PHARMACIST COMMUNICATION AND PATIENT MEDICATION ADHERENCE IN GHANA

BY

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DECLARATION

I Naessiamba Eab-Aggrey, hereby declare that no part of this report has been submitted for any other degree in this University and elsewhere. Research work described in this dissertation was carried out by me and supervised by Dr. G.K.M Tietaah.

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DEDICATION

I dedicate this project to God Almighty, my lovely parents, Edem Klobodu and all pharmacists who are in a quest to make this profession worth pursuing.

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ABSTRACT

This study was inspired by the assumption that a consultative-based approach to pharmacy services offered opportunities for improving health service delivery outcomes in developing countries like Ghana, where there is a wide deficit of doctor-to-patient ratios. Specifically, the study was conducted to investigate: the nature of pharmacist communication; the factors that influence pharmacist communication; the relationship between pharmacist communication and patient medication adherence; and the barriers to pharmacist-client communication. It was underpinned by the communication perspective in Munro *et al's* (2007) five factors of patient medication adherence. Employing the survey research design, the study involved the administration of questionnaires to a sample of 60 pharmacists and 196 patients (clients) of pharmacy facilities within the La Nkwantanang-Madina municipality of the Greater Accra region. Results showed that pharmacists reported to have exhibited good communication practice skills. However, the expectation, contingent on the literature and theory, that communication would improve medication adherence was not borne out by the findings of this study. There was no significant association between pharmacist communication and patient medication adherence. The study concluded that in order for communication to manifest in observable improvements in client satisfaction and improved medication adherence, the concept of consultation-based pharmacy service must become a mainstream element in both the training of pharmacists and the practice of their profession. Secondly, communication may not be a sufficient condition for medication adherence. Barriers, including such communication barriers as language, health literacy and pharmacist-client interaction time, were identified as factors that must be addressed in order to improve the role and outcomes of communication as a factor in healthcare delivery in Ghana.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND FOR THE STUDY

The contemporary pharmacist is trained not only to formulate and dispense drugs, but to also provide clinical information on medicines and medication to both health professionals and patients (Thamby & Subramani, 2014). This role requires pharmacists to interact and exchange information with healthcare professionals and patients in order to improve health outcomes. The emergence of clinical pharmacy has allowed pharmacists to shift from a product oriented role towards direct engagement with patients and the problems they encounter with medicines (Walker & Whittlesea, 2012).

Over the years, this shift from merely dispensing medications to a more patient-centered approach has brought about the need for pharmacists to be able to interact with patients appropriately on their medication needs in order to improve the health outcomes of patients, especially when it comes to medication adherence. This makes communication a vital element that pharmacists need to acknowledge and employ for the effective discharge of their role.

In Ghana and other parts of the developing world, pharmacists are very instrumental in the healthcare system due to the various roles they play when it comes to the medication needs of patients. Thus, as Beardsley (2001:307) put it, “effective communication skills are important in the practice of pharmacy”. Beardsley (2014:307) actually asserts that active pharmaceutical care is built on the clear and concise transfer of correct information to patients and health care providers.

This buttresses the argument that without adequate interactions with patients and other healthcare providers, there cannot be effective pharmaceutical care.

The World Health Organization introduced the concept of the seven-star pharmacist which stipulated, among other things, that a pharmacist should play a role as a communicator (Wiedenmayer. et al, 2006). This role is instrumental to the success of the pharmacy profession. Communication skills are therefore essential for pharmacists to master (Wiedenmayer et al., 2006; Thamby & Subramani, 2014). As the role of the pharmacist is changing and becoming more patient based, thus involving patient consultations, it is important that discussions on pharmacist communications are forthcoming in order to enable today's pharmacist to communicate effectively and confidently (Cleland et al., 2007). With the increasing popularity of patient-centered programmes such as the doctor of pharmacy (Pharm D.) degree, which has been introduced in universities in Ghana, there is the need to develop soft skills such as communication skills. This would further enhance patient outcomes like medication adherence.

Adherence as defined by some literature, is the degree to which the individual's behaviour (including medication-taking) agrees with approved recommendations from a healthcare giver (Davis & Cohen, 1992). It comprises the commencement of the treatment, implementation of the approved regime, and withdrawal of the pharmacotherapy (Vrijens et al., 2012). By opposition, non-adherence leads to poor clinical outcomes, increase in morbidity and death rates, and unnecessary healthcare expenditure (Brown & Bussell, 2011). The World Health Organization (WHO), in its 2003 report on medication adherence, states that "increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any

improvement in specific medical treatment" (quoted in Sabaté, 2003:21). This report suggests that an adherence intervention such as pharmacist communication on patient medication information in the clearest way would help enhance adherence and minimize unnecessary health expenditure. This research was designed to investigate pharmacist communication and patient medication adherence in Ghana. It is hoped that the findings would help pharmacists to make appropriate adjustments in order to improve health outcomes like patient medication adherence.

1.2 IMPORTANCE OF PHARMACIST COMMUNICATION IN DEVELOPING COUNTRIES

Interpersonal skills are indispensable when it comes to the day-to-day activities of pharmacists; whether counselling patients, communicating with physicians or interfacing with associates. Researchers have established that pharmacist-patient communication is not only important for improving appropriate medication use, but also for achieving desired patient outcomes (Young, 1996). Pharmacists require improved patient-centered communication skills as the nature and needs of their profession are changing and becoming more patient-centered. Effective communication by Pharmacists is important to advance the use of medications by patients and guarantee ideal therapeutic outcomes (Davis & Cohen, 1992).

Most patients reporting at health facilities would have first used a home remedy or visited a pharmacy (Gyasi, 2013) especially in developing countries like Ghana. This would explain anecdotal observations that, the pharmacist is usually the first point of call for most patients in developing countries. In the Ghanaian medical system, it would seem that due to the high doctor-to-patient ratio, patients prefer to see the pharmacist first when they are confronted with minor

medical challenges (Health Sector Facts and Figures, 2015:20). The pharmacist is usually also the final point of contact especially for most outpatient admissions and as an intermediary for inpatient admissions. The pharmacist's role in health care delivery is to ensure that any issues related to the medication needs of patients are solved. How can the pharmacist achieve their goal if they do not employ communication in a way that the patient would understand?

There are consequences to every communication, whether intended or not, so the way in which a pharmacist presents information would affect the way in which the recipient responds to treatment recommendations. It is a two-way affair between the pharmacist and patient. This study investigated pharmacist communication from the perspectives of both patients and pharmacists. Some academics have contended that healthcare provider's miscommunication starts in medical school and continues when students start practicing medicine as resident healthcare givers (Swasey, 2013). Arnold (2003), noted, for instance, that medical students including pharmacy students, spent hundreds of hours studying biochemical and historic facts, of which they might never use (Arnold, 2003). On the other hand, basic skills like communication skills were not prioritized. According to Arnold (2003: p.189), few, if any schools, spent any time teaching the basic science of communication. This makes it difficult for some physicians and pharmacists to understand the impact words can create.

