ENSIGN COLLEGE OF PUBLIC HEALTH, KPONG EASTERN REGION,
GHANA

SELF-MEDICATION WITH ANALGESICS AND ANTIBIOTICS- A SURVEY AMONG TRADERS IN THE CENTRAL BUSINESS DISTRICT OF ACCRA, GHANA

SUBMITTED BY

SYLVIA KESEWA OFORI

A Thesis submitted to the Department of Community Health in the Faculty of Public Health in partial fulfillment of the requirements for the degree

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DECLARATION AND CERTIFICATION

I, Sylvia Kesewa Ofori, declare that this submission is my own work towards the MPH and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

Sylvia Kesewa Ofori (157100031)	.....	15/07/17 .....
(Student)	Signature	Date

(Certified by)		
Dr. Frank Baiden	.....	27/07/2017 .....
(Supervisor)	Signature	Date

(Certified by)		
Dr. Steven Manortey	.....	28/07/2017 .....
(Ag. Head of Academic Programme)	Signature	Date

DEDICATION

To my beloved parents, Mr. Ernest Ofori and Mrs. Agnes Ofori, who supported and encouraged me every second of my life.

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Sylvia Ofori, 2017.

Operational Definitions

Sex	Being male or female
Analgesic	Any drug that acts to relieve pain
Antibiotic	A medicine that inhibits the growth or destroys microorganisms
CBD	Central business district including Tema station, Tudu, Makola and Okaishie
Indication	Symptom that suggests certain medical treatment is necessary.

List of Abbreviations

CBD	Central Business District
IPF	International Pharmaceutical Federation
NSAIDS	Non-steroidal Anti Inflammatory Drugs
OTC	Over The Counter
URTI	Upper Respiratory Tract Infections

ABSTRACT

Introduction: Self- medication practices continues to be a growing global problem. The prevalence and nature of self-medication varies in different countries and cultures. A number of factors come into play to result in the decision to self-medicate. Some factors that have been associated with frequency of self-medication in previous studies include age, educational level and legislation regulating dispensing and sale of drugs. Inappropriate self-medication results in wastage of healthcare resources, increases resistance of pathogens, drug-drug interactions, and adverse drug reactions leading to hospital admissions.

Methodology: This study used a cross-sectional method to estimate the extent of self-medication and factors associated with it among traders in the Central Business District (CBD) of Accra. A printed structured questionnaire was used for data collection. Data was collected between November, 2016 and January, 2017. Non-probability sampling, specifically convenience sampling was used in the study. Questionnaires were administered by trained research assistants and traders were invited to participate by moving from shop to shop along the market area. Data was entered with Microsoft Excel 2013 and analysis done using Stata version 14.0. Descriptive statistical analysis was carried out to obtain summary tables and graphs. Multivariate logistic regression analysis was carried out to determine adjusted odds ratios.

Results: Four hundred and seventeen (417) traders (60.0% females) with mean age of 36 ($\pm$10.6) years participated in the study. Prevalence of analgesic self-medication was 76.1%, with paracetamol being reported as the most common analgesic. Headache was reported to be the most common indication for analgesic use. Prevalence of antibiotic self-medication was 66.7%. Antibiotics were used mainly for upper respiratory tract infections. The most commonly used

class of antibiotics was the penicillins. Highly educated people (O.R=0.39 (95% C.I; 0.16-0.98) were less likely to use antibiotics for self-medication. Community pharmacists (55.2%) were the main expected source of information on analgesics and antibiotics.

Conclusion: The prevalence of self-medication with analgesics and antibiotics were high among the traders. There is the need to provide public education to traders on the harmful effects of self-medication; particularly with antibiotics. Community pharmacists operating in the CBD should be empowered to provide one-on-one education for traders who call to procure analgesics and antibiotics.

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CHAPTER ONE

INTRODUCTION

1.1 Background information

Medicines play an integral part of the health system; they are not only needed to save lives and promote health, but also in preventing diseases and other disasters like outbreaks. Medicines are one of the greatest weapons of mankind to fight against diseases (Guide, 2012).

Every person has the right to have access to quality and effective medicines. However, the increased accessibility to drugs worldwide has posed a lot of problems such as misuse of drugs in the form of self-medication, overprescribing, poly pharmacy, use of unnecessary expensive drugs, abuse of antibiotics and injectables (Agyei-boateng, 2015; Guide, 2012).

Self- medication practices continue to be a growing global problem. The use of medicines without prior medical consultation regarding indication, dosage and duration of treatment is referred to as self-medication (Eticha and Mesfin, 2014). The prevalence and nature of self-medication varies in different countries and from cultures (Garofalo et al., 2015; Lukovic et al., 2014). Cultural and socioeconomic characteristics, previous experience with a symptom or disease, attitude toward a disease, the way in which healthcare is funded or reimbursed, and the availability of medicinal products have been quoted as determining factors of self-medication (Garofalo et al., 2015). Some other factors that have been associated with frequency of self-medication in previous studies include age, educational level, family attitudes, advertising of drugs by manufacturers, legislation regulating dispensing and sale of drugs and economic situation of respondents (Lukovic et al., 2014). A lot of factors come into play to result in the decision to self-medicate, especially in developing countries. These include the higher cost involved in going to the hospitals; poverty; the long waiting times in hospitals; cultural beliefs in

the efficacy of other traditional methods; as well as poor regulation and easy availability of drugs outside formal and regulated environments (Agyei-boateng, 2015; Van et al., 2008).

Garofalo et al (2015) estimate that the prevalence of self-medication among the people of Italy is 69.2%, and the odds of having performed a form of self-medication are higher in females. Figueiras et al. (2000) in a study of socio-demographic factors associated with self-medication in Spain also associated self-medication with women, people living in large cities, and people who live alone. People do not only self-medicate for existing conditions but also to prevent an anticipated condition (Agyei-boateng, 2015).

1 .2 Problem statement

Self-medication practices lead to various forms of irrational drug use. Inadequate information lead to problems such as the use of inappropriate agents for conditions for which they might not be indicated; drug overdose and under dose are also common among such uninformed groups (Osemene & Lamikanra, 2012).

There are difficulties in accessing medical care in several places in Ghana (Agyei-boateng, 2015). Consequently, self-medication is a common practice among Ghanaians. It is common for Ghanaians to self-medicate first instead of seeking professional medical care when ill. This behavior among the general Ghanaian populace is to reduce cost of consultation and the cost of transportation to and from hospitals or health care facilities (Agyei-boateng, 2015). Consequently, difficulties and inconveniences in accessibility to and use of professional health care is a significant challenge for the government. This challenge includes reducing self-medication practices and promoting good health seeking behaviors among Ghanaians (Agyei-boateng, 2015).

Inappropriate self-medication results in wastage of healthcare resources and increases resistance of pathogens, drug-drug interactions, and adverse drug reactions leading to hospital admissions (Garofalo et al., 2015). In developing countries, basic knowledge concerning the pharmacological properties of drugs and how they affect those who use them are not well known (Abasiubong et al., 2012; Eticha & Mesfin, 2014).

Several studies have revealed use of sub therapeutic and frequent use of antibiotics and other prescription only medicines. A review of the current practices in the use, safety and basis for allopathic drug use has concluded that it would be safe, if the people who are using such drugs, had sufficient knowledge about its dose, time of intake and side effects- since lack of information led to serious effects (Kumar et al., 2013). There is need for more public awareness and legislations to promote judicious and safe drug use. This study was conducted to describe self-medication practices among traders in the Central Business District (CBD) of Accra, in the Greater Accra Region of Ghana.

1.3 Significance of the study

Many studies in the country focused on self-medication practices among tertiary students, medical students and health practitioners on the basis that they had enough information to make informed decisions about their health (Osemene & Lamikanra, 2012). However, the general public or the layman may not have the right information to make decisions about their health and to compound the problem is their easy accessibility to drugs.

Antibiotics, from previous studies, have been stated as one of the most widely abused drug for self- medication (Salisu, A. and Prinz, 2009; Eticha & Mesfin, 2014). This has resulted in the rising problem of antibiotic resistance. Antimicrobial resistance is an important issue which

caused the president of the UN General Assembly to hold a one-day high-level meeting on 21st September 2016 at the UN Headquarters in New York, with the participation of Member States, non-governmental organizations, civil society, the private sector and academic institutions, in order to provide input on how to combat it.

This study therefore seeks to generate data for the drug supply regulatory bodies in the country in order to strengthen policies on regulation and access to drugs. Results of the study will also serve as grounds for strengthening awareness activities on dangers of self-medication and antibiotic resistance.

1.4 Hypothesis

i) Ho: there is no significant difference in extent of analgesic and antibiotic use.

H1: there is significant difference in the extent of antibiotic and analgesic use.

ii) Ho: there is no significant difference in self-medication with analgesics and socio-cultural factors.

H1: there is significant difference in self-medication with analgesics and socio-cultural factors.

iii) Ho: there is no significant difference in self-medication with antibiotics and socio-cultural factors.

