



**ST. MARRY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

**THE IMPACT OF PHARMACEUTICAL PROMOTION ON
PHYSICIAN'S PRESCRIPTION OF NEW BRAND MEDICINES:
THE CASE OF TIKUR ANBESSA SPECIALIZED HOSPITAL
AND ADDIS HIWOT GENERAL HOSPITAL**

**BY
WOINHAREG YEMIAMREW (SGS/0451/2007A)**

**July, 2018
Addis Ababa, Ethiopia**

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ACRONYMS AND ABBREVIATIONS

AHGH	Addis Hiwot General Hospital
HAI	Health Action International
IFPMA	International Federation of Pharmaceutical Manufacturers Association
NDP	National Drug Policy
SPSS	Statistical Product and Service Solutions
TASH	Tikur Anbessa Specialized Hospital
WHO	World Health Organization
MR	Medical Representative

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Abstract

Promotion for prescription drugs in most pharmaceutical industry is different from the traditional marketing approach in that it is directed towards physicians who are professionally and legally allowed to prescribe instead of towards the final consumers/patients. Some studies conducted outside Ethiopia pointed out that pharmaceutical promotion is one factor influencing physicians to prescribe brand medicines. So, this study, considering the Ethiopian context, aimed to assess the relationship and impact of pharmaceutical promotional strategies being implemented by drug representatives/promoters on physician's (working in Tikur Anbessa Specialized Hospital and Addis Hiwot General Hospital) brand medicine prescription decision. A cross sectional descriptive explanatory study design was used to execute the study. Without any sampling, all the study population (all physicians working in the two hospitals mentioned) were invited to participate in the study. Out of the invited 213 physicians, 174 physicians were able to respond to a self-administered structured questionnaire. The study found out that majority of physicians believe that both generic and brand medicines have similar contents and equal health treatment effects in addition to the generic medicines having lower price in the Ethiopian market. What is more is that implementation of pharmaceutical detailing and new drug advertisement strategies is found to have significant impact on brand medicine prescription while sponsorship promotion techniques have almost no significance. The study concluded that pharmaceutical promotions has a positive relationship with brand medicine prescription and can influence physicians to prescribe more of new promoted brand medicines than those of generic medicines. Finally, the study recommended the need for continuous awareness program for physicians regarding the influence of promotions and how to deal with drug promoters, and for ministry of health and hospitals to control and enforce the implementation of the national drug policy regarding pharmaceutical promotion and prescription practices.

Key words: Pharmaceutical promotion, brand medicine prescription

Chapter 1

INTRODUCTION

In this introductory section, background of the study, background of the target organization, statement of the problem, objective of the study, research questions, limitation of the study, scope/delimitation/ of the study, significance of the study, organization of the study is briefly addressed.

1.1. Background of the study

In today's increasing marketing practices, companies like pharmaceutical manufacturers seek to establish close relationships with physicians to present information or to increase the prescription/sales of their manufactured or imported medicines. According to Edwards and Ballantyne (2009), to stand in these relationships, pharmaceutical companies and importers via their medical representatives use different promotional techniques and approaches: for instance: offering free meals, financial support/sponsorship for conferences, providing free drug samples, giving gifts etc.

Considering the growing amounts of money being invested by drug manufacturing companies on promotion, according to WHO (2005), it is increasingly important to understand the effects that pharmaceutical promotion has on prescribing of generic and brand medicines. Pharmaceutical companies' efforts to promote prescription drugs have attracted the attention of policymakers because such activities may affect the rate at which different drugs are prescribed and consumed, the total amount spent on health care, and, ultimately, health outcomes

According to WHO/HAI (2005) and also Kesselheim et. al., (2008), such pharmaceutical promotions are affecting the way physicians are prescribing brand and generic medicines. Generic and brand medicines have same therapeutic substance, form, safety, strength, quality.

However, due to such promotions directed towards physicians, there is a tendency to prescribe brand medicines if a given physician is exposed to promotions or has dealing with medical representatives of pharmaceutical manufacturing companies. Generic medicine become available once the patent protection granted to the brand medicines have expired, which leads to greater market competition and lower prices. According to Sufrin and Ross (2008), physicians with access to these four main forms are more likely to prescribe brand name medication over equivalent generic medications.

According to the Ethiopian drug control authority and drug administration and control proclamation No. 176/1999, prescription drugs are licensed medicines that are legislation-regulated. These medicines are given to patients by a doctor for the purpose of treating specific health conditions. So, pharmacies are obligated to provide such medicines only when they are prescribed by doctors. In Ethiopian context, the information, advertising and promotion of such prescription medicines are controlled by the Ethiopian drug control authority and direct promotion/advertising of such medicines to the consumers/patients are not allowed. The advertising and promotion of such prescription medicines involve only the health professionals i.e. doctors and pharmacists

So, the study investigates the impact of such drug promotions on the way physicians prescribe brand medicines. Based on the findings, the study recommends solutions or intervention mechanisms that will enhance ethical, economical and proper ways of drug promotion and prescription practices. Statement of the problem

Ensuring full access to quality medicines, according to WHO/HAI (2005), is a complex job that requires governments, through their policies, to balance the availability of quality assured medicines, whilst ensuring that they are affordable, and at the same time meeting the priority health needs of the population. According to Cameron et. al. (2009), about 30% of the world's population lacks regular access to essential medicines; in the poorest parts of Africa and Asia this figure rises to over 50%. The most crucial element which restricts access to medicines is drug pricing. According to WHO/HAI (2005), one factor that will improve the accessibility and affordability of medicine is to make sure low cost generic medicines are also prescribed as an alternative to brand name medicines as their clinical effect is proven to be similar except for their patent right difference. In line with this, as per the Ethiopian drug control policy, health practitioners like physicians need to prescribe medicines without naming the brand, focusing only on the scientific medical benefit of a given medicine. This

way, medicines can be more affordable and accessible as consumers/patients will have alternative generic low cost but similarly effective medicines.

Drug promotion is one of the conditions that lead to prescription of expensive drugs in their brand names although National Drug Policy of Ethiopia (1993) encourages generic prescribing. In the Ethiopian context, there is no enough research conducted regarding the effect of drug promotion on prescription choice of physicians except Workneh et.al. (2016) who studied the impact of medical representative/promoters/ on the Mekele based physicians. According to Workneh et.al. (2016), nearly half of the physicians working in Mekelle reported that their prescribing decisions were influenced by MRs in the last 12 months. Accepting gifts and working in private health facilities were predictors of influencing prescribing decisions. According to a survey conducted on the prices of medicines in Ethiopia, by ministry of health and world health organization in 2005, Innovator brand products generally had higher prices than their generic equivalents. For example, innovator brand products were 5.9 times as expensive as the most sold generic medicines and 5.7 times as expensive as the lowest price generic equivalents. According to Workneh et.al. (2016), drug promotion is one of the condition that leads to prescription of expensive drugs in their brand names although National Drug Policy of Ethiopia encourages generic prescribing. As an insider to the paramedical industry in Ethiopia, the heavy promotion of brand medicines as compared to generic medicines has led many consumers or patients to pay higher price for brand named medicine while low cost generic but effective medicines exist in the market.

In response to this problem, the study investigates the effects of pharmaceutical promotion on physician's prescription behavior and choice of medicine type. The findings from this study provide the baseline data to assist policy makers and other stakeholders to employ appropriate intervention strategies like educational intervention on physicians and pharmaceutical representatives to promote the quality, ethical and efficient use of generic and brand drugs.

1.2. Research questions

The study seeks to find answers for the following major research questions:

1. What general awareness exists among physicians towards brand and generic medicines?
2. To what extent are physicians exposed to pharmaceutical promotions that are aimed to induce prescription of new brand medicines?
3. Is there any statistical significant relationship between pharmaceutical promotion strategies and choice of branded medicine prescription?
4. Which pharmaceutical promotional strategies significantly influence physicians towards the prescription of new brand medicines?

1.3. Research Objectives

1.1.1. General Objective

The major objective of the study is to investigate the impact of pharmaceutical promotion targeting physicians on the prescription of new brand medicines.

1.1.2. Specific Objective

Specifically, the study attempted to find answers for the following questions:

- ✓ To assess the general awareness of physicians towards new brand and generic medicines
- ✓ To determine the extent physicians are exposed to pharmaceutical promotions that are aimed to induce prescription of new brand medicines.
- ✓ To determine the relationship between pharmaceutical promotion strategies and choice of branded medicine prescription.
- ✓ To investigate the impact level of pharmaceutical promotional strategies on physicians' prescription of new brand medicines.

1.4. Significance of the study

The significance of the study is embodied below;

- For physicians and regulatory bodies, the study helps to understand the current pharmaceutical promotional practices influencing the attitude and practice of

physicians regarding brand and generic medicine prescription and give direction to enhance professional and objective way of medicine prescription allowing economical and accessible distribution of medicine throughout the country.

- For final consumers/patients and for the Ethiopian economy, the study gives directions and recommendations to physicians and health regulatory bodies to make medical treatments accessible and affordable through the prescription of low cost generic medicines having the same contents and health effects as that of brand medicines.
- The study recommends the practice of medicine prescription as per the country's medical guideline set for physicians i.e. all physicians should prescribe without naming brand names. This allows patients or consumers to get the same quality medicine with low cost.
- The findings of this study gives a clue to conduct further research in the area of ethical medical prescription, on the economic impact of brand medicine prescription on patients and on national economy so as to develop best practices.
- No doubt that the research gave great experience for the student researcher regarding research methodology and future problem solving activities.

1.5. Scope of the study

Geographically, the study focuses on physicians working in Addis Ababa, Ethiopia, working in public and private big hospitals. Accordingly, Tikur Anbessa Specialized Hospital (Tikur Anbessa areas) and Addis Hiwot General Hospital/around Hayahulet, in front of Axum hotel areas were considered. Ideally, it would have been perfect to involve all health practitioners working in Addis Ababa but due to the limitation on cost and time, only those physicians working in the Tikur Anbessa Specialized hospital (public) and Addis Hiwot General hospital (private) are targeted. Since physicians are the major targets for many pharmaceutical promotions in the country, only licensed physicians/medical doctors are involved in the study to understand their behaviour and choice in prescribing brand and generic medicines.

Theoretically, the study is limited to the investigation of the impact of physician directed pharmaceutical promotions on the prescription choice and practice of physicians. Based on the international standard and the Ethiopian drug policy, the study assumes generic and brand medicines as having similar clinical effect and there is no reason for doctors to prescribe

brand medicines unless their generic medicines are not available in the market. So, the study is not to analyze the clinical effectiveness or comfort of brand and generic medicines. Since in the Ethiopian context, only the physicians are subject to pharmaceutical promotion for prescription drugs, the study doesn't consider or analyze the satisfaction of consumers or patients towards generic and brand medicines.

In terms of time scope, the study focuses on one-year experience of physicians (to let respondents easily remember) regarding their experience of pharmaceutical promotion and their attitude towards the prescription of brand and generic medicine. However, the data is collected at the time of the survey/cross sectional/ allowing respondents to remember their one-year experience and attitude. Last but not least, the scope of the methodology is limited to the survey method using closed ended data collecting questionnaire. Due to convenience and cost factors, the study considers physicians working only in two purposely selected hospitals, namely, at Tikur Anbessa and Addis Hiwot General Hospital

1.6. Definition of key terms

The following key term definitions are provided in order to share a better and common understanding on the concepts to be discussed:

- **Brand medicine:** - those originally manufactured drugs that can only be produced and sold by the producing company until their patent rights expire and replaced by generic medicines. (Stoppler & Hecht, 2009).
- **Generics medicine:** -alternative medicines to branded ones that contains the same active substance as the original (innovator) brand name medicine and it is of the same safety and treatment/therapeutic effects as the original product. (Weekes, 2010)
- **Pharmaceutical Promotion:** -. all informational and persuasive activities by manufacturers and distributors, the effect of which is to induce prescription, supply, purchase and/or use of medicinal drugs (WHO,2004)
- **Pharmaceutical detailing-** a promotional instrument/method used by pharmaceutical companies by which medical representatives/promoters details their brand medicines via frequent visit and briefing, printed materials, provision of sample brand medicines and simple personalized gifts like stationary items, prescription pads etc. (Masood et al., 2007)

- **Drug advertisement-** a promotional strategy by which pharmaceutical representatives display/promote their brand medicine information on medical journals, medical books and electronic Medias, conferences etc. (Masood et al., 2007)
- **Pharmaceutical Sponsorships-** a promotional strategy by which pharmaceutical representatives promote their brand medicine by financially supporting training and education programs, conferences, public events etc. (Masood et al., 2007)
- **Prescription of brand medicines-** a practice of physicians/medical doctors by which they write the drug's brand name on their prescription paper. (Stoppler & Hecht, 2009).