According to Hochman et al. (2008: p.880) although patients considered communication to be of the top three competencies for healthcare providers to possess, most of them did not possess it. The sciences, such as anatomy, physiology, biochemistry, pharmacology, microbiology, pathology are the main subjects in the curriculum of medical schools. This focus on the sciences is

dehumanizing medical students (Hochman et al., 2008). du Pre (2005: p. 90) noted that, in traditional medical schools, students learn about the human body by the use of cadavers and not living human beings. These students do not treat the cadaver with sensitivity or think of how these cadavers in terms of animate beings with 'feeing' or reactions. In essence, due to training orientation the medical student may be predisposed to objectify the client, thus failing to interact with him/her as a person. While du Pre (2005) was specific to medical students, the repercussions have logical application to other practitioners within the health delivery system as a whole; including pharmacists.

The argument here is that, when healthcare practice trainees start working with living patients, they may have the mindset that is not sufficiently sensitive to feelings and concerns of their patients. Some medical schools, such as the one at Harvard, have recognized this handicap, and have begun to incorporate communication basics into their required training curriculums (Swasey, 2013).

1.3 PROBLEM STATEMENT

Although, globally most patients do not tend to adhere to their medication prescriptions (Jimmy & Jose, 2011), the situation is particularly serious in developing countries; for two reasons: a low doctor/pharmacist-patient ratio; and a low literacy/poverty rates.

According to statistics from the latest available report on the health sector in Ghana, the doctor to population ratio as at 2014 was 1:9043 (Health Sector Facts and Figures, 2015: p.20). This ratio shows that the number of people seeking medical help at any point in time in Ghana is huge,

leading to long waiting time at hospitals. This situation tends to push people to seek medical help outside hospitals hence relying on the services provided by other care givers especially the community pharmacist. According to a report by the Ghana statistical service (2013: pp. 52,57), the overall multi-dimensional poverty index (MPI) national occurrence of poverty was projected at 42.7 percent with poverty rates in the three upper regions remaining the highest in the country. This figure shows that close to half of the people in Ghana are poor and might not be able to afford health care provided by some health facilities. They would therefore tend to patronize more accessible services such as are provided by some community pharmacies. These community pharmacies are easy to access within communities and consultations are usually free and also giving people the chance to spend very limited time getting medical attention compared to some hospitals in the country. Therefore, it is very fundamental that pharmacists are able to communicate with patients properly in order to improve patient outcomes like medication adherence.

Effective pharmacists' communication is a crucial factor in ensuring that medications are used properly (Nakayama et al., 2016) and research has revealed that using good communication skills can increase patient health outcomes (Coulter & Ellins, 2007). If professionals are able to interact properly with patients, then this medical problem of adherence could be minimized. Health care professionals should identify practically possible strategies to improve medication adherence (Jimmy & Jose, 2011). One strategy, lies within pharmacist-patient interactions. Little research has focused on communication within the new consultation-based roles of pharmacists (Greenhill, Anderson, Avery & Pilnick, 2011). These new consultation-based roles are more clinical and patient-inclined; hence the need for improving communication between pharmacists and patients

and other health care providers. This study sought to address pharmacist communication and how this interaction affected patients' medication adherence.

1.4 RESEARCH OBJECTIVES

The study sought to explore the following objectives:

1. To investigate the nature of communication between pharmacists and patients in pharmacies in Accra.
2. To examine the relationship between pharmacist communication and patient medication adherence in the La Nkwantanang Madina District of Ghana.
3. To identify some of the barriers to effective pharmacist communication in community pharmacies in Accra.

1.5 RESEARCH QUESTIONS

The study sought to answer the following questions:

1. What is the nature of pharmacist's communication in pharmacies in Accra?
2. What is the relationship between pharmacist communication and patient medication adherence in the La Nkwantanang Madina District of Ghana?
3. What barriers exist in effective pharmacist communication in pharmacies in Accra?

1.6 SIGNIFICANCE OF STUDY

The medical sector in Ghana is overwhelmed because of a low doctor to patient ratio which makes patients prefer to patronize the community pharmacist, due also to their easier accessibility within

the community, free consultations and less time spent in getting medical attention. This has formed the reorientation towards pharmaceutical care and new thinking of patient consultation. However, there has been little research that focuses ‘‘on communication within new consultation-based roles of pharmacists’’ (Greenhill, Anderson, Avery & Pilnick, 2011). The evolving nature of pharmacists’ role as consultant has increased the level of trust for pharmacists which makes their communication a concern since that would affect patient outcome. This study would provide empirical data that could inform policy on skill training and capacity building in the pharmaceutical field. The study would focus on the pharmacist’s communication and patient’s medication adherence in Ghana. This study would add to the existing literature relating to pharmacist communication and patient medication adherence.

1.7 OPERATIONAL DEFINITIONS

The following terms/concepts are explained as used in the study:

- **Pharmacist communication**: Referred to the interaction between a pharmacist and a client or patient who has visited the facility to seek the services of the facility, such interaction is observed and interpreted through verbal and nonverbal behaviors of the pharmacist and client. Pharmacist communication was investigated in community pharmacies and hospital pharmacies only.
- **Client**: Person who visits the pharmacy to purchase drugs or enquires about health related products/services with or without prescription.
- **Patients:** This term was used interchangeably with clients.
- **Medication adherence**: The extent to which instructions related to prescribed medication was strictly followed by a patient.

- **Nature:** This term was used to describe the kind of verbal and nonverbal cues used in the pharmacist-patient interaction; observed to be either positive (enabling interaction and understanding) or negative (disabling any fruitful engagement).
- **Relationship;** referred to the positive or negative association between the pharmacist - patient interaction
- **Barriers:** Referred to any condition that hindered the pharmacist-patient interaction, such as language barriers, time, feeling of shyness, negative nonverbal cues, etc.

1.8 SCOPE AND DELIMITATION

Client respondents were limited to the La Nkwantanang district of the Greater Accra Region. The choice of respondents was restricted to patients or clients who patronized community pharmacies in this district. The choice of pharmacist respondents was limited to pharmacists in the Greater Accra Region who patronize continuous education programmes organized by the various multinational pharmaceutical companies in Ghana. It was assumed that such ongoing training opportunities would make them relatively more aware of new trends and shifts in approach towards patient care and client communication these are discussed in detail in the methodology.

1.9 SUMMARY

This chapter reflects the introduction to the study, emphasizing the shift of the pharmacy profession from a dispensing role to a more patient care approach, causing a need for pharmacists to master communication skills essential to improving patient outcomes. Also the importance of pharmacist communication in developing countries was discussed. The literature suggests that most people see the community pharmacies as their first point of call, hence making it an important facility to consider when it comes to healthcare delivery. Issues relating to health literacy, physician-patient deficits and influence of economic factors on medication adherence were discussed. The problem statement followed. It was recognized that medication non-adherence was a major problem globally but probably more far-reaching in a developing country context due to socio-economic challenges. The research objectives and questions as well as the significance of the study were stated. In addition, some operational definitions were provided and the scope and delimitation of the study were clearly explained.