H1: there is significant difference in self-medication with antibiotics and socio-cultural factors.

1.5 Conceptual framework

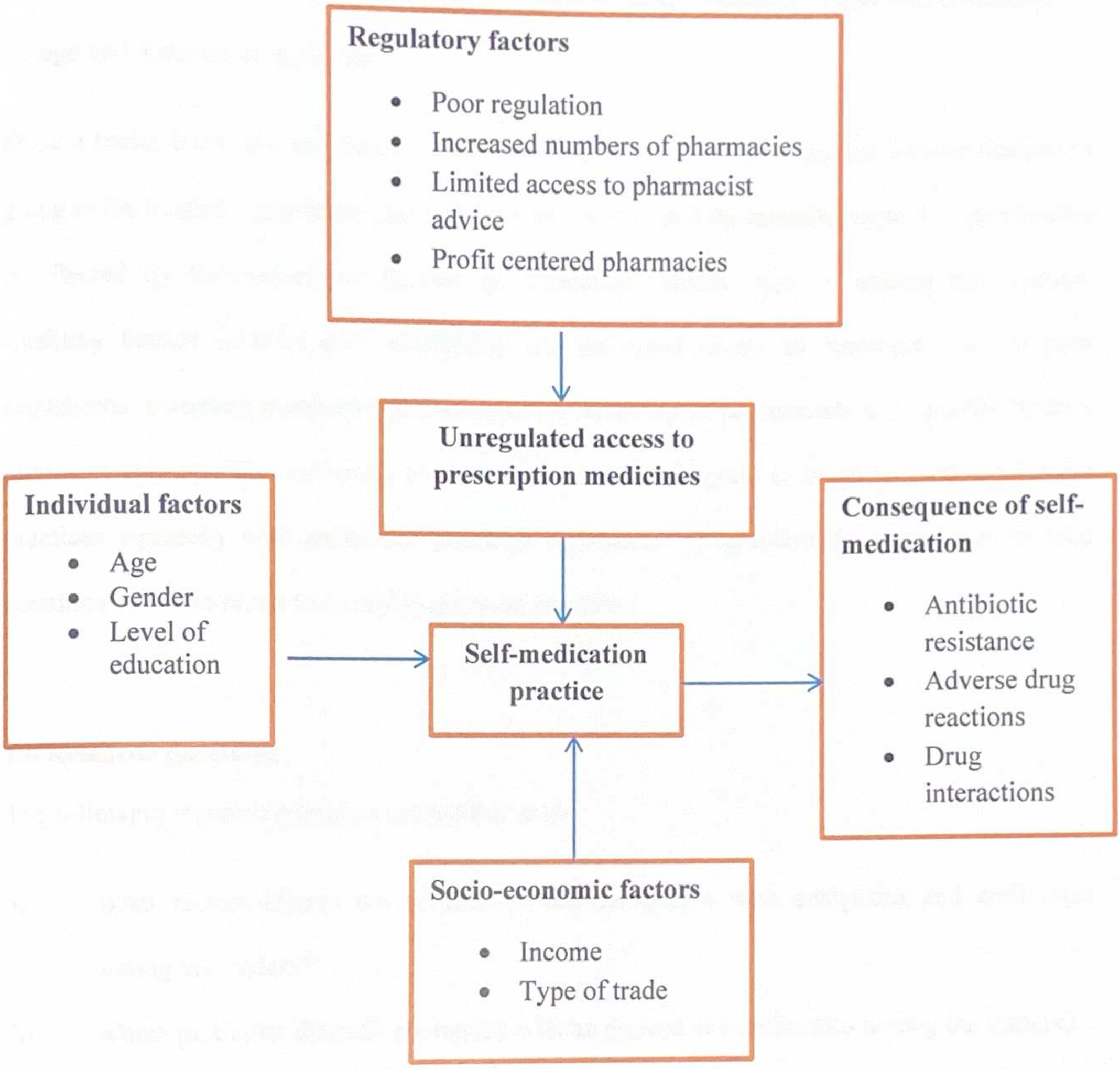

Figure 1.5: Conceptual framework of self-medication practices

The International Pharmaceutical Federation (IPF) defines self-medication as the use of non-prescription medicines by people on their own initiative. Eticha and Mesfin (2014) also defined self-medication as use of medications without prior medical consultation regarding indication, dosage and duration of treatment.

Once a trader feels sick or unwell, he or she needs to makes a decision on self-medicating or going to the hospital, depending on the perceived severity and the enabling factors. The decision is affected by socio-economic factors like education, gender, type of trading and income. Enabling factors such as easy availability and increased access to medicines due to poor regulations, increased number of pharmacies, unavailability of pharmacists and profit-centered pharmacy owners affect self-medication practices. Increased access to drugs and self-medication practices especially with antibiotics promotes resistance. Drug interactions and adverse drug reactions may also result from self-medication practices.

1.6 Research questions

The following research questions guided this study:

i) What factors inform the practice of self-medication with analgesics and antibiotics among the traders?

ii) Which particular diseases are treated with analgesics and antibiotics among the traders?

iii) Which analgesics and antibiotics are most often used in self-medication?

iv) What are the sources of information on these drugs?

1.7 General objective

Generally, this study seeks to explore the phenomenon of self-medication with analgesics and antibiotics among traders in the CPD of Accra, Ghana.

1.8 Specific objectives

1. To determine the prevalence of self-medication with analgesics and antibiotics among traders in the CBD of Accra.
2. To assess the factors that informs the practice of self-medication.
3. To identify the disease conditions treated with analgesics and antibiotics through self-medication.
4. To identify the types of analgesics and antibiotics that are most often used in self-medication.
5. To identify the sources of information on drugs.

1.9 Scope of study

This study was conducted to determine the extent of self-medication among traders in the CBD of Accra. Analgesics and antibiotics are the classes of drugs focused on in the study. The study was conducted between November, 2016 and January, 2017. The study looked into demographics of participants, type of trade, place of trade, use of analgesics and antibiotics, the types of drugs and indications for use. The write up concludes with recommendations to improve practice of self-medication and to combat antibiotic misuse.

1.10 Organization of report

The main body of the report is preceded by detailed contents including lists of figures, tables, and definition of terms used in the report. This is followed by abstract giving briefly the scope and objectives of the study, methodology, findings and conclusions.

Chapter 1 explains the importance of the topic, scope, problem statement, significance of study, objectives, hypotheses and conceptual framework.

Chapter 2 is the review of literature associated with the topic under study

Chapter 3 talks about the methodology including study design, study population, sampling, data handling and analysis, ethical considerations and limitation of the study.

Chapter 4 is on results from data analysis, presented by graphs and tables.

Chapter 5 discusses the results and compares with available literature on previous works by other researchers.

Chapter 6 gives the conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Prevalence of self- medication

The most common problems associated with irrational use of medicines include selection of medicines without considering the cost effectiveness, inadequate procurement of unnecessarily expensive drugs, failure to prescribe according to standard treatment guidelines, poor dispensing practices resulting in medication errors, improper patient adherence to dosing schedule and treatment regimen, and inappropriate self- medication (Lukovic et al., 2014; El-Nimr et al., 2015).

More than 50% of patients worldwide fail to take their medications properly and practice self-medication (Donkor et al., 2012). Rahman et al. (2008) revealed that approximately 80% of the people worldwide rely on the use of unconventional medicines as the first option of health care. In developing countries, self- medication is a common practice because it provides a cheaper alternative for people who cannot afford the high cost of medical care and also many drugs are dispensed over the counter without a valid prescription (Salisu and Prinz 2009; Van et al., 2008).

Self-medication is undeniably a major global practice which influences individuals' behavior while taking decision concerning their health. In a study to assess the practice of self-medication in the treatment of illnesses in children under five years by mothers in Ibadan, Nigeria; findings revealed that 53.4% mothers of under-five whose children fell sick two weeks before the survey applied self-medication as first action; 81.4% disclosed that they ever administered non-prescribed drugs for their children, 47.3% reportedly applied self-medication based on competence, while 19% were encouraged by family members to use non-prescribed drugs

Majority of the target populace of this research are mothers and thus raises a great concern for self-medication and abuse (Sumaila, 2015). A study done in Italy reported that 69.2% of participants stated that they had used an oral medication without the prescription of a physician at least once in their lives. In that same study, 71.8% of participants reported having done so at least once in the 12-month period preceding the study (Garofalo et al., 2015). In Alexandria, a pharmaco-epidemiological study of self-medication among adults attending pharmacies reported that nearly 81% of medications were purchased without prescription (El-Nimr et al., 2015). Another study carried out among Ain Shams University medical students in Cairo, Egypt, showed that the prevalence of self-medication among the studied population was 55% (El-Nimr et al., 2015). A study was aimed at assessing the magnitude, type, and factors of self-medication in Assendabo town, Jimma, southwestern Ethiopia came out with results that of 143 participants, and 11.4% reported at least 1 episode of illness out of which 39% used self-medication using both modern pharmaceuticals and traditional medicines (Suleman et al., 2009). The recent study from Sri Lanka had reported 12.2% and 7.9% prevalence of self-medication to allopathic drugs from urban and rural area, respectively, before two weeks of interviews. Study from South Africa had shown very high prevalence of self-medication (Suleman et al., 2009).