1.7. Organization of the study

Chapter I introduces the background of the study, statement of the problem, objective of the study, significance of the study, limitation and scope of the study. **Chapter II** reviews related theoretical and related empirical studies regarding the major variables of the study. **Chapter III** presents how the research was conducted and explains the methodology to be used to collect and analyze the data. **Chapter IV** presents the analysis and findings of the study. **Chapter V** provides the summary, conclusions, research contribution/limitations of the study and some recommendations.

Chapter 2

REVIEW OF RELATED LITERATURES

This chapter reviews available theoretical and empirical evidences in relation with the study topic i.e. the impact of pharmaceutical promotion on brand medicine prescription behavior of physicians.

2.1. Theoretical Literature Review

2.1.1. The Concept of Pharmaceutical Marketing

Pharmaceutical industries, according to Masood et. al. (2009), adopted a number marketing maneuvers with some controlled practices initially. But with the passage of time and with the increasing competition, pharmaceutical marketing is becoming most common and fast moving like other consumer goods putting a challenge to the safety and health of patients. Masood et. al. (2009) described pharmaceutical Marketing as “activities focused on making physicians as well as the general public aware of new and existing pharmaceutical brands, pharmaceutical marketing can include giveaway samples, detailed product literature, disease management programs, and support material for patients, internet initiatives, and events/meetings for physicians”

2.1.2. Pharmaceutical Promotion

World Health Organization (WHO, 2004) defines promotion as “all informational and persuasive activities by manufacturers and distributors, the effect of which is to induce prescription, supply, purchase and/or use of medicinal drugs” International Federation of Pharmaceutical Manufacturers Association (IFPMA) defines promotion as “any activity undertaken, organized or sponsored by a member company (pharmaceutical company member of IFPMA) which is directed at healthcare professionals to promote the prescription, recommendation, supply, administration or consumption of its pharmaceutical product(s) through all media, including the internet” (IFPMA code of practice, 2006). Based on the review of Masood et.al.(2009), the traditional and modern techniques and tools for Pharmaceutical Marketing and Promotion are discussed below:

2.1.3. Traditional pharmaceutical marketing promotion: techniques and tools

i. Advertisement of drugs

Drug advertisement via media is not allowed in many countries except for USA and New Zealand. However, advertisement targeting physician or medical doctors is most common. This is usually done via professional publications, books, journals, conferences, electronic media or continuous medical education programs. These days, this tool of pharmaceutical promotion is very popular. It is a process by which pharmaceutical companies use educational events for their marketing purpose by investing in physicians or opinion leaders who are paid as speakers at education events, lectures, excursions i.e. national excursions for participation in conference/seminars and symposia, foreign excursions for participation in conference/seminars and symposia. At one end, they oblige their customers (prescribers) and as return, get increased prescription. On the other end they promote their image as a responsible organization of the society to use corporate social responsibility (CSR) concept.

ii. Sponsorships Strategy

The other traditional way of promoting drugs, according to Masood et al., (2007), is via sponsorships. i.e. pharmaceutical companies sponsor medical related conferences, clinical trials, establishing free medical camps or via facilitating lectures for health care professionals.

iii. Pharmaceutical Detailing Strategy

Detailing is the most commonly used technique world-wide and by definition, it is “the personal sampling and other promotional work among doctors, dentists, and other professional persons done for pharmaceutical concerns; in order to secure goodwill and possible distribution or prescription of the product”. Sales representatives are the focal resource for applying most of the techniques of pharmaceutical marketing. This means that the relationship between prescribers and medical representatives is supported by various gifts and materials. Masood et al., (2007), The adopted tools of promotion for this technique are drug information brochures, literatures, drug samples, giveaways, personalized gifts, sweepstakes in conferences and workshops and many other tools (Masood et al., 2007)

2.1.4. Pharmaceutical marketing in 21st century: latest techniques and tools in global village.

Improvement in technology has brought more modern ways of promoting pharmaceuticals products that enhance traditional promotional techniques

a) Internet Based/E-Detailing Drug Promotion:

Using Corporate Blogs, Social Network Webs and Many Other Online Methods Pharmaceutical industries are focusing on the advantages of the internet and the development of new media forms to promote their products. Electronic detailing, interactive websites, email prompts and viral marketing campaigns using social networking sites such as YouTube, Myspace and Facebook are amongst the tools being used (Sweet, 2009). Electronic detailing (e-detailing) is one of the methods of drug promotion introduced a few years back as a technologically developed tool. In the pharmaceutical industry, it has been introduced as a new communication channel for the promotion of drugs among the physicians. E-detailing digital technologies like internet, video conferencing, and interactive voice response are adopted to interact with physicians (Alkhateeb, 2007).

2.1.5. Brand vs Generic Medicine Prescription

Generic medicines are similar to branded medicines in dosage form, safety, strength, route of administration, quality, performance characteristics and intended use. Some clinical and bioavailability studies indicated that generic medicine are bioequivalent to a branded alternatives and elicit the same clinical effects. Even though there is a perception by patients, pharmacist and even by some medical doctors that brand medicines are superior in quality and health effects than their alternative generic medicines, according to Kesselheim (2008), a lot of clinical studies as well as clinical guidelines assured that generic medicines are bioequivalent to branded alternatives. Using peer reviewed scientific publications, a systematic review of clinical evidences clearly concluded that there is no evidence of safety and efficacy inferiority of generic cardio-vascular medicines to brand name medicines. Similarly, focusing on patients with schizophrenia and schizoaffective disorders, Siebel et.al., (2001) concluded that there is no safety and dosage requirement difference between the brand name Clozanyl® and its alternative generic clozapine medicines.

According to Bihari (2010), brand name medicines are given a patent for around 20 years, which provides a protection for the company that spent money in research, development and

marketing for the new product. With the patent it is not allowed for other companies to make and sell the product. Nevertheless, when the patent expires, other pharmaceutical companies, when approved, can start producing a generic version of the medicine.

2.1.6. The impact of Pharmaceutical promotion on Physician's prescription of brand medicines

Attitudes towards brand, according to Shimp (1981) is achieved by structuring ads to influence consumers' beliefs and evaluations regarding the favorable consequences of consuming the brand. It includes beliefs formed from the attributes of information and inferences indicated on adverts. According to Biehal et.al., (1992), pharmaceutical promotions can affect consumers' attitude towards brand products. Choices may be formed for one or for several alternatives without a decision actually being made from any of the consumers' attitudes toward the brand. To make choices, consumers may use many types of processes to eliminate certain brands early in their processing by simply comparing the brands. The consumer could choose a brand without differentiating between different brands on the basis of attitude towards brands or even without ever forming an overall brand attitude. This concept implies that attitude towards brand formation may not necessarily be a precursor of brand choice.

Any influence the brand choice has may be indirect via its impact on the acceptance of ad information and the formation of brand beliefs, which are then incorporated in attitudes towards brands, (MacKenzie et.al., 1986). However, if two brands are perceived to be very similar overall, it may be difficult for the consumer to discriminate between them (Biehal et al. 1992). If consumers wish to choose the best brand, they may possibly consider other relevant, brand-related information, such as advertisement reactions. Very little research has been done that examines promotion and its effects either directly or indirectly on brand choice, (Biehal et al., 1992). Intentions are type of judgments about how in the present context, a consumer will behave towards a particular brand (Biehal et al., 1992, p. 25). Intentions may be based on processing all relevant and available brand information (Biehal et al. 1992).

A close relationship between intentions and choice may not always occur; consumers may make choices without completely processing all brand information (Biehal et al. 1992). Consumers may not even form overall evaluations/intentions either, but they may form

attitudes toward the brand without making choices (Biehal et al. 1992). One can distinguish intentions and choice when considering how promotions, a predisposition to respond in a favorable or unfavorable manner to a particular advertising stimulus during a particular exposure situation, affect brand choice. If, during the early stages, consumers use prior attitudes to eliminate brands, they may not form attitude towards brands for those brands (Biehal et al. 1992).

Physician prescription behavior is affected by pharmaceutical marketing in a significant, positive way (Manchanda, et.al.,2005). Due to the promotional activities directed at physicians, physicians learn and experience the effectiveness of the new drugs more rapidly when exposed to marketing communication (Narayanan et.al., 2005). According to Orłowski and Wateška (1992), many studies concluded that pharmaceutical marketing is not only influential to the doctors' attitude but also their prescribing behaviors. Pharmaceutical companies give gifts to doctors as part of promoting and marketing their products. Although many doctors deny the potential for gifts to influence their judgment, according to McNeill et al., (2009), It has been found out that medical practitioners' attitudes to the pharmaceutical industry, their knowledge about pharmaceutical products, and prescribing behavior are influenced by industry promotion and gift-giving.

As far as attitude is concerned, it has been changed. For example, they (prescribers) ask for or readily accept the offer for free travel and hotel accommodation, give green cards against donations for building funds and refuse to see the medical representatives if donation is not given. Groups of doctors have formed companies and prescribe their products. They have an increasing liaison with chemists to prescribe a product which provides more discounts. They ask for money per each prescription particularly for prescribing more tonics and vitamins. Other studies also support the truth that pharmaceutical promotion has clear impact on the doctors prescribing behavior. A case is presented for understanding the impact of drug promotional activities on the sale of a drug (intravenous antibiotic used for hospitalized patients) having 125 units' consumption per month over the period of last 22 months. The consumption of the drug peaked to 476 units (maximum) per month after the pharmaceutical company invited specialists of that hospital with one guest each for an "all-expense paid" trip to a luxurious place (Orłowski and Wateška, 1992).

2.1.7. Interventions to counter the impact of pharmaceutical promotions

According to the review conducted by WHO (2004), different intervention mechanism has been implemented by health sectors of different countries in their effort to counter the impact of medical representatives/pharmaceutical promotions on the professional prescription practices of medical doctors. Below, the most common ones are discussed:

1) Guidelines, codes and regulations for Promotional material/medias

Countering the negative effects of pharmaceutical promotions and their information using guidelines, codes, and regulations is the most common one being implemented by many countries. By this interventions, health sectors attempts to control misleading promotional information/advertisement by developing policy guidelines and cross checking the practice against the established guidelines, codes and regulations. For instance, in some countries, they have the ‘‘fair balance’’ requirement act by which pharmaceutical promoters/medical representatives are required by law to clearly include both negative and positive information about their drugs. This includes the inclusion of brief summary of side effects, warning and contradictions. In most countries, physicians are required to prescribe generic medicines, when available in the market over brand name medicines. Some countries have regulations by which the behavior of sales representatives, such as how should they interact physicians and what information they should give about their drugs, is managed

2) Guidelines for post-marketing surveillance

The other intervention mechanism recommended by WHO is to conduct surveillance on post marketing effects by which the prescription and safety of new medicines is investigated. Based on such investigations, corrective measures should be taken in case new medicines safety and effects are in question.

3) Management of conflict of interest in research

This intervention dictates that conflict of interest by pharmaceutical manufacturing companies or medical representatives should be avoided. For instance, published studies that are funded by pharmaceutical manufacturers are likely to support the manufacturer’s drugs. Some published work doesn’t always disclose relationships between manufactures and researchers. So, such conflict of interest should be closely monitored and any publications or sponsorships should be free from brand medicine owners.

4) Guidelines about gifts

The other possible intervention is implementation of guidelines about gifts. Some medical associations have guidelines about gifts from the pharmaceutical industry by incorporating it in their code of ethics. These suggest that gifts to doctors should primarily benefit patients and should not be of substantial value.