CHAPTER TWO

LITERATURE REVIEW

2.0. INTRODUCTION

This chapter describes the theoretical perspective of the study and explores related work on pharmacist communication and patient medication adherence. The purpose is to establish the context within which the study is demonstrated to have scholarly relevance in terms of contributing to knowledge on the research problem, the methodological options to employ, and the generalization of existing precepts and theories.

2.1 THEORETICAL PERSPECTIVE

In a study conducted in 2007, Munro et al discussed some theories that could improve treatment adherence. Specifically, they conducted a search on a range of databases; namely: MEDLINE, Pre-CINAHL, PsycInfo, ScienceDirect, CINAHL, and ERIC; using various keywords. In addition, search engines/platforms such as google, google scholar and the University of Cape Town library were explored for information on the construct under investigation. Using the results of these searches, they summarized theories and examined the usefulness of theories in developing interventions to improve medication adherence. Flowing from this, Munro et al (2017) recognized the following five main theoretical perspectives related to adherence: biomedical, behavioural, communication, cognitive and self-regulatory. The communication perspective supported other empirical evidence and conceptual propositions (Sabaté, 2003; Ross & Deverell, 2004: p. 11) that improved provider-client communication will enhance adherence. It also implies that adherence can be achieved through patient education, and good healthcare worker communication skills (Munro et al, 2007). While the literature does not offer any single comprehensive theory or

model on communication and medication adherence, therefore, the current study was based on the communication perspective derived from the five factors to adherence identified by Leventhal & Cameron (1987). The study sought to investigate whether pharmacist communication could affect patient medication adherence. This theoretical perspective is grounded in the concept that communication needs to be clear and comprehensive to be effective (Munro et al, 2007). Hence pharmacist communication skills were assessed and deemed to be effective if they were observed to practice the consultative-based approach to practice by providing answers and volunteering explanations through their verbal and nonverbal communication acts with patients or clients. According to Munro et al (2007), there is no simple solution to the problem of adherence. To understand and overcome the barriers to treatment adherence, considerable research is needed. Hence, this study sought to contribute to a greater understanding of the problem of adherence only from a communication perspective.

Furthermore, as Hermansen and Wiederholt (2001: p.309) have noted, the norm of reciprocity may be present between a healthcare provider and a patient as an interpersonal relationship develops through continued social interactions and in the context of providing healthcare. Norm of reciprocity is a social rule that is widely accepted (Burger et al., 1997: p91) and requires that people should help those who help them (Goulder (1960: p.173). In this context, both the pharmacist and the patient need to help each since both of them tend to gain or lose from this association. If a patient walks into a pharmacy and complains about a particular ailment and the pharmacist attends to his/her needs, then it implies that the patient should adhere to the instruction given by the pharmacist in order to help the pharmacist gain a sense of job satisfaction.

According to Goulder (1960: p. 171), the norm of reciprocity is universal, contrary to the claims of cultural relativists. The norm of reciprocity in its universal form makes two interrelated, minimal demands, that is, people should help those who have helped them and people should not injure those who have helped them. Here the way in which pharmacists communicate with patients should persuade patients to adhere more to their medication.

2.2 PHARMACIST COMMUNICATION

Communication, derived from the Latin word *communis*, is the activity of conveying or sharing information (Hollermann, Melznerand, & Bargstadt, 2012). In the context of this study, communication encompassed both verbal and nonverbal cues that pharmacists used to interact with their clients. There is evidence that majority of people believe that talking to healthcare professionals about medicines is important and useful (Erickson, et al, 1998) and that they are happy to discuss their concerns when encouraged to do so by a health care professional (Meystre-Agustoni, 2000). This makes communication relevant to the pharmacy profession. Swasey (2012) found out that physicians who communicated effectively provided the best medical treatment for patients. That evidence is logically applicable to pharmacists as well.

Almost two decades ago, both observational studies and those reporting pharmacists' perceptions suggested that when it came to communication with pharmacists, some people did not want counselling by the pharmacist and were irritated by attempts to provide it (Livingstone, 1996; Hassell, et al, 1998). This meant that pharmacist communication at that time might not have been relevant to those people adhering to their medication. Moreover, pharmacists did not offer

counselling in the majority of cases (Erickson, et al, 1998; Taylor, 1994). Looking at pharmacy practice in currently, the story can be expected to be different due to transformations of the pharmacy profession to a more patient-oriented one as discussed in the introduction.

Though contemporary studies agree that communication can improve health outcomes, health care professionals' behaviour can as well impede patient involvement (Stevenson, et al, 2004). Smith-Dupre and Beck (1996) suggested that practitioners' communication style may help patients become actively involved in discussions about their medicines. This is very important because patients' involvement in their treatment would help them in recovering and improving their quality of life. In addition, patient participation in discussions about medicines and greater involvement in decisions was found to lead to greater subsequent understanding of treatment, adherence, more satisfaction about both the visit and doctor behaviour, and less regret about the treatment decision (Bultman & Svarstad, 2000; Siminoff, et al, 2000). What this study sought to do, therefore, was to find out if pharmacists and patients believed that communication could improve health outcomes like medication adherence.

Assuming that patients had the perception that their health practitioner felt they were wasting their time or were irritated by the questions they asked, that might affect their medication adherence. Furthermore, individuals' decision to adhere to recommendations depended significantly on whether they felt they were involved in the decision-making process and were treated as equals by their doctors (Stavropoulou, 2012). According to Arnold (2003:190), fewer than 10 percent of medical schools had an integrated four-year curriculum in doctor-patient communication. This is no different from the pharmacy schools in Ghana, where there is no evidence of any formal

curriculum designed to teach pharmacists about how to communicate with their clients. Students are left on their own to learn how to effectively communicate with their clients sometimes on the job. Pharmacist communication does not seem to be a priority either for students or professionals. A study conducted by Kyei et al (2015) indicated that majority of respondents had detected technical or clinical errors due to miscommunication. As part of the measures in minimizing these inaccuracies, most of the respondents were of the view that professionals would need an in-service training. Health practitioners who miscommunicate or who do not communicate effectively are subject to embarrassment and loss of professional image (Swasey, 2013). Hence, physicians believe that communication is worthy of their attention and are willing to learn how to communicate better (Swasey, 2013). This study sought to find out the extent to which these conclusions are applicable to the specific example of pharmacists in Ghana. Perceptions of patients about the ability and preparedness of their pharmacist to offer counselling or respond to questions and include patients or clients in decisions helped in understanding whether pharmacist communication would affect medication adherence.

2.3 VERBAL AND NON-VERBAL COMMUNICATION

Documentation and verbal instructions are the predominant media through which professionals communicate and transfer information (Kyei et al, 2015). This can be seen in the use of patient folders, prescriptions and notes written by health professionals. Physicians and other health professionals like pharmacists practice verbal and non-verbal communication daily with patients, nurses, and staff members (Swasey, 2013).

