SCHOOL OF PUBLIC HEALTH

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ASSESSING COMPLIANCE TO THE STANDARDS OF DISPENSING PRACTICES IN COMMUNITY PHARMACIES IN NIMA

BY

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DECLARATION

I, Priscilla Asarebea Asare-Duah hereby declare that apart from references to other people's works which have been duly acknowledged, this thesis is as a result of my own independent research undertaken under supervision and that it has neither in whole nor in part been submitted for the award of any degree in this university or elsewhere.

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DEDICATION

I humbly dedicate this work to my Sweet Husband, Mr. Stephen Kwofie (Ing). He has been my Greatest Inspiration, Encourager, Support and Proof reader, without whose assistance I would not have come this far with this piece of work. May the Good Lord Reward Him Greatly.

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Great is our Lord God and He is greatly to be praised. By His Grace and Mercies over us, we have made it to the top.

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ABSTRACT

Introduction: Dispensing is one of the important activities that take place in an everyday community pharmacy setting. It starts with receipt and confirmation of prescription order, examination and interpretation of prescription, verification and consultation if required, removal of medicines for final checks and issuance of medicines with clear instructions and counselling. Good dispensing practices are therefore vital and guarantee that the right patient receives an effective form of the correct drug, with right dosage and quantity written in clear instructions, in well-labelled packages, which maintains the integrity of medicines. The rate of medication compliance is directly influenced by the accuracy of labelling shown by dispensers, the time spent in counselling patients and the skills exhibited in communicating with patients.

Objective: The aim of this study is to assess compliance to the standards of dispensing practices in community pharmacies in Nima.

Method: A descriptive cross sectional study was conducted among the six existing and operational community pharmacies in Nima. The study population covered 26 dispensers in the community pharmacies and 394 clients exiting these facilities. A conservative sampling method was used to obtain the sample size of patients recruited for the study and two different structured questionnaires were used to collect data from both the patients and the dispensers. Assessment was made by direct observation of the dispensing practices and through a face-to-face exit interview of patients to determine compliance to the standards of labelling, counselling and dispensing time. Data was exported from Excel to STATA which were processed and analyzed.

Results: From the study, an average of four labelling indicators were provided on drug labels by dispensers out of the 10 indicators for the labelling checklist. These were dosage of drug representing 98.48%, name of drug (93.15%), expiration date (80.96%), and cautionary information (59.14%). A general assessment of the standards of labelling in Nima community pharmacies indicated a 9.1% level of compliance as against the checklist of 100%. The majority of clients were also provided with only four patient counselling information out of the 12 counselling indicators which were dosage instruction (96.45%), instruction on whether the medication was to be taken with food or on an empty stomach (72.34%), duration of medication (67.51%) and purpose of medication (59.39%). The proportion of efficient counselling presented by the community pharmacies in Nima to the patients was 20.6% and the proportion of non-compliance to counselling standards was 79.4%. Furthermore, it was observed that 36.55% of the dispensing occurred from 5 min and above which corresponds to adequate dispensing time.

Conclusion: Generally, compliance to the standards of dispensing practices in Nima Community Pharmacies are poor and below international standards as the proportion of compliance to standards of dispensing practices was 8.6% and the proportion of non-compliance to the standards of dispensing practices was 91.4%. This therefore demand serious regulations and policies to be implemented in order to ensure and improve on dispensing practices.

Key Words: Compliance**,** Standards, Dispensing Practices, Community Pharmacies

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AA	-	Asuo Afram Pharmacy
ASHP	-	The American Society of Health System Pharmacists
CKR	-	CK. Relog Pharmacy
CPPA	-	Community Practice Pharmacists Association
FIP	-	Fédération Internationale pharmaceutique
FMHACA	-	Food, Medicine and Healthcare Administration and Control Authority
INT	-	Interbrain Pharmacy
LES	-	Lesson Pharmacy
MCA	-	Medicine Counter Assistants
MM	-	Magmitch Pharmacy
NHW	-	Nima Highway Pharmacy
SOP	-	Standard Operations Procedure
WHO	-	World Health Organisation

LIST OF DEFINITIONS

Adverse drug reaction: A noxious and unintended effect of medicine that occurs in doses normally used in humans or animals for the diagnosis, prophylaxis or treatment of disease.

Average Dispensing Time: The time that the pharmacist or dispenser spends with the patient during dispensing drugs in the pharmacy. Paying &Waiting time is not included.

Community Pharmacists: Health professionals most accessible to the public. They supply medicines in accordance with a prescription or, when legally permitted, sell them without a prescription. They maintain links with other health professionals in primary health care.

Counselling: the provision of verbal or written information to the patient or their representatives on drug use, side effect and its management, storage of medication, efficient diet and lifestyle modification.

Dispenser: Any person who is licensed or authorized by the appropriate body to dispense medicines and/or medical supplies.

Dispensing Error: Error occurred during dispensing in pharmacy setting, such as not checking patient age, not dispensing correct drug, correct frequency, and correct total quantity.

Dispensing: The act of preparing medicines and/or medical supplies and distributing to users with adequate information, counselling and appropriate follow up.

Label: Any material which is printed or affixed to a packing material which provides the necessary information about medicine, and includes an insert.

Patient/client: A person presenting to an authorized health care provider to promote health, prevent or treat disease.

Pharmaceutical care: Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life. These outcomes are cure of a disease; elimination or reduction of a patient's symptomatology, slowing of a disease process; or preventing a disease or symptomatology.

Prescriber: Any medical practitioner who is licensed or authorized by the appropriate body to write a prescription.

Prescription medicines: medicines dispensed only with prescription

Prescription: Any order for medicine written and signed by a duly licensed or authorized practitioner issued to a patient in order to collect medicine from dispensing outlet.

SOPs: Documents that detail written instructions describing specific steps to follow in all activities under defined conditions

CHAPTER 1

INTRODUCTION

1.1 Background

It is largely recognized that dispensing is one of the important activities that take place in an everyday community pharmacy setting. The risk involved with medicine dispensing is one of the major challenges in achieving the safety of drugs (WHO, 1995). In developing countries, compliance to acceptable medication procedures is often poor, potentially resulting in treatment failure. Ghana is no exception, as it is being saddled with drug-related challenges such as drug peddling, irrational prescribing and dispensing as well as drug abuse. These could lead to potential medication errors. In minimizing as well as avoiding medication errors, it is essential that proper dispensing processes are not disregarded (Anacleto *et al*, 2005).

Good dispensing practices ensure that the right patient receives an effective form of the correct drug, with right dosage and quantity written in clear instructions, in well-labelled packages, which maintains the integrity of medicines. Dispensing entails all the activities that transpires between the time the prescription is handed to the dispenser to the time the medication is served to the patient or client (WHO, 1995). Dispensing must be done accurately and orderly with disciplined use of effective procedures and standards. Apparently, dispensing seems to be a simple process, but it is time consuming to carry out good dispensing practices (Toklu, 2010). In the process of dispensing, drugs must be carefully counted and measured with caution not to contaminate them by using clean equipment and avoid direct handling of medicines. Qualified staff with training in the knowledge and skills of dispensing should be engaged to dispense prescribed medicines. Care must be taken to label drugs accurately to provide drug information and its correct use. The style and language of labelling must also be suitable to the needs of the patient (Nyiligira, 2009).

According to WHO (1993), the dispensing practices among community pharmacies are assessed by average dispensing time, percentage of drugs actually dispensed, percentage of drugs adequately labelled and patients' knowledge of correct dosage based on the adequacy of information given to patients by the dispenser. The dispensing process primarily focuses on patient and therefore assessment of medicine should be done appropriately for that individual in order to reflect diligence and care in the receipt, review, assembling, checking, recording and dispatch (CPPA, 2015).

Community pharmacies serve as the primary point of call in the delivery of pharmaceutical care in most developing countries since many patients consult them. In the healthcare delivery system, community pharmacists play a large role in patient health care through their accessibility, expertise and experience (Alfadl, Alrasheedy, & Alhassun, 2018). Community pharmacists could assist patients to understand the appropriate use and management of drugs in addition to provision of advice on healthy lifestyle, which contribute significantly to improving the health care systems and reduce hospital patient admissions. Compliance to good dispensing procedures is essential in ensuring that during the dispensing process, drugs are dispensed appropriately and any potential errors are detected and corrected before medicines are given to patient (Division & Of, 2016).

In Ghana, a study conducted among parents and guardians in Accra revealed that poor understanding of dosage instruction leading to non-adherence is a common occurrence especially in the undeveloped areas (Agyepong et al. 2002). This could be attributed to poor patient counselling, inappropriate labelling of drugs and dispensing being done by marginally trained pharmacy staff resulting in poor compliance to the standards of dispensing practices. Nima is arguably the most famous and often cited Zongo community in Ghana which is under

developed and faced with numerous challenges such as poor waste management, drug abuse, high illiteracy rate and low socio-economic status. Nima has been observed to be one of the most marginalized, deprived and/or dangerous communities to live in. (Mahmoud, 2018). The dearth of knowledge on dispensing practices in such areas necessitated the study. This study is therefore aimed at assessing compliance to the standards of dispensing practices in community pharmacies in under developed areas with Nima as the case study area.

1.2 Problem Statement

Good dispensing practices ensure that the right patient receives an effective form of the correct drug, with right dosage and quantity written in clear instructions, in well-labelled packages, which maintains the integrity of medicines (WHO, 1995). According to World Health Organization (2002), wrongly prescribed and dispensed medicines are over 50% and more than half of patients take their medicines wrongly worldwide. In developing countries like Ghana, poor dispensing practices are very common. Poor labelling of dispensed drugs, insufficient or lack of patient counselling, incomplete compiling and recording of prescriptions, dispensing partial doses for prescription–only medicines and over the counter medicines are some of the non-compliance to the standards of dispensing practices (HKMA, 2002).

Several studies carried out in some developing countries such as Pakistan, India, Nepal, Iran, Cambodia, Botswana, Sudan and Nigeria discovered that compliance to the standards of dispensing was poor as a result of poor practice of labelling, poor patient knowledge and short dispensing time (Boonstra et al, 2003; Yasmin et al., 2014). Further study conducted among guardians and parents of children in Accra, Ghana revealed that lack of understanding of dosage instructions impacts negatively on compliance with drug therapy. However, efficient

patient counselling and appropriate labelling of drugs in public health facilities has resulted in better compliance (Agyepong et al. 2002). Medically, inappropriate, ineffective and inefficient dispensing practices can lead to several problems among them are adverse reactions, medication errors and irrational use of drugs (Nyiligira, 2009). Inappropriate dispensing practices could also affect the quality of drug therapy, depletion of resource, high cost of treatment, high risk of adverse medicine reaction and increase in drug resistance (Boonstra et al, 2003; Yasmin, et al, 2014).

Generally, many studies on dispensing practices have been conducted and well described in medical literature both nationally and internationally. But the focus of these studies have been the hospital dispensaries or pharmacies. However, dispensing practice in the community pharmacy settings is one equally important area, but has been given little attention, and thus not many studies have been conducted in that area (Shewa, 2015). An all-inclusive study assessing dispensing practice particularly in slum as well as undeveloped areas is lacking. This study therefore seeks to assess compliance to the standards of dispensing practices in a typical slum community as Nima.

1.3 Justification

The lack of compliance to the standards of dispensing practices is mainly due to the way drugs are dispensed and the types of information given to the patients during dispensing. The purpose of this study therefore is to assess compliance to the standards of dispensing practices in Nima (one of the highly populated and poorly developed areas in Ghana) to inform policy decisions of current dispensing practices in slum communities. The dearth of knowledge on dispensing practices in such areas necessitated the study.

Nima has been observed to be one of the most marginalized, deprived and/or dangerous communities to live in. It is also faced with numerous challenges such as high illiteracy rate and low socio-economic status, as such the inhabitants are most vulnerable and at a higher risk of the health implications for poorly dispensed medication.

The findings of this study would be used to improve practice, as well as policy formulation and implementation. Out of this study, various stakeholders such as Ministry of Health, the Pharmacy Council of Ghana, the Pharmaceutical Society of Ghana, the Community practice pharmacists' association of Ghana, researchers and other stakeholders would be well informed about the deficits in the dispensing practices in community pharmacies in order to improve on these practices by modification of weaknesses and malpractices that exist.

1.3 Study Objectives

1.3.1 General Objectives

The general objective of this study is to assess compliance to the standards of dispensing practices in community pharmacies in Nima.

1.3.2 Specific Objectives

1. To assess compliance to the standards of labelling
2. To assess compliance to the standards of patient counselling
3. To assess compliance to the standards of dispensing time
4. To determine the level of compliance to the standards of dispensing practices among dispensers in community pharmacies in Nima.

1.4 Conceptual Framework

A number of variables have been identified as influencing factors that could affect compliance to the standards of dispensing practices in community pharmacies.

These have been used to develop a conceptual framework for the current research as shown in Figure 1.1. The conceptual framework aims to explore factors that may affect or influence compliance to the standards of dispensing practices.