5) Knowledge of these guidelines and their effect on attitudes

Continuous awareness and reporting on pharmaceutical promotions and its effect on attitude should be there as some doctors are reported to be influenced by promotions without knowing it actually. Physicians should be aware of the existence of such guidelines so as to cope up with negative impact of promotions that don't benefit the final consumers-the patients.

6) Education about promotion

Continuous education programs to teach health professionals on how to interact with sales representatives and interpret promotional approaches and information is the other major intervention to cope up with pharmaceutical promotions.

7) Monitoring/countering promotion

The last but not the least intervention mechanisms are via government monitoring of promotional programs that are directed towards health professionals/physicians. One way is to have a controlling body that will handle complaints of the health sector about improper or promotional information having no scientific grounds and act accordingly. The other monitoring activity could be carried out by conducting a research on pharmaceutical promotions and information whether there are exaggerations or not, whether warnings/side effects are limited/minimized or entirely ignored or not.

Generally, after discussing the most common intervention mechanisms, WHO (2004) recommended the most common and effective interventions mechanisms, namely, government regulation, continuous education of physicians/doctors about drug promotion influences and publicizing deceptive pharmaceutical promotions.

2.2. Empirical Literature Review

Below, empirical studies that have been conducted in relation with the impact of pharmaceutical marketing or promotion in pushing physicians to prescribe brand medicines over generic alternative medicines are reviewed and presented under their relevant topic as follows:

2.2.1. Pharmaceutical Promotions focusing on Physicians

Nowadays, the effort by pharmaceutical companies to push physicians prescribes their new brand medicine over generic medicine. According to a study conducted in Finland by Vainiomaki et.al., (2004), nearly half of physicians contacted marketing representatives/promoters and attended their briefing regarding new brand medicines at least twice a week. After observing medical students having very high contact with pharmaceutical promoter, they even suggested pharmaceutical promotion to be addressed in medical education. Sierles et.al., (2005) also conducted a survey in the united states on student physicians regarding their interaction with pharmaceutical promoters and found out that over 9 out of 10 student physicians were asked by faculty members to attend sponsored launches.

While studying pharmaceutical promotion techniques being used by market representatives, Burashnikova et al. (2008) found that pen gifting is the marketing technique used the most by pharmaceutical sales representatives, as 93.3% of physicians received pens at least once a year. Furthermore, 63.3% of physicians were invited to a symposium and to a dinner once in the previous year. Similarly, Zaki (2014) found out that most of the healthcare professionals who participated in their study reported receiving gifts from pharmaceutical sales representatives. Product brochures and product samples were the most-accepted giveaways.

2.2.2. Prescription choice of physicians

Although generic medicines are bio-equivalents to their innovator counterparts and are produced according to good manufacturing practices, generic medicines are widely believed as inferior in therapeutic efficacy and quality to branded alternatives and their use worldwide is poor. The most challenging barriers for the use of generic medicines are lack of knowledge and negative attitude among health practitioners and even consumers. According to a study

by Lebanova, et.al., (2012); and Chong et al.,2011, most consumers and some health practitioners believed that generic medicines are inferior to branded alternatives in quality, safety and efficacy.

A study conducted in the USA in 2005 (Barrett, 2005) showed that 78% of physicians support generic substitution in most cases, with 17% said they would prescribe generic drugs in all cases when they are available. Only 5% of doctors indicated they did not support generic substitution. Ninety percent of physicians surveyed believed they were knowledgeable enough about generic bioequivalence to instruct informed substitution of generics for brands. Sixty-nine percent indicated that therapeutic index influenced their decision to prescribe a brand over a generic, while 75% thought that certain drugs that have a narrow therapeutic index should never be substituted for generics (Barrett, 2005)

2.2.3. The impact of pharmaceutical promotion

Some studies have examined the impact of promotion aimed at health-care providers, which historically has been the primary form of promotion used by the pharmaceutical industry. Earlier, in 1980 Hibberd and Meadows found 85% of the UK doctors they interviewed said they used pharmaceutical promotions to learn about new drugs, but most used noncommercial sources to find out about efficacy. Regarding promotional strategies being followed by pharmaceutical promotions, Berndt et al. (1995), for instance, considered the role of detailing and medical journal advertisements and found out that there was the strongest demand effect for the stocks of detailing followed by medical journal advertising. They found the smallest impact for print media consumer advertising. As per the study conducted by Sriwignaraja and Fernando (2015), among the most influential factor leading towards doctors' branded medicine prescription behavior was sponsorships offered by the pharmaceutical firms. At the same time gifts and the interaction between the doctor and the company representatives also mainly encourage doctors to prescribe medicine

Avorn et.al., (1982) attempted to study the negative impact of promotional information on physician's prescription of two medicines that were not strongly supported by the science and found out that contrary to the advertised information about the drugs, their health treatment effect was very low. besides, the found out that those doctors who rely more on promotional

information prescribe new brand medicines quicker or earlier than those doctors that were not exposed to new drug promotions.

As per the study conducted by Sierles et.al., (2005) in the united states on student physicians regarding their attitude towards prescription of brand medicine as a result of experiencing pharmaceutical promotion, however, many of the students indicated that their prescription practice is unlikely to be affected by promotional gifts they have been getting by medical representatives.

2.2.4. Related studies on Ethiopian cases

In Ethiopian context, very few studies have been conducted on the impact of pharmaceutical promotions on physician's prescription choices especially with regard to the prescription of branded medicines. The available limited studies are reviewed below:

Zelalem et.al., (2013) studied the barriers to access availability and affordability of essential drugs in south western Ethiopia and found out that there is low availability of generic medicines in the market and as a result, consumers/patients were forced to purchase expensive brand medicines from private pharmacies. They suggested that generic medicine prescription practice should be implemented in a controlled managed to make essential medicines available and affordable.

Using a descriptive cross sectional survey method, Hayelom et.al (2016) assessed the awareness, attitude and practice of Mekele(Ethiopia) based physicians and pharmaceutics towards generic medicines and found that of all the respondents, only 51.10% believes that generic and brand medicines are similar showing knowledge gaps that requires continuous training and enforcement of clinical guidelines.

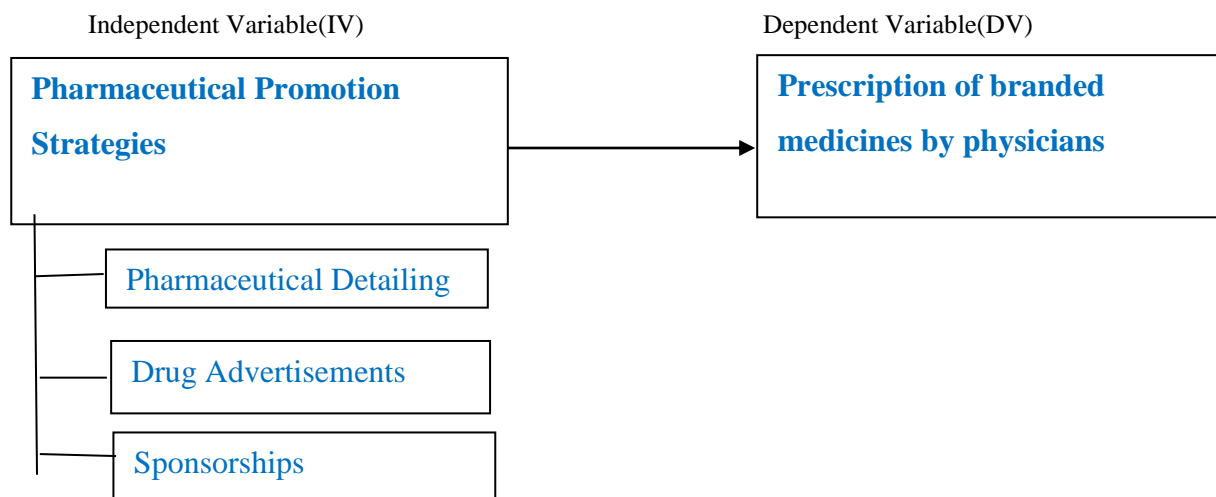
According to a related descriptive qualitative study by Adam (2016) on the role of drug promotional tools in inducing new brand medicine prescription by physicians working in private hospitals in Addis Ababa, it was found out 47.4% of physicians indicated that free medical samples have brand reminder effect and prescription choice. Stationaries, pocket treatment guides, brochures, journal articles were also mentioned by 33.6%, 27.8%, 19.1%

and 14.8%, respectively. However, the study doesn't clearly show the relationship between pharmaceutical promotion tools and prescription choice.

2.3. Conceptual Framework

The below conceptual framework is adapted from Sriwignaraja and Fernando (2015) and customized a little bit in such a way that it is aligned with the research objectives and the reviewed literature with regard to the topic of the study. Keeping other factors that may influence the prescription of brand medicines constant, the study will focus on the impact of pharmaceutical promotion strategies and methods on physicians who are legally and professionally responsible to prescribe drugs. Accordingly, the major pharmaceutical promotional strategies commonly used by pharmaceutical companies and their medical representatives- Pharmaceutical detailing, Drug advertisement and Sponsorships promotional strategy implementations are presented as independent variables while brand medicine prescription by physicians is the outcome/dependent variables.

Figure 2.1. The conceptual framework showing the impact of pharmaceutical promotion strategies and methods on brand medicine prescription



Source: adapted from Sriwignaraja and Fernando (2015) and available literature

Chapter 3

RESEARCH DESIGN AND METHODOLOGY

3.1. Study Area

The study was conducted in Addis Ababa, Ethiopia. As per the latest report from Ethiopian Ministry of health (2017), the total number of Hospitals in Addis Ababa city is 31(excluding 94 health centers). Out of the total 31 hospitals, about 11 of them are public owned. To make the study representative, the study involves one public/government/ hospital and one privately owned hospital working in Addis Ababa. From the public hospital, Tikur Anbessa Specialized Hospital/TASH/ is selected as it is the Largest referral public hospital in the country having 200 medical doctors, 379 nurses and 700 beds. The hospital is now the main teaching hospital for both clinical and preclinical training of most medical disciplines. The hospital is also an institution where specialized clinical services that are not available in other public or private institutions are rendered to the whole nation. From private hospitals operating in Addis Ababa, Addis Hiwot General Hospital/AHGH/ is chosen for the study. The hospital, located around Haile G/Silase road (in front of Axum Hotel) -Addis Ababa, has been established in 2000E.C by group of Ethiopian doctors so as to provide diversified specialties.

3.2. Research Design

Following a deductive scientific research approach, the research uses a descriptive and explanatory research design. According to Saunders (2009), in order to understand a given phenomenon or events, descriptive designs are important but to further understand the relationship between variables, explanatory study is also needed. Therefore, in order to understand the existing phenomenon or awareness regarding pharmaceutical promotions and brand prescription practices, as well as to examine and explain the relationship between the pharmaceutical promotions and brand medicine prescription, descriptive and explanatory design were followed. For related studies, similar research designs were also used by other scholars such as Sriwignaraja and Fernando (2015), Workneh et.al., (2016)

3.3. Population, Sample size and Sampling Techniques

According to Wren (2004, 158:159), the purpose of sampling is to gain an understanding about some features or attributes of the whole population based on the characteristics of the sample. Due to limitation on cost and time, only physicians working in two hospitals operating in Addis Ababa- Tikur Anbessa Specialized and Addis Hiwot General Hospitals, were selected purposely with non-probabilistic approach. The two sampling frames/hospitals were selected to represent physicians working in government owned and private owned health hospitals. Besides, their location was found convenient for the student researcher to easily and efficiently access data from the physicians working the hospitals.

However, considering the population size for Tikur Anbessa Specialized hospital and Addis Hiwot Hospital being small/manageable in number i.e. a total of 223 physicians, the study considers census method instead of taking samples but purposely excluded those 10 physicians who were working in the emergency sections of the two hospitals. Thus, to increase the validity of the generalization to be made on the study population, all of the remaining 213 medical doctors/physicians actively working in both health institutions were invited to participate in the study.