Osborne and Ulrich (2008) actually found that non-verbal prompts such as body posture, facial expression and personal appearance are key components when health professionals are listening to their patients. These nonverbal cues help health professionals, especially pharmacists, understand their clients better in order to adequately attend to their needs. Facial expressions can reflect how a health practitioner is interpreting the information they are receiving (Osborne & Ulrich, 2008). Also, Osborne and Ulrich (2008) recommended the use of 'warm smile' which conveys how kindly we feel towards other people. They added that the eyebrows, along with the eyes, both communicate attitudes such as surprise, compassion, fear, doubt or dislike. In their words, "maintaining friendly eye contact with others often promotes trust'' (Osbrne & Ulrich, 2008: p.12). On the other hand, ''our clients may doubt our sincerity or competence if we avoid respectful eye contact during conversation" (Osbrne & Ulrich, 2008: p.12). Also, Fry and Mumford (2011; p 183) in their study made mention of how nonverbal cues like "simply slowing down speech and maintaining good eye contact significantly" improves understanding. When pharmacists interact with clients, the use of nonverbal cues may be as loud as the words that are spoken. There is, therefore, the need for pharmacists to also master and express nonverbal communication competence. Fry and Mumford (2011; p 183) stated that for understanding to occur the art of listening is essential for both healthcare providers and patients. There are a lot of nonverbal cues that could convey some important information that might be difficult to convey by words. Therefore, the nonverbal communication of pharmacists in Ghana was assessed though observation methods.

2.4 RELATED STUDIES

2.4.1 **Factors influencing pharmacist-patient communication**

This section reviews the relevant literature on pharmacist-patient communication and their relations to medication adherence and health outcomes. It is organized into three subheadings to reflect three themes of particular interest to the objectives and focus of this study; namely 1) influences in pharmacist-patient communication; 2) evidence and concerns about patient medication adherence and 3) the role of communication in medication adherence.

Evidence suggests that when health professionals and patients speak different languages, achieving effective communication becomes immeasurably more difficult (Lee, 2003). Lee (2003) pointed out that language and cultural barriers in health communication was one of the many challenges facing health care in the United States as it affected the quality and accessibility of health care. This may be a real challenge in Ghana considering its multilingual setting. In addition, studies show that barriers to the effective use of medicines specifically include poor provider-patient communication, inadequate knowledge about a drug and its use, not being convinced of the need for treatment, fear of adverse effects of the drug, long term drug regimens, complex regimens that require numerous medications with varying dosing schedules, cost and access (Leupkar, 1971; Osterberg & Blaschke, 2005; Tarn et al, 2006; Rodondi et al, 2006). Few studies conducted in Ghana have explored the barriers to effective communication among pharmacist and patients.

The identification of some of these barriers is one of the main objectives of this study. Schomer and Wiederholt (1995: p. 567) conducted a study on participant and environmental “effects on pharmacist-patient communication in community pharmacies”. Their objective was to identify

participants and environmental variables that affected pharmacist-patient communication and their effects in a range of community pharmacy practices. They used unobtrusive observation, patient and pharmacist interviews in 12 community pharmacies. They concluded that pharmacists and the environments in which they worked were most responsible for occurrence of communication. One potential limitation of their study, however, was the integrity or validity of the observation data. Since pharmacists and patients knew that they were being observed during data collection, they may have behaved differently than if they had not known. The current study was, therefore, done using patients and pharmacist questionnaires. Pharmacist and patient responses were taken outside the pharmacy premises; hence responses were unlikely to be influenced as in the case of the observational study conducted by Schomer and Wiederholt (1995).

Furthermore, their study was carried out at a time when the consultation based approach to pharmacy practice was not a universally recommended norm. A study by Babinec et al (2010, p.183) investigated how pharmacy practice researchers designed their study in ways that acknowledged verbal communication between pharmacists and patients with diabetes. They searched MEDLINE, EMBASE, the Cochrane pharmaceutical abstracts from 2003-2008 to identify relevant studies published in English. A total of 413 abstracts were identified and analysed. One striking outcome that was of importance to this current study was that researchers did not appear to consider the influence of pharmacist communication skills on health outcomes (p. 191), which would be looked at in this study.

2.4.2 Medication adherence

Adherence to medical recommendations has received increasingly more attention over the last decades (Stavropoulou, 2012). This might be due to the rise in antimicrobial resistance and the worsening of some chronic illnesses which have caused unnecessary medical expenses as discussed in Chapter One. The consequence of non-adherences is wasting of medication, worsening of disease, reduced functional abilities, and a lower quality of life, increased use of medical resources such as nursing homes, hospital visits and hospital admissions (Col et al, 1990; Sullivan et al, 1990). Also, studies reveal that poor adherence to prescribed regimens can result in non-medical but nonetheless important health consequences like unplanned health expenses and a reduction in human resources. Non-adherence is a very common phenomenon in patients with drug taking behaviour (Jimmy & Jose, 2011). However, in a study by Kjellgren et al (1998) it was found that confidence in the physician and the health care system as a whole led to better adherence. Confidence in a healthcare professional, will encompass the manner in which they interacted with their patients. In a similar vein, this study sought to show the relationship between pharmacist communication and patient medication adherence.

Jimmy and Jose (2011: p. 155) discussed and categorized adherence into three types; the first, being primary non-adherence. This is a type of adherence in which health professionals write prescriptions but the medication is at no time filled or started. This type is commonly called non-fulfillment adherence (Gellad, Grenard & McGlynn, 2009). A second type of non-adherence, called non persistence, occurs when patients choose to stop taking a medication after starting it, without being instructed by a health professional to do so (Jimmy & Jose, 2011). Jimmy and Jose (2011) noted that non persistence is rarely intentional and happens when patients and providers

miscommunicate about therapeutic plans. The third type of non-adherence known as non-conforming, comprises a variety of ways in which medications are not taken as prescribed. This behaviour can range from skipping doses, to taking medications at incorrect times or at incorrect doses, to even taking more than the prescribed dose (Jimmy & Jose, 2011). Again, communication by way of counselling, cautioning and clarification on the part of the pharmacist could potentially reduce the rate of such incidence of non-adherence.

Some methods used to improve medication adherence at the prescription level include health care providers involving patients in decision making regarding their medications so that they have a sense of ownership, and would, consequently, partner in the treatment plan (Jimmy & Jose, 2011). Involving them in decision making means that a premium would be placed on how pharmacists convey information to them and vice versa; and that is what this study sought to explore. This sense of ownership could alter the adherence behaviour of defaulting patients or clients.

According to the World Health Organization (WHO), there are multiple factors leading to poor medication adherence, normally classified into five categories: socioeconomic factors, therapy-related factors, patient-related factors, condition-related factors, and healthcare-team-related factors (Davis & Cohen, 1992). Healthcare-team-related factors like communication are of importance to this study because the study sought to find the relationship between pharmacist communication and patient medication adherence.