The prevalence of self-medication among women has been reported to be particularly higher compared to that of men. This has been attributed to the physiological stress that women usually experience for instance during menstruation and ovulation (Agyei-boateng, 2015). The socio-cultural expectation and requirement for women to take care of themselves physically has also been used to explain the high incidence of self-medication among women (Agyei-boateng, 2015).

2.2 Causes of self-medication

The ease of accessibility to drugs due to poor regulatory systems existing in developing countries has resulted in the poor health seeking behavior of people. World Health Organisation reported that more than 50% of all countries do not implement basic policies that would have helped to promote better health seeking behaviours among its citizens (WHO, 2010).

A study done by Van et al., in 2008, that investigated self-medication in Ghana reported that access to health care is biased and oriented towards health care provision in the urban areas to the detriment of the rural areas. The authors argued that the Ghana government's health policies have placed very little emphasis on providing preventive health care for rural residents but rather on curative health care, and that there is less emphasis on the provision of basic health care for rural residents.

Failure of government to control the sale of medicines in some countries is one of the major causes of self- medications. This has made it possible for people to have access to all sorts of pharmaceutical products over the counter (Anon, 2012). The incidence of self-medication is worse in developing countries due to poor regulation, distribution, and sale of prescription (Anon, 2012). The high cost of health care coupled with easy accessibility of drugs makes self-medication a preferred choice of health care in these countries. Meanwhile, in developed countries, pharmaceutical industries have played a lead role in turning prescription only medicine (POM) into over-the-counter (OTC) drugs, made available to consumers without mandatory presentation of a professional prescription (Filho & Lima-Costa, 2004). In a recent study in Brazil, Loyola Filho observed that the factors independently associated with self-medication were male gender, age bracket (older participants used fewer non-prescribed drugs),

more individuals residing in the household, fewer medical visits, consultation with a pharmacist, and less expenditure.(Filho & Lima-Costa, 2004)

2.3 Dangers of self-medication

It may be associated with certain risks such as drug resistance, drug interactions, adverse drug reactions, increased poly pharmacy, incorrect diagnosis and drug dependence (Donkor et al., 2012; Garofalo et al., 2015). The potential risks of self-medication include using inappropriate drugs or inaccurate dosages, which may result in adverse reactions. It may temporarily mask symptoms and delay patients from seeking medical advice, which could result in serious complications (El-Nimr et al., 2015). The community should be educated and well informed about the negative consequences of such practices and steps must be initiated to stop it. Uncontrolled irrational use of antimicrobials without medical advice may lead to a higher chance of inappropriate, incorrect, or undue therapy, missed diagnosis, delays in appropriate treatment, pathogen resistance and increased morbidity (Agyei-boateng, 2015).

2.4 Drugs used in self-medication

Many studies done on self-medication have reported on similar classes of drugs that are commonly used for self -medication in most countries (Agyei-boateng, 2015). These classes include analgesics, antibiotics, drugs for chronic illness and vitamins.

2.4.1 Analgesics

The medical dictionary defines analgesics as compounds capable of relieving pain. Lukovic et al (2014) reported that the most commonly self-medicated class of drugs is analgesics. He reported a prevalence of 55.4%. A research on self -medication and non-doctor prescription practices in Pokhara, reported that the most commonly used drug for self-medication was paracetamol (43%) followed by NSAIDS (non-steroidal anti-inflammatory drugs) which was 23% (Partha and

Shenoy, 2002). Paracetamol and NSAIDS are examples of analgesics. Abasaibung et al in a study on self-medication practices among pregnant women reported in Uyo, Nigeria reported the rate of self-medication with analgesics to be 30.3% (Anon, 2012). A study in Alexandria, Egypt also reported analgesics as the most commonly used drug for self-medication with a prevalence of 96.7% (El-Nimr et al., 2015). A 20.8% prevalence rate of self-medication has been reported in Mekelle, Ethiopia (Eticha and Mesfin, 2014). It is expected that this study will show a high prevalence of the use of analgesics due to the tiring nature of their jobs. One study done to compare prevalence between medical and non-medical students reported that about 72% of pain relievers were taken for headaches whiles 47.6% took the pain relievers for pain elsewhere (Zafar, 2008). Regarding the active ingredient in the pain medication, a research done on teachers in Pakistan University, results showed that participants preferred medicines containing ibuprofen were 31%, followed by Panadol (paracetamol) 46% and aspirin 15% (Chen et al., 2014).

2.4.2 Antibiotics

Antibiotics have also been reported as one of the most frequent used drugs for self-medication (Agyei-boateng, 2015). El-Nimr et al in a study in Egypt, reported an antibiotic use prevalence rate of 53.9% (El-Nimr et al., 2015). The study mentioned cough and common cold as the symptoms that warranted the use of antibiotics. Tadele Eticha in his study in Mekelle reported a rather low prevalence of antibiotic use compared to analgesics and vitamins. Their reported prevalence rate was 8.4%, which was far lower than that recorded in Ethiopia (Eticha and Mesfin, 2014). Osemene and Lamikanra (2012) reported that 53.8 % of the university students who took part in their study in Nigeria admitted taking antibiotics for self-medication. The prominent disease conditions that predisposed respondents to self-medication practices with

antibiotics were urinary tract infection, typhoid fever, cough and catarrh, diarrhea, malaria, sore throat, otitis media and pneumonia (Osemene and Lamikanra, 2012).

2.5 Sources of information on drugs

One of the driving determinants of self-medication is the source of information on the drugs and where they are purchased from. These two factors have a role to play in safety and quality of drugs. There is evidence to suggest that people in developing countries receive their drugs as well as information on these drugs from non-pharmacists and non-trained personnel (Agyei-boateng, 2015). Drug peddlers are quite a common sight and a source of information for self-medicated drugs in developing countries. Drug peddlers often operate in and around large markets and parked vehicle stations and often target unsuspecting travellers (Agyei-boateng, 2015). Another known source of information on drugs is licensed chemical sellers, these are people licensed to sell over the counter drugs (OTC). They however may not have the requisite knowledge to provide information on drugs.

Information may also be obtained from informal sources include friends, family among others (Albalawi et al., 2015). For instance, it is common to find older generations like parents, in-laws, and other relatives suggesting possible drug treatments because they are seen to have experience and are therefore important sources of drugs and drug information for self-medication (Albalawi et al., 2015; Agyei-boateng, 2015). Older family members serve as a source of drugs too not just information. Sometimes, they go to the extent of sharing leftover prescription drugs with other family members and friends too (Van et al., 2008; Agyei-boateng, 2015).

Left over drugs is also a vital source of drugs for self-medication. It is common for people to stop taking their drugs when they feel well and keep the rest in anticipation of future ailments

and diseases (Agyei-boateng, 2015). The media has also been mentioned as one of the sources of information on drugs (El-Nimr et al., 2015). This is made evident by the numerous advertisements of drugs on television and radio including the internet. Albalawi et al (2015) reported that 53.1% of people obtain information on drugs from the pharmacist with 18.7% obtaining the information from old prescription forms. Other reported sources in that same study included health staff and relatives or friends (Albalawi et al., 2015).

CHAPTER THREE

METHODOLOGY

3.1 Research method and design

This study used a cross-sectional method specifically; quantitative method was used in this study to estimate the extent of self-medication and factors associated with it among traders in the CBD of Accra. It is described as quantitative because it attempts to measure self-medication practices among traders using a questionnaire. Cross-sectional surveys provide the opportunity for one-time health assessment problems and results are easily expressed in mathematical language and interpreted by means of statistical procedure.

3.2 Data collection techniques and tools

A printed structured questionnaire was used for data collection. Data was collected between November, 2016 and January, 2017. Questions were close ended with options for participants to choose from. Participants completed the questionnaires with the aid of trained research assistants. The questionnaire consisted of socio-demographic characteristics of study participants, types of illnesses or symptoms of illnesses for which self-medication was sought, reasons and type of requests for self-medication, sources of advice and category of drug products demanded for self-medication

3.3 Study Population

The study was conducted in the CBD of Accra. The site was chosen because it is one of the busiest places in Accra. The markets are dominated by women who sell goods varying from fresh food, imported goods, local jewelry, shoes and many more. Furthermore, it is difficult for traders to leave their shops and attend hospitals when they are ill because they feel it is a waste of time and they might miss out on some important transactions or money, to be precise. Hence

they are more prone to self-medicating when ill or when someone else in their household is ill. There are several pharmacies in this district, popularly called the Drug Lane,6 and the existence of drug peddlers in this area makes them easily accessible to these drugs.

The study included traders in Makola, Okaishie, Tema Station and Tudu.