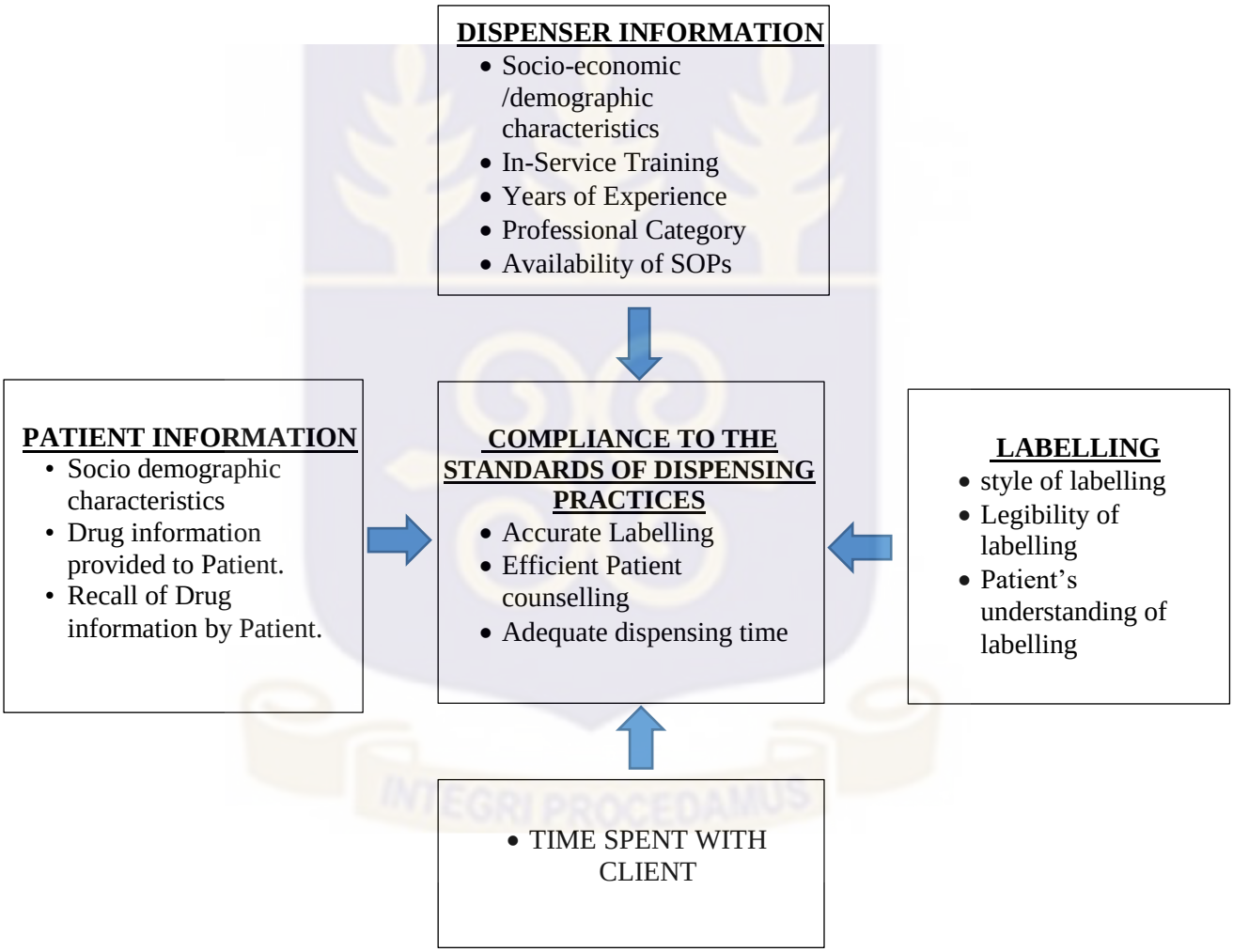


Figure 1-1: Conceptual Framework for Compliance to the Standards of Dispensing Practices

The socio-economic/demographic characteristics, years of practice, professional category of dispensers, their on the job training and availability of standard operation procedures are highly significant factors that could directly have an impact on compliance to the standards of dispensing practices. Patient educational level is also a possible factor that could impact on compliance to the standards of dispensing practices, as highly educated patients would have a higher expectation of the dispenser concerning their labelling instructions as well as the patient counselling. Drug information provided to patient as well as their ability to recall this drug information are key indications of the efficiency of patient counselling. Also, the style of labelling (text or symbols), the legibility of labelling and patient's understanding of labelling could impact on the accuracy of labelling. Time spent with patient influences the efficiency of counselling and hence compliance to the standards of dispensing practices would imply spending adequate time with the client.

CHAPTER 2

LITERATURE REVIEW

2.1 Dispensing Process

Dispensing refers to the preparation and delivery of prescribed medicine to a patient, which must be rightly and accurately interpreted, prepared and labelled for appropriate use by patient (WHO, 2012). Dispensing entails, the various activities that transpires between the time the dispenser receives the prescription and the time prescribed items are given to the patient. It should be done sequentially with accuracy according to the standard operation procedures. Good dispensing practices are therefore vital and guarantee that the right patient receives an effective form of the correct drug, with right dosage and quantity written in clear instructions, in well-labelled packages, which maintains the integrity of medicines (WHO, 1995). Dispensing practices also contributes to the rational use of medicine. The consistent and repeated adherence to procedures for good dispensing is essential for the detection and correction of errors throughout the dispensing processes (WHO, 2012). Dispensing practice to the required standards is an important part of drug therapy, in which the pharmacist interprets the physician requirements on the prescription and accordingly supplies for the treatment of patient.

The dispensing process according to standards begins with receipt and interpretation of prescriptions after which medicines are prepared and labelled. The dispenser then advises or counsels the patient and medicines are handed over to them for use according to instructions given. Appropriate records are finally taken to conclude the dispensing process (Etefa, Teshale, Hawaze, & Sciences, 2013). Good records, though often neglected, forms vital part of the dispensing process; they aid good management and monitoring of services provided (WHO, 2012).

Muppur & Kandavalli (2017) also reported that activities involved in the dispensing process covers receipt and confirmation of prescription order, examination and interpretation of prescription, verification and consultation if required, removal of medicines for final checks and issuance of medicines with clear instructions and counselling. Generally, the dispensing cycle has six major steps to be carried out during the dispensing process. The activities involved in the dispensing process are shown in Figure 2.1.

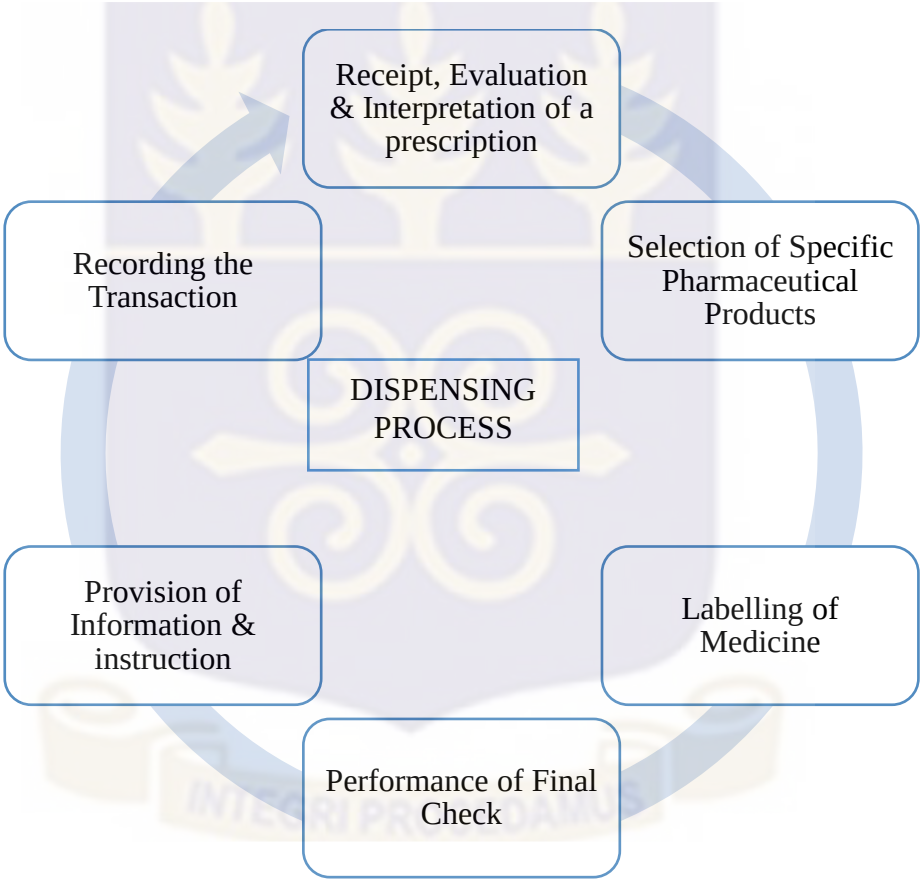


Figure 2-1: Activities involved in the dispensing process

Source: *Adapted from Manual for Medicines Good Dispensing Practices, Ethiopia (FMHACA, 2012)*

In the dispensing process, the name of patient is confirmed to ensure that the right medication is received by the right patient. Also, confirmation of the date is made to ensure current prescription was received. The dispenser must be able to read and interpret the prescription with understanding. Furthermore, calculations for doses and quantities to be dispensed should be done rightly and the prescriber should be contacted for any clarification especially on abbreviations. The pharmacist is expected to screen the prescription to check that prescribed doses are within acceptable range as well as drug-drug interaction have been scrutinized. The final check should comprise of checking the identity of the medicine dispensed; checking the labels; and lastly counter signing the prescription (WHO, 2012). The dispensing process would be greatly hindered without all these checks especially at the instance when the pharmacist is absent. The development and use of written standard operating procedures (SOPs) for the dispensing process will improve consistency and quality of work and can be used for training and reference (WHO, 2012).

Community pharmacies supply majority of medicines to patients in developing countries. Pharmacist and other pharmacy staff personnel are often approached for medicines and advice on health problems (Hussain & Ibrahim, 2011). Traditionally, the role of pharmacists has been primarily to dispense drugs correctly and to ensure that the drugs dispensed maintain the pharmaceutical quality. Currently, their responsibilities have been extended to advising physicians and other health professionals on drug therapy and counselling of patients about medicines as well as monitoring of their use (Shewa, 2015). Community pharmacies are therefore required to render support for drug users in order to improve on rational use of medicine and assist medical practitioners rationalize prescription of medicines (Lenjisa, 2015). Dispensers must ensure safety and effectiveness in the dispensing of drugs to patients in order to achieve good dispensing practices.

Dispensing errors could occur in the process of dispensing which may be referred to any deviations or inconsistencies in a medicine prescription. Examples of errors include dispensing incorrect drug, wrong dose, inappropriate dosage form; wrong quantity; inappropriate or incorrect labelling, inadequate guidance on directions for use of drugs; inappropriate preparation, packaging or storage of drugs prior to dispensing (Szeinbach et al., 2007). The errors that occur in the transcription stage, inefficient counselling on drugs sold, inaccurate labelling and mixture of different drugs in the same package are evidence of poor dispensing practices (Hussain & Ibrahim, 2011). Numerous studies conducted showed that the potential of drugs to have dangerous effects on patients have risen due to errors in prescription and dispensing of drugs (Hogerzell et al., 1989).

A general overview of dispensing suggests the process where a patient is supplied with goods based on a written order issued by a prescriber and dispensed by anyone who could read the prescription, count and pour drugs. Subsequently, dispensing is often left in the hands of any staff member who was free and carries out this function without training and supervision. This is a very irrational and dangerous approach to dispensing of drugs (WHO, 2012). Besides a dispenser's ability to read, write, count and pour medicines, the dispensing team require additional skills, knowledge and attitudes to complete the dispensing process. These include dispenser's knowledge about the medicines being dispensed, good arithmetic and calculation skills, assessing quality of preparation skills, with attributes of accuracy, cleanliness and honesty in addition to effective communication skills (WHO, 2012). It is therefore essential that dispensers receive an acceptable level of training to enable them dispense correctly the range of medicines prescribed in their facilities. The level of training dispensers received, the availability of information on medicine and supervision of dispensers have direct influence on compliance to the standards of dispensing practice (FMHACA, 2012). For the dispensing

process to go right or wrong depends totally on the dispensing personnel. It is therefore important that dispensing staff are competent enough and well equipped with all the knowledge needed for the dispensing process.

Boonstra (2003) purported that the accuracy of labelling shown by dispensers, the time spent in counselling patients and the skills exhibited in communicating with patients influence the rate of medication compliance. One of the necessary requirements for patient adherence is accurate labelling of the medicines issued to patients, because it mainly serves as a unique identifier of the content of container and ensures that the patients have concise and clear information about the use of their medicines (Nigussie, 2014).