Table: 3.1. Study Population and Sample Size

Sampling frames/Hospitals	Study Population	Proportional Sample size
Tikur Anbessa Specialized Hospital	209	All 201(excluding 8 emergency doctors) considered (no sampling)
Addis Hiwot General Hospital	14	All 12(excluding 2 emergency doctors) considered (no sampling)
Total	223	213

Source: own (based on inputs from the hospitals' personnel section)

Due to time and resources constraints, a non-probabilistic purposive convenience sampling process was chosen to select 2 hospitals operating in Addis Ababa. However, due to the small size of the total population of doctors working in the two selected representative hospitals, as well as due to the need for more representation and to enhance the validity of the study, the researcher took the entire population of physicians/doctors working in the two hospitals for

the study without any sampling. The two hospitals are purposely selected on a convenience basis as they are representatives of both government and private owned health centers, in addition to having relatively better accessibility to quickly get primary data. Purposely selecting the two hospital on convenience basis. As Malhotra and Birks, (2006) indicated, such Convenience sample comprises selecting sampling units purposely because they are at the right place at the right time

3.4. Study unit

All physicians working in the government owned Tikur Anbessa Specialized Hospital and in the privately owned Addis Hiwot General Hospitals, who have the privilege to prescribe drugs, are the study units

3.5. Data sources

The study used both Primary and Secondary Data. Primary data was collected using the key data collection instrument- Questionnaire. While secondary data was collected from available pharmaceutical reports, newspapers.

3.6. Inclusion and Exclusion Criteria

Any physicians currently working in the hospitals and willing to participate in the study were included in the study. While, any physicians not willing to participate in the study were excluded. Besides, those 10 medical doctors (8 from Tikur Anbessa and 2 from Addis Hiwot General Hospital) working in the emergency sections of the hospitals were not included in the study as they were assumed to be extremely busy of saving lives. However, all the remaining physicians were invited to participate in the study.

3.7. Procedures of data collection

The primary data was collected using the questionnaire. Structured questionnaire having close ended questions was adapted from Sriwignaraja and Fernando (2015) and Workneh et.al., (2016) and customized to suit the objectives of the study. The questionnaire is selected as a major data gathering tool because the researcher believe that the questionnaire helps respondents to easily remember their attitude and practices towards generic and brand

medicines and their prescription practices when they are given choices to pick. Besides, the questionnaire method is found to be cheap, easy to administer to a large number of respondents. The questionnaire was distributed to available (actively working i.e. not to those on leaves or on training) physicians based on convenience purposive sampling methods.

3.8. Reliability and validity of measurement instrument

3.8.1. Validity

According to Adams et al., (2007), validity refers to whether the items measure what they are supposed to measure. To ensure the validity of the instrument, panel of experts/colleagues, were invited to review the instrument. In order to check the response bias, few similar items were repeated in different parts of the questionnaire. Thus, Content validity of the survey questionnaire was validated by professionals and the research advisor. The results led to make minor changes in the instrument, which were made prior to administering the survey.

3.8.2. Reliability

According to Adams et al., (2007), reliability is a measure for the consistency of collected data through time and among respondents, while validity refers to whether the items measure what they are supposed to measure. A pilot test of 15 questionnaires were distributed to test and check the reliability of the items of the questionnaire and to make the necessary correction. Then, the questionnaire was tested using Cronbach's alpha reliability measurement scales. According to Sekaran (2003), using Cronbach alpha, coefficient alpha provides a good estimate of reliability. Alpha values of 0.7 or higher are considered to be adequately reliable. Values between 0.5 and 0.7 are acceptable while values of below 0.5 are considered to be less reliable. Accordingly, the reliability of the questionnaire with regard to the major variables of the study has been tested by using Cronbach Alpha and it is found that Cronbach's Alpha value is **0.752** and hence, reliable.

Table: 3.2. Reliability Test Result

Major Variables	Number of items	Cronbach's alpha value for entire analysis data
Pharmaceutical detailing Strategies	4	0.717
New Drug Advertisements	2	0.969
Sponsorships by pharmaceutical companies	2	0.867
New Brand Medicine prescription as a result of pharmaceutical promotions	3	0.671
Total Reliability of the instrument having a total of 11 items(excluding the demographic variables)	11	0.752

Source: SPSS Output (2018)

3.9. Methods of Data Analysis

Sekaram (2003) asserts that there are three objectives in data analysis; getting a feel for the data, testing the goodness of the data, and answering the research question. He notes that establishing the goodness of data lends credibility to all subsequent analysis and findings because it measures the reliability and the validity of the measures used in the study. After gathering data from the questionnaire, the data was checked adequately for reliability and clarification.

Then, the collected data was entered into a computer and analyzed using Statistical Package for Social Sciences (SPSS version 20). Data analysis of this study was performed using quantitative and qualitative methods to address the respective nature of the data collected and research questions available. Descriptive analysis was used to locate the typical data and its variability using the measures of frequencies, central tendency and dispersion respectively. Relationship measurements, which base their techniques on correlation and regression, measure the associations between or among variables depending on the number of variables involved. Variables are labelled as dependent and independent variable, not as one causes the other but to express the degree of relationship in which one could predict the other variable (Housden, 2005).

3.10. Ethical Considerations

Letter of support was obtained from St. Marry University, School of Graduates. Additional permission was obtained from the concerned target hospitals. The purpose of the study was explained to the participants and informed consent was also obtained before data collection. To keep the confidentiality of the participants, personal identifiers was not being included in the data collection format and ensured throughout the research process and the information has been utilized only for research purpose. Participation of the respondents was also being entirely voluntary.

Chapter 4

RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter presents the analysis of data collected for the study. For the purpose of responding to the objectives of this study, all of the study population (all physicians working in both purposely selected hospitals-Tikur Anbessa and Addis Hiwot General Hospital) were invited to involve in the study and data was able to be collected from 174 of them. The study mainly assesses the impact of pharmaceutical promotion on Physicians' attitude and prescription choice of brand and generic medicines. Data have been analyzed in the form of reliability analysis, descriptive statistics, and multiple regression analysis. Accordingly, below the results of data analyzed have been presented in the form of tables and charts and interpreted based on the reviewed theoretical literature.

4.2. Overall Empirical Result of the study

4.2.1. Response Rate

A total of 213 questionnaires were distributed for physicians working in Tikur Anbessa Specialized Hospital and Addis Hiwot General Hospital. Out of which, 174 questionnaires were returned with complete response, while 3 questionnaires that were distributed to Tikur Anbessa Hospital physicians were partially completed and rejected due to missing/incomplete data and unfortunately 36 questionnaires were returned with no response. Since the entire population i.e. 213 physicians working in the two hospitals were invited (without sampling) to respond to the survey, the response rate of 81.69% (excluding questionnaires with missing response or no response at all) is adequately enough to conduct the study.

Table: 4.1. Response Rate

Hospitals	Total study population	Questionnaire distributed	Questionnaire returned with complete response	Overall, Returned rate (in %)
Tikur Anbessa Specialized Hospital	201	201	165	82.09%
Addis Hiwot General Hospital	12	12	9	75 %
Total	213	213	174	81.69%

Source: research data (2018)

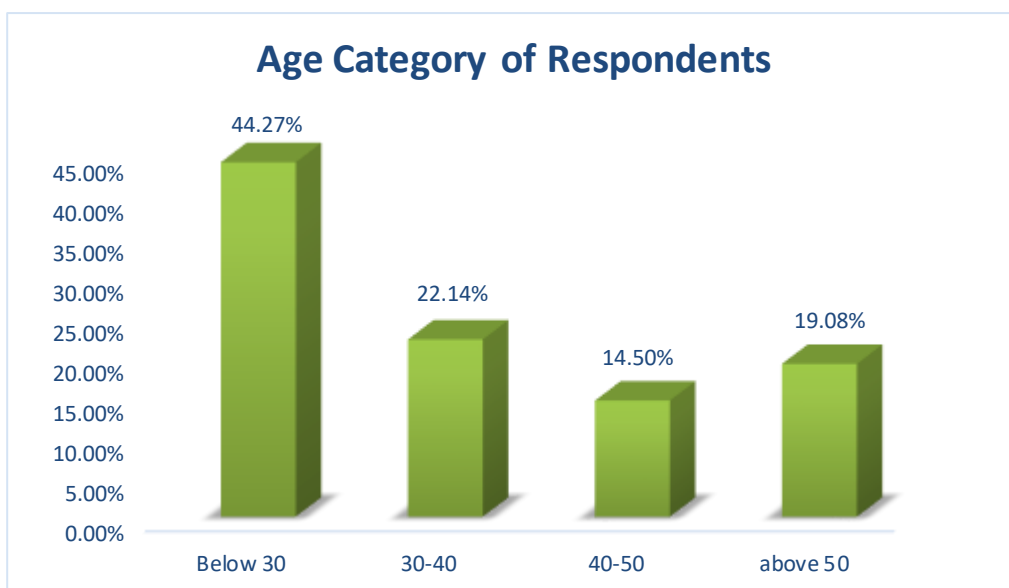
Therefore, 174 questionnaires having complete response were used for the below data analysis, based on which the findings and the conclusions are to be made.

4.2.2. Demographic profile of respondents

4.2.2.1. Age of Respondents

Results showed that majority of the physicians (44.27%) were aged below 30 years. This was followed by those aged from 30 to 40 (22.14%) and those above 50 years (19.08%). The remaining age group (30-40) constitutes 14.5%. Most of the physicians were therefore relatively young. See details in the below Figure 4.1:

Figure 4.1. Age of Respondents

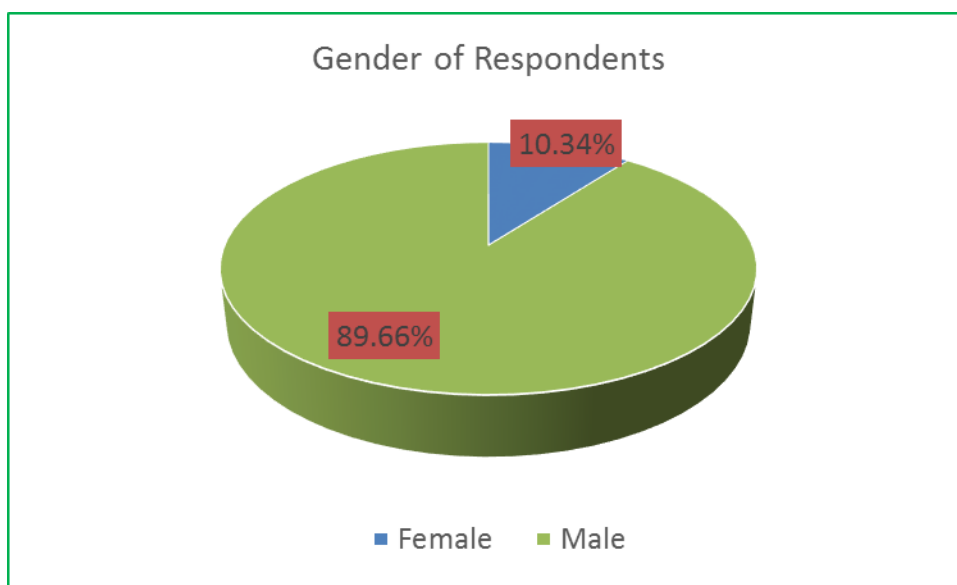


Source: SPSS Output (2018)

4.2.2.2. Gender of Respondents

As indicated in the below table, it can clearly be seen that the majority of the respondents involved in this study were males. They represented 89.66% while the females represented only 10.34% of the respondents.

Figure 4.2. Gender of Respondents



Source: SPSS Output (2018)

4.2.2.3. Hospital in which Respondents work

This study was only aimed at those Physicians working in Tikur Anbessa Specialized Hospital and Addis Hiwot General Hospital. The majority of respondents are from Tikur Anbessa Hospital constituting 94.83% out of the total of 174 respondents, while Respondents from Addis Hiwot General Hospital constitute 5.17% of the total respondents.