3.4 Profile of study area

Accra is the capital and most populous city of Ghana, with an estimated urban population of 2.27 million as of 2012. It is also the capital of the Greater Accra Region and of the Accra Metropolis, with which it is conterminous. Accra is furthermore the anchor of a larger metropolitan area, the Greater Accra Metropolitan Area (GAMA), which is inhabited by about 4 million people and the thirteenth-largest metropolitan area in Africa. Accra stretches along the Ghanaian Atlantic coast and extends north. Originally built around three different settlements including a port (Jamestown), it served as the capital of the British Gold Coast between 1877 and 1957. Accra serves as the Greater Accra Region's economic and administrative hub. Since the early 1990s, a number of new buildings have been built, including the multi-storey French-owned Novotel hotel. The CBD of Accra contains the city's main banks and department stores, and an area known as the Ministries, where Ghana's government administration is concentrated. Economic activities in Accra include the financial and commercial sectors, fishing, and the manufacture of processed food, lumber, plywood, textiles, clothing, and chemicals. Makola, Okaishie, Tudu and Tema Station are suburbs in the CBD of Accra

3.5 Study Variables

The outcomes of the study are the use of analgesics and antibiotics without prescriptions. The independent variables include sex, age, marital status, education, type of education and place of trade.

Table 3.5: Description of variables

Category	Variable	Scale of measurement
Outcome	i) Use of analgesics ii) Use of antibiotics	Binary Binary
Independent	Sex Age Marital status Education Type of trade Place of trade	Binary Categorical Categorical Categorical Categorical Categorical

3.6 Sampling

3.6.1 Sample technique

Non-probability sampling was used in this study, specifically convenience sampling. Convenient sampling was used due to the busy nature of the study area. Traders would hardly leave their wares to respond to questions being asked or filling forms. Only traders who were willing to take part in the study were enrolled. To avoid cluster effect, only one person from each shop was recruited.

3.6.2 Sample size calculation

The study aimed to interview 417 traders in the CBD. This target was dictated by time and other resource constraints. This sample size however afforded an estimation of the extent of self-medication within a margin of error of 4.3% at 95% confidence level, using an assumed self-medication prevalence of 27.6% as estimated by Worku in Jimma town, southwest Ethiopia (Worku, 2003) .

3.7 Pretesting

The questionnaire was pretested in Tudu, a suburb close to the business city. Results from the pretesting were not included in the main study. The pre-test made it possible to assess participants' level of understanding of the questionnaire items and to make adjustments to wording and sentence structure.

3.8 Data handling

Data collected with questionnaires were screened for completeness and errors. The data was entered using Microsoft excel 2013. The principal investigator was responsible for data cleaning and management. The original entry on the questionnaire was used as source data. Soft copies of all dataset and work done were sent to the investigator by e-mail, and an external drive and all completed individual questionnaires were kept under lock and key.

3.9 Data analysis

Data collected was analyzed using STATA, version 14.0. Descriptive statistical analysis was carried out to obtain summary tables and graphs containing the demographic characteristics of the study participants. Odds ratios ORs, reported with their 95% confidence intervals (C.Is) with the level of statistical significance set at $p<0.05$ for all tests. Results were expressed as means, frequencies, and percentages and in graphs. A measure of strength of association between the outcome variable and the predictor variables were obtained by calculating the crude odds ratio using the tab odds command. All confounding variables were catered for and the effect of prominent predictor variables evaluated using a multivariate logistic regression model,, obtaining the adjusted odds ratios.

3.10 Ethical considerations

Some ethical issues faced were confidentiality and inconvenience in time for participants. Oral informed consent was sought from participants after explaining the study to them before recruitment. Furthermore, this research sought the consent of participants by asking them to sign a consent form. Participants were made aware of the objectives of the research project, and they were assured of anonymity and confidentiality for all information they provided. Participants were also assured that at any point during the data collection they had every right to withdraw without any consequences to their person, image or self-esteem.

Ethical clearance was obtained from the Ethical committee of the Ensign College Of Public Health before the study begun.

3.11 Limitations of the study

Given the very busy environment where the study took place, it is possible that some participants may have completed the questionnaires in a hurry and not paid particular attention to some questions. Participants may potentially want to deny having self-medicated to create a good impression of themselves to the researcher. This may have had implications for the accuracy of responses regarding the incidence of self-medication among respondents.

The lack of a complete list of traders and their shops made it impossible to target a representative sample of the traders. This limits the generalizability of the findings of the study. Data was collected mainly in Tudu, Okaishie, Makola and Tema Station.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic results

Four hundred and seventeen traders were surveyed between November, 2016 and January, 2017.

4.1.1 Age and sex distribution of participants

Participants were made up of 253 females representing 60.7%, and 164 males representing 39.3%. About 45% of participants were between the ages of 31 and 45 years, with 39% between 17 and 30 years. The lowest age of the participants was 17 years and maximum age was 72 years. The average age of participants was 35.6 (±10.60) years.

4.1.2 Marital status of participants

The majority of participants were married or cohabiting, with 44.8% being single. A few of the traders were widowed, separated or divorced.

4.13 Religious affiliation of participants

Majority of participants were Christians (90.4%). Only 8.6% of them were Muslims, with about 1% not belonging to any religion.

4.1.4 Educational level of participants

Most of the participants had completed secondary education, followed by 23.0% completing primary or basic education. Only 13.4% of them had tertiary education with 10.4% having no form of education.

4.1.5 Type of trade of participants

Most of the participants were involved in trading of clothing. 17.1% sold food items. 18.7% sold cosmetic products and 7.7% sold stationaries. About twenty-two percent were involved in other trading like spare parts, bicycles among others.

Table 4.1: *Summary of Socio-demographic results among traders in CBD*

CHARACTERISTICS	NUMBER (%)
GENDER	
Male	164 (39.3)
female	253 (60.7)
AGE (years)	35.58 ±10.60(17-72)
17- 30	161 (38.6)
31-45	187 (44.8)
>45	69 (16.6)
MARITAL STATUS	
Single	187 (44.8)
Married/cohabiting	197 (47.2)
Separated/divorced	15 (3.6)
widowed	18 (4.4)
ETHNICITY	
Akan	185 (44.4)
Ga	129 (30.9)
Ewe	71 (17.0)
Non-Ghanaian	14 (3.4)
Other	18 (4.3)
EDUCATIONAL LEVEL	
None	43 (10.3)
Primary	96 (23.0)
Secondary	222 (53.2)
Tertiary	56 (13.4)
RELGION	
None	4 (1.0)
Christian	377 (90.4)
Muslim	33 (8.6)
TRADE TYPE	
Food	71 (17.0)
Cosmetics	78 (18.7)
Clothing	142 (34.1)
Stationary	32 (7.7)
Other	94 (22.5)
PLACE OF TRADE	
Own shop	149 (35.7)
Rented shop	128 (30.7)
Outside	140 (33.6)

Source: Author,s Field Survey, December 2016

4.2 Results relating to analgesics

The majority of participants admitted to buying analgesic recently, out of which 76.1% admitted to buying and using the analgesics themselves, and 3.4% admitted they bought the drugs for themselves and another person, while the remainder indicated they bought the drugs for another person.

Most of the participants said they used paracetamol most recently, whilst 12.9% said they used ibuprofen most recently. A few indicated they used diclofenac and tramadol.

Participants were asked reasons (indications) for the use of the antibiotics. The majority indicated they used analgesics for headache, 8.9% used it for joint ache, 9.6% to relieve tiredness, and 6.9% for backache.

From table 4.2, the most used drug to manage headache was paracetamol. Ibuprofen was mostly used to manage joint pain. The only participant who admitted to taking morphine before took it for headache. Aspirin was mostly used for headaches.

Table 4.2: *Analgesics and indications for use among traders in CBD*

Analgesic	Headache N (%)	Back pain N (%)	Joint pain N (%)	Tiredness N (%)	Other N (%)	Total N (%)
Paracetamol	261 (90.0)	14 (4.1)	4 (1.4)	11 (3.8)	2 (0.7)	290 (100.0)
Ibuprofen	8 (16.0)	5 (10.0)	21(42.0)	16 (32.0)	0 (0.0)	50 (100.0)
Diclofenac	8 (25.8)	7 (22.6)	8 (25.8)	7 (22.6)	1 (3.2)	31 (100)
Tramadol	1(12.5)	4 (50.0)	0 (0.0)	3 (37.5)	0 (0.0)	8 (100.0)
Morphine	1(100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Aspirin	7 (58.3)	0 (0.0)	2 (16.7)	1(8.3)	2 (16.7)	12 (100.0)
Other	5 (50.0)	0 (0.0)	1 (10.0)	0 (0.0)	4 (40.0)	10 (100.0)
Total	291(72.4)	28 (7.0)	36 (9.0)	38 (9.4)	9 (2.2)	402 (100.0)

Source: Author's Field Survey, December 2016

4.3 Results relating to antibiotic use

Only 33.3% said they had never used antibiotics in the past year. About a quarter (23.1%) indicated using antibiotics once and 30.1% said they used it more than twice or thrice. In summary, 66.7% of participants admitted using antibiotics on their own.