2.2 Standards of Labelling

Dispensing process encompasses accurate preparation and labelling of drugs for patient based on directions given by prescriber. Dispensing process is essential for ensuring the rational use of medicines, as a minor errors can result in wrong drug, incorrect dosage, and incorrect information. Hence it is very necessary for medicine to be dispensed properly (Malik, Hussain, Amin, & Hashmi, 2016). One of the important factors affecting dispensing includes labelling of drug products. Labelling of drugs accurately is of great essence, because it ensures the safe use of medicines, as non-adherence to the standards of labelling is a possible cause of medication errors. Medications issued out to clients should be accurately labelled in order that it complies to the professional and legal standards to provide comprehensive and specific instruction to the patient as well as the dispenser and so as to prevent medication errors (Nigussie, 2014). Marfo, Owusu-Daaku, & Kyerewaa-Akromah, (2013) purported that, about

40% of the population in a developing country like Ghana, are not literate, and hence the need for medicines to be labelled appropriately and appropriate directives given to suit the needs of such patients.

Labelling is the process of indicating drug name, frequency of administration, total quantity, unit dose and treatment duration on the packages on dispensed medicine (FMHACA, 2012 and WHO, 1993). Furthermore, Bashrahil (2012) and CPPA (2015) purported that adequate labelling must include the name, strength, dosage instructions for use to the patient, expiry date, date of dispensing, name or initials of dispenser, name and address of the pharmacy. Labels should also provide cautionary information to patient such as store in refrigerator, not for oral use, may affect performance of skill tasks (driving), keep away from children among others (CPPA, 2015). Drugs adequately labelled could be measured in percentages by assessing the extent to which dispensers record key information such as patient name, drug description, dosage regimen, drug strength, total quantity and precautions on the drug dispensed packages (Sosola, 2007). In the measurement of labelling of dispensed medicines, studies are often carried out on medication name and purposes, frequency of dose, treatment duration and side effect of drugs as they are regarded as necessary for appropriate and safe use of medicine but practically, the later parameter is disregarded (Nigussie, 2014). The accuracy of labelling is used to measure the extent to which dispensers are able to record essential information on the drug packages they dispense.

An overview of drug use program indicated that concentration has been on ensuring rational drug prescription practices but less attention has been given to compliance to the standards of labelling since it is considered as of secondary significance to diagnosis, procurement, inventory control and distribution of drugs (Bashrahil, 2012). In order to guarantee no wastage

of all the resources required in delivery of drugs to patient, the dispensing practice must ensure that the right patient receives an effective form of the correct drug, with right dosage and quantity written in clear instructions, in well-labelled packages, which maintains the integrity of medicines (WHO, 1995). One of the major causes of medication errors worldwide are related to poor drug labelling. Not only wrong labelling on medicine is harmful but incomplete labelling information can also cause medication errors. Most of the medication errors are reported when the drug label does not have proper warning signs (Malik et al., 2016).

The key purposes of label on drugs dispensed are to distinctively identify the content of packages and to enable patients use their drugs efficiently with clear and concise information. The label on dispensed medicines should provide the patient with all the needed information so that the medication can be taken right, and as a result therapeutic effectiveness of the medicines will be enhanced and reduction in adverse drug reaction and toxicity (Nigussie, 2014). Another benefit of labelling is to help practitioners and patient distinguish between sound alike and look alike medicines. Medication errors could be encountered when the writing font and style of labelling are improperly done. This could inhibit patient from properly reading information labelled on drugs and possibly will result in handling errors (Malik et al., 2016). The style and language of labelling should be appropriate to the needs of the patient (WHO, 2012). Misreading is another important issue in labelling of drugs. In the hospitals, nurses often have very tough schedules and as such may misread information on labels (Fyhr and Akselsson, 2012).

2.3 Standards of Patient Counselling

Pharmacist could promote good health through the assurance of quality use of medicine. Medication counselling is one of the most essential tools to achieve this. Alfadl et al (2018) reported that counselling is vital in enhancing adherence to medication and optimization of medication therapy. The American Society of Health System Pharmacists (ASHP) defined patient counselling as the provision of verbal or written information to the patient on medications. Patient counselling also considers provision of proper instruction on drug use, side effect and its management, storage of medication, efficient diet and lifestyle modification. (ASHP, 1997). Therefore, patient's non-adherence could be because of failure of Physician or Pharmacist to provide appropriate counselling on the prescribed drugs (Hussar, 1995). As a result, appropriate counselling has now been considered as a fundamental component of healthcare which contributes to patients' adherence (Alfadl et al., 2018)

Patient counselling facilitate the use of medicines according to given instructions and minimizes the possibilities of drug-food interactions, drug-drug interactions, drug allergies as well as other precautions that needs to be noted while taking the medications (Alfadl et al., 2018). Appropriate counselling is of equally importance as the appropriateness of the medication dispensed. A number of studies have laid emphasis on the essence of adequate information provision to ensure better patient adherence (Isacson and Bingefors, 2002).

On the other hand, patients' non-adherence could be attributed to inadequate counselling (Jimmy and Jose, 2011). Patient counselling is assumed to help improve on drug therapy and therefore poor medication counselling could directly result in ineffective drugs, drug overdoses, injury or even death (Sanii et at., 2016).

It has been established that lack of counselling contributes significantly to errors in the dispensing of drugs and therefore counselling should be done during the dispensing process at community pharmacy as it provides a possibility to discuss the various aspects of the medication with the patient to ensure that the required therapeutic impact could be achieved (Hussain & Mohamed Ibrahim, 2011). Several studies have discovered that better communication between dispensers and patients has contributed essentially to the improvement in treatment adherence (Hussain & Mohamed Ibrahim, 2011). The delivery of healthcare should include provision of appropriate information with explanation considering the patients' emotional understanding (Astrom et al, 2000). A positive attitude towards drugs could be achieved when fact-based information are provided to patients which results in better compliance (Isacson and Bingefors, 2002).

The pharmacists play a significant role in ensuring safe and effective use of medication by provision of accurate and adequate information to patients and drug therapy monitoring. Rational use of medicines is promoted by proper dispensing processes and as such, a good pharmacy practice in community pharmacies (Toklu, 2010). Patient's compliance in taking their medication properly is assured by the provision of needed guidance and information from the pharmacist (Toklu, 2010). The community pharmacies provide this important service of patient counselling, and this often takes place at the time of serving a prescription. Counselling could however be delivered as a separate service (Alaqeel & Abanmy, 2015). The findings from a systematic review pointed to the fact that medication counselling led by a Pharmacist enhances quality of life, clinical outcomes, disease knowledge, economic outcomes and the overall patient satisfaction with service (Okumura et al, 2014). Medication counselling is an essential step in the dispensing process and must be done properly. This is to ensure clear understanding and adherence to medication (Melanic, 2007).

2.4 Standards of Dispensing Time

The WHO patient care indicator relates dispensing time to the period that the dispenser spends to explain to the patient the medication schedule side effects, precautions and other information regarding the drug. Accordingly, long dispensing time results in better explanation (WHO, 1995). The average time patients spend with dispensers during dispensing of a prescription is a measure of the average dispensing time.

According to the WHO standards, the average dispensing time should be at least 5 minutes (WHO, 1995). Regional studies conducted in Bangladesh, Nepal and Tanzania showed that the average dispensing time were 23, 86 and 78 seconds respectively (Hafeez et al., 2004). An average dispensing time obtained in a study conducted in Nigeria was 12.5 sec and 21.8 sec in Sudan (WHO, 1998). An average dispensing time of 4.3min was obtained in a study conducted in North Ethiopia (Elizabeth et al, 2003). 3.1 min was also obtained in a study conducted in India (Awad and Himad, 2006). These results largely point to the fact that there is general problem at community pharmacy settings regarding the time spent to dispense medicines to clients.

In most developing countries, there is a lot of compromise on good dispensing practices. The WHO document on how to investigate drug use in health facilities (WHO, 1995) attributes this to large crowds of people visiting the pharmacy with their prescriptions at the same time. This is suggestive of the fact that pharmacies with heavy workload function in a more commercial way, minimizing the time a pharmacist spends with each client and exerting less control over prescriptions (Caamano et al, 2005). More so, some studies have shown that lack of up-to-date drug information as well as sufficient knowledge on drugs was a major factor that hinders dispensers from spending adequate time to counsel patients (Nasir et al, 2011).

The rush in the dispensing process could result in a lot of omissions, inadequate labelling, miscalculations, no or inadequate information and counselling. It is essential to concentrate more on the exactness of the dispensing process rather than swiftness (WHO, 1995). An appropriate means of managing the heavy workload and minimize possible errors but ensure effective patient counselling is to label and prepack frequently used drugs in order to make room for maximum use of dispensing time (FMHACA, 2012)

It should be noted that, although the dispensing process appears to be simple, proper dispensing is time consuming. Dispensing quality is directly related with the time spent (Toklu, 2010) and the length of time spent with the prescriber is directly related with patient satisfaction (Hafeez et al., 2004). A study conducted in Northwest Ethiopia reported that the dispensing time was found to be statistically significant predictor for quality of labelling. The dispensers who spent an average time of five minutes or more in dispensing drugs to patient had better labelling score compared to those who spent less than five minutes dispensing (Nigussie, 2014).

2.5 Summary

In modern medicine, there has been improvement in dispensing managements. Nonetheless, there is still evidence that indicated adverse drug reactions to medicine are related to dispensing practices. The risk associated with dispensing of drugs is one of the major problems in achieving drug safety (WHO, 1995). Generally, many studies on dispensing practices have been conducted and well described in medical literature both nationally and internationally. But the focus of these studies have been the hospital dispensaries or pharmacies. However, dispensing practice in the community pharmacy settings is one equally important area, but has been given little attention, and thus, not much studies have been conducted in that area (Shewa, 2015). Furthermore, most studies done in this area uses the WHO standards of assessment but this study seeks to use a recent document on Guidelines for Community Pharmacy Practices published by the Ghana Community Practice Pharmacists Association (CPPA, 2015) to assess compliance to the standards of labelling. In addition, the WHO document on how to investigate drug use in health facilities (WHO, 1995) is used to assess compliance to the standards of Patient counselling as well as the standards of dispensing time in community pharmacies in Nima.

Dispensing is a crucial and integral part of the drug use process and medication errors could be minimized or avoided by an appropriate dispensing system. In considerations of the above, this research is being carried out to investigate compliance to the standards of dispensing practices in community pharmacies.

CHAPTER 3

METHODOLOGY

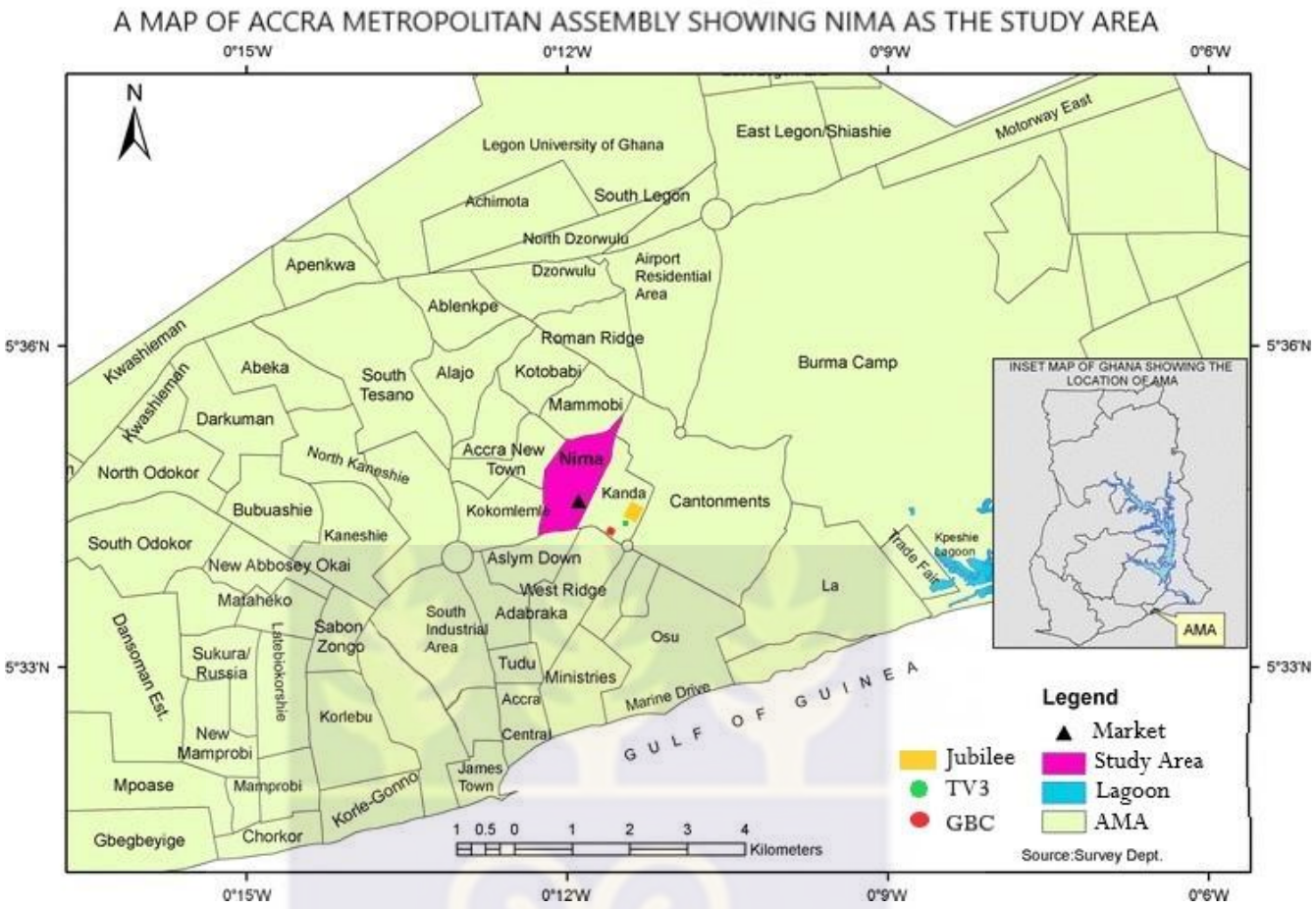
3.1 Study Design

A descriptive cross sectional study was conducted among the community pharmacies at Nima.