2.4.3. Pharmacist communication and patient medication adherence

In a qualitative study by Barry et al. (2000) in England, healthcare providers and patients were interrogated to scrutinize their level of communication during consultation. It was shown that most

of the patients' needs were not met all through the consultation and this led to poor adherence (Stavropoulou, 2012). The present study sought to investigate communication between pharmacists and patients and the relationship between this interaction and adherence. Since these studies were with specific reference to doctors, the aim of the present study was to fill the gap in scholarship when it comes to pharmacists' communication.

Studies show evidence to propose that the provider-patient relationship impacts on patients' judgment to follow recommendations (Stavropoulou, 2012). However, this cannot be presumed about pharmacist-patient relationships since there is little empirical research evidence to support this relationship and its impact on adherence especially in Ghana. It clearly suggests that any intervention aimed at improving patients' adherence needs to be developed on the basis of a strong pharmacist-patient relationship. According to Woroniecki et al (1982: p.1907) communication between pharmacist and patient is of great importance for accomplishing desired patient fulfilment as well as for improving appropriate medication use and treatment outcomes. Treatment outcomes could be improved when patients adhere to their medication. Could pharmacist communication influence medication adherence in Ghana? This study hoped to find empirical answers to this question.

2.7. SUMMARY

The theoretical perspective for this study was discussed in this chapter. From the theory, pharmacist communication was found to enhance medication adherence as discussed earlier. Hence the need to investigate this assertion. This chapter also discussed empirical studies related to pharmacist communication. Furthermore, medication adherence was also addressed since some studies implicitly suggest a role for communication in improving medication adherence was also discussed. Methods used to measure medication adherence were also assessed. The next chapter explains the methodological implications of the studies reviewed here and the options of research design employed in this work.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

This chapter looks at the research procedure employed in the study. The main objective is to explain and substantiate the methods employed to achieve the stipulated research objectives. According to Johnson and Christensen (2005) research methodology indicates the structure of the actions of the researcher in making right choices in relation to the structure of the research questions stipulated and the answers expected. The chapter captures the research design and approach, the population, sample size and the sampling technique, data collection methods and ethical considerations.

3.1 RESEARCH DESIGN

Research design is the strategic plan and structure of conducting a research project (Kweit and Kweit, 1981). Boateng (2014) stated that appropriateness of choice of any research design is based on the purpose, objectives and questions underpinning the study. A one phase study was developed to ascertain pharmacist communication from both the pharmacist point of view and the patient point of view; and to understand how this interaction can affect medication adherence. The study used a quantitative technique. The quantitative method used was employed in the data collection for both pharmacists and patients. In addition, open ended questions were included in patient questionnaires to enrich the work. This way of approaching research was informed by a similar study done by Gade in 2008 where a focus group of pharmacists were conducted plus a pilot study of two parallel surveys of retail independent resident pharmacists and patients (Gade, 2008: p. 89). Pharmacists were sent a package comprising five patients survey recruiting instructions, scripts

and self-addressed, stamped return envelopes to patients (Gade, 2008: p. 90). Here, pharmacists were responsible for their own random distribution of the survey; though not for their collection. In the current study, however, in order to eliminate any bias in the distribution of the survey, an independent person was employed to administer the questionnaires to patients, and a different person to administer to a group of pharmacists. The purpose of this choice of administering the questionnaires was to eliminate the bias of a pharmacist influencing the patient as he/she administers the questionnaire possibly or distributes questionnaires to only his/her favourite clients. Also a focus group discussion as used by Gade (2008: p.90) was not employed in this work because it was very difficult to bring pharmacists together due to their busy schedules and also gathering them to provide group responses would upset the comparability of responses to those of the patients' data.

The survey comprised two sets of questionnaires administered to the two sets of populations (patients and pharmacists) over a 14-day period. Pharmacists attending a continuous professional development (CPD) programme and clients who patronized selected pharmacies in the La Nkwantanang district of the Greater Accra region were surveyed. The pharmacist questionnaire comprised 71 questions and the client's questionnaire comprised of 29 questions. Considering the extensive nature of the questions, and given the ethical undertaking to include only respondents who had been fully appraised, and therefore, independently made the informed decision to participate, fewer questionnaires than was originally conceived were successfully completed.

Furthermore, due to language barriers in the case of non-literate clients, some of the participants were assisted with translations and their responses recorded in the questionnaires. The chosen

design was considered adequate to gather data that would be sufficient and relevant to the research objectives, and enable recommendations that would be useful to knowledge in the field.

3.2 STUDY AREA

There were two study areas that were looked at in this study. Patients who visited pharmacies at La Nkwantanang-Madina Municipality and pharmacists who had attended continuous professional development (CPD) programmes organized monthly by Pfizer (a multinational pharmaceutical company) in the month of September at the Kempinski Gold Coast Hotel in Accra.

Clients study area

The La Nkwantanang-Madina Municipality, which is one of the study areas for this study, is located in the Greater Accra Region. It is one of the 16 Metropolitan, Municipal and District Assemblies in the region and was created in 2012 as part of the newly created Assemblies aimed at deepening decentralization and bringing development to the door-step of citizens (Ghana Statistics Service, 2014). La Nkwantanang-Madina Municipal was established by Legislative Instrument (L.I.) 2131 and inaugurated on June 2012. According to the Ghana Statistical Service, La Nkwantanang was carved out of the GA East Municipality. The District is situated in the northern part of the Greater Accra Region. It covers a total land surface area of 70.887 square kilometres and it is generally urban (84%). The population, according to the 2010 Population and Housing Census, is 111,926 (representing 2.8 percent of the region's total population). Females constitute 51.5 percent and males represent 48.5 percent (Ghana Statistics Service, 2014).

La Nkwantanang District was chosen for this study due to its cosmopolitan demographics in terms of age, education and social status, as well as its diversity of cultures and religious affiliations. The Ghana Statistical Service (2014) in its report on the La Nkwantanang district stated that majority (77.1 %) of migrants living in the district were born in another region in Ghana while 19.9 percent were born elsewhere in the Greater Accra Region. This implies that more than half of the population are from different parts of the country with different cultures and languages, making it fairly heterogeneous, cosmopolitan and, therefore appropriate for the study. Furthermore, about 79.2 percent of the population in the Municipality are Christians, 17.5 percent Muslims, and one percent (1%) are Traditionalists reflecting, broadly the national population figures in terms of religious composition (Ghana Statistics Service, 2014). Tertiary institutions found in and around this district created a further layer of various cultures and diversities, hence making it a suitable and interesting site for the study. This diversity created, on face value, the conditions for eliciting responses that might be reflective of other regions in the country.

Pharmacist study area

Per the requirement of the Pharmacy Council, a licensed pharmacist is supposed to renew his/her license each year in order to be able to practice as a pharmacist in Ghana. Any pharmacist who wants to practice in the country Ghana is supposed to undergo a continuous professional development programme and accumulate credit in order to be in good standing so as to be eligible to be registered and published in the gazette each year. Continuous professional development programmes are organized all year round by the Pharmacy Council, various practice groups or pharmaceutical companies.