More than a quarter (33.2%) used antibiotics for respiratory tract infections like sore throat, cold, catarrh and cough, whilst 30.7% took antibiotics for gastro-intestinal disorders like diarrhea and stomach pain. A few took antibiotics for penile or vaginal discharge, skin infections, pain and fever.

Participants were asked of the antibiotics they use and it appeared that most of them used penicillins like amoxicillin, penicillin V tablet, flucloxacillin and amoxicillin/clavulinic acid combination. This was followed by metronidazole, popularly known as flagyl. Fluconazole and griseofulvin were the least reported antifungals.

From the results, penicillins were mostly used for upper respiratory infections followed by gastro-intestinal infections (table 4.3). Flagyl was mostly used for gastrointestinal infections, and the other antibiotics were also mostly used for upper respiratory infections.

Table 1.3: *types of antibiotics and indications for use among traders in CBD*

Drug N (%)	URTIs	GIT	Skin	Fever/pain	Genital Discharge	Other	TOTAL
Penicillins	44(33.1)	27(20.3)	30(22.6)	11(8.3)	13(9.7)	8(6.0)	133 (100)
Flagyl	18(20.7)	51(58.6)	8(9.2)	5(5.7)	4(4.6)	1(1.2)	87(100)
Antifungals	6(46.1)	3(23.1)	1(7.7)	0(0.0)	3(23.1)	0(0.0)	13(100)
Others	26(56.5)	5(10.9)	5(10.9)	2(4.3)	7(15.2)	1(2.2)	46(100)
TOTAL	94(33.7)	86(30.8)	44(15.8)	18(6.5)	27(9.7)	10(3.5)	279(100)

Source: Author's Field Survey, December 2016

4.4 Duration of usage of antibiotics

Majority of the participants (67.5%) indicated they know the quantity to buy from the pharmacist and 9.8% said it depended on their money. About a fifth (20.3%) indicated they knew from a previous prescription.

For the dosage of antibiotics, none of them indicated using the internet to know the dosage. A few indicated reading the package leaflets (17.2%) or consulting their doctors (17.8) on the

dosage. More than half (55.2%) consulted pharmacists. Family and friends (9.4%) were also consulted.

Minority (3.2%) of participants indicated that they always changed the dosage, 16.0% said they sometimes changed dosages and majority (80.8%) said they never changed the dosage. For those who admitted to changing dosage, 43.7% said they changed they changed dosage because they felt better, 17.2% changed it because the condition worsened and 23.4% changed it to reduce the side effects.

Participants were also asked if they had switched antibiotics and the reasons for doing so. Majority of participants indicated they never switched antibiotics; however, 2.9% indicated they always switch to other antibiotics during the course. For those who admitted to switching drugs, quite a number (36.2%) indicated that they switched because the previous antibiotics did not work for them, with 23.4% indicating they did so because they ran out of the previous ones.

Majority of participants indicated they stopped taking the antibiotics after the symptoms disappeared. Minority indicated they stopped upon consultation with a doctor or pharmacist.

Table 4.4: *Summary of results on dosage of antibiotics among traders in CBD*

Variable (Antibiotic)	N (%) response
Knowledge on quantity to buy	
Pharmacist	193 (67.5)
Money available	28 (9.8)
Previous prescription	58 (20.3)
Guessing	4 (1.4)
Other	3 (1.0)
Knowledge on dosage	
Package insert	49 (17.2)
Consulting doctor	51 (17.8)
Consulting pharmacist	158 (55.2)
Family/ friends	27 (9.4)
Previous experience	1 (0.4)
Change in dosage	
Always	9 (3.2)
Sometimes	45 (16.0)
Never	227 (80.8)
Reason for changing dosage	
Improving condition	28 (43.7)
Worsening condition	11 (17.2)
To reduce side effects	15 (23.4)
Insufficient quantity	4 (6.3)
Other reasons	6 (9.4)
Switching of antibiotics	
Yes	8 (2.9)
Sometimes	31 (11.2)
Never	237 (85.9)
Reason for switching	
Drug did not work	17 (36.2)
First drug ran out	11 (23.4)
Latter one was cheaper	7 (14.9)
Side effects of drug	7 (14.9)
Other	5 (10.6)
Stopping antibiotics	
After a few days regardless of outcome	4 (1.4)
After symptoms disappeared	125 (44.0)
Days after recovery	23 (8.1)
After antibiotics ran out	16 (5.6)
After completing the course	111 (39.1)
Upon consultation with pharmacist/doctor	5 (1.8)

Source: Author's Field Survey, December 2016

4.5 Difference between prevalence of antibiotic use and analgesic use

The proportion of respondents self-medicating with antibiotics was 66.7%; in contrast with 76.1% in the case of analgesics and this difference is found to be statistically significant ($p<0.001$).

4.6 Factors influencing self-medication

When asked about the determinants for self-medication, it was revealed that majority of participants self-medicated because of convenience (table 4.5).

Table 4.6: *factors influencing self-medication among traders in CBD*

Reason	**N (%)**
Cost	45 (16.2)
Convenience	219 (78.8)
Other reason	14 (5.0)

Source: Author's Field Survey, December 2016

4.7 Predictors of analgesic self-medication

Participants who were older than 45 years were 1.78 times more likely to self-medicate with analgesics compared to those who were below 30 years, however the difference was not statistically significant. Those between the ages of 31 and 45 years were 1.6 times more likely to practice self-medication with analgesics compared to those below 30 years ($p = 0.04$). There seems to be a general increase in odds of practicing analgesic self-medication with increasing age.

There was no significant difference between the odds of practicing self-medication with analgesics between males and females. Participants with primary education were 0.97 times less likely to involve in the practice compared to those with no education.

Married participants were 1.42 times more likely to self-medicate with analgesics compared to single participants, and divorced participants were 2.64 more likely than single participants to use analgesics themselves. Traders who sold outside, that is those who were not in shops, were 0.54 times less likely than those in their own shop to use analgesics.

Table 4.7: *predictors of analgesic use among traders in CBD*

Indicator	Yes (%)	No (%)	OR(95%CI)	p
Age(years)				
17- 30	112 (70.0)	48 (30.0)	1	0.07
31-45	146 (79.8)	37 (20.2)	1.69 (1.03-2.78)	
>45	54 (80.60)	13 (17.4)	1.78 (0.88-3.58)	
Sex				
Male	122 (74.8)	41 (25.2)	1	0.63
Female	190 (76.9)	57 (23.1)	1.12	
Education				
None	30 (73.2)	11 (26.8)	1	
Primary	66 (72.5)	35 (27.5)	0.97 (0.42-2.22)	0.73
Secondary/middle	171 (77.4)	50 (22.6)	1.25 (0.58-2.68)	
Tertiary	45 (78.9)	12 (21.1)	1.37 (0.53-3.54)	
Marital status				
Single	128 (71.1)	52 (28.9)	1	
Married/cohabiting	151 (77.8)	43 (22.2)	1.42 (0.89-2.28)	
Separated/divorced	13 (86.7%)	2 (13.3)	2.64 (0.57-1.22)	0.04
Widowed	20 (95.3)	1 (4.7)	8.1 (1.02-64.28)	
Place of trade				
Own shop	119 (79.9)	30 (20.1)	1	0.04
Rented shop	100 (86.0)	25 (20.0)	1.0 (0.55-1.83)	
Outside	93 (68.4)	43 (31.6)	0.54 (0.32-0.94)	
Type of trade				
Food	58 (82.9)	12 (17.1)	1	0.09
Cosmetics	66 (84.6)	12 (15.4)	1.14 (0.47-2.74)	
Clothing	98 (70.5)	41 (29.5)	0.49 (0.24-1.02)	
Stationary	24 (75.0)	8 (25.0)	0.62 (0.22-1.73)	
Other	66 (72.5)	25 (27.5)	0.55 (0.25-1.19)	

Source: Author's Field Survey, December 2016

4.8 Independent predictors of self-medication practices with analgesics

A multivariate logistic regression analysis showed that marital status and place of trade were independently associated with analgesic use. Selling outside was significantly associated with analgesic use; the odds of using analgesic in a person who sold outside was decreased by 45% ($p = 0.03$). Widowed persons were 9 times more likely to use analgesics compared to single persons and this association was significant; OR = 9.03 (95%CI; 1.08-75.85, p. value=0.03).