3.2 Study Area

For the purpose of this study, Nima community was surveyed. Nima is a typical Zongo Community in the Greater Accra Region of Ghana and the district seat of Ayawaso East Constituency. Muslims and people from Northern Ghana and other West African countries predominantly inhabit it, with Hausa as their main dialect. The population of Nima and its neighbouring communities is about 183,498 (GSS Census, 2010).

Nima is situated approximately 5 miles north of Accra Central. Nima is boarded with neighbouring communities to the North by Mammobi, to the South by Aslym Down, to the West by Accra New Town and Kokomlemle and to the East by Kanda as shown in Figure 3.1. These communities share the same constituency with the seat of Government - the Jubilee House and two major TV stations (GBC and TV3 Network) all located within Kanda.



(Source: Ghana Geographical Survey Department)

Figure 3-1: the Geographical location of Nima within the Central Accra

3.3 Study Variables

The main dependent variable considered was Compliance to the standards of dispensing practices. The independent variables of interest are dispenser information, patient information, time spent with patients and labelling.

3.3.1 Dependent Variable

Type Of Variable	Operational Definitions	Compliance Index	Scales Of Measurement
DEPENDENT VARIABLE			
Compliance to the Standards of Dispensing Practices	Accurate Labelling Efficient Patient counselling Adequate dispensing time	>11.5 ⇒ high compliance < 11.5 ⇒ low compliance	Ordinal
Accurate Labelling	Patient name Facility name Name of drug Dosage Instruction Age of Patient Initials of Dispenser Date of Dispensing Expiration Date Duration of treatment Cautionary Information	>5 ⇒ accurate labelling ≤5 ⇒ inaccurate labelling	Ordinal
Efficient Patient counselling	Patient identification Name of drugs The purpose of medication or diagnosis Dosage instruction of the drugs Duration of use What to do if a dose is missed Possible side effects Management of possible side effects Medication to be taken with food or on an empty stomach Drug-food interactions Drug-drug interactions Storage conditions	>6 ⇒ efficient patient counselling ≤6 ⇒ inefficient patient counselling	Ordinal
Adequate dispensing time	Time in minutes	≥ 5 min ⇒ adequate dispensing time < 5 min ⇒ inadequate dispensing time	

3.3.2 Independent Variables

TYPE OF VARIABLE	OPERATIONAL DEFINITIONS	SCALES OF MEASUREMENT
INDEPENDENT VARIABLES		
Dispenser Information		
Socio-economic /demographic characteristic	**Sex:** Male or Female	Nominal
	Age: Age at last birthday	Ratio
	Marital status: Married, Single, Divorced/Separated, Widowed, Cohabitation	Nominal
	Educational level: None, Primary/Elementary, Secondary, Tertiary,	Ordinal
	Religion: Christianity, Islamic, Traditional, Others	Nominal
	Income: <Gh₵500, Gh₵500- Gh₵1000, Gh₵1001- Gh₵2000, >Gh₵2000	Ordinal
In service Training	Yes, No	Ordinal
Years of Experience	Less than a year, 1 to 5 years, 6 to 10 years, 11 to 15 years, 6 to 20 years, above 20 years	Ordinal
Professional Category	Pharmacist, Pharmacy Technician, Medicine Counter Assistant (MCA), Others.	Ordinal
Availability of SOPs	Yes, No	Ordinal
Patient Information		
Socio demographic characteristics	**Sex:** Male or Female	Nominal
	Age: Age at last birthday	Nominal
	Marital status: Married, Single, Divorced/Separated, Widowed, Cohabitation	
	Educational level: None, Primary/Elementary, Secondary, Tertiary,	Ordinal
	Religion: Christianity, Islamic, Traditional, Others	Nominal
Drug information provided to Patient & Recall of Drug information by Patient	Patient identification Name of drugs The purpose of medication or diagnosis Dosage instruction of the drugs Duration of use What to do if a dose is missed Possible side effects Management of possible side effects Medication to be taken with food or on an emp stomach Drug-food interactions Drug-drug interactions Storage conditions	Ordinal

TYPE OF VARIABLE	OPERATIONAL DEFINITIONS	SCALES OF MEASUREMENT
INDEPENDENT VARIABLES		
Time Spent with Patients	Time in minutes	Ratio
Labelling	Patient name Facility name Name of drug Dosage Instruction Age of Patient Initials of Dispenser Date of Dispensing Expiration Date Duration of treatment Cautionary Information	Ordinal
Style of labelling	Symbols, Text or Both symbols and text	Nominal
Patient's understanding of labelling	Yes, No	Ordinal
Legibility of labelling	Yes, No	Ordinal

3.4 Study Population

The study population covers dispensers in retail pharmacies within Nima community as well as clients exiting these facilities.

3.4.1 Inclusion Criteria

Dispensers included in this study were all permanent or locum dispensers on duty in the community pharmacies during the time of data collection. Patients included in the study were people of age 16 years and above who visited the community pharmacies and gave consent to participate in the study.

3.4.2 Exclusion Criteria

The dispensers excluded were those who for some personal reasons cannot participate in the study. Patients excluded comprised clients who for some reasons cannot participate in the study such as the aged above 60 years, incapacitated and people with cognitive disabilities who could not participate in the study.

3.5 Sample Size Determination

The sample size was obtained considering a proportion of 50% as the prevalence of the parameters of this study are unknown and 95% confidence interval with ±5% precision were considered.

The sample size was determined using Cochrane sample size calculation formula as follows.

$$N = (z^2pq)/d^2$$

Where

N = sample size for one sample

p = estimated proportion of clients (0.5)

d = margin of error (0.05 with a confidence interval of 95%)

q = (1-p)

z = 1.96

$$N = (1.96^2 x 0.50 * 0.50)/(0.05)^2$$

$$= 384.16$$

Thus a sample size of 385 clients was to be assessed. Considering a 5% non-responsive group in addition. (5%) 385 ≅ 19. Thus sample size used for the study was 404.

3.6 Sampling Method

Accordingly, retail facilities selected for this study was based on the list of retail pharmacies in Nima obtained from Ghana Pharmacy Council. Out of the list of fourteen (14) community pharmacies, only six (6) were existing and operational. The remaining eight (8) were non-operational. A census was therefore conducted of the six functional pharmacies in Nima. These pharmacies were identified by the snowball technique where the initially identified facilities assisted in the identification of other existing pharmacies from among their acquaintances.

A consecutive sampling method was used to obtain the sample size of patients recruited for the study. Consecutive sampling is a method by which patients that happen to be available at the time of data collection and are within the criteria for selection are selected. The sample size was distributed among the six facilities proportionate to their capacities. For each of the community pharmacies, patients were then selected starting with the first until sample size was obtained. Selection of clients for exit interviews was also done based on the individual's appreciation of the research topic. All dispensers who were on duty at the time of Data collection and fell within the inclusion criteria were purposively selected for the study.

3.6.1 Background Characteristics of Clients

Two field assistants visited these facilities and were each given a unique identifier. Special codes were given to facilities and randomly assigned to the research assistants.

An expected population of four hundred and four (404) clients were recruited for the study but three hundred and ninety-four (394) indicated their willingness to be involved in the study and completed data were collected representing a 97.5% yield.

3.6.2 Background Characteristics of Dispensers

All dispensers on duty at the six community pharmacies were purposely recruited for the study. Thirty (30) dispensers gave their consent to take part in the study but only 26 provided completed forms, representing a response rate of 87%.

3.7 Data Collection Technique and Method

The data collection tool designed were two different structured questionnaires targeting patients and the dispensers (Questionnaires were designed based on Good Pharmacy Practice standards of WHO). Assessment was made by direct observation of the dispensing practices and through a face-to-face exit interview of patients. Structured observation checklist adopted from CPPA Guidelines for Community Practice was used to collect data on labelling. Likewise, a form to assess counselling was prepared based on the core indicators used for evaluating drug use in healthcare settings developed by WHO (WHO, 1993, 2002). A pilot study was carried out in three (3) community pharmacies (ie. Palace pharmacy in Osu, Septal Pharmacy at Maamobi and Jinlet pharmacy, also in Osu) to check the feasibility of the data collection tool and also to improve the study design and subsequently modify it to ensure that reliable information would be extracted from the data. All dispensers were interviewed to assess their years of experience, professional category, in-service training and their availability of SOPs at the facilities. Data collection was done at the various community pharmacy outlets between 4pm and 9pm each day as they are known to be the peak periods.

3.7.1 Questionnaire Description

The questionnaires for patients was administered by the investigator. Sample of questionnaire can be found in Appendix 3.

Patients' questionnaire covers the socio - demographic features of patients, drug information provided, patient's ability to recall drug information provided, labelling checklist, availability and involvement of pharmacist, and average dispensing time (Average time dispenser spends with patients).

Questionnaire for the pharmacy staff also covered the socio - demographic features of dispenser, professional category of dispenser, years of experience of dispenser and in- service training for dispensers.

Questionnaires were administered to dispensers for data collection after client exit interviews have been conducted to avoid any information bias. To collect data on professional category, experience, training and SOPs, dispensers were interviewed while they were on their normal activity using a questionnaire and clients were interrogated through a face-to-face exit interview.

The average dispensing time was determined using stop watch to record time spent on each client.

3.8 Quality Control

All observers or research assistants were instructed not to interfere with the dispensing process, in order to avoid or minimize errors in the data collection to ensure quality and accuracy of data using the methodology chosen for this study.

3.8.1 Training of field Research Assistants

A two-day training session was organized for the field research assistants. All assistants recruited for the study were university graduates from the University of Ghana. The training captured a comprehensive exposition on the key concepts of the study as well as the detailed methodology. Two research assistants were trained on the subject area. The key concepts discussed included:

1. The objectives of the study
2. Definition of key terms
3. Description of study scope
4. Selection of study participants
5. Basic Interviewing techniques with emphasis on courtesy for participants
6. Maintaining respondent's confidentiality
7. Receiving informed consents from study participants
8. Review of all questionnaires and checklists
9. Appropriate translation of questionnaire into a local dialect where necessary
10. Assessment of knowledge gained and retained by interviewers

3.8.2 Monitoring Interviews

Interviewers' performance was monitored by directly observing and evaluating field interviewers on adherence to research protocols. Areas that need improvements were noted and necessary actions taken accordingly.

3.8.3 Pre-testing

Questionnaires for the study were pretested in three (3) community pharmacies outside the selected study area to check for normality and reliability of the questionnaire. Dispenser questionnaires were administered to dispensers on duty who were attending to clients. Patient data extraction tools was also used to extract information from clients who visited the selected

facilities. Observations were made on the dispensing practices to assess the standards of labelling and counselling. A stop clock was used to monitor dispensing time. Based on the pre-testing exercise carried on dispensers and patients, both questionnaires were further refined accordingly.

3.8.4 Editing and Reviewing of Questionnaire

In addition to training and implementing procedures to ensure quality control, steps were taken to verify that the procedures being used to collect and process data are functioning properly. Questionnaires were reviewed to check for completeness and appropriateness of filling during and after data collection. Questionnaires was also reviewed for frequencies of the collected data throughout data collection to ensure appropriate responses are provided and to identify and address any questions that have higher-than- expected rates of responses. Questionnaires with nonresponses and unrealistic data were discarded or recorded as nil.

3.8.5 Data Entry and Management

After the questionnaires were pre-tested and filled, they were kept safely in a cabinet under lock and key. All data entered and analyzed was transferred to a laptop and password protected. Another copy was kept on an external hard drive which was securely kept in a cabinet, with access limited to the principal investigator.