Table: 4.2. Distribution of demographic Variable-Respondents' Hospital in which they work

variable	Hospital	Frequency	Percent
Name of Hospital in which physicians working	Tikur Anbessa Specialized Hospital	165	94.83%
	Addis Hiwot General Hospital	9	5.17%
	Total	164	100%

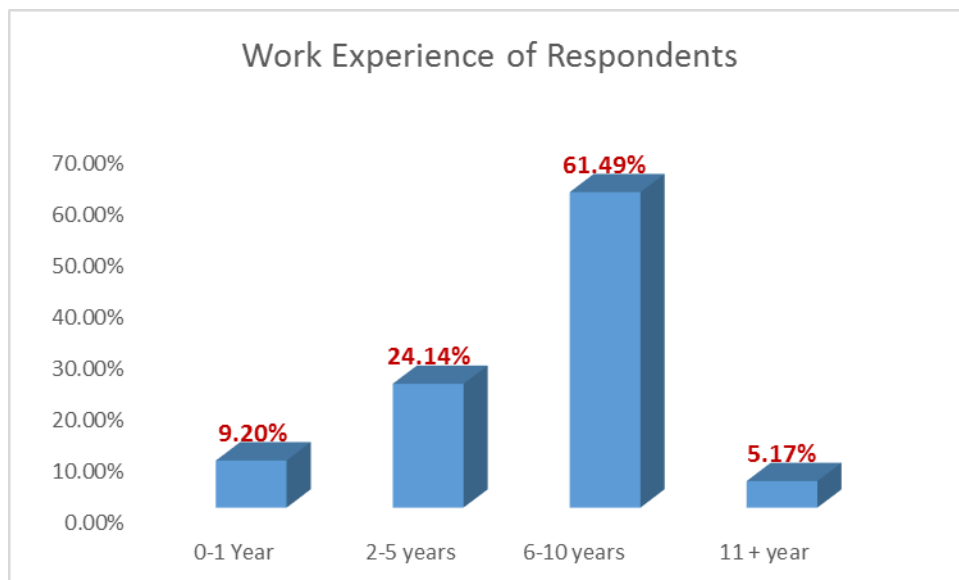
Source: SPSS Output (2018)

4.2.2.4. Number of Years working as medical doctor

The other variable that the respondents were asked was number of years they had worked as physician specifically at Tikur Anbessa or at Addis Hiwot Hospital. This variable is important in that, the experience of respondents working as physician provides relevant and reliable information about their interaction with pharmaceutical promotion/representatives and its impact on their prescription behavior and choice over the last 12 months. Thus, for this question, majority (61.49%) of the respondents answered they had 6-10 years of work experience as physicians, while the second majority 24.14% indicated they have 2 to 5 years of work experience. Those having below 1-year work experience constitute 9.2%, while the remaining 5.17% said they have above 11 years of work experience. This indicates that all the respondents have been working as medical doctor/physicians long enough to understand and share their relevant experiences regarding pharmaceutical promotion and their prescription choice and behavior.

The below graph shows the details:

Figure 1.3. Work Experience of Respondents

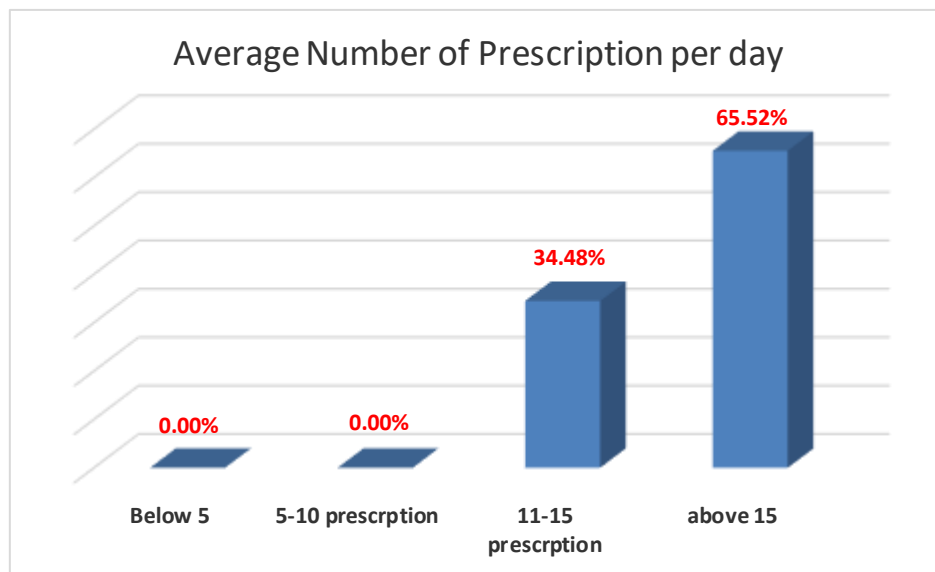


Source: SPSS Output (2018)

4.2.2.5. Average Number of Prescription per day

Knowing the average number of prescription physicians provide to their patients per a given working day is important to make sure that physicians participating in the study are engaged in prescription practice that is enough to share experience regarding their drug choice and prescription practice. Accordingly, the majority of involved respondents (65.52%) indicated that, on average, they provide more than 15 prescription orders to their patients per a given working day, while the remaining 34.48% said that they write 11 up to 15 prescription orders per a given working day. There are no respondents who indicated that they prescribe below 11 orders. This indicates that the respondents are actively engaged in prescription practice and provides relevant information regarding their prescription choice and practice.

Figure 4.4. Average number of prescription per day



Source: SPSS Output (2018)

4.3. Reliability and Validity Measurement Test of the study

In most cases, according to Field (2009), uncertainties of measurement are related to validity and reliability. Validity tells whether a measuring instrument measure what it is supposed to measure in the context it is applied, which is a primary concern, while reliability is interested in measuring the accuracy of the instrument. So, the study provides due attention to the requirements of both validity and reliability.

4.4. Assessing the basic awareness of physicians towards Generic and brand medicines

Before assessing the impact of pharmaceutical promotion on physicians towards their attitude and prescription choice towards brand and generic medicines, assessing the awareness level of respondents towards generic and brand medicines is important as the awareness/knowledge can be one factor influencing prescription of brand medicines while alternative low cost generic medicines are available in the market. Out of 174 respondents, the majority of physicians (79.3%) indicated that they clearly know the fact that both generic and brand medicines have similar contents and health effects, while the remaining 20.7% of don't exactly know that generic and brand medicines have equal contents and health effects. As per the Ethiopian drug policy, generic medicines are encouraged to be prescribed as they have similar contents and health effects as the brand medicines ones. On the remark part of the instrument mentioned by 4 respondents who opposed to the idea that both generic and brand medicines have similar contents and health effects, they stated that they agree in principle that they have similar contents but pointed out that the observation rate (the rate at which the drug centers in to our blood circulation and absorbed by body cells) of some of the generic medicines is slower than their alternative brand medicines.

With regard to knowing the cost of generic and brand medicines, 96% of respondents indicated that most generic medicines have lower cost than brand medicines. This is important variable in that, even though the physicians are not the direct users of drugs, they should consider the cost implications for their patients who will end up paying and using the drugs prescribed by doctors. So, in this regard, except for the 4% of physicians, the majority of them clearly know that the cost of most generic medicines is lower than the brand ones.

The other awareness questions forwarded to respondents was whether they know the existence of drug prescription policy that demand the need for prescription of only prescription drugs so long as they are available in the market. In this regard, the majority of them (74.1%) indicated that they are aware of such prescription guideline, while the remaining 25.9% lacks the clear awareness regarding such prescription guideline.

Table: 4.4. Frequency distribution indicating the overall awareness of physicians towards generic and brand medicines

Question	Response	Frequency	Percent	Valid Percent	Cumulative Percent
Do you know that both generic and brand drugs have similar contents and health effects	Yes	138	79.3%	79.3%	79.3
	No	36	20.7%	20.7%	100.0
	Total	174	100.0	100.0	
Question	Response	Frequency	Percent	Valid Percent	Cumulative Percent
Do you know that the cost for most generic drugs is lower than brand medicines	Yes	167	96.0%	96.0%	96.0
	No	7	4.0%	4.0%	100.0
	Total	174	100.0	100.0	
Question	Response	Frequency	Percent	Valid Percent	Cumulative Percent
Are you aware of a prescription policy that states that wherever available, generic drugs should be prescribed over brand ones?	Yes	129	74.1%	74.1%	74.1
	No	45	25.9%	25.9%	100.0
	Total	174	100.0	100.0	

Source: SPSS Output (2018)

4.5. Assessment of Pharmaceutical Promotional strategies directed towards physicians to influence prescription of brand medicines

In order to meet the second objectives of the study, i.e. to assess the extent to which physicians have observed/experienced pharmaceutical promotional strategies and methods that aimed encouragement of physicians to prescribe new brand medicines, respondents were asked to indicate the extent to which they have observed/experienced the different pharmaceutical promotional strategies and methods. The extent was measured on a Likert scale of 0-4 where: 0= No extent, 1= Small Extent, 2= Moderate Extent, 3= Great Extent and 4= Very great Extent. So, the greater the mean, the greater the extent of agreement while the greater the standard deviation, the greater the level of variation in the responses. A mean (M) score of (0 < mean < 0.4) means-No extent, (0.5 < mean < 1.4) -to small extent, (1.5 < mean < 2.4)-to moderate extent, (2.5 < mean < 3.4) means to a great extent and a mean score (3.5 < mean < 4) means to a very great extent. The following table 4.5. Shows the descriptive statistics to indicate the extent of pharmaceutical promotional strategies and methods being observed in the health industry.

Table: 4.5. Descriptive statistics showing the extent of pharmaceutical strategies being implemented in the Ethiopian health industry

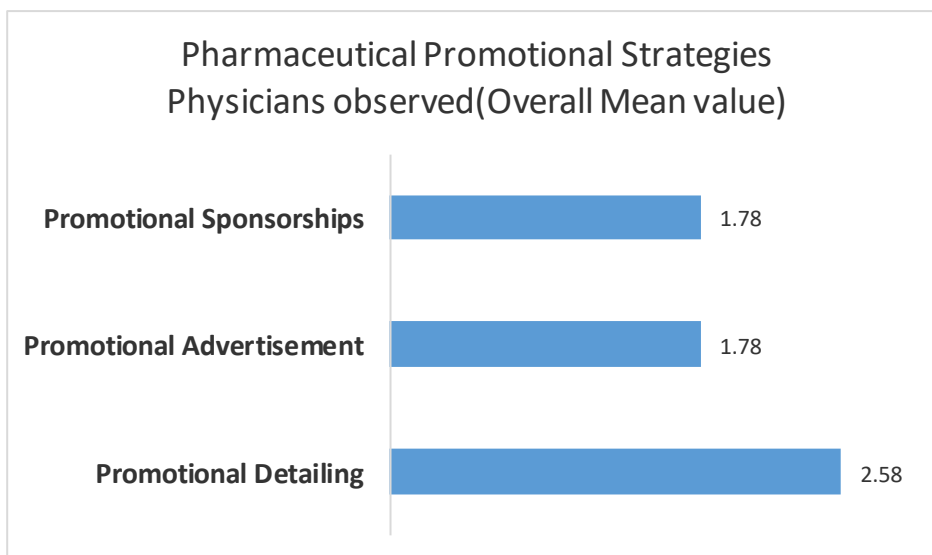
Descriptive Statistics				
Major Variable	Sub Variables	N	Mean	Std. Deviation
Promotional Detailing	Representatives Visits to brief physicians	174	2.41	.784
	Promoting via printed materials	174	2.83	.829
	Promoting via sample medicines	174	2.71	.942
	Promoting via giving personalized gifts	174	2.39	1.171
Promotional Advertisement	Promoting via advertisement on publications	174	1.82	.791
	Promoting via advertisement on public events	174	1.75	.777
Promotional Sponsorships	Promoting via Sponsorship of public events	174	1.81	.793
	Promoting via Sponsorship of Training/Education	174	1.75	.779
	Valid N (list wise)	174		

Source: SPSS Output (2018)

According to the SPSS result provided above, to a great extent ($2.5 \leq \text{mean} \leq 3.4$) physicians has observed/experienced pharmaceutical detailing promotional strategies of medical representatives/pharmaceutical companies over the last 12 months. Such detailing strategies are implemented by sending medical representatives/drug promoters to hospitals so as to brief physicians regarding new brand medicines, by using printed materials that explains information regarding new brand medicines, by providing sample new brand medicines to physicians and by giving personalized simple gifts to physicians. Among detailing methods, only the delivery of simple personalized gifts like stationary items, prescription pads, pens were observed to moderate extent with a total mean value of 2.39, while the rest of detailing methods have been observed with great extent. Among pharmaceutical promotional detailing methods, the practice of promoting new brand medicines via printed materials like brochures has the highest total mean value (2.83) indicating its great extent while detailing via giving simple gifts like stationary items has the lowest mean value (2.39) indicating its moderate extent. Generally, the detailing strategy of pharmaceutical companies has been observed from moderate extent to great extent indicating.