Table 4.8: *independent predictors for analgesic use among traders in CBD*

Indicator	OR (95%C.I)	P
Place of trade		
Own shop	1	
Rented shop	1.11 (0.61-2.04)	0.73
Outside	0.55 (0.32-0.95)	0.03
Marital status		
Single	1	
Married/cohabiting	1.26 (0.74-2.2)	0.41
Divorced/separated	2.80 (0.56-14.07)	0.21
Widowed	9.03 (1.08-75.85)	0.04
Age group(years)		
17-30	1	
31-45	1.43 (0.82-2.52)	0.21
>45	1.07 (0.46-2.51)	0.87

Source: Author's Field Survey, December 2016

4.8 Predictors of self-medication with antibiotics

Females were 1.6 times more likely than males to use antibiotics ($p = 0.03$). Persons with primary level of education were 2 times more likely than persons with no education, and those with secondary and tertiary education were less likely to use antibiotics compared to those with no education ($p=0.01$). Married couples were 0.18 less likely, and persons who were divorced or separated were 3 times more likely to use antibiotics, compared to single ones. Participants who rented shops and those who sold items in the open were less likely to use antibiotics compared to

those who owned their own shops. Persons who sold food items, cosmetics, clothing and stationary were more likely to use antibiotics compared to those who sold other items ($p < 0.01$).

Table 4.9: *predictors of self-medication with antibiotics among traders in CBD*

Indicator	Antibiotic use Yes (%)	No (%)	OR (95%CI)	P
Age (years)				
17- 30	98 (65.3)	52 (34.7)	1	
31-45	123 (66.5)	62 (33.5)	1.05 (0.67-1.67)	0.72
>45 years	45 (70.3)	19 (29.7)	1.26 (0.67-2.37)	
Sex				
Male	95 (60.5)	62 (39.5)	1	0.03
Female	171 (70.7)	71 (29.3)	1.6 (1.03-2.40)	
Education				
None	29 (72.5)	11 (27.5)	1	0.01
Primary	76 (84.4)	14 (15.6)	2.06 (0.83-5.11)	
Secondary/middle	135 (62.5)	81 (37.5)	0.63 (0.23-1.34)	
Tertiary	26 (49.1)	27 (49.1)	0.37 (0.14-0.91)	
Marital status				
Single	116 (67.05%)	57 (32.9)	1	
Married/cohabiting	120 (62.8%)	71 (37.2)	0.83 (0.54-1.3)	0.18
Separated/divorced	13 (86.7%)	2 (13.3)	3.19 (0.69-14.8)	
Widowed	17 (85.0%)	3(15.0)	2.78 (0.77-10.01)	
Place of trade				
Own shop	101 (68.7)	46 (31.3)	1	0.75
Rented shop	80 (67.2)	39 (32.8)	0.93 (0.56-1.57)	
Outside	8 5(63.9)	48 (36.1)	0.80 (0.49-1.33)	
Type of trade				
Food	54 (78.3)	15 (21.7)	4.32 (2.03-9.19)	0.01
Cosmetics	55 (69.6)	24 (30.4)	2.75 (1.42-5.31)	
Clothing	100 (74.6)	34 (25.4)	3.53 (1.43-5.31)	
Stationary	17 (58.6)	12 (41.4)	1.70 (1.94-6.43)	
Other	40 (45.4)	48 (55.5)	1	

Source: Author's Field Survey, December 2016

4.10 Independent predictors of self-medication with antibiotics

A multivariate logistic regression analysis which adjusted for the effects of all predictors of self-medicating with antibiotics shown to be significantly associated with use of antibiotics at the univariate logistic regression level showed that education and type of trade were independently associated with antibiotic use.

Persons with tertiary education were less likely (OR = 0.39, 95%CI; 0.16-0.98) to use antibiotics compared to those with no education (p= 0.04). Persons who sold food items, cosmetics and clothing were more likely to use antibiotics compared to those who sold other items.

Table 4.10: *Independent predictors of self-medication with antibiotics among traders in CBD.*

Indicator	Adjusted OR (95% CI)	P
Sex		
Male	1	
Female	1.36 (0.83-2.24)	0.22
Education		
None	1	
Primary	1.97 (0.78-4.97)	0.15
Secondary/middle	0.63 (0.29-1.34)	0.25
Tertiary	0.39 (0.16-0.98)	0.04
Type of trade		
Food	3.56 (1.70-7.45)	0.01
Cosmetics	2.61 (1.34-5.09)	0.01
Clothing	3.39 (1.88-6.12)	0.01
Stationary	2.01 (0.79-5.09)	0.14
Other	1	

Source: Author's Field Survey, December 2016

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This study was on self-medication practices with analgesics and antibiotics among traders. The chapter discusses results from the study.

5.1 Demographic characteristics

5.1.1 Sex distribution

The sex distribution of participants showed female dominance. This results is similar to results from other related studies in Italy that reported that majority (75%) of participants were females (Garofalo et al., 2015). Another study in Karachi also reported about 41% of participants being males and 59% being females (Zafar, 2008).

5.1.2 Marital status

Even though participants in married/co-habiting unions were more than single ones, the fact that single participants were almost the same number as married people gives room for comments. This is because it was observed in a study that amongst other things, single people, particularly females, were more likely to practice self-medication, due to strenuous job requirement without partner support predisposing them to frequent illness and in extreme cases drug addiction (Boateng, 2009). The proportion of widowed participants and single participants shows comparable figures to the profile of Accra Metropolitan Assembly, which reported 4% of the population to be widowed and 48% to be single (GSS, 2010).

5.1.3 Educational background

Majority of persons in this study had at least secondary level of education, comparable to a study in Italy among parents who practice self-medication; about 48% of parents who took part in that study had at least secondary education (Garofalo et al., 2015). The percentage of participants with at least tertiary level of education was however lower than those reported in other studies. A study in Alexandria, Egypt reported that about 22% of participants had at least tertiary level of education (El-Nimr et al., 2015). The educational level of respondents is important because some studies have suggested a link between level of education and the probability for self-medication. A study done in Ejisu in Ashanti Region of Ghana, argued that higher education increased self- confidence about accurate drug use and with it the probability of self- medication (Agyei-boateng, 2015)

5.2 Use of analgesics

5.2.1 Prevalence of self-medication with analgesics

The results from this study reported a high prevalence of analgesic use. This is in line with the fact that most of the conditions that necessitated self-medication in this study were associated with pain like headache, back pain and joint pains. This result was higher than the prevalence of 46% reported in a study among pregnant women in Ejisu. Analgesics was reported as the first among the top 10 drugs used in self-medication in Alexandria, Egypt, with a prevalence of about 96% (El-Nimr et al., 2015). Another study also reported that analgesics were the most common drugs used for self-medication (Salisu and Prinz, 2009) . This is explained by the fact that globally, 20% of adults suffer from one or more type of pain and it is estimated that another 10% of adults are diagnosed with chronic pain each year (El-Nimr et al., 2015). The prevalence of

analgesic use in this study is quite high and can be attributed to the strenuous nature of trading, as this puts them at risk of pains which could lead to frequent use of analgesics.

5.2.2 Indications for analgesic use

Majority of participants admitted using analgesics for headaches, and this is in consonance with what has been reported in other studies (El-Nimr et al., 2015). However the use of analgesics for headaches in our study was high compared to a study in Saudi Arabia that reported the prevalence for use of analgesics for headaches be about 60% (Albalawi et al., 2015). A study at the Okomfo Anokye Teaching Hospital in Ghana revealed that malaria was the most common indication for analgesic use (Owusu-ansah et al., 2009); none of the participants in our study admitted using analgesics for this purpose. The use of analgesics for headache was also reported to be about 49% in the University of Iran (Sarahroodi et al, 2012). The high prevalence for analgesic use in headaches in this population may be due to the stressful nature of trading. In our study, about less than a tenth of participants used analgesics for joint pain, similar to results from Iran (Sarahroodi et al, 2012) and India (Greenhalgh, 2015). It was however interesting to find out that almost a tenth of our study participants used analgesics for tiredness; this is because tiredness is not an indication for using analgesic and no study was found that supported this.

5.2.3 Types of Analgesics used

The results from our study showed paracetamol was the most common analgesic used among participants, and this is in concordance with reports from studies in Western Nepal (Partha and Shenoy, 2002) and Ghana (Owusu-ansah et al., 2009). This could be due to the fact that paracetamol is very common and relatively cheap, compared to other analgesics. The safety profile and easy accessibility may also be reason why paracetamol has been observed to be the most common analgesic. Paracetamol was used mostly for headaches, similar to what was found

in other parts of the world (Greenhalgh, 2015;Lukovic et al., 2014). Non-steroidal inflammatory drugs (NSAIDS) like diclofenac, ibuprofen and aspirin followed as the drugs used mainly for joint pain and back pain. A study in Pakistan by Chen et al (2014) acknowledged the fact that NSAIDs have harmful side effects especially when used in elderly with co-morbid conditions; such patients can suffer from hemorrhage if they are taking antiplatelets like aspirin, corticosteroids and anticoagulants like warfarin. Moreover, patients with malfunctioning kidneys have experienced cardiac failure, and those taking any medicine that reduces fluid overload have a high risk of experiencing kidney failure (Chen et al., 2014). NSAIDs when used frequently also increase the risk of peptic ulcers. A meta-analysis of randomized trials studying the effect of NSAIDS on BP showed that they may increase blood pressure and antagonize the BP lowering effect of antihypertensive (Owusu-ansah et al., 2009). Tramadol and morphine are opiod analgesics which are strictly prescription only drugs. This is because they can be addictive due to euphoria associated with their use (Lukovic et al., 2014; Okeke et al., 1999). Hence, even though the reported frequency in this study was low, it is a concern that people have access to these drugs without prescription.