3.9 Data Processing

Data was transferred from the questionnaire to Microsoft Excel Spreadsheet using codes. In entering of data into Excel, close ended questions were coded as Yes = 1, No = 0. Other variables with more than two levels were coded from 0 to 5. Double data entry was done to

ensure minimized errors and assure reliability of data collected. Data was exported from Excel to STATA for processing and data analysis.

3.10 Data Analysis

STATA/IC version 15.0 was used for analysis. To analyze the specific objectives which were standards of labelling, patient counselling and average dispensing time, descriptive statistics was used to describe baseline characteristics. Frequency distribution was summarized in tables and charts as well. Measures of central tendencies (mean, median and mode) were determined for continuous variables. Standard deviation was used to establish the extent of spread of certain selected key continuous variables. Inferential statistics was carried out to determine the relationship between some independent variables (legibility of labelling and labelling accuracy) using the chi square test of association.

3.11 Ethical Issues

Ethical approval was sought from the Ghana Health Service Ethics Review Committee. (Ref no. GHS-ERC:040/12/17). Approval was also sought from the proprietors of retail facilities that were involved in the study as well. Before the exit interview is conducted, the participants were duly informed about all relevant details and their consent sought. Dispensers were informed about the nature of the work and their consent sought before the questionnaires are administered. All other ethical issues concerning conducting research were adhered to such as the following:

Potential risks/benefits - There were no risks to participant in taking part in this study that the researcher is aware of. The main cost to the participant was some of his/her time spent. The researcher did not anticipate that this would be more than thirty (30) minutes of the

respondent's time in both the data collection and audit. It was rather envisaged that the outcomes of the study served as basis for improving the quality of dispensing practices in community pharmacies.

Privacy/confidentiality - The data collected were strictly used for academic and research purposes only. Confidentiality was assured for all information collected and no reference was made to specific patients or study units.

Data security and storage - After the questionnaires have been filled, they were kept safely in a cabinet under lock and key. All data entered and analyzed were transferred to a laptop and password protected. Another copy was kept on an external hard drive which were securely kept in a cabinet, with access limited to the principal researcher. The information provided was treated as confidential and used only for the purpose of the study.

Description of Consenting Process – The respondents were duly informed about the basis of the research and issues related to risk/benefit, privacy/confidentiality, data storage and usage, informed consent, voluntary consent/withdrawal, cost/compensation, conflict of interest and have been detailed out in the information sheet at Appendix 1. Participation in the study is solely voluntary and participants may choose to opt out from the study at any point during the interview. There was no penalty in opting out of the study. The informed consent for data collection is presented at Appendix 2.

Compensation - There was no financial benefits or any other material benefits to participants after the interviews and administration of questionnaire but respondents were appreciated in words for their time and contributions.

Conflict of Interest - There is no conflict of interest in this study.

Funding of study - This research was solely funded by the principal investigator.

Dissemination of findings - The result of this research was submitted to the School of Public Health in partial fulfilment of the requirements for the award of a Master of Public Health Degree. The findings would also be written for publication in a reputable journal.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the results of the study. These consist of exit interviews conducted on the clients leaving the community pharmacies as well as measured indicators from the pharmacies and professionals on duty during the data collection. This chapter has been organized in thematic areas and presented as follows:

4.2 Background Characteristics of Study Population.

4.2.1 Socio-Demographic Characteristics of Clients

The socio-demographic characteristics of 394 clients interviewed for the study are shown in Table 4.1. The clients who participated of this study were mostly females accounting for 55.33% (218). Ages of clients ranged from 16 years to 60 years, with a mean age of 35.11 years and a standard deviation of 11.58. Majority of the Client belonged to 36 to 40 age category representing 25.89%. Most of the clients had secondary level of education representing 37.06% (n=146) and only 13.71% had no formal education. The majority of participants were self-employed, representing 54.06% and 54.82% of them belonged to the Islamic Religion. Majority of clients interviewed (47.21%) were married, 43.15% were single, 1.27% of participants were separated or divorced, 2.79% were widowed and 5.58% were cohabiting.

Table 4.1: Sociodemographic characteristics of clients who patronize community pharmacy services in Nima – 2018

Characteristics	Frequency (n=394)	Percentage (%)
Sex		
Male	176	44.67
Female	218	55.33
Age		
16-20 years	43	10.91
21-25 years	65	16.50
26-30 years	38	9.64
31-35 years	30	7.61
36-40 years	102	25.89
41-45 years	41	10.41
46-50 years	34	8.63
51-55 years	21	5.33
56-60 years	20	5.08
(*mean, sd*)	(35.11, 11.58)	-
Highest Level of Education		
None	54	13.71
Primary	123	31.22
Secondary	146	37.06
Tertiary	71	18.02
Occupation		
Student	46	11.68
Civil servant	31	7.87
Private sector worker	94	23.86
Self-employed	213	54.06
Unemployed	10	2.54
Religion		
Christianity	178	45.18
Islamic	216	54.82
Marital Status		
Single	170	43.15
Married	186	47.21
Separated/Divorced	5	1.27
Widow/ widower	11	2.79
Cohabitation	22	5.58

4.2.2 Socio-Demographic Characteristics of Dispensers

The background characterics of the 26 dispensers interviewed for the study are shown in Table 4.2. Majority of the dispensers were female accounting for 73.08% (n=19). Ages of dispensers ranged from 18 years to 58 years, with a mean age of 30.73 years and a standard deviation of 11.06. Majority of the dispensers belonged to 21 to 25 age category representing 34.62%. In terms of the marital status, majority of dispensers were single 73.8% (n=19). 50% of dispensers had secondary level of education whilst 46.15% had tertiary level of education and a corresponding 3.85% represented dispenser with primary education.

The professional categories of dispensers ranged from pharmacists, pharmacy technician, Medicine Counter Assistants (MCA), and Others (Manager, owner, auxiliary staff). Of the professional category, majority were MCAs representing 80.77%.

Table 4.2: Sociodemographic Characteristics of Dispensers in Nima Community Pharmacies

Characteristics	Frequency (n=26)	Percentage (%)
Sex		
Male	7	26.92
Female	19	73.08
Age		
16-20 years	1	3.85
21-25 years	9	34.62
26-30 years	8	30.77
31-35 years	1	3.85
36-40 years	3	11.54
46-50 years	2	7.69
56-60 years	2	7.69
(*mean, sd*)	(30.73, 11.06)	-
Marital Status		
Single	19	73.08
Married	6	23.08
Separated/Divorced	1	3.85
Highest Level of Education		
Primary	1	3.85
Secondary	13	50.00
Tertiary	12	46.15
Professional Category		
Pharmacist	2	7.69
Pharmacy Technician	2	7.69
Medicine Counter Assistant	21	80.77
Others (Proprietor)	1	3.85
Work Experience		
Less than a year	3	11.54
1 to 5 years	18	69.23
6 to 10 years	1	3.85
16 to 20 years	1	3.85
Above 20 years	3	11.54
Income (Monthly)		
Less than GHC 500	15	57.69
GHC 500 to GHC 1000	8	30.77
GHC 1000 to GHC 2000	3	11.54

4.3 Assessing Compliance to the Standards of Labelling

4.3.1 Accuracy of Labelling Checklist

In the assessment of labels provided on dispensed medicines, Table 4.3 showed that out of 10 indicators for the labelling checklist, an average of 4 were provided by dispensers. These were Dosage of Drug representing 98.48%, Name of Drug (93.15%), Expiration Date (80.96%), and Cautionary Information (59.14%). The least label indicator provided was Patient Name representing 0.76%.

Table 4-3: Distribution of Labelling Score for the Recommended Checklist

Areas of Assessment (Labelling Checklist)	Frequency (n=394)	Percentage (100%)
Patient Name		
Yes	3	0.76
No	391	99.24
Facility Name		
Yes	42	10.66
No	352	89.34
Name of Drug		
Yes	367	93.15
No	27	6.85
Dosage of Drug		
Yes	388	98.48
No	6	1.52
Patient Age		
Yes	8	2.03
No	386	97.97
Initials of Dispenser		
Yes	4	1.02
No	390	98.98
Date of Issue		
Yes	20	5.08
No	374	94.92
Expiration Date		
Yes	319	80.96
No	75	19.04
Duration of Treatment		
Yes	221	56.09
No	173	43.91
Cautionary Information		
Yes	233	59.14
No	161	40.86

4.3.2 Compliance to the Standards of Labelling in Nima Community Pharmacies

The levels of compliance to the standards of labelling among community pharmacies in Nima are presented in Table 4.4. Asuo Afram and C. K. Relog Pharmaices were 100% non-compliant to the standards of labelling whilst Nima Highway Pharmacy was 4.6% compliant, Interbrium Pharmacy was 9.1% compliant, Lesson Pharmacy was 12.1% compliant and Magmitch Pharmacy was 18.2% compliant to the standards of labelling. The proportion of accurate labelling presented by the community pharmacies in Nima to the patients was 9.1% and the proportion of non-compliance to labelling standards was 90.9%.

Table 4.4: Compliance to Standards of Labelling in Nima Community Pharmacies

Areas of Assessment (Names of Pharmacies)	Inaccurate labelling	Accurate Labelling	Total
Asuo Afram Pharmacy	n=40 (100%)	n=0 (0%)	n=40(100)
C. K. Relog Pharmacy	n=40 (100%)	n=0 (0%)	n=40(100)
Interbrain Pharmacy	n=40 (90.9%)	n=4 (9.1%)	n=44(100)
Lesson Pharmacy	n=160 (87.9%)	n=22 (12.1%)	n=182(100)
Magmitch Pharmacy	n=36 (81.8%)	n=8 (18.2%)	n=44(100)
Nima Highway Pharmacy	n=42 (95.4%)	n=2 (4.6%)	n=44(100)
Total	n=358 (90.9%)	n=36 (9.1%)	n=394(100)

Pearson $chi^2(5) = 15.4067$ Pr = 0.009

4.3.3 Style of Labelling

The style of labelling used in the dispensing of drugs were symbols only, text only as well as both symbol and text. This has been illustrated in Figure 4.3. Majority of the labelling was done in both symbol and text with correspondence of 62% (n=243). The style of labelling was found to be significantly associated with legibilty of labels. (Chi = 20.441, p-value= 0.000). Nonetheless, the clarity of labelling was insignificantly related to style of labelling. (Chi = 2.777, p-value = 0.427)

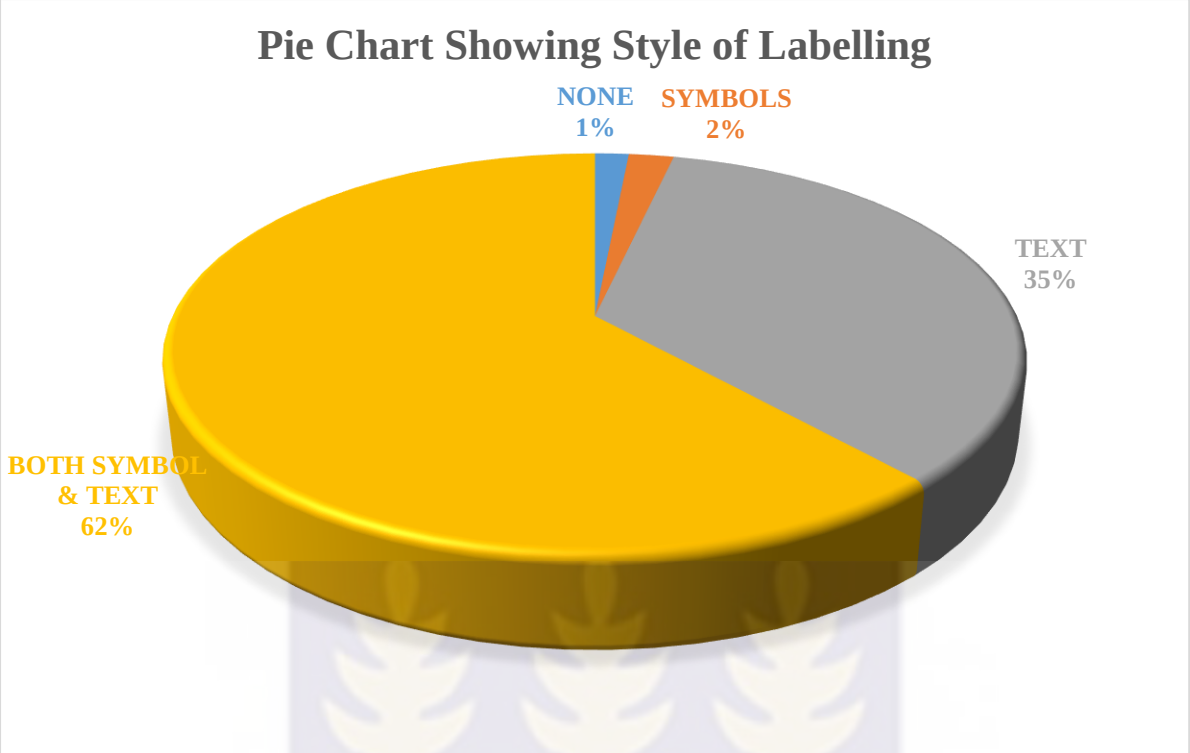


Figure 4.1: Pie Chart Showing Style of Labelling

4.4 Assessing Compliance to the Standards of Patient Counselling

4.4.1 Efficiency of Drug Information Provided

Data indicating the drug information provided to clients during counselling are reported in Table 4.5. Out of 12 indicators for the patient counselling, an average of 4 were provided by dispensers. Information regarding the dosage was the most common type of information provided to the Clients during counselling which corresponded to 96.45% (n=380) followed by whether the medication was to be taken with food or on an empty stomach (72.34%). The information provided on duration of medication was 67.51% whilst that on purpose of medication was 59.39%. The names of medication mentioned represented 47.21% and the verification of patients' identification was 42.64%.