The rest of promotional strategies i.e. promoting via sponsorships and via advertisement has been observed by physicians to moderate extent. From sponsorships strategy, sponsorship of public events/conferences has the highest overall mean value (1.81) while sponsoring education/training of physicians has lower mean value (1.75) but both methods has been observed to moderate extent. Similarly, the advertisement of new drugs via publications/books, journals, magazines/ has higher mean value (1.82) as compared to advertisement on public events/conferences/exhibitions (1.75). Overall, among the pharmaceutical promotional strategies, the strategy of detailing via frequent visits and briefing, printed materials, sample brand medicines and via provision of simple personalized gifts has been observed to a great extent being used by medical representatives/promoters in their effort to induce perception of their brand medicines.

Figure 4.5. Pharmaceutical promotional strategies experienced by physicians



Source: SPSS Output (2018)

4.6. The Pearson correlation between the independent and dependent variables

In order to learn the nature of statistical relationship between the independent and dependent variables, the correlation coefficients together with their significance level has been analyzed using the SPSS. According to Landau and Everett (2004), the relationship is expressed by value within the range -1.00 to + 1.00 as Pearson product-moment indicates. Pearson correlation is +1 in the case of a perfect increasing (positive) linear

relationship (correlation), -1 and 1 in all other case indicating the degree of liner dependency between variables. It is important to note that correlation provides evidence that there is a relationship between two variables. It does not, however, indicate that the independent variable actually caused the dependent ones. Accordingly, as the below SPSS result shows, it is observed that pharmaceutical detailing, drug advertisement and sponsorships have statistically strong correlation with prescription of new brand medicines with a P value of less than 0.05(at the 0.05 level-2-tailed) and with a Pearson R value of 0.176,0.185 and 0.181, respectively.

Table: 4.6. Correlation between the independent and dependent variables

Correlations					
		Pharmaceutical Detailing	Drug Advertisement Scale	Sponsorships	Prescription of Brand Medicines
Pharmaceutical Detailing	Pearson Correlation	1	.081	.076	.176*
	Sig. (2-tailed)		.286	.317	.020
	N	174	174	174	174
Drug Advertisement Scale	Pearson Correlation	.081	1	.995**	.185*
	Sig. (2-tailed)	.286		.000	.014
	N	174	174	174	174
Sponsorships	Pearson Correlation	.076	.995**	1	.181*
	Sig. (2-tailed)	.317	.000		.017
	N	174	174	174	174
Prescription of Brand Medicines	Pearson Correlation	.176*	.185*	.181*	1
	Sig. (2-tailed)	.020	.014	.017	
	N	174	174	174	174

*. Correlation is significant at the 0.05 level (2-tailed).

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

For all the variables, the Pearson's r is positive meaning as one variable increase in value; the second variable also increases in value. Accordingly, when the value of the independent variables- pharmaceutical detailing, sponsorships, advertisement increases, the value of the dependent variable-prescription of brand medicine will also increase.

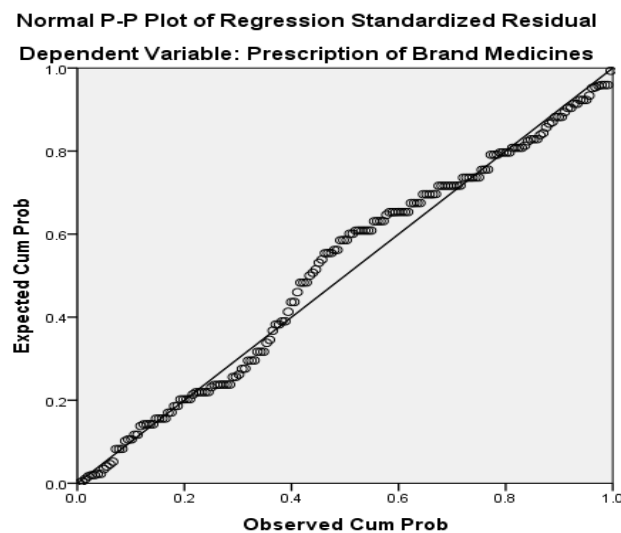
4.7. Testing Normality, Multi collinearity and Homoscedastic Assumptions for regression

According to Landau and Everett (2004), 3 major assumptions should be tested and met for a regression model to be analyzed and used for sound predictions or decisions.

1. Normality Test

According to Landau and Everett (2004), considering the P-P plot diagram, when the points lie approximately on the reference line, the distribution is normal and the relationship between the independent and dependent variable is linear. As per the below figure shows, the distribution is normal meeting the requirements of the regression model.

Figure 4.6. Normal P-P plot showing normal distribution



Source: SPSS output (2018)

2. Multi Collinearity

Multiple regression, according to Landau and Everett (2004), assumes that the independent variables are not highly correlated with each other. This assumption is tested using Variance Inflation Factor (VIF) values. If the collinearity statistics show VIF scores well below 10, and tolerance scores above 0.2, it means there is no multi collinearity and fit for regression. If multi collinearity is found in the data, one possible solution is to identify the variables

causing multi collinearity issues (i.e., through correlations or VIF values) and removing those variables from the regression. Accordingly, the correlation of between the sponsorships and advertisement has been very strong as their r value was above 0.8, therefore, the independent variable-sponsorships was removed and the multi collinearity test was tested again. Accordingly, the result shows a VIF scores in between 1-10 (1.007) with tolerance score above 0.2

Table: 4.7. Collinearity Statistics

Model	Coefficients						Collinearity Statistics	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF	
	B	Std. Error	Beta					
(Constant)	2.215	.165		13.393	.000			
1 Pharmaceutical Detailing	.118	.054	.162	2.180	.031	.993	1.007	
Drug Advertisement Scale	.118	.051	.172	2.314	.022	.993	1.007	

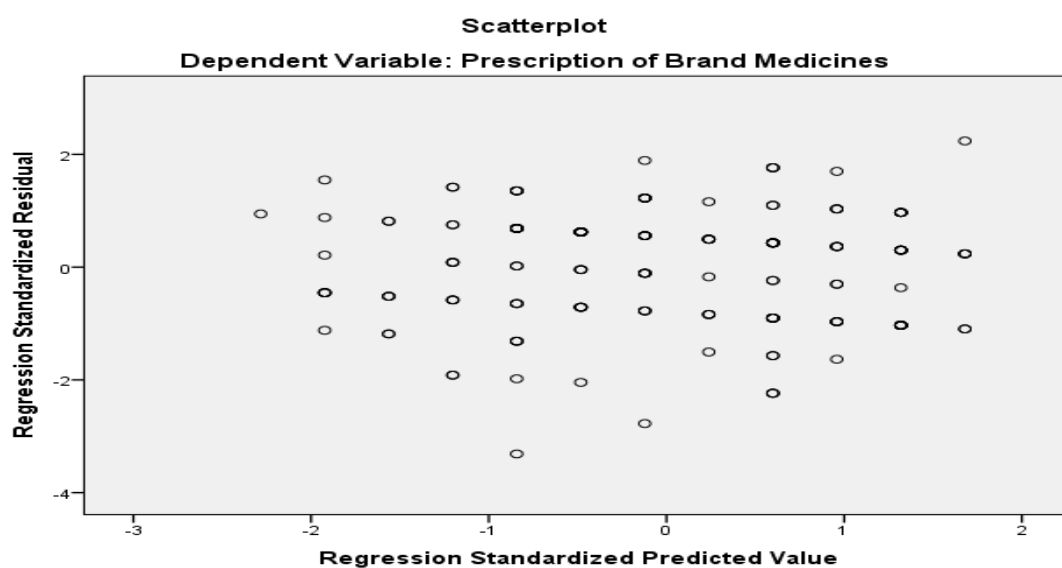
a. Dependent Variable: Prescription of Brand Medicines

Source: SPSS Output (2018)

3. Homoscedasticity

According to Landau and Everett (2004), one of the major assumptions of the regression model is the fact that the variance of errors is the same across all levels of the Independent variable which is called homoscedasticity. When the variance of errors differs at different values of the IV, heteroscedasticity is indicated. This assumption can be checked by visual examination of a plot of the standardized residuals (the errors) by the regression standardized predicted value. If plot of standardized residuals vs standardized predicted values shows no obvious signs of funneling or shows a rectangular shape, it means the assumption of homoscedasticity has been met, meaning the variance of errors are equal across all levels of the independent variables.

Figure 4.7. scatter plot showing Homoscedasticity



4.8. Results of the multiple regression analysis

Multiple regressions, according to Landau and Everett (2004), are the most common and widely used to analyze the relationship between a single continuous dependent variable and multiple continuous or categorical independent variables. Multiple regression analysis was conducted to examine the relationship and impact when all the independent variables—pharmaceutical detailing, advertisement of new drugs and promotional sponsorship strategies, simultaneously influence new brand drug prescription. The regression model used to predict prescription of new brand medicines is:

$$\text{Prescription of brand new medicine}(Y) = B_0 + B_1PD + B_2DA + B_3SP$$

- Where Y is the dependent variable (new brand prescription), B1-B3 are the estimated regression coefficients, B0 is the value of the dependent variable when all the independent variables are zero. The independent variables are denoted by PD (Pharmaceutical detailing), DA (Drug advertisement) and SP(Sponsorships). Each regression coefficient represents the change in Y relative to a one unit change in the respective independent variable.

Table: 4.8. Regression Coefficients and the model summary

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.215	.165		13.393	.000
	Pharmaceutical Detailing	.118	.054	.162	2.180	.031
	Drug Advertisement Scale	.118	.051	.172	2.314	.022
Model summary	R ² =.060; Adjusted R ² =.049 ; Sig =0.005					

Source: SPSS Output (2018)

As the above table of coefficients indicates, the **B** values of standardized coefficients have positive values indicating positive relationship between brand new medicine prescription with each of pharmaceutical detailing and new drug advertisement.

The **t** test associated with the **B** values is significant for pharmaceutical detailing with significance level of 0.031 which is less than 0.05 while it is 0.022 for new drug advertisement. This implies that the independent variables -pharmaceutical detailing and new drug advertisement significantly impacts/predict the prescription of new brand medicines. According to Table 4.7, the model summary shows the R-square value (0.060) shows small percentage of (6%) the variation can be explained by the variation in all the two independent variables-namely, pharmaceutical detailing and new drug advertisement variables. According to Landau and Everett (2004), even when R-squared is low, low P values still indicate a real relationship between the significant predictors and the response variable. So, even though the variation explained by the independent variable is very small, it is safe to consider the significant impact of each of the promotional Strategy-Pharmaceutical Detailing and new drug advertisement promotional practices, on brand medicine prescription of physicians as both have significance level below 0.05.

The result of the above analysis is not far from what others found. For instance, As Berndt et al. (1995) also found out that pharmaceutical promotional strategies of detailing and

advertisement create strong demand effect on physicians to prescribe promoted new brand medicines. When referring the most significant influencing pharmaceutical promotion strategy, a slight different result was observed as compared to what Sriwignaraja and Fernando (2015) who found out that from the pharmaceutical promotions, the promotion strategy of sponsorships was found to have most significant impact on brand medicine prescription, while the other promotional strategies still affecting the prescription. This could be due to lower sponsorships activities being implemented in the Ethiopian context and other factors may contribute to it but generally, similar studies conducted outside Ethiopia has also indicated positive relationship between pharmaceutical promotion and brand medicine prescription even though the significance level of each pharmaceutical promotional activities may differ.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

The chapter covers five major sections. These include the summary of the major findings, conclusion of the study, limitations encountered during the study, recommendations and suggestions for future research.