Accra, the capital of Ghana, covers an area of about 420 kilometers square (Agyei-Mensah & Aikins, 2010), with an estimated population of 4,010,054, according to the Statistical Service census of 2010. Kempinski Gold Coast hotel is located in the heart of Accra and serves as a study area for this research work. It offered a serene and beautiful environment appropriate for most of the CPD's organized for pharmacists. This study area was chosen because it offered an opportunity to get pharmacists in good standing from different parts of Accra at a common location, thereby making it easier to administer questionnaires to as many pharmacist as was desired; and as willing to participate in the study.

3.3. STUDY POPULATION

According to Baumgartner (2002), population covers the entire spectrum of people or elements with similar characteristics or features. Creswell (2009) also defined population as the totality or sum total of the phenomenon that interests a researcher. The population for this study consisted of all pharmacists in both community and hospital pharmacies who attended continuous professional development (CPD) training sessions organized by Pfizer in the month of September at the Kempinki Gold Coast hotel in Accra and clients of community pharmacies that were systematically intercepted outside the pharmacy premises in the La Nkwantanang district.

Population of pharmacists

Pharmacist respondents were sought at the CPD gathering because this venue offered the opportunity to conveniently and randomly select pharmacists from diverse communities in the

Greater Accra region including the La Nkwantanang District. Also, respondents were engaged in a more efficient way than would have been entailed in walking into various pharmacies and engaging pharmacists to respond to questionnaires one after another.

In addition, pharmacists with diverse backgrounds were engaged by using this method of collecting data. There were a little over 182 participants who made it to the CPD session. They included pharmacist managers, hospital pharmacists, industrial pharmacists, community pharmacists and medicine counter assistants. Sixty questionnaires were distributed after a plenary session. Pharmacists were asked to fill the questionnaire. After about 15minutes, 47 pharmacists returned filled questionnaires. In all 47 questionnaires were retrieved, representing 78 percent response rate.

Population of clients

The client study population for this research work comprised all patients or patrons who patronize pharmacies within the La Nkwantanang District. Clients who fit these descriptions were systematically intercepted outside 12 randomly selected pharmacies in the La Nkwantanang district, and following a brief introduction and explanation of the research purpose as well as assurance of the necessary ethical undertakings, the questionnaires was administered to those who consented to participate.

3.4 SAMPLE SIZE FOR PHARMACISTS

One important component of a study is the sample size. Hancock (2002, p.12) defined sample size as the number of representatives that is nominated from a population being researched on. The sample size is dependent on the accuracy needed, population size, population heterogeneity and resources available (Hancock, 2002). Saunders et al (2009) stated that a large sample size is a real specimen of the population and more representative, making the result more dependable. From the population of pharmacists who attended CPD organized by Pfizer in September, 2017 a sample size of 60 respondents (pharmacist) were used. This sample size was arrived at after making certain assumptions. First of all, there were 182 participants at the CPD programme consisting of diverse staff all in the pharmacy sector. Assuming there were two thirds of pharmacists who patronized this programme, then it implies that there were about 121 pharmacists present. Considering the fact that most pharmacists are interested in CPD's as compared to medicine counter assistance and other staff of a pharmacy. However, the pharmacist of interest here were community and hospital pharmacists, implying that pharmacists in academia and industrial pharmacists were not included in the study. On assumption that half of the 121 pharmacist present were those of interest to us, then it implies that pharmacist of interest to this research is 60. This explains why 60 questionnaires were given.

3.5 SAMPLE SIZE OF PATIENTS

The minimum number of patients needed for this study, was calculated using the formula below; based on the approach employed by Naing, Winn and Rusli, (2006: p. 9);

$n = (Z)^2 * P (1-P) / (d)^2$

Where n=sample size

Z= Z statistic for a level of confidence

P= expected prevalence or proportion

d= Precision

For the purpose of this research work, a 95% level of confidence was used which correspond to a z value of 1.96, implying that there was a 95% confidence in the result obtained for this study. In calculating the proportion of patients who visit pharmacies in Ghana, prevalence was set at 0.5 since it was not possible to get a good estimate for the prevalence. A 0.5 proportion can be used in order to yield maximum sample size in such cases (Daniel. 1999). A precision of seven percent (7%) was used. According to Naing, Winn and Rusli, (2006: p. 10) there is no definite recommendation for appropriate precision; this could be altered due to resource limitations, hence a value of 0.07. The calculation of the sample size was therefore as follows;

$n = (Z)^2 * P (1-P) / (d)^2$

$((1.96)^2 \times .5(.5)) / (.07)^2$

$(3.8416 \times .25) / .0049$

$.9604 / .0049$

$= 196$

Therefore, a sample size of 196 patients or clients from selected pharmacies in the La Nkwantanang district was used. The "mall intercept" method was relied on to administer questionnaires to the 196 respondents over a two-week period.

3.6 SAMPLING PROCEDURES

The study employed a combination of convenience and systematic sampling approaches. This allowed the respondents to become part of the study willingly. It was also adopted because patient population and attributes could not be pre-determined from any sampling frame.

Sampling procedure for patients

About 12 pharmacies situated in the La Nkwantanang district were randomly selected. Three trained data collectors shared the 12 pharmacies amongst themselves with each collecting data from four pharmacies for a period of two weeks. Data collectors were stationed outside the premises of the pharmacies selected. Clients were then intercepted as they left the pharmacy. The first person to be met at the pharmacy was noted as one, the next person to be selected was the 3rd person, as in kth person was 6th, 9th in that order. This was done for all the pharmacies visited.

Sampling procedure for pharmacists

Convenience sampling allowed the selection of 60 pharmacist respondents. Pharmacists were asked about 15 minutes to dinner break after a CPD session to voluntarily participate and fill questionnaires on pharmacist communication. All 60 questionnaires were given out to only participants determined as pharmacists; since there were other people other than pharmacists at the programme. Questionnaires were administered to pharmacists in the seminar auditorium. Seven questionnaires were not filled at all; and six questionnaires were not completed.

3.7 VARIABLES

Dependent variables: Pharmacist Communication was the main construct under investigation. Pharmacist communication was studied from both patients and pharmacists' perspective.

Independents variables: Medication adherence was the independent variable in the study. The study sought to find out if pharmacist communication influenced medication adherence of participants or clients.

Inclusion criteria: Pharmacists who had been licensed in Ghana and were in good standing per the Pharmacy Council's requirement for the year 2017 were included in the study. Also clients who had just visited the selected pharmacies were included in the study.

Exclusion criteria: Participants who fell outside the inclusion criteria were automatically excluded. In addition, if participants were not able to provide consent as appropriate, they were also excluded. Also, clients who were 18 years and below and pregnant women were excluded.