According to respondents, management of possible side effect of medication as well as missed dose instructions (1.78% each) were the least information provided followed by drug-drug interactions and drug-food interactions (3.55% and 4.06% respectively). Also, information on possible side effect and storage of medication were provided less frequently to patients (6.85% and 15.74% respectively).

Table 4.5: Drug Information Provided During Patient Counselling

Areas of Assessment (Drug Information Provided)	Frequency (n=394)	Percentage (100%)
Patient Identification		
Identified	168	42.64
Not Identified	226	57.36
Name of Medicine		
Mentioned	186	47.21
Not Mentioned	208	52.79
Purpose of Medication		
Informed	234	59.39
Not informed	160	40.61
Dosage Instruction		
Informed	380	96.45
Not informed	14	3.55
Missed Dose Instruction		
Informed	7	1.78
Not informed	387	98.22
Duration of Medication		
Informed	266	67.51
Not informed	128	32.49
Possible Side Effects of Medication		
Informed	27	6.85
Not informed	367	93.15
Management of Side Effects of Medication		
Informed	7	1.78
Not informed	387	98.22
Medication taken with Food or Empty Stomach		
Informed	285	72.34
Not informed	109	27.66
Possible Drug-Food Interaction of Medication		
Informed	16	4.06
Not informed	378	95.94
Possible Drug-Drug Interaction of Medication		
Informed	14	3.55
Not informed	380	96.45
Storage of Medication		
Informed	62	15.74
Not informed	332	84.26

4.4.2 Compliance to the Standards of Patient Counselling in Nima Community Pharmacies

As presented in Figure 4.6, the levels of compliance to the standards of patient counselling among community pharmacies in Nima showed that, Lesson Pharmacy had the least efficient counselling represented by 9.3% and the maximum was observed at C. K. Relog Pharmacy representing 40%. The proportion of efficient counselling presented by the community pharmacies in Nima to the patients was 20.6% and the proportion of non-compliance to counselling standards was 79.4%.

Table 4.6: Distribution of Level of Compliance to the Standards of Counselling

Areas of Assessment (Names of Pharmacies)	Inefficient Counselling	Efficient Counselling	Total
Asuo Afram Pharmacy	n=26 (65%)	n=14 (35%)	n=40(100)
C. K. Relog Pharmacy	n=24 (60%)	n=16 (40%)	n=40(100)
Interbrain Pharmacy	n=36 (81.8%)	n=8 (18.2%)	n=44(100)
Lesson Pharmacy	n=165 (90.7%)	n=17 (9.3%)	n=182(100)
Magmitch Pharmacy	n=28 (63.6%)	n=16 (36.4%)	n=44(100)
Nima Highway Pharmacy	n=34 (77.3%)	n=10 (22.7%)	n=44(100)
Total	n=313 (79.4%)	n=81 (20.6%)	n=394(100)

Pearson $chi^2(5) = 101.3346$ Pr = 0.000

4.5 Assessing Compliance to the Standards of Dispensing Time

4.5.1 Adequacy of Dispensing Time

In the assessment of overall dispensing time for drugs among the community pharmacies, Table 4.7 showed that dispensers spent an average of 3.8 minutes (SD = 1.336) to dispense. Furthermore, it was observed that the least dispensing time was 1 min corresponding to 8.6% whilst the maximum time spent in dispensing of drugs to patient was 6 min which corresponds to 4.8%.

Table 4.7: Distribution of Dispensing Time

Dispensing Time (Minutes)			Frequency (n=394)	Percentage (100%)
	1		34	8.63
	2		36	9.14
	3		66	16.75
	4		114	28.93
	5		125	31.73
	6		19	4.82
Mean = 3.805	Sd = 1.336	P25 = 3min	P50 = 4min	P75 = 5min

4.5.2 Compliance to the Standards of Dispensing Time in Nima Community Pharmacies

As presented in Table 4.8, the least average dispensing time was observed at Asuo Afram Pharmacy (20%) which explains why the highest level of inadequate dispensing time (80%) was observed at the aforementioned pharmacy.

On the other hand, the highest level of compliance to dispensing time was observed at Nima Highway Pharmacy which corresponds to 50%. Furthermore, it was observed among the community pharmacies in Nima that 36.6% of the dispensing occurred from 5 min and above which corresponds to adequate dispensing time.

Table 4-8: Compliance to the Standards of Dispensing Time in Nima Community Pharmacies

Areas of Assessment (Names of Pharmacies)	Inadequate Dispensing Time	Adequate Dispensing Time	Total
Asuo Afram Pharmacy	n=32 (80%)	n=8 (20%)	n=40(100)
C. K. Relog Pharmacy	n=24 (60%)	n=16 (40%)	n=40(100)
Interbrain Pharmacy	n=28 (63.6%)	n=16 (36.4%)	n=44(100)
Lesson Pharmacy	n=112 (61.5%)	n=70 (38.5%)	n=182(100)
Magmitch Pharmacy	n=32 (72.7%)	n=12 (27.3%)	n=44(100)
Nima Highway Pharmacy	n=22 (50%)	n=22 (50%)	n=44(100)
Total	n=250 (63.4%)	n=144 (36.6%)	n=394(100)

Pearson $chi^2(5) = 10.2824$ Pr = 0.068

4.6 Assessing Compliance to the Standards of Dispensing Practices

4.6.1 Compliance to the Standards of Dispensing Practices by Dispensers

In the assessment of dispensers' compliance to the standards of dispensing practices Table 4.9 showed that proprietors did not comply with the standards representing 100% followed by Medicine Counter Assistants representing 94.2%. It was observed that 20% of the Pharmacists and 6.4% of the Pharmacy Technician were compliant to the standards of dispensing practices.

Table 4-9: Compliance to the Standards of Dispensing Practices by Dispensers

Areas of Assessment (Dispensers)	Non-compliance to Standards of Dispensing Practice	Compliance to Standards of Dispensing Practice	Total
Pharmacists	n=12 (80%)	n=8 (20%)	n=20(100)
Medicine Counter Assistant	n=290 (94.2%)	n=18 (5.8%)	n=308(100)
Pharmacy Technician	n=58 (93.6%)	n=4 (6.4%)	n=62(100)
Others (Proprietor)	n=4 (100%)	n=0 (9%)	n=4(100)
Total	n=364 (92.4%)	n=30 (7.6%)	n=394(100)

Pearson $chi^2(3) = 31.6407$ Pr = 0.000

4.6.2 Compliance to the Standards of Dispensing Practices in Nima community Pharmacies

The levels of compliance to the standards of dispensing practices among community pharmacies in Nima are presented in Table 4.10. The highest level of compliance was found at Asuo Afram Pharmacy representing 20%. On the other hand, the highest non-compliance to the standards of dispensing practices was found at Lesson Pharmacy, represented by 95.6%. The proportion of compliance to standards of dispensing practices presented by the community pharmacies in Nima was 8.6% and the proportion of non-compliance to the standards of dispensing practices was 91.4%.

Table 4-10: Compliance to the Standards of Dispensing Practices in Nima Community Pharmacies

Areas of Assessment (Names of Pharmacies)	Non-compliance to Standards of Dispensing Practice	Compliance to Standards of Dispensing Practice	Total
Asuo Afram Pharmacy	n=32 (80%)	n=8 (20%)	n=40(100)
C. K. Relog Pharmacy	n=38 (95%)	n=2 (5%)	n=40(100)
Interbrain Pharmacy	n=42 (95.5%)	n=2 (4.5%)	n=44(100)
Lesson Pharmacy	n=174 (95.6%)	n=8 (4.4%)	n=182(100)
Magmitch Pharmacy	n=36 (81.8%)	n=8 (18.2%)	n=44(100)
Nima Highway Pharmacy	n=38 (86.4%)	n=6 (13.6%)	n=44(100)
Total	n=360 (91.4%)	n=34 (8.6%)	n=394(100)

Pearson $chi^2(5) = 27.5801$ Pr = 0.000

CHAPTER 5

DISCUSSIONS

5.1 Introduction

This study is intended to function as a baseline survey for the Pharmacy council of Ghana, the Pharmaceutical society of Ghana, the Community practice pharmacists' association of Ghana, researchers and other stakeholders. The objective of the study was to assess Compliance to the Standards of Dispensing practices in the community Pharmacies in Nima, the District seat of the Ayawaso East District in the Greater Accra Region. This Chapter presents with a vivid discussions of the results obtained from the study, and it is ordered in line with the objectives of this study.

5.2 Compliance to the Standards of Labelling

The medications dispensed were evaluated for labelling accuracy. Result revealed that majority of the dispensed medications obtained were not labelled according to regulatory requirements. CPPA (2015) purported that accurate labelling must include the name of drug, strength, dosage instructions for use to the patient, expiry date, date of issue, name or initials of dispenser, name and address of the pharmacy, as well as the name and age of patient. Labels should also provide the necessary cautionary information to patient. From the study, an average of four labelling indicators were provided on drug labels by dispensers out of the 10 indicators for the labelling checklist. These were dosage of drug representing 98.48%, name of drug (93.15%), expiration date (80.96%), and cautionary information (59.14%). The least label indicator provided was patient name representing 0.76%.

Assessment of individual community pharmacies in Nima also showed that the highest compliance to labelling was observed at Magmitch Pharmacy with a corresponding 18.2%. The least compliance to standards of labelling (4.6%) was obtained by Nima Highway Pharmacy whilst Asuo Afram and C. K. Relog Pharmacies were 100% non-compliant. None of the pharmacies obtained a compliance level above 50% as required by the compliance index set for the labelling (> five labelling indicators) . The proportion of accurate labelling presented by the community pharmacies in Nima was 9.1% and the proportion of non-compliance to labelling standards was 90.9%. This implied that the standards of labelling as proposed by the CPPA guidelines for community pharmacy practice were not being met.

The study findings suggest that the labelling checklist proposed by the CPPA guidelines for Community Pharmacy Practice is not practical in Nima community pharmacies. The checklist for accurate labelling according to the guidelines for community pharmacy practice, can be best achieved using the electronic form of labelling as against manual labelling (CPPA, 2015). The electronic labels are in-built features of software used in Pharmacy Point of Sales Systems and readily appear as templates which require little efforts to complete and print out. However, much effort is required in doing it manually. Apparently, none of the community pharmacies in Nima printed out their labels. All labels were manually prepared and this was a major contributor to their inability to comply with the standards of labelling.

Malik et al (2016) reported that medication errors could be encountered when labelling font and writing style are improperly done which could prevent patient from reading the labelling information properly and may lead to handling errors as well. From the survey, the style of labelling used in the dispensing of drugs were mostly presented in both symbol and text with correspondence of 62%. An assessment of style of labelling against understanding and

legibility of labels showed that majority of patients appreciated both symbol and text labelling than either symbol or text labelling. It was observed that majority of Clients clearly understood the labels representing 77.41% even though 68.78% of them could see the handwriting of dispensers.

A simple descriptive cross tabulation between the style of labelling and the patient's understanding of it, gave a p-value of 0.427 which implies that the association between the style of labelling and the understanding of it is not significant. This could be due to the fact that clients pay attention to counselling instructions rather than the labelling instructions and hence understand the labelling instructions irrespective of the style of labelling. However, cross tabulation between the style of labelling and legibility of labelling or handwriting gave a p-value of 0.000 which implies that the association between the style of labelling and the legibility of it is significant. This could also be due to the fact that labelling was done with both symbol and text. Thus the symbol gives more emphasis to the text and enhances clarity of labelling. This style of labelling with both symbol and text therefore addresses the remark from study conducted by Marfo, Owusu-Daaku, & Kyerewaa-Akromah, (2013) that about 40% of the population in a developing country like Ghana, are not literate, and hence the need for medicines to be labelled appropriately and appropriate directives given to suit the needs of such patients.