5.2.4 Predictors of self-medication with analgesics

Self-medication was strongly influenced by marital status (widowed) and place of trade; those who sold items in the open were found to be more likely to use analgesics compared to those who had their own shops. This may be due to the fact that they may be more predisposed to body pains because of discomfort. Unlike other studies, this study did not identify socio demographic characteristics like age, gender or education to be independently associated with analgesic use (Garofalo et al., 2015). The reason for this could be that the questions were not sensitive enough

and because of disparity in study participants. No study was found to be done among traders; hence results could not be compared to with other studies.

5.3 Use of antibiotics

5.3.1 Prevalence of self-medication with antibiotics

The prevalence of self-medication with antibiotics in this study was high. Antibiotics are prone to misuse because they are readily available and microbial infections are common. The irrational use of antibiotics in self-medication, without proper diagnosis of the disease leads to increased morbidity among population and to the emergence of multiple resistant strains of the causative organisms which are difficult and costly to treat, especially in immune deficient individuals (Osemene and Lamikanra, 2012); the authors reported a lower prevalence of 53% of antibiotic use among university students in Nigeria. The difference between the two studies may be due to the fact participants in the Nigerian study were tertiary students, whilst our study had about only 10% having at least a tertiary level of education. This may lead to an assumption that the higher the education level, the less likely it was to self-medicate with analgesics. A study done in Serbia seemed to buttress this assumption, reporting a self-medication prevalence of 46% among university students (Lukovic et al., 2014) . The reason for the high prevalence in our study could be that even though antibiotics are supposed to be prescription- only medicines, regulatory measures are not strict enough hence there is easy accessibility to such drugs. In addition to these regulatory aspects, other differences in health care systems such as drug prices and reimbursement policies may also influence the attitudes of the public towards antibiotic use and self-medication (Grigoryan et al., 2007)

5.3.2 Indications for antibiotics use

This study revealed 5 main conditions for which antibiotics were used. Upper respiratory tract infections (URTIs), reported as cough, common cold and sore throat, were the most common ones. Our results are similar to those reported in studies in Kuwait and Ethiopia (Abahussain et al., 2005; Eticha and Mesfin, 2014). A study on antibiotic use in children under 5 years in Kumasi, Ghana also mentioned upper respiratory tract infections as the major indication for antibiotic use (Sumaila, 2015). In this study, gastrointestinal disorders recorded as diarrhea and stomach ache followed URTIs. This is in concordance with a lower frequency for use of antibiotics in gastrointestinal conditions recorded in other studies (Abasaeed et al., 2009; Fadare and Tamuno, 2011). The problem with using antibiotics for diarrhea is the fact that most diarrhea cases are caused by viruses and hence it is not imperative to use antibiotics for such cases. This creates a foundation for possible development of resistance to antibiotics, in addition to financial loss and possible adverse drug reactions (Fadare and Tamuno, 2011). Similar to our findings, other studies also mentioned skin diseases and penile/urethral discharge as indications for antibiotics use (Eticha and Mesfin, 2014). A proportion of our participants reported using antibiotics to relieve pain. Studies that focused on the use of antibiotics to relieve pain did not have sufficient evidence to support the claim and concluded the act, if continued, could promote the incidence of antibiotic resistance (Keenan and Farman, 2006).

It was encouraging that majority of our participants did not change the dosage or drugs they were taking, similar to reports from Belgrade, Serbia (Lukovic et al., 2014). However less than half of our participants indicated taking the full course of antibiotics, regardless of disappearance of symptoms; this may be due to lack of knowledge of the implications of antibiotic resistance.

5.3.3 Types of antibiotic used

This study revealed two major drugs as antibiotics used in self-medication. These are penicillins and metronidazole. The choice of antibiotics from the penicillin group (especially flucloxacillin and amoxicillin) by majority of respondents in our study is in line with findings from other studies (Fadare and Tamuno, 2011; Okeke et al., 1999). The reasons for the patronage of penicillins could be because they are cheap, easily accessible, have a good safety profile and somehow broad spectrum of antimicrobial activity. Also, even though antibiotics are supposed to be prescription only medicines, because regulatory measures are not strict enough there is easy accessibility to such drugs. The frequency of metronidazole use recorded in this study was high, compared to another study in Northern Nigeria ((Fadare and Tamuno, 2011). The difference could be due to socio-demographic variation between study participants. For research purposes, antifungals were included in the definition of antibiotics. Similar to our findings, it was found out in another study that antifungals were used mostly for skin- related infections (Zafar, 2008).

5.3.4 Predictors of self-medication with antibiotics

Education was found to be an independent predictor for using antibiotics for self-medication. The odds of self- medicating was less likely for people with higher level of education. This is similar to results from other studies where the participants had varied levels of education (Garofalo et al., 2015; Albalawi et al., 2015). This may be due to the fact that more educated persons had knowledge on the implications of antibiotic misuse and hence desisted from the act. Findings from other studies however dispute this fact, reporting that the more educated people had a higher tendency of using antibiotics (Partha and Shenoy, 2002). This study did not identify gender as an independent predictor for antibiotic misuse. However, most studies showed a

significant relationship between females and self-medication (Kumar et al., 2013; Albalawi et al., 2015).

5.4 Sources of information of drugs

Three major sources of information on drugs were identified in this research: the pharmacist, the doctor and package inserts. Pharmacists have also been identified in most studies as the main source of information of drugs used in self-medication. In Ethiopia, Eticha (2013) revealed that major information sources for self-medication were pharmacists followed by other healthcare providers such as physicians, nurses and health assistants; the author argued that pharmacists play a critical role in assisting people to make informed choices about self-care. The pharmacist in his or her professional capacity and in direct contact with patients is competent to provide sound advice on the medicines he or she supplies (Eticha and Mesfin, 2014). Hence, the role of community pharmacists in self–medication needs to be encouraged to promote responsible self-medication. Consulting doctors, in other studies was however the major source of information compared to pharmacists. About 70% of parents in Italy consulted their doctors before taking drugs compared to pharmacists (Garofalo et al., 2015). The difference in these studies could be due to the socio-demographic differences and health seeking behaviors. One revealing finding in this study was the fact that the third common source of information was reading of package leaflet. Some studies mentioned reading leaflet as source of information, but in those studies the participants were university students (Zafar, 2008) and lecturers (Chen et al., 2014). Friends and family members were also revealed to be source of information in this study, and this has been reported in studies in Egypt (El-Nimr et al., 2015) and among adolescents in Kuwait (Abahussain et al., 2005). This may be a reflection of the belief in the value of other people's experiences and the views of elderly people.

It has generally been assumed and confirmed in some studies that previous experience with drugs is one of the major sources of drug information (Agyei-boateng, 2015;). However in this study, previous experience was the least reported source. Comparing this to the proportion that consulted pharmacists is an indication of appreciation of role of pharmacists in healthcare. This may also be due to ease of accessibility to pharmacists and pharmacies in the study area.

5.5 limitations

The results of this study should be interpreted keeping in mind some limitations of the primary design; cross-sectional studies do not permit ascertaining causal inferences for the effects of the dependent variables on the outcomes. The participant self-reported the information and researchers could not validate the answers. There is also the possibility that some may over report socially desirable attitudes and/or behaviors. The absence of identifying data on the questionnaire sheets would tend to minimize such bias. Lastly, the sample may not be representative of the whole population of traders.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This research sought to explore self-medication practices with analgesics and antibiotics among traders in the CBD of Accra. This section talks about conclusions and recommendations based on the findings from the study.

6.1 Conclusions

The following conclusions were drawn based on the findings from the study:

- Prevalence of self-medication with analgesics and antibiotics were high among the traders.
- Paracetamol is the most common analgesic used in self-medication.
- Penicillins are the most common antibiotics used in self-medication.
- Upper respiratory tract infections are the major indications for using antibiotics and headache is the most common indication for using analgesics.
- Traders obtain their information on drugs mainly from the pharmacist.
- Highly educated people are less likely to use antibiotics.

6.2 Recommendations

Based on the above conclusions, the following recommendations are being made:

- Considering the high prevalence for antibiotic use indicating easy accessibility, the Pharmacy Council and other regulatory bodies are being called upon to strengthen regulatory measures that desists traders from having access to these drugs.

