009). Doctors' attitudes about prescribing and knowledge of the costs of common medications, irish j med *sci* .178, 277-280.
- Moss G. A brand logic for pharma: a possible strategy based on FMCG experience. (2003) Int J Med Mktg.4:55–62.
- Mrazek M, Frank R. (2004). The off-patent pharmaceutical market in regulating pharmaceuticals in Europe: striving for efficiency, equity and quality. Open University Press. 46, 245-259.

- National Economic Research Associates. Policy relating to generic medicines in the OECD. London: NERA; 1998. Contract No.: ETD/97/501335.
- Paraponaris A, Verger P, Desquins B, Villani P, Bouvenot G, Rochaix L, et al (2004). Delivering generics without regulatory incentives? Empirical evidence from French general practitioners about willingness to prescribe international non-proprietary names. Health Policy. 70, 23–32.
- Rodin HA, Heaton AH, Wilson AR, Garrett NA, Plocher DW (2009). An analysis of a free generic benefit. The American journal of managed care. 81,12-15.
- Shrank WH, Hoang T, Ettner SL, Glassman PA, Nair K, DeLapp D et al. (2006). The implications of choice: prescribing generic or preferred pharmaceuticals improves medication adherence for chronic conditions. Arch Intern Med. 133,332-337.
- Simoens S, De CosterS. Sustaining Generic Medicines Markets in Europe.Katholieke Universities Leuven; 2006.
- Steinman MA, Chren MM, Landefeld CS. WhatÆs in a name? Use of brand versus generic drug names in United States outpatient practice (2007). Journal of general internal medicine.22, 645-8.
- Toverud EL, Røise AK, Hogstad G, Wabø I. (2011).Norwegian patients on generic antihypertensive drugs: a qualitative study of their own experiences. Eur J Clin Pharmacol.67, 33–8.
- US Food and Drug Administration, Center for Drug Evaluation and Research. What are generic drugs? Available from: http://www.fda.gov/cder/ogd/index.htm# Introduction. (Accessed on Feb 21, 2015)
- William H Shrank, Joshua N Liberman, Michael A Fischer, Charmaine Girdish, Troyen A Brennan, and Niteesh K Choudhry.(2011). Physician Perceptions About Generic Drugs. The Annals of Pharmacotherapy.45,31-39
- Wazana A. Physicians and the pharmaceutical industry: is a gift ever just a gift? (2000) JAMA.283, 373–380.
- World trade organization. Survey of Pharmaceutical Industry. Implementation of the WTO Decisions on TRIPS Public Health COMESA Member States – Seminar Series Paper. Report number: 016/10, 2011.
- Zarowitz BJ. (2008). The generic imperative. Geriatr Nurs. 29, 223-226.

Appendices

Annex 1

ST.MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

Dear Sir/Madam,

The objective of this questionnaire is to gather information regarding physician's perception towards generic medications use. The information obtained will be used for research purpose only. As a result, your frank and honest response to each item has practical and valuable significance in the accomplishment of the study.

The questionnaire consists of two parts: Background information and perception of physicians' towards non branded medicines.

Thank you very much for your cooperation and time!

Part One

Background Information

Please make a tick mark **(**√**)**or fill in the blank space.

1. Sex. Male_____ Female _____
2. Age □18-30 □ 31-40 □ 41-50 □ 51-60 □ 60+
3. Level of Education □ GP □ Specialist
4. Year of Service □ ≤5 □ 6-10 □ 11-15 □ 16+
5. How many patients do you receive, diagnose, or treat per day? □ ≤15 □ 16-30 □>30
6. How many medical representatives' visits your office per month? □ ≤15 □ 16-30 □>30

Part Two

Perception

Based on the extent to which an item explains, please respond to all the items in the table by indicating your agreement or disagreement using '√' in the column provided.