According to (Nigussie, 2014), medications issued out to clients should be accurately labelled in order that it complies to the professional and legal standards to provide precise and comprehensive instructions to the patient as well as the dispenser and so as to prevent medication errors. On the contrary, a general assessment of the standards of labelling in Nima community pharmacies indicated a 9.1% level of compliance as against the checklist of 100%,

which implies that labelling done in community pharmacies in Nima lack precision and therefore medication errors are likely to occur. From the study, majority of the labelling was done manually by MCAs with correspondence of 80.77% who have low professional qualification and experience. This could be the reason for poor labelling. Consequently, there would be high probability of patient non-adherence as accurate labelling of dispensed medicines influences the patient's compliance and thereby therapeutic success or failure (Nigussie, 2014). It is the primary responsibility of the pharmacy professional to ensure the compliance to the standards of labelling for dispensed medicines (FMHACA, 2012 and WHO, 1993) and therefore the absence of pharmacists in the community pharmacies has limited the supervision checks to achieve high compliance to the standards of labelling.

The chances of therapeutic failure and drug toxicity could be increased when drugs are partly labelled or no information is provided for drugs. Therefore, regulatory bodies are to put the necessary measures in place to equip the community pharmacy settings with the resources to ensure dispensers put appropriate labels on every drug dispended to patients.

5.3 Compliance to the Standards of Patient Counselling

Another specific objective of this study was to assess compliance to the standards of patient counselling in the community pharmacies in Nima as one of the most important tools to promote good health is through medication counselling. Counselling plays an important role in enhancing medication adherence and optimizing medication therapy (Alfadl et al., 2018). The findings from a systematic review pointed to the fact that medication counselling led by a Pharmacist enhances quality of life, clinical outcomes, disease knowledge, economic outcomes and the overall patient satisfaction with service (Okumura et al, 2014). Of the professional category of dispensers that participated in the study, majority were MCAs representing 80.77%. The pharmacist corresponded to only 7.69% of dispensers which could contribute to the poor counselling of patients. Meanwhile, Patient's compliance in taking their medication properly is assured by the provision of needed guidance and information from the pharmacist (Toklu, 2010).

Hussain and Ibrahim (2011) purported that ccommunity pharmacies supply majority of medicines to patients in developing countries. Furthermore, community pharmacies provide support for patients to improve adherence to prescribed medicines, and to help doctors rationalize their prescription (Lenjisa, 2015). Assessment of community pharmacies in Nima on the levels of compliance to the standards of patient counselling indicated that C. K. Relog Pharmacy had the highest level of compliance to standards of counselling which corresponds to 40% whilst the least level of compliance was observed at Lesson Pharmacy. The least level of compliance could be attributed to dispensing staff rushing through the dispensing process resulting in a lot of omissions, inadequate labelling, miscalculations, no or inadequate information and counselling. Inference could also be made that in an attempt to speed up the process and clear the huge number of people at the pharmacies, the dispensing staff spend little

time in counselling patient. It is essential to concentrate more on the exactness of the dispensing process rather than swiftness (WHO, 1995).

The WHO document on how to investigate drug use in health facilities, (WHO 1995) proposes that efficient patient counselling should entail; verification of patient identity, information on drug name, drug purpose, dosage instruction, duration of medication, possible side effects and its management, whether drug is to be taken with food or on an empty stomach, drug-drug and drug-food interaction and storage conditions of the medicine. From the study, 42.64% of the patient identification and verification were carried out. The percentages of drug information provided in respect to counselling were dosage instruction (96.45%), medication taken with food or empty stomach (72.34%), duration of medication (67.51%), purpose of medication (59.39%), name of medicine (47.21%), storage of medication (15.74%), possible side effects of medication (6.85%), possible drug-food interaction of medication (4.06%), possible drug-drug interaction of medication (3.55%), management of side effects of medication (1.78%) and what to do when a dose is missed dose (1.78%). The majority of clients were provided with only four patient counselling information out of the 12 counselling indicators. This implies that the standards proposed by WHO is being compromised in Nima community pharmacies. The proportion of efficient counselling presented by the community pharmacies in Nima to the patients was 20.6% and the proportion of non-compliance to counselling standards was 79.4%. None of the pharmacies obtained a compliance level above 50% as required by the compliance index set for the counselling (> six counselling points). It can therefore be inferred that the standards of patient counselling were not met.

Consequently, the patient's adherence to medication instructions are compromised as a number of studies have laid emphasis on the essence of adequate information provision to ensure better

patient adherence (Isacson and Bingefors, 2002). According to Alfadl et al (2017), patient counselling facilitate the use of medicines according to given instructions and minimizes the possibilities of drug-food interactions, drug-drug interactions, drug allergies as well as other precautions that needs to be noted while taking the medications (Alfadl et al., 2018). However, in the study on instructions given during patient counselling, it was observed that information on drug-drug interactions and drug-food interactions (3.55% and 4.06% respectively) were provided less frequently to patients. Also, information on storage of medication, possible side effect and its management were less frequently provided to patient. The inefficiency of counselling on this information could therefore result in patient's inability to use their medicines as required. Likewise, poor medication counselling could directly result in ineffective drugs, drug overdoses, injury or even death (Sanii et at., 2016). Medication counselling is an essential step in the dispensing process and must be done properly. This is to ensure clear understanding and adherence to medication (Melanic, 2007).

5.4 Compliance to the standards of Average Dispensing Time

According to the WHO standards, the average dispensing time should be at least 5 minutes (WHO, 1995). In the assessment of overall dispensing time for drugs among the community pharmacies, dispensers spent an average of 3.8 minutes (SD = 1.336) to dispense. In comparison with other studies, this figure was less than the results of a study conducted in North Ethiopia which indicated 4.3 minutes (Elizabeth AF et al, 2003) but better than the results of a study conducted in India (3.1minutes), Nigeria (12.5seconds), Sudan (21.8 seconds), Bangladesh (23 seconds), Nepal (86 seconds) and Tanzania (78 seconds) (Awad et al, 2006, WHO, 1998, Hafeez et al., 2004). On the whole, these results are all less than the WHO Standards and therefore suggestive of the fact that inadequate dispensing time is a general concern, especially in developing countries. These results largely point to the fact that there is

general problem at community pharmacy settings regarding the time spent to dispense medicines to clients.

The WHO document on how to investigate drug use in health facilities, (WHO, 1995) attributes this to large crowds of people visiting the pharmacy with their prescriptions at the same time. In Nima scenario, only Lesson Pharmacy appears to be very busy with a heavy patient load compared to the other pharmacies (because it is strategically located in the center of the community). That notwithstanding, the level of inadequacy in Lesson Pharmacy (61.54%) was found to be much less than Asuo Afram (80%), Interbrain (63.64%) and Magmitch Pharmacies (72.73%), which are smaller in size with far less patient load. On the contrary, Asuo Afram pharmacy was observed to be the least patronized Pharmacy in Nima yet had the highest level of inadequacy (80%) of dispensing time.

On the other hand, the dispensing that occurred from 5 min and above which corresponds to overall adequate dispensing time was 36.6%. In comparison of the Nima community pharmacies, it was observed that Nima Highway Pharmacy had the highest adequate dispensing time of 50% and the least obtained from Asuo Afram Pharmacy representing 20%. According to Toklu (2010), it should be noted that, although the dispensing process appears to be simple, proper dispensing is time consuming. Compliance to the standards of dispensing is directly related with the time spent. Inferring from the above, the inadequate dispensing time could be best explained by the fact that inefficient patient counselling as well as inaccurate drug labelling was being carried out at the various facilities. More so, some studies have shown that lack of up-to-date drug information as well as sufficient knowledge on drugs was a major factor that hinders dispensers from spending adequate time to counsel patients (Nasir TW et al, 2011). Similarly, this also could be due to little or no knowledge of the Standards of dispensing

practices by dispensers, as the majority of dispensers in Nima community pharmacies were medicine counter assistants (corresponding to 80.77% of the dispensers).

Generally, inadequate time was spent with the majority of clients (63.4%) while adequate time was spent with only 36.6% of the Clients. It can only be inferred from the results of our study that quality time is not spent in the dispensing process and thereby breaching the standards of dispensing time.

5.6 Compliance to the Standards of Dispensing Practices

According to WHO (1993), the dispensing practices among community pharmacies are assessed by average dispensing time, percentage of drugs adequately labelled and patients' knowledge of correct dosage based on the adequacy of information given to patients by the dispenser. A general assessment of the standards of labelling in Nima community pharmacies indicated a 9.1% level of compliance whilst that of average dispensing time was 36.6% and level of compliance to standards of patient counselling was 20.6%. The proportion of compliance to standards of dispensing practices presented by the community pharmacies in Nima was 8.6% and the proportion of non-compliance to the standards of dispensing practices was 91.4% which has resulted in dispensing errors such as dispensing incorrect drug, wrong dose, inappropriate dosage form; wrong quantity; inappropriate or incorrect labelling, inadequate guidance on directions for use of drugs; inappropriate preparation, packaging or storage of drugs prior to dispensing (Szeinbach et al., 2007). Compliance to standards of dispensing practices would ensure that the right patient receives an effective form of the correct drug, with right dosage and quantity written in clear instructions, in well-labelled packages, which maintains the integrity of medicines (WHO, 1995).

Community pharmacies serve as the primary point of call in the delivery of pharmaceutical care in most developing countries since many patients consult them. (Alfadl, Alrasheedy, & Alhassun, 2018). Pharmacist and other pharmacy staff personnel are often approached for medicines and advice on health problems (Hussain & Ibrahim, 2011). For the dispensing process to go right or wrong depends totally on the dispensing personnel. It is therefore important that dispensing staff are competent enough and well equipped with all the knowledge needed for the dispensing process. Cross tabulation between the category of dispensers and level of compliance to the standards of dispensing practices gave a p-value of 0.000 which implies that the association between the dispenser and the level of compliance is significant. From the study, majority of the dispensing was carried out by Medicine Counter Assistants corresponding to 80.77% of dispensers. This affirms report by Zewdie et al (1999) that the dispensing process itself is left for medicine counter assistants or trained- on- the- job staff members to dispense due to shortage of qualified staff members.

This practice is dangerous and should not be encouraged, since it gives a lot of room for medication errors. In the assessment of dispensers' compliance to the standards of dispensing practices, the proprietors did not comply with the standards representing 100% non-compliance followed by Medicine Counter Assistants representing 94.2% noncompliance which attest to the poor standards of dispensing practices exhibited among the community pharmacies in Nima. It was observed that out of the 26 dispensers, only two were Pharmacists representing 7.69% of dispensers. That notwithstanding, compliance rate among dispensers showed a 20% compliance by the pharmacists and 5.8% compliance by the medicine counter assistants. The study also revealed that the highest level of noncompliance (94.2%) was exhibited by the MCAs. This stands to reason that the presence of the pharmacists in the community pharmacies is of high essence.

Also, the level of training dispensers received, the availability of information on medicine and supervision of dispensers have direct influence on compliance to the standards of dispensing practice (FMHACA, 2012). Besides a dispenser's ability to read, write, count and pour medicines, the dispensing team require additional skills, knowledge and attitudes to complete the dispensing process. These include dispenser's knowledge about the medicines being dispensed, good arithmetic and calculation skills, assessing quality of preparation skills, with attributes of accuracy, cleanliness and honesty in addition to effective communication skills (WHO, 2012). The development and use of written standard operating procedures (SOPs) for the dispensing process will improve consistency and quality of work and can be used for training and reference (Embrey, 2012). Contrary to this, it was observed that none of the pharmacies in Nima had SOPs, which explains why dispensing practices in Nima community pharmacies are unsatisfactory. It is therefore essential that dispensers receive an acceptable level of training to enable them dispense correctly the range of medicines prescribed in their facilities.

5.7 Study Limitations

The following limitations were encountered during the study:

- The study covered only community pharmacies in one community and therefore, there was no comparison with other community pharmacies in the various municipalities and regions where the results could be different especially in compliance to the standards of dispensing. Furthermore, the result could not be generalized to be the facts in all community pharmacies in Ghana.
- The validity of the results could be distorted by the issuance of consent form since the subject were operating from an experimental environment.
- The observation of health workers could introduce bias as they are likely not to work normally due to the presence of investigators. Also, the use of interviewer administered questionnaire in this study could result in partiality towards a preconceived response based on the structure, phasing or tenor of questions asked in the interviewing process.
- Basic labelling deficiency - There are two (2) main forms of labelling which are the manual and electronic. The checklist for accurate labelling according to the guidelines for community practice, can be best achieved using the electronic form of labelling as against manual labelling. The electronic labels are in-built features of softwares used in Pharmacy Point of Sales Systems and readily appear as templates which require little efforts to complete and print out. However, much effort is required in doing it manually. Apparently, the manual form of labelling is mostly practiced in community pharmacies in Ghana and as such a limitation to the compliance to the standards of labelling.
- Researcher presence bias

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter presents with the conclusions arrived at, as well as the recommendations made and addressed to the appropriate stakeholders.