- The Ministry of Health and the Accra Municipal Assembly should embark on a health education program to educate the traders on dangers of self-medicating with antibiotics and the implications of antibiotic resistance.
- Community pharmacists operating in the CBD should be empowered to provide one-on-one education for traders who call to procure analgesics and antibiotics.
- Pharmacy owners in the district should be encouraged to have a pharmacist on duty at all times to provide the needed pharmaceutical care to the traders.
- Future studies should use qualitative methods in order to identify contextual predictors of antibiotic abuse.
- More studies on the role of the pharmacist in self-medication practices should be considered.
- Further studies should be done on traders in different parts of the country.

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APPENDIX

8.1 QUESTIONNAIRE

SECTION A DEMOGRAPHICS

QUESTIONS	OPTIONS	SCORE	CODE
1. AGE			AGQ1
2. SEX	1. Male 2. Female		SEXQ2
3. MARITAL STATUS	1. Single 2. Married/cohabiting 3. Separated/divorced 4. widowed		MARSTAT
4. ETHNICITY	1. Akan 2. Ga 3. Ewe 4. Non-ghanaian 5. Other, specify.....		ETH
5. EDUCATIONAL BACKGROUND	1. None 2. Primary 3. Secondary/middle 4. Tertiary		EDU
6. RELIGION	1. None 2. Christian 3. Muslim 4. Traditionalist 5. Other, specify.....		RELI
7. TYPE OF TRADE	1. Food 2. Cosmetics 3. Clothing 4. Stationary 5. Other, specify.....		TRAD
8. PLACE OF TRADE	1. Own shop 2. Rented shop 3. Outside		PLTRD
9. PLACE OF RESIDENCE			PORR

SECTION B: SELF-MEDICATION PRACTICES (DRUG APPROACH)

SECTOR A; PAINKILLER AND FEVER DRUG

QUESTION	OPTIONS	SCORE	CODE
1. Which pain killers do you know?	a) Paracetamol b) Ibuprofen (brufen) c) Diclofenac d) Tramadol e) Morphine f) Aspirin g) Other		BA1
2. Where do you obtain information on drugs	1. Pharmacist 2. Previous prescription 3. Family/friends 4. Health staff (nurses, doctor) 5. Media (radio, television, internet) 6. Others please specify.....		BA2
3. Have you bought some painkillers yourself before?	0. Yes 1. No ***If yes, who did you buy it for?*** 1. Self 2. Another person		BA3
4. If yes to Q3, which type did you buy most recently?	1. Paracetamol 2. Ibuprofen (brufen) 3. Diclofenac 4. Tramadol 5. Morphine 6. Aspirin 7. Other		BA4
5. For what symptoms did you buy the drug for?	1. Headache 2. Back pain 3. Joint pain 4. Tiredness 5. Other please specify.....		BA5
6. How do you know the quantity to buy?	1. From the pharmacist 2. Depending on my money 3. From previous prescription		BA6

	4. Guessing 5. Other		
7. How do you know the number of days to take it?	1. From previous prescription 2. From the pharmacist/dispenser 3. I know I can take till I feel fine 4. Other.....		BA7
8. How long do you keep left over pain-killers?	1. I don't keep left-overs 2. Less than a month 3. Between one and 6 months 4. Between 6 months and one year 5. More than a year		BA8
9. Where do you keep left-over painkillers?	1. Inside the Fridge 2. On top of the fridge 3. Medicine container 4. Other please specify		BA9
10. How do you dispose of leftover drugs?	1. I give it to friend 2. Dust bin 3. Flush it in WC 4. Sink 5. Other please specify.....		BA10

SECTOR B; ANTIBIOTICS (interviewer to explain antibiotics to participants and show samples)

QUESTIONS	OPTIONS	SCORE	CODE
1) How many times did you treat yourself with antibiotics in the past one year?	1. Never 2. More than once 3. Two or three times 4. More than three times 5. I can't count		BB1
2) What was reason(s) of self-medication with antibiotics?	1. Cost saving 2. Convenience 3. Lack of trust in prescribing doctor 4. Others (specify)		BB2
3) What was your selection of drug based on?	1. Recommendation by community pharmacists 2. Opinion of family members 3. Opinion of friends 4. My own experience 5. Previous doctor's prescription 6. The advertisement 7. other		BB3
4) What did you consider when selecting antibiotics?	1. Type of antibiotics 2. Brand of antibiotics 3. Price of antibiotics 4. Indications for use 5. Side effects		BB4
5) Where do you usually obtain antibiotics from; for self-medication?	1. Community pharmacies 2. Licensed chemical shop 3. Those selling around/ drug peddlers 4. Leftover from previous prescription 5. Others (specify)		BB5
6) Did you ever change the dosage of antibiotics deliberately during the course of self-treatment?	1. Yes, always 2. Yes, sometimes 3. Never ***If Never, please go to Question 9***		BB7
7) Why did you change the dosage of antibiotics during the course of self-treatment?	1. Improving conditions 2. Worsening conditions 3. To reduce adverse		BB8

	reactions 4. Drug insufficient for complete treatment 5. Others (specify).....		
8) Did you ever switch antibiotics during the course of self-treatment?	1. Yes, always 2. Yes, sometimes 3. Never ***If Never, please go to Question 11***		BB9
9) Why did you switch antibiotics during the course of self-treatment?	1. The former antibiotics did not work 2. The former antibiotics ran out 3. The latter one was cheaper 4. To reduce adverse reactions 5. Others (specify)		BB10
10)When do you normally stop taking antibiotics?	1. After a few days regardless of the outcome 2. After symptoms disappeared 3. A few days after the recovery 4. After antibiotics ran out 5. At the completion of the course 6. After consulting a doctor/pharmacist 7. Others (specify)		BB11
11)Which of the following have you used most recently?	1. Amoxicillin 2. Flagyl 3. Griseofulvin (fucin) 4. Cipro 5. Clindamycin (dalacin c) 6. Flucloxacillin		BB12

	7. Cefuroxime (zinnat) 8. Azithromycin (Zithromax) 9. Fluconazole (diflucan) 10. Penicillin V tablet 11. Doxycycline 12. Amoxicillin+ clavulinic acid 13. Other please specify.....		
12)For what symptoms did you buy the drug for?	1. Cough 2. Cold/catarrh 3. Sore throat 4. Diarrhea 5. After surgery 6. Skin infections 7. Stomach "sore" 8. Vaginal discharge/penile discharge 9. Fever 10. Aches and pains 11. Skin wounds 12. Clean the system or blood 13. Other please specify		BB13
13)How do you know the quantity to buy?	1. From the pharmacist 2. Depending on my money 3. From previous prescription 4. Guessing 5. Other		BB14
14)How long do you keep left over antibiotics?	1. I don't keep left-overs 2. Less than a month 3. Between one and 6 months 4. Between 6 months and one year 5. More than a year		BB15

15)Where do you keep left-over antibiotics?	1. Inside the Fridge 2. On top of the fridge 3. Medicine container 4. Other please specify.....		BB16
16)How do you dispose of leftover drugs?	a) I give it to friend b) Dust bin c) Flush it in WC d) Sink e) Other please specify		BB17
17)How do you know the number of days to take it?	1. From previous prescription 2. From the pharmacist/dispenser 3. I know I can take till I feel fine 4. Other.....		BB18
18)How long do you keep left over antibiotics?	1. I don't keep left-overs 2. Less than a month 3. Between one and 6 months 4. Between 6 months and one year 5. More than a year		BB19

SECTION C: SELF-MEDICATION DISEASE SPECIFIC APPROACH

1) What do you do two days of experiencing the following symptoms?

Symptom	Please check the appropriate answer	SCORE	CODE
1) Vomiting	0. Go to hospital 1. Take drugs myself		E1
2) Diarrhea	0. Go to hospital		E2

	1. Take drugs myself		
3) Fever	0. Go to hospital 1. Take drugs myself		E3
4) Toothache	0. Go to hospital 1. Take drugs myself		E4
5) Toothache	0. Go to hospital 1. Take drugs myself		E5
6) Frequent urination	0. Go to hospital 1. Take drugs myself		E6
7) Vaginal /penile infection	0. Go to hospital 1. Take drug myself		E7
8) Stomach pain	0. Go to hospital 1. Take drug myself		E8
9) Menstrual pain	0. Go to hospital 1. Take drug myself		E9
10)Skin infection	0. Go to hospital 1. Take drug myself		E10

SECTION D

1) where do you obtain information on drugs?

i) By checking the package insert

ii) By consulting a doctor

iii) By consulting a pharmacist

iv) By consulting family members/friends

v) From the Internet

vi) From my previous experience

vii) By guessing the dosage by myself

8.2 Informed consent form

INFORMED CONSENT FORM TO PARTICIPANTS

Title of study: SELF MEDICATION PRACTICES AMONG TRADERS IN CENTRAL BUSINESS DISTICT OF ACCRA

I have been invited to participate in a study conducted by Miss Sylvia Ofori on taking drugs without prescription.

Information on the study has been fully explained to me in my language and all my questions have been answered.

I understand that I may withdraw from the study at any time without explanation and that my decision would not affect me.

I agree to take part in this study.

Date.....

Place.....

Signature.....

Witness 1.....