5.2. Summary of the major Findings

In an effort to understand the general awareness of physicians towards brand and generic medicines, the study found out that the majority of physicians (79.3%) are aware of the fact that both generic and brand medicines have similar contents and health effects, while the remaining ones (20.7%) opposed to the statement that both generic and brand medicines have similar contents and health effects. Similarly, majority of physicians (96%) also indicated that they are aware of the fact that most generic drugs available in the Ethiopian market have lower price as compared to brand new medicines. Besides, significant number of physicians (74.1%) responded that they are aware of clinical guideline/prescription policy that orders physicians to prescribe, where available, generic medicines over brand medicines. But the remaining 25.9% indicated that they are not aware of such policy/guideline.

The study also revealed that, to a great extent, pharmaceutical detailing promotional strategy with frequent visits/briefing, printed materials, sample brand medicines, personalized gifts provision methods have been observed and experienced by physicians. The study further revealed that both drug advertisement and sponsorship promotional strategies have been utilized by medical representatives/pharmaceutical promoters, to a moderate extent, in their effort to induce prescription of their brand medicines.

Furthermore, the study found out that there is positive relationship among the independent variables-pharmaceutical detailing, drug advertisement and sponsorships and with the dependent variable-decision to prescribe brand new medicine. Among the pharmaceutical promotional strategies, pharmaceutical detailing and new drug advertisement promotional strategy significantly impacts or contributes to the variation on the outcome variable-brand medicine prescription. Implying an improvement in such pharmaceutical promotions will lead to a

corresponding improvement in the prescription of new brand medicines. Generally, a very small but important percentage (6%) of the variation on the dependent variable-brand medicine prescription is explained by the explaining factors- pharmaceutical detailing and new drug advertisement.

5.3. Conclusions

This study concludes that the majority of physicians working in Tikur Anbessa Specialized and Addis Hiwot General's Hospital have the general awareness or knowledge that generic and brand medicines have similar contents and health treatment effects. Similarly, most physicians also agreed to the fact that generic medicines available in the Ethiopian market have lower price as compared to their alternative brand medicines. Besides, most physicians are found to have the awareness regarding the existence of prescription guideline/policy that orders physicians, wherever available in the market, to prescribe generic medicines over brand medicines.

Furthermore, the study also revealed that, to a great extent, pharmaceutical detailing promotional strategy with frequent visits/briefing, printed materials, sample brand medicines, personalized gifts provision methods have been observed and experienced by physicians. The study further revealed that both drug advertisement and sponsorship promotional strategies have been utilized by medical representatives/pharmaceutical promoters, to a moderate extent, in their effort to induce prescription of their brand medicines.

Furthermore, the concluded that having a positive statistical relationship, pharmaceutical detailing promotional strategy significantly impacts or contributes to the variation on the outcome variable-brand medicine prescription. Besides, it is concluded that the impact of new drug advertisement and sponsorships mechanisms on brand new medicine prescription is minimal.

5.4. Recommendations

On the basis of the findings and conclusions reached, the following recommendations are forwarded:

- To make sure that there is similar awareness and prescription practice among physicians, governing bodies like the Ethiopian health minister should be engaged in

continuous awareness creation/education programs directed towards physicians (including student physicians) with regard to the prescription of generic medicines and their equal health treatment effects as that of the brand medicines.

- Physicians need to strictly follow the prescription guideline/medical text books guidelines and prescribe only generic description of medicines, so long as they are available in the market, instead of writing name of medicine brands on their prescription paper.
- When prescribing, it is also better if physicians inform their patients regarding the existence of low cost but similarly effective generic medicines as the brand ones. This will help the final consumer/patients to defend any misleading efforts by pharmacists or to purchase the lower but similarly effective generic medicines, so long as they are available in the market.
- As per the recommendation and guideline of WHO (2004), the pharmaceutical promotion methods being implemented by pharmaceutical representatives/promoters to induce prescription of their brand medicines need to be guided/controlled and managed as such unethical prescription, while their alternative low cost generic medicines are available, has cost implication not only to the direct consumers but also to the country's economy/foreign exchange availability.

5.5. Limitations of the Study

The fact that there is a limited accumulated knowledge concerning similar studies on the impact of drug promotions on Ethiopian physicians' attitude and practice towards generic and brand medicine prescription is one potential limitation. Due to limitation on cost and time, only physicians working in Tikur Anbessa Specialized Hospital and Addis Hiwot General Hospital were involved and surely this has limitation on the generalization of the result on all physicians working in Ethiopia. Data collection was also limited by the busy schedules of the respondents. The researchers had to exercise utmost patience and make extra effort in reminding respondents and making constant follow-ups so as to acquire sufficient data from respondents. Some of the respondents approached were reluctant in giving some information fearing that the information sought would be used to intimidate them. The researcher handled

the problem personally convincing and assuring respondents that the information will be treated as confidential and would be used purely for academic purposes.

Besides, it is likely that some of the subjective responses obtained from the respondents may minimally affect the objectivity of the research inputs. The last but not the least limitation is the fact that the student researcher lacks thorough practical experience in conducting such problem-solving research.

However, to reduce the negative impact of the limitations described above, the following major actions were taken:

- Related studies conducted in other related closely related developing countries were reviewed
- Instead of taking samples from already small study population, all physicians working the two hospitals were invited to participate so as to increase the validity of the generalization at least on the study population.
- While collecting data, briefed respondents/personally administering data collection instruments/ about the purpose of the study and contents of the data collection instruments so as to ensure respondents give the right information without being confused or without making assumptions.
- Not to be affected by possible wrong memory of respondents, to let respondents use a questionnaire with listed choices to pick
- In addition to following/implementing the feedback of this research's adviser, books written on research methods as well as previously prepared thesis papers, journal articles were reviewed so as to quickly improve/refresh the student researcher's knowledge regarding the processes of research.

5.6. Suggestions for Further Research

This study was limited to two hospitals case operating in Addis Ababa, and hence its findings cannot be confidently generalized to other hospitals and health centers in Ethiopia and else. What is more is that there is hardly available study conducted on the impact of pharmaceutical promotion on the attitude and prescription choice of physicians working in Ethiopian health centers and Hospitals. Therefore, this study suggests similar studies to be conducted on other hospitals and health centers operating in Ethiopia involving not only physicians but also pharmaceutical drug promoters and pharmacists. In addition, the study

encourages others to investigate the impact of brand prescription on the final consumers/patients and on the national economy as a whole. Furthermore, the study suggests others to research further regarding the other factors affecting the prescription decisions of physicians and to identify more ways of securing the professional and ethical prescription practices.

References

- Adams, J., Khan, H.T.A. & Raeside, R., 2014. *Research methods for business and social science students*, New Delhi: SAGE Response.
- Adam, Bizuayehu. 2016. *Assessment of the effect prescription drug promotion on physician prescribing behaviour practicing in Addis Ababa*. Thesis submitted to St. Mary's University.
- Alkhateeb F. 2007. Physicians' attitudes toward e-detailing: a pilot study. *Value Health*;10(3)
- Avorn, Jerry. Chen, Milton. Hartley, Robert. 1982. Scientific versus commercial sources of influence on the prescribing behavior of physicians. *American Journal of Medicine*.
- Biehal, D., Gabriel, C., & Stephens, E. 1992. Attitude toward the ad and brand choice. *Journal of Advertising*, 21(3), 19-37.
- Barrett, L.L., 2005. *Physicians' Attitudes and Practices Regarding Generic Drugs*, Washington DC, AARP Knowledge Management, 33p. Online document <http://assets.aarp.org/rgcenter/health/phys_generic.pdf>. accessed on February 18, 2018, 3pm
- Berndt, E.R. 2006. "The United States experience with direct-to-consumer advertising of prescription drugs: what have we learned?" in: F.A. Sloan and C.R. Hsieh, eds., *Promoting and Coping with Pharmaceutical Innovation: An International Perspective*. New York: Cambridge University Press.
- Bihari, M. 2010. *Generic drugs - Are they as safe and effective as brand-name drugs?* Health Insurance.
- Burashnikova, I., Ziganshin, A., & Ziganshina, L. 2008. Attitudes to pharmaceutical promotion techniques among healthcare professionals in the Republic of Tatarstan, Russia. *International Journal of Risk & Safety in Medicine*, 20(1/2), 57-71. doi:10.3233/JRS-2008-0425
- Cameron, M. Ewen, D. Ross-Degnan, D. Ball, R. 2009. *Medicine prices, availability, and affordability in 36 developing and middle-income countries: a secondary analysis* Lancet, 373
- Consumers International. 2007. *Branding the Cure: A consumer perspective on corporate social responsibility, drug promotion and the pharmaceutical industry*. Consumers International: London.

- Creswell, J. 2009. *Research Design: Qualitative, Quantitative and Mixed Method*. Thousand Oaks, London and New Delhi: Sage Publications
- Edwards D, Ballantyne A: 2009. Patient awareness and concern regarding pharmaceutical manufacturer interactions with doctors. *Internal medicine journal* 39(3):
- Ethiopian Ministry of Health and World Health Organization. 2005. *Survey on prices of medicines in Ethiopia*. http://www.who.int/medicines/areas/coordination/ethiopia_prices.pdf. Online document: accessed on February 28, 2018 at 4pm
- Ethiopian Ministry of Health. 2017. *Health Sector Transformation Plan: Annual Performance Report*. Online source: https://www.itacaddis.org/docs/2017_11_10_09_48_31_ARM%202017.compressed.pdf
- Field, A. 2009. *Discovering statistics using SPSS*. 3rd ed. Sage Publications. UK. London.
- Hayelom G., Abadi K. and Gebremedhin G. 2016. Assessment of knowledge, attitude and practice of pharmacists and physicians toward generic medicine use in private clinics and dispensary of mekelle city, northern ethiopia. *European Journal of pharmaceutical and medical research*. 3(7), 114-121.
- Res Social Adm Pharm. 2010. *Evaluating pharmacists' views, knowledge, and perception regarding generic medicines in New Zealand*.
- Gebre Kirstos H, Kidanemariam A, Gebrezgiabher G. 2016. Assessment of knowledge, attitude and practice of pharmacists and physicians toward generic medicine use in private clinics and dispensary of Mekelle city, Northern Ethiopia. *EJPMR*, V.3,114-21.
- Hibberd, Patricia L. Meadows, A. J. 1980. Use of drug information sources by hospital doctors. *Journal of Information Science*. 2:169-172.
- Housden, M. 2005. *Marketing research and information: Course book 2005–2006*. Burlington.
- IFPMA. 2006. *code of practice* <http://www.pharmacomplianceforum.org/docs/resources/IFPMACode.pdf>. Online source accessed on May 2, 2018.
- Kesselheim AS, Misono AS, Lee JL, Stedman MR, Brookhart MA, Choudhry NK .2008. Clinical equivalence of generic and brand name drugs used in cardio-vascular diseases. *JAMA*. 300:2514–26.

- Kravitz, R.L., Epstein, R.M., Feldman, M.D., Franz, C.E., et al. 2005. "Influence of patients' requests for direct-to-consumer advertised antidepressants: a randomized controlled trial," *Journal of the American Medical Association*, 293(16)
- Landau, S. Everett, B. 2004. *A handbook of statistical analysis using the SPSS*. A CRC press company.
- Lebanova H, Manolov D & Getov I. 2012. Patients attitude about generics –Bulgarian perspective. *Marmara Pharmaceutical Journal* 16: 36-40.
- Manchanda, P., Phil, M., & Honka, E. 2005. The Effects and Role of Direct-to-Physician Marketing in the Pharmaceutical Industry: An Integrative Review. *Yale Journal of Health Policy, Law, and Ethics*, 785-822.
- MacKenzie, S. Lutz, R. and Belch, G. 1986. attitude toward brands. The Role of Attitude toward the Ad as a Mediator of Advertising Effectiveness: A Test of Competing Explanations. *Journal of Marketing Research*. Vol. 23, No. 2
- Malhotra, N.K. and Birks, D. 2006. *Marketing Research: An Applied Approach*. 3rd Edition, Prentice Hall, Upper Saddle River.
- Masood I, Ibrahim Mim, Hassali M A, Ahmed M. 2009. Evolution of Marketing Techniques, Adoption in Pharmaceutical Industry and Related Issues: A Review. *Journal of Clinical and Diagnostic Research*. Available from http://www.jcdr.net/back_issues.asp?issn=0973709x&year=2009&month=December&volume=3&issue=6&page=1942-1952&id=609 accessed on March 10, 2018.
- McNeill P.M., Kerridge I.H., Henry D.A., Stokes B., Hill S.R., Newby D., Macdonald G.J., Day R.O., Maguire J., Henderson K.M. 2006. Giving and receiving of gifts between pharmaceutical companies and medical specialists in Australia. *International Medical Journal*. 36
- Mitchell, A. A., & Olson, J. C. 1981. Are product attribute beliefs the only mediator of advertising effects on brand attitude? *Journal of Marketing*, 18, 318-332.
- Narayanan, S., Manchanda, P., & Chintagunta, P. K. 2005. Temporal differences in the role of Pharmaceutical Manufacturer Interactions with Doctors', *Internal Medicine Journal*, 39: 191-196.
- Masood I., Ibrahim M., Hassali M., Ahmed M. 2009. Evolution of Marketing Techniques, Adoption in Pharmaceutical Industry and Related Issues: A Review. *Journal of clinical and diagnostic research*. online source: http://www.jcdr.net/article_fulltext.asp?id=609. Accessed on May 5, 2018.