6.2 Conclusion

The findings of this study showed that the proportion of compliance to standards of labelling in Nima community pharmacies is 9.1%, which implies that the standards of labelling are not being complied to. Labelling done in the Nima community pharmacy lack accuracy as far as the CPPA checklist for labelling is concerned. Generally, accuracy of labelling among Nima community pharmacies was not yet at the optimal level.

Furthermore, the study revealed that counselling of patients have significant deficiencies as less information is provided than required. The level of compliance to the standards of counselling was 20.6% which implies poor compliance to the standards of patient counselling.

The average dispensing time as indicated by the study was 3.8 minutes, which represents only 36.6% adequacy. Even though the average dispensing time is comparatively higher than results obtained by other studies, it was less than recommended average dispensing time by the WHO (5 minutes). Time spent with Clients was not efficiently used and therefore adequate time should be spent with patients to ensure proper counselling about their medication. This will enhance compliance and improve drug therapy.

Generally, the proportion of compliance to the standards of dispensing practices in community pharmacies in Nima was 8.6%. This implies that compliance to the standards of dispensing practices in Nima Community Pharmacies are poor and below international and national

standards and therefore demand serious regulations and policies to be implemented in order to ensure and improve on dispensing practices

6.3 Recommendations:

- Further studies could be done to investigate why the standards of dispensing practices are not being complied with, in the community pharmacies in Nima.
- Patient counselling as well as labelling of drugs in the community pharmacies, require an urgent need of improvement.
- There is the need for dispensers to spend adequate time (≥ 5 min) with their clients during dispensing to ensure efficiency in counselling and accuracy in labelling.
- There is the need for the Pharmacy Council of Ghana to monitor for and ensure the presence of the Pharmacist in the community pharmacies to keep the standards of dispensing practices.
- Supt. Pharmacists are to ensure the availability and use of Standard Operation Procedures in the various community pharmacies to enhance the quality of dispensing practices.

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APPENDICES

Appendix 1: Participant Information Sheet

SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

Title of study	**Assessing Compliance to the Standards of Dispensing Practice in Community Pharmacies in Nima**	
Researcher	**Department**	**Phone**
Priscilla Asare-Duah	Health Policy, Planning and Management	0541710122

Background

Dear participant, **Priscilla Asare-Duah** is my name, a student of School of Public Health, University of Ghana, Legon. I am undertaking a study by assessing the compliance to the standards of Dispensing Practice in Community Pharmacies in Nima. The objective of the study includes compliance to the standards of labelling, compliance to the standards of patient counselling, and compliance to the standards average dispensing time

Procedure

The study will involve the use of a questionnaire as an extraction tool. Data will be taken from dispensers and clients who visit community pharmacies. The consent of dispensers and our clients will be sought before taking any data. This is purely an academic research which forms part of my work for the award of Master of Public Health Degree. I would be very grateful to have you as part of this study.

Risks and Benefits

The study will not cause any risk to the participants as data will be collected and duly explained to participants before taking them. It is hoped that the results obtained for this study will be used by policy makers and the community pharmacies in particular to improve on compliance to the standards of dispensing practices.

Right to refuse

Participation is this study is voluntary and participants can choose not to answer any particular question or all questions. You are at liberty to withdraw from the study at any time. However, it is encouraged that you participate since your opinion is important in determining the outcome of the study.

Anonymity and Confidentiality

I would like to assure you that whatever information provided will be handled with strict confidentiality and will be used purely for research purposes. Your data will not be shared with anybody who is not part of the research team. Data analysis will be done at the aggregate level to ensure anonymity. Your identity will not be disclosed in the material that is published.

Conflict of Interest

There is no conflict of interest whatsoever in this study on the part of the investigator.

Appendix 2: Informed Consent Form

I have read the research information (The research information was read and explained to me in the language I understand), and that all my questions have been answered to my satisfaction. I therefore agree to take part in this study.

The result of this study could be mailed to you upon request if you provide your address below.

……

……

Do you agree to participate in an interview? (please tick) **Yes** ( ) **No** ( )

Consent

I……., declare that the purpose of the study has been thoroughly explained to me in English language/Twi and I have understood. I hereby agree to answer the questions

Signature…….. Date……

Thumb print

Interviewer's Statement

I, the undersigned, have explained this consent form to the subject in the English language that he/she understands the purpose of the study, procedures to be followed as well as risks and benefits involved. The subject has freely agreed to participate in the study.

Interviewer's signature……

Date…… Address……

If you have questions later, you may contact me on 0541710122

Administrator, Ghana Health Service Ethical Review Committee, Miss Hannah Frimpong (0507041223/0243235225) or Miss Nana Abena Kwaa Addai-Donkor (0244712919)

Appendix 3: Patient Data Extraction Tool

SCHOOL OF PUBLIC HEALTH,

UNIVERSITY OF GHANA

A STUDY TO DETERMINE COMPLIANCE TO THE STANDARDS OF DISPENSING PRACTICES IN COMMUNITY PHARMACIES IN NIMA

PURPOSE OF THIS SURVEY

The main purpose of this research is to assess compliance to the standards of dispensing practices in community pharmacies in Nima which is one of the highly populated areas in Ghana and the district seat of the Ayawaso East constituency. This will go a long way to inform policy makers and health educators. The findings of this study would be used to improve practice, as well as policy formulation and implementation.

CONFIDENTIALITY

The researcher wishes to assure all the respondents that all the information provided will be treated very confidential and it remains purely an academic work.

Section A: Socio-Dermographic Features of Respondent

1. Sex: a. Male [ ] b. Female [ ]

2. Age (at last birthday): [……]

3. What is your level of education?

a. None	[ ]	d. Tertiary	[ ]
b. Primary	[ ]	e. Others (please specify)	[ ]
c. Secondary	[ ]		

4. Which of the following category below do you belong to?

a. Student	[ ]	d. Self-employed	[ ]
b. Civil Servant	[ ]	e. Unemployed	[ ]
c. Private Sector Worker	[ ]	f. Others (please specify)	[ ]

5. Which Religion are you affiliated to?
   a. Christianity [ ]
   b. Islamic [ ]
   c. Traditional [ ]
   d. Others (Please Specify) [ ]

6. Marital status:

   a. Single [ ]
   b. Married [ ]
   c. Separated/Divorced [ ]
   d. Widow/Widower [ ]
   e. Cohabitation [ ]

Section B: Drug Information Provided

SN	QUESTION	RESPONSE	
		YES	NO
1	Was the identity of the patient verified?		
2	Were the names of your medicines mentioned to you at the pharmacy?		
3	Were you informed of the purpose of your medication?		
4	Were you informed of the dosage instructions for your medication?		
5	Were you informed of duration of your medication?		
6	Were you informed of what to do when a dose is missed?		
7	Were you informed of the possible side effects of your medication?		
8	Were you informed of how to manage the possible side effects of your medication?		
9	Were you informed whether your medication is to be taken with food or on an empty stomach?		
10	Were you informed of the possible drug - food interactions of your medication?		
11	Were you informed of the possible drug - drug interactions of your medication?		
12	Were you informed of the storage conditions of your medication?		

Section C: Patient's Ability to Recall Information

SN	QUESTION	RESPONSE	
		Can recall vividly	Cannot recall
1	Can you recall the names of your medicines given to you at the pharmacy?		
2	Can you recall the purpose of your medicines		
3	Can you recall the dosage instructions given for your medication?		
4	Can you recall the duration for your medication?		
5	Can you recall what to do when a dose is missed?		
6	Can you recall the possible side effects of your medication?		
7	Can you recall how to manage the possible side effects of your medication?		
8	Can you recall whether your medication is to be taken with food or on an empty stomach?		
9	Can you recall the possible drug - food interactions of your medication?		
10	Can you recall the possible drug - drug interactions of your medication?		
11	Can you recall the storage conditions of your medication?		

OBSERVATION DATA EXTRACTION TOOL – TO BE FILLED BY INTERVIEWER

Section D: Average Dispensing Time

1. Approximately how long did the dispenser spend on the patients?

…….. (mins)

2. Was the time for dispensing adequate and efficiently utilized?

a. Yes [ ] b. No [ ]

OBSERVATION DATA EXTRACTION TOOL – TO BE FILLED BY INTERVIEWER

Section E: Compliance to the Standards of Labelling

1. Are the packages of the medication labelled?

a. Yes [ ] b. No [ ]

2. Checklist for correct labelling. Which of the following can be seen on the label? Please tick.

a. Patient name	[ ]	f. Initials of Dispenser	[ ]
b. Facility name	[ ]	g. Date	[ ]
c. Name of drug	[ ]	h. Expiration Date	[ ]
d. Dosage Instruction	[ ]	i. Duration of treatment	[ ]
e. Age	[ ]	j. Cautionary Information	[ ]

3. Was the labelling done with symbols or with text?

a. Symbols [ ]

b. Text [ ]

c. Both symbols and text[ ]

4. Is the above forms of labelling clearly understood by patient?

a. Yes [ ] b. No [ ]

5. Is the above forms of labelling legible to the patient?

c. Yes [ ] d. No [ ]

Section F: Availabilty and Involvement of Pharmacists

6. Who does the dispensing? (State qualification please).

a. Pharmacist [ ]

b. Medicine Counter Assistant (MCA) [ ]

c. Pharmacy Technician [ ]

d. Physician Assistant [ ]

e. Others *(If other please specify)* [ ] ……

7. Are drugs cross checked by the pharmacist before dispensing?

a. Yes [ ] b. No [ ]

8. Does the dispenser show individual drugs to patient while counselling?

a. Yes [ ] b. No [ ]

Appendix 4: Data Extraction Tool

SCHOOL OF PUBLIC HEALTH,

UNIVERSITY OF GHANA

A STUDY TO DETERMINE COMPLIANCE TO THE STANDARDS OF DISPENSING PRACTICES IN COMMUNITY PHARMACIES

PURPOSE OF THIS SURVEY

The main purpose of this research is to assess compliance to the standards of dispensing practices in community pharmacies in Nima which is one of the highly populated areas in Ghana, and the district seat of the Ayawaso East constituency. This will go a long way to inform policy makers and health educators. The findings of this study would be used to improve practice, as well as policy formulation and implementation.

CONFIDENTIALITY

The researcher wishes to assure all the respondents that all the information provided will be treated very confidential and it remains purely an academic work.

Section A: General Background Information

1. Sex: a. Male [ ] b. Female [ ]

2. Age (At last birthday) ……

3. Marital status:

   a. Single [ ]
   b. Married [ ]
   c. Separated/Divorced [ ]
   d. Widow/Widower [ ]
   e. Cohabitation [ ]

4. What is your highest educational level?

   a. Primary/Elementary [ ]
   b. Secondary [ ]
   c. Tertiary [ ]
   d. Others (*If other please specify)* [ ] ……

5. Professional Category

a. Pharmacist [ ]
b. Pharmacy Technician [ ]
c. Medicine Counter Assistant (MCA) [ ]
d. Others *(If other please specify)* [ ] …….

6. How long have you been practicing as a dispenser? (Completed years)

a. Less than a year [ ]
b. 1 to 5 years [ ]
c. 6 to 10 years [ ]
d. 11 to 15 years [ ]
e. 16 to 20 years [ ]
f. Above 20 years [ ]

7. How much do you earn as a dispenser? (Montly)

a. Less than GH₵ 500 [ ]
b. GH₵ 500 to GH₵ 1000[ ]
c. GH₵ 1000 to GH₵ 2000[ ]
d. Above GH₵ 2000 [ ]

8. Please provide the following information about the pharmacy

a. Name of Pharmacy …….
b. Location of Pharmacy …….
c. How many people work at the pharmacy? ……..
d. How many pharmacists are there at the pharmacy? ……
e. Approximately, how many patients visit your pharmacy per day?

WITH a prescription

0-10 [ ]
11-20 [ ]
21-30 [ ]
31-40 [ ]
More than 40 [ ]

WITHOUT a prescription

0-10 [ ]
11-20 [ ]
21-30 [ ]
31-40 [ ]
More than 40 [ ]

10. Is the owner of this pharmacy a Pharmacist?

a. Yes [ ] b. No [ ]

11. Is the pharmacist for this facility available every day?

a. Yes [ ] b. No [ ]

12. Is the pharmacist involved in the dispensing process?

a. Yes [ ] b. No [ ]

Section B: Staff Training and Competence

13. Do you organize in-service training programmes on medicines?

a. Yes [ ] b. No [ ]

If yes:

14a. Who organizes the in-service training?

a. The pharmacist
b. Community Practice Pharmacists Association
c. Pharmaceutical Representatives (REPs)

14b. Can you recall the last in-service and what it was about?

a. Yes, I can recall
b. No, cannot recall

15. Do you have reference materials? (E.g. standard treatment guideline, Essential Medicines List)

a. Yes [ ] b. No [ ]

16. Do you have Standard Operation Procedures for the various activities carried out in the facilities

a. Yes [ ] b. No [ ]

17. Have you been trained on the applications of these Standards of Operations?

a. Yes [ ] b. No [ ]