1 = strongly agree 2 = Agree 3= Neutral 4 =Disagree 5 =strongly disagree

No.	Items	SA	A	N	DA	SDA
	Cost					
1.	I believe that generic medicines are more affordable than brand name medicines	**1**	**2**	**3**	**4**	**5**
2.	I believe that doctors should be educated more about prices of medicines	**1**	**2**	**3**	**4**	**5**
3.	I believe that generic medicines are only meant for poor	**1**	**2**	**3**	**4**	**5**
4.	I think that confidence should be built in the patient about the low-cost brand	**1**	**2**	**3**	**4**	**5**
5.	I wish to prescribe low cost medicines in my practice	**1**	**2**	**3**	**4**	**5**
	Quality					
6.	I believe that branded products are of good quality than generic company products	**1**	**2**	**3**	**4**	**5**
7.	I believe that all the generic companies are not following Good Manufacturing Practices (GMP) guidelines as the Originators	**1**	**2**	**3**	**4**	**5**
	Efficacy					
8.	I believe that generic medicines are of same effectiveness as brand name medicines	**1**	**2**	**3**	**4**	**5**
9.	I think generic medicines produce more side effects than brand name medicines	**1**	**2**	**3**	**4**	**5**

10.	I believe low-cost generic medicines are as safe as high-priced brand name medicines	**1**	**2**	**3**	**4**	**5**
11.	I am concern about the therapeutic failures that are serious problems with generic medicines	**1**	**2**	**3**	**4**	**5**
	Availability					
12.	I believe that my prescribing decision is influenced by medical representatives	**1**	**2**	**3**	**4**	**5**
13.	I believe that it is easier to remember a brand name	**1**	**2**	**3**	**4**	**5**

Annex 2

ST.MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

Dear Sir/Madam,

The objective of this questionnaire is to gather information regarding pharmacist's perception towards generic medications use. The information obtained will be used for research purpose only. As a result, your frank and honest response to each item has practical and valuable significance in the accomplishment of the study.

The questionnaire consists of two parts: Background information and perception of physicians towardnon branded medicines.

Thank you very much for your cooperation and time!

Part One

Background Information

Please make a tick mark **(**√**)**or fill in the blank space.

1. Sex. Male_____ Female _____
2. Age □18-30 □ 31-40 □ 41-50 □ 51-60 □ 60+
3. Year of Service □ ≤5 □ 6-10 □ 11-15 □ 16+
4. How many patients do you dispense per day? □ ≤15 □ 16-30 □>30
5. How many medical representatives' visits your office per month?□ ≤15 □16-30 □>30

Part Two

Perception

Based on the extent to which an item explains, please respond to all the items in the table by indicating your agreement or disagreement using '√' in the column provided.

1 = strongly agree 2 = Agree 3= Neutral 4 =Disagree 5 =strongly disagree

No.	Items	SA	A	Ne	DA	SDA
	Cost					
1.	I believe that generic medicines are more affordable than brand name medicines	**1**	**2**	**3**	**4**	**5**
2.	I believe that doctors should be educated more about prices of medicines	**1**	**2**	**3**	**4**	**5**
3.	I believe that generic medicines are only meant for poor	**1**	**2**	**3**	**4**	**5**
4.	I think that confidence should be built in the patient about the low-cost brand	**1**	**2**	**3**	**4**	**5**
5.	I wish to dispense low cost medicines in my practice	**1**	**2**	**3**	**4**	**5**
	Quality					
6.	I view generic medicines of low quality than brand name medicines	**1**	**2**	**3**	**4**	**5**
7.	I believe that branded products are of good quality than generic company products	**1**	**2**	**3**	**4**	**5**
8.	I believe that all the generic companies are not following Good Manufacturing Practices (GMP) guidelines as the Originators	**1**	**2**	**3**	**4**	**5**
	Efficacy					
9.	I believe that generic medicines are of same effectiveness as brand name medicines	**1**	**2**	**3**	**4**	**5**

10.	I think generic medicines produce more side effects than brand name medicines	**1**	**2**	**3**	**4**	**5**
11.	I believe low-cost generic medicines are as safe as high-priced brand name medicines	**1**	**2**	**3**	**4**	**5**
12.	I am concern about the therapeutic failures that are serious problems with generic medicines	**1**	**2**	**3**	**4**	**5**
	Availability					
13.	number of available generic medications affect your choice between generic and branded medications	**1**	**2**	**3**	**4**	**5**
14.	Diversification (packaging, galenic, etc) affect your choice between generic and branded medications	**1**	**2**	**3**	**4**	**5**
15.	available substitution groups affect your choice between generic and branded medications	**1**	**2**	**3**	**4**	**5**

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