- Orlowski J, Watseka L. 1992. *The effects of pharmaceutical firm enticements on physician prescribing patterns*. Chest. <https://www.ncbi.nlm.nih.gov/pubmed/1623766>
- Report linker, 2016, *Analysis of the Ethiopian Pharmaceutical Market*. <https://www.reportlinker.com/p03605445/Analysis-of-the-Ethiopian-Pharmaceutical-Market-.html>
- Saunders, Mark. Lewis, Philip. Thornhill, Adrian. 2009. *Research methods for business students*. 5th ed., Pearson Education Ltd. Harlow.
- Saibel T., Carter G., Wiley R. 2001. *Converting patients from brand-name clozapine to generic clozapine*. *Ann Pharmacother* 35: 281-4.
- Sekaran, Uma. 2003. *Research methods for business, a skill building approach*. 4th ed., Jhon Wiley and Sons. New York
- Shimp, T. 1981. Attitude toward the ad as a mediator of consumer brand choice. *Journal of Advertising Research*
- Sierles F, Brodkey A, Clearly L, McCurdy FA, Mintz M. 2005. Medical students' exposure to and attitudes about drug company interactions. *Journal of American Medical Association*.294:1034–1042.
- Sriwignarajaa, K. and Fernando. M. 2015. *Factors Affecting On Pharmaceutical Products Brand Promotions: A Study On Professional Endorsement Perspective*. Department of Marketing Management, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka. Online document: <http://repository.kln.ac.lk/bitstream/handle/123456789/10602/441-448.pdf?sequence=3> accessed on February 29, 2018.
- Stoppler, M. Hecht. 2009. MedicineNet.com. Obtido em 2013, de <http://www.medicinenet.com/script/main/art.asp?articlekey=46204>
- Sweet M. 2009. *Pharmaceutical marketing and the internet*. *Australian Pres*. 32(1): <https://www.nps.org.au/australian-prescriber/articles/pharmaceutical-marketing-and-the-internet>. Accessed on May15, 2018.
- Sufrin, C. and Ross, J. 2008. *Pharmaceutical industry marketing: understanding its impact on women's health*; *Obstet Gynecol Surv* 63 (9): 585–96.
- Transitional Government of Ethiopia.1993. *National Drug Policy of the Transitional Government of Ethiopia*. Addis Ababa: Ethiopia

- Vainiomaki M., Helve O, Vuorenkoski L.A. 2004. *national survey on the effect of pharmaceutical promotion on medical students*. 2004 Nov;26(7):630-4. Online <https://www.ncbi.nlm.nih.gov/pubmed/15763854>. accessed on May 1, 2018
- Weekes L, Ramzan I. 2010. *Generic medicines—how confident should we be?* Pac Health Dialog.16(2): 109-111.
- WHO. 2013. *Prices and availability of locally produced and imported medicines in Ethiopia*. <http://haiweb.org/wp-content/uploads/2016/12/Price-Availability-Local-vs-Imported-Meds-in-Ethiopia.pdf> online doc: accessed on February 29, 2018.
- Workneh, B. Gebrehiwot, M. Bayo, T. Gidey, M. Belay, Y. Tesfaye, D. Kassa, T. 2016. *Influence of Medical Representatives on Prescribing Practices in Mekelle, Northern Ethiopia*.<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0156795>
- World Health Organization .2004. *WHO Medicines Strategy: Countries at the core, 2004–2007*. Geneva: World Health Organization. URL: <http://apps.who.int/medicinedocs/pdf/s5416e/s5416e.pdf>. online doc: accessed on February 29, 2018.
- World Health Organization and Health Action International. 2005. *Drug Promotion*. http://www.who.int/medicines/areas/rational_use/drugPromodhai.pdf online doc: accessed on February 29, 2018
- World Health Organization.2004. *Drug promotion what we know, what we have yet to learn* Reviews of materials in the WHO/HAI database on drug promotion. Online source: http://www.who.int/medicines/areas/rational_use/drugPromodhai.pdf
- World Health Organization and Health Action International .2004. *Understanding and responding to pharmaceutical promotion: A practical guide*. Online source: <http://www1.paho.org/hq/dmdocuments/2011/drug-promotion-manual-CAP-3-090610.pdf>
- Wren, Buce. Stevens, Robert. Laudon, David. 2004. *Marketing research: Texts and cases*. JAICO publishing house. Binghamton.
- Zaki, N. 2014. Pharmacists' and physicians' perception and exposure to drug promotion: A Saudi study. Saudi Pharmaceutical Journal.
- Zelalem Abiye, Amene Tesfaye, Segewkal Hawaze. 2013.. Barriers to access: availability and affordability of essential drugs in a retail outlet of a public health center in south western Ethiopia. *Journal of Applied Pharmaceutical*

APPENDIX-A: THE QUESTIONNAIRE

**ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

Dear sir/Madam

My name is Woinhareg Yemiamrew. Currently, I am attending my MA in Business Administration at St.Mary's University. As part of my study, I am conducting a research on *Impact of Pharmaceutical Promotion on physicians' prescription choice of branded medicine: The case of Tikur Anbessa Specialized Hospital and Addis Hiwot general Hospital*. Accordingly, the below questions are prepared to gather information regarding pharmaceutical promotion and prescription choice and practice. I assure you that your response will be treated with strict confidentiality. The outcome of this study will be used only for academic purpose.

Therefore, your genuine response to the questions is extremely vital for the quality and successful completion of the study.

Thank you in advance for taking your precious time to fill this questionnaire.

Section A- Personal/demographic information

1. Your age category

- Below 30 30-40 40 -50 >50

2. Your sex please

- Male Female

3. In which Hospital do you currently work most often?

- Tikur Anbessa Specialized Addis Hiwot General Hospital

4. For how many years have you worked as physician/medical doctor?

- 0- 1 Year 2-5 years 6-10 years 11 + year

5. On average, how many prescription papers do you provide to your patients per a given working day?

- Below 5 5-10 11-15 Above 15

SECTION B: The knowledge and attitude of physicians' towards branded and generic medicines

6. Do you agree with the statement that both local generic and their alternative brand medicines have similar contents and health effects?

- Yes No

If your answer is No, please explain it_____

7. Do you know that the cost of generic medicines is generally lower than brand medicine?

- Yes No

If your answer is Yes, please explaining it_____

8. Are you aware of any clinical prescription policy that states that, whenever available, physicians should prescribe generic medicines over brand medicines.

- Yes No

SECTION C: The Extent of pharmaceutical detailing Strategies being implemented by medical representatives/new drug promoters

Please indicate the extent to which you have been exposed to the below detailing promotional methods of pharmaceutical representatives over the last 12 months:

S.N.	Sub Questions	Not at all	Very small extent	Small extent	Large extent	Very large extent
9	Medical representatives visiting your office to brief/educate you(face to face) and give you information about their new brand medicines					
10	Medical representatives/promoters giving you new drug information via printed materials in the form of like brochures, journals, articles etc.					
11	Medical representatives/promoters giving you sample brand new medicines					
12	Medical representatives/promoters giving you simple personalized gifts like (e.g. pens, notepads, stationary items, prescription pads with your name on it etc.)					

SECTION D: The Extent of pharmaceutical advertising Strategies being implemented by medical representatives/new drug promoters

Please indicate the extent to which you have observed/exposed to the below new brand medicine advertising promotional methods over the last 12 months:

S.N.	Sub Questions	Not at all	Very small extent	Small extent	Large extent	Very large extent
13	New drugs being advertised on professional publications/journals					
14	New drugs being advertised on public events like on conferences/meetings/exhibitions					
15	New brand medicines being advertised over the electronic media and the internet					

SECTION E: The Extent of pharmaceutical sponsorship promotional Strategies being implemented by medical representatives/new drug promoters

Please indicate the extent to which you have observed promoting medical representatives sponsoring the below issues over the last 12 months:

S.N.	Sub Questions	Not at all	Very small extent	Small extent	Large extent	Very large extent
16	Medical representatives or promoters sponsoring public events like conferences, Exhibitions in which you participated					
17	Medical representatives sponsoring trainings programs in which you have participated					

SECTION F: The impact of pharmaceutical promotions on physicians towards their prescription of branded new medicines.

Think about your most common prescription choices/decisions and indicate to what extent you agree with the below statements:

S.N.	Sub Questions	Not at all	Very small extent	Small extent	Large extent	Very large extent
18	Pharmaceutical promotions has influenced me to prescribe brand medicines over generic medicines.					
19	For better health effect, I unusually prescribe brand name medicines over generic medicines.					
20	The relationship I have with medical representatives allowed me to know and prescribe their brand medicine					

Thank You!

Appendix 2- SPSS Outputs

Reliability Statistics

Cronbach's Alpha	N of Items
.752	11

Item Statistics

	Mean	Std. Deviation	N
Representatives Visits to brief physicians	2.41	.784	174
Promoting via printed materials	2.83	.829	174
Promoting via sample medicines	2.71	.942	174
Promoting via giving personalized gifts	2.39	1.171	174
Promoting via advertisement on publications	1.82	.791	174
Promoting via advertisement on public events	1.75	.777	174
Promoting via Sponsorship of public events	1.81	.793	174
Promoting via Sponsorship of Training/Education	1.75	.779	174
Brand Medicine Prescription due to detailing	3.28	.520	174
Brand Prescription due to advertisement	2.49	.743	174
Brand Prescription due to sponsorships	2.43	.674	174

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.246 ^a	.060	.049	.49377

a. Predictors: (Constant), Drug Advertisement Scale, Pharmaceutical Detailing

b. Dependent Variable: Prescription of Brand Medicines

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.681	2	1.340	5.498	.005 ^b
	Residual	41.692	171	.244		
	Total	44.373	173			

a. Dependent Variable: Prescription of Brand Medicines

b. Predictors: (Constant), Drug Advertisement Scale, Pharmaceutical Detailing

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.215	.165		13.393	.000		
	Pharmaceutical Detailing	.118	.054	.162	2.180	.031	.993	1.007
	Drug Advertisement Scale	.118	.051	.172	2.314	.022	.993	1.007

a. Dependent Variable: Prescription of Brand Medicines

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.719	3	.906	3.698	.013 ^b
	Residual	41.654	170	.245		
	Total	44.373	173			

a. Dependent Variable: Prescription of Brand Medicines

b. Predictors: (Constant), Sponsorships, Pharmaceutical Detailing, Drug Advertisement Scale

Descriptive Statistics

	N	Mean	Std. Deviation
Promoting via printed materials	174	2.83	.829
Promoting via sample medicines	174	2.71	.942
Promoting via giving personalized gifts	174	2.39	1.171
Promoting via advertisement on publications	174	1.82	.791
Promoting via advertisement on public events	174	1.75	.777
Promoting via Sponsorship of public events	174	1.81	.793
Promoting via Sponsorship of Training/Education	174	1.75	.779
Valid N (listwise)	174		

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of GETIE ANDUALEM(PhD). All sources of material used for the thesis have been duly 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 earning any degree.

Name

Signature

St. Mary's University, Addis Ababa, July, 2018.

ENDORSEMENT

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

Adviser

Signature

St. Mary's University, Addis Ababa, July, 2018.