3.8 DATA COLLECTION TECHNIQUES

Using the quantitative design necessitated the use of questionnaire instrument with close and open ended questions. Two different questionnaires were designed, one for pharmacists and one for clients. These questionnaires were designed to foster easy and accurate interpretation of responses from respondents. In order to fulfil the ethical obligations of such research, an oral consent was sought from the organizers of the CPD sessions and owners of the selected pharmacies at the La Nkwantanang district. In addition, a consent form included a summary of the study objective in order for participants to know what the study was about. The pharmacist questionnaires were self-

administered. On the other hand, client questionnaires were individually administered by approaching and talking to every kth visitor.

3.9a INSTRUMENT DEVELOPMENT

The research instrument was designed by operationalizing the research questions and gaining insights from the related studies and theoretical perspective in chapter two specifically the eight-item Morisky medication adherence scale was adopted to help measure patient medication adherence (Morisky et al, 2008). Morisky et al (2008) developed their eight-item morisky medication adherence scale (MMAS-8) in 2008 based on the medication adherence questionnaire (MAQ) (Lam & Fresco, 2015). With sensitivity of 93 percent and 53 percent specificity were reported while validating in very low income minority patients treated for hypertension seeking routine care in a clinical setting (morisky et al, 2008). According to Lam and Fresco (2015), it is probably the most accepted self-report measure for adherence to medication.

Research questions to measure pharmacist communication and barriers to pharmacist communication were adapted from other related studies (Boakye-Boateng, 2010; Fejzic & Barke, 2015; O'neal, et al, 2013; Paluck, 1998; Pharmaceutical Society of Australia, 2010). The final questionnaire was then validated and used to conduct the study.

Three trained data collection assistants administered patient questionnaires to respondents face-to-face. The research purpose and issues of disclosure and ethical consent obligations were all

addressed before questionnaires were administered. It took an average of 15 minutes for questionnaire to be completed.

3.9b DATA ANALYSIS TECHNIQUES

According to Sullivan (2006) during data analysis researchers utilize a number of statistical tools ranging from percentage to standardized statistical tests. The reason for analyzing data is to unlock the critical and important information hidden in the raw data. Pre-coded data were entered into excel, cleaned and subsequently migrated into Stata (version14.1) software for statistical analysis. Both patients and pharmacists' data were analyzed separately. Pharmacist's data were analyzed to answer research questions one and three (What is the nature of pharmacist's communication in pharmacies in Ghana? What barriers exist in effective pharmacist communication in pharmacies in Ghana?). In addition, patient's data were analyzed to answer research questions two & three (What are the factors that influence pharmacist communication with clients in pharmacies in the La Nkwantanang district of Ghana? What is the relationship between pharmacist communication and patient medication adherence?)

Data analysis for patients

Frequency distribution for patients were done to compute proportions on adherence, gender, age categories, educational level, pharmacy visits in last six months, and type of pharmacy visited. Tests of significance were done on pharmacy communication factors in relation to adherence using Chi Square, with statistical significance set at p-values ≤ 0.05. This was done by running a bivariate

analysis between adherence and all the pharmacy communication variables (pharmacist used understandable words, pharmacist maintains eye contact, pharmacist smiles, pharmacist explains how to take medication, pharmacist encourages questions, the pharmacist listened to everything I have to say, pharmacist made it feel like you were wasting his time, I mind how my pharmacist communicates, pharmacist tells everything truthfully, frank and upfront).

Data analyses for pharmacists

Pharmacist data were also cleaned and migrated to Stata (version14.1) software for statistical analysis. Frequency distribution was done to compute proportions on gender, age categories, duration of work as pharmacist, duration of work at current pharmacy, and hours of work per week. Mean scores with their respective standard deviations were reported. Histogram distributions of communication scores were reported. T-test to demonstrate significant differences in mean communication scores (if any) by gender was done. Analysis of variance was also done to show significant differences in communication scores by other groups such as age categories, duration of work as pharmacist, duration of work at current pharmacy, and hours of work per week.

3.9c ETHICAL CONSIDERATION

Resnik (2011) explains that acceptable and unacceptable conditions that underscore any research study are regarded as ethical considerations. Ethics are a vital component of any research study. With this in mind, permission was sought from participants before they were engaged in the study. In addition, permission was also sought from the organizers of continuous professional

development (CPD) sessions where pharmacist responses were gathered for the study. A letter requesting for information on the La Nkwantanang municipality was sent in order to access the background information needed for the determining and describing the suitability of the study site.

3.8d SUMMARY

The La Nkwantanang-Madina municipality was chosen for this study due to the diversity of people, cultures and religious affiliations that fairly mimic that of the characteristics of the national population. Samples consisted of the people in the La Nkwantanang-Madina municipality who visited community pharmacies and pharmacists who attended CPD sessions. The sample size was 60 pharmacists and 196 patients or clients. The sampling procedure made use of convenience and systematic sampling approaches. The instrument used for data collection was developed from the research questions as well as adaptations from some related studies. Data was analysed using the Stata (version 14.1) software. The study was done in an ethical way. The next chapter presents the findings of the study.

CHAPTER FOUR

FINDINGS OF STUDY

4.0 INTRODUCTION

This chapter presents the results of the study. The main aim of the study was to investigate the presence and nature of pharmacist-patient communication and how it affects medication adherence. The findings are presented in accordance with the ordering of questions that were posed to adduce data that address the research objectives. Two sets of questionnaires were administered for data collection. This was made up of 196 client questionnaires and 60 pharmacist questionnaires. Out of these, 193 client questionnaires were successfully retrieved and 47 of pharmacist questionnaires retrieved. The process of data cleaning and validation further excluded three items from the client questionnaires and 13 questionnaires from the pharmacist questionnaires because they were incomplete and not properly entered. This report is, therefore, based on data of the remaining 193 client questionnaires and 47 pharmacist questionnaires. Analyses of patient data would be presented first, then that of the pharmacists follow.

4.1. ANALYSES OF PATIENT DATA

This section presents the analyses of patient's data, which comprises of socio-demographic characteristics of pharmacy clients, adherence level of pharmacy clients, association between pharmacy client socio-demographic characteristics and adherence, pharmacist communication relationship with adherence and reasons for clients asking questions at the pharmacy.

4.1.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF CLIENT RESPONDENTS

A total of 196 questionnaires were distributed out of which 193 were retrieved successfully. This report is based on the 193 questionnaires analysed. The details on the socio-demographic characteristics of respondents are as shown in Table 4.1. Majority of pharmacy clients at the La Nkwantanang district were males, 57.0 percent (110 out of 193 questionnaires). Most of the clients were aged 18-25, representing 51.8 percent (100 out of 193 questionnaires). Results from frequencies of the educational level indicate that 49.2 percent (95 out of 193 questionnaires) of pharmacy clients were university graduates. As much as 92.8 percent (179 out of 193 questionnaires) had visited the pharmacy in the last six months. Community pharmacies were the most visited pharmacies by clients with a frequency of 58.6 percent (105 out of 193 questionnaires). Also, the major percentage of clients who had no preference for either male or female pharmacists was 51.8 percent (100 out of 193 questionnaires). However, those who preferred female pharmacists (24.9%) were more than those who preferred male pharmacists (23.3%).

Table 4.1 **Socio-demographic Characteristics of Pharmacy clients (N = 193)**

Variables	Frequency	Percent (%)
Gender		
male	110	57.0
female	83	43.0
Age Categories		
18-25yrs	100	51.8
26-32yrs	43	22.3
33-40yrs	25	12.9
41-48yrs	4	2.1
49-56yrs	9	4.7
57-64yrs	4	2.1
65+yrs	8	4.1
Educational level		
no formal education	2	1.1
primary	4	2.1
junior high graduate	19	9.8
senior high graduate	49	25.4
university graduate	95	49.2
others	24	12.4
Pharmacy visits in last six months		
Yes	179	92.8
No	14	7.2
Type of pharmacy visited		
Community pharmacy	105	58.6
hospital pharmacy	17	9.5
Both community and hospital pharmacy	55	30.8
others	2	1.1
Preferred Pharmacist		
Male pharmacist	45	23.3
Female Pharmacist	48	24.9
No preference	100	51.8

4.1.2 ADHERENCE LEVEL OF PHARMACY CLIENTS

Findings from Table 4.2 indicate that majority of respondents sometimes forgot to take their medication, accounting for 62.7 percent (121 out of 193 questionnaires). Also, 104 respondents (53.9%) did not forget to take their medication over the past two weeks. In addition, the proportion of clients who had never cut back or stopped taking their medication without telling their doctor because they felt worse taking it was 51.8 percent (100 out of 193 questionnaires). Thirty-six percent of respondents (70 out of 193 questionnaires) did not forget to take their medications along when leaving home or travelling. Majority (88%) of respondent took their medication the previous day. Sixty-eight respondents did not stop taking their medications when their symptoms were under control (35.2%). The proportion of clients who did not feel hassled when sticking to their treatment plans was 25.4 percent (49 out of 193 questionnaires) and respondents who never/rarely forgot to take all their medication were 25.4 percent (49 out of 193 questionnaires).

Table 4.2 **Adherence to (health concern) medication (N = 193)**

Morisky Questions	Response	Score	n (%)
Do you sometimes forget to take your medicine?	Yes	0	121(62.7)
	No	1	72(37.3)
Over the past two weeks, were there any days when you did not take your medicine?	Yes	0	89(46.1)
	No	1	104(53.9)
Have you ever cut back or stopped taking your medication without telling your doctor because you felt worse when you took it?	Yes	0	93(48.2)
	No	1	100(51.8)
When you travel or leave home, do you sometimes forget to bring along your medications?	Yes	0	123(63.7)
	No	1	70(36.3)
Did you take your medicine yesterday?	Yes	1	170(88.1)
	No	0	23(11.9)
When you feel like your symptoms are under control, do you sometimes stop taking your medicine?	Yes	0	125(64.8)
	No	1	68(35.2)
Do you ever feel hassled about sticking to your treatment plan?	Yes	0	144(74.6)
	No	1	49(25.4)
How often do you have difficulty remembering to take all your medication?	Never/rarely	1	49(25.4)
	Once in a while	0	63(32.6)
	Sometimes	0	53(27.5)
	Usually	0	20(10.3)
	All the time	0	8(4.2)

Out of the 193 client respondents, only 21.2 percent (41 out of 193 questionnaires) of them had Morisky Adherence Score of six and above, indicating their adherence to medication according to the eight item Morisky Medication Adherence Scale (MMAS-8), (p=21.2%, 95% CI =15.7% - 27.7%). Below is a pie chart of the distribution of adherence amongst pharmacy clients.

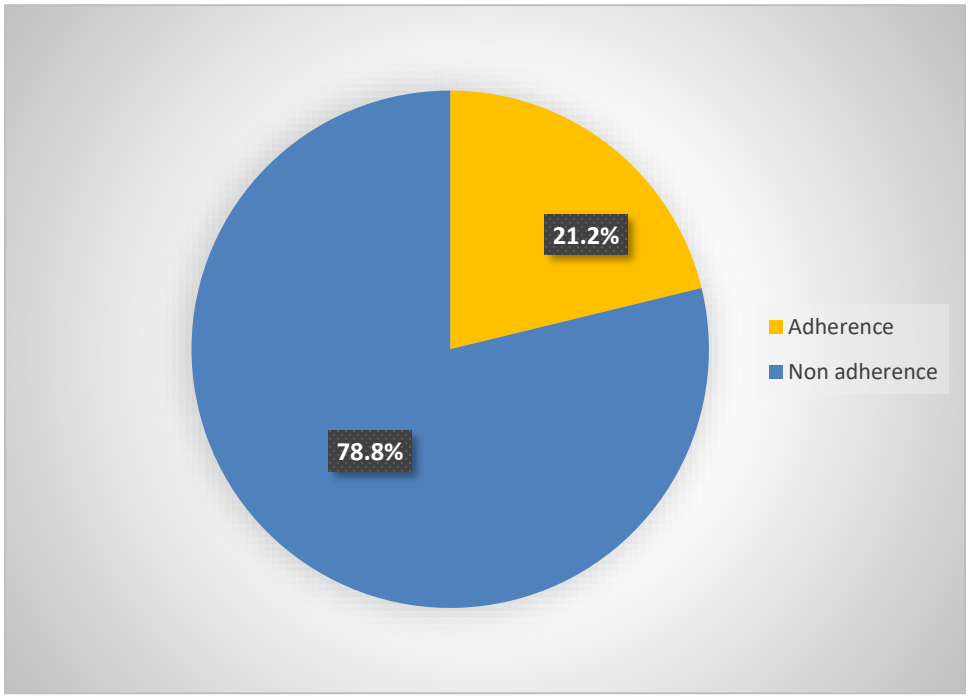

Figure 4.6 Proportion of Adherence amongst Client Respondents

4.1.3 ASSOCIATION BETWEEN PHARMACY CLIENT SOCIO-DEMOGRAPHIC CHARACTERISTICS AND ADHERENCE

To find out the possibility of a link or relationship between the socio-demographic attributes of pharmacy clients and inclination towards medication adherence, a cross tabulation analysis was performed between these variables. The results (Table 4.3) show that most socio-demographic characteristics of pharmacy clients did not have significant associations with medication adherence. The gender of clients, educational level and their preference for a male or female pharmacist did not influence their level of adherence. There was no significant association with adherence. However, only age of clients showed significant association with medication adherence **(p=0.01)** (Table 4.3).

Table 4.3 **Association between Pharmacy Client Socio-demographic characteristics and Adherence**

Variables	**Adherence to Medication**		X^2
	Adherence (n = 41)	**Non adherence (n = 152)**	**p-value**
Gender			0.9
male	23(20.9)	87(79.1)	
female	18(21.7)	65(78.3)	
Age Categories			**+0.01***
18-25yrs	22(22.0)	78(78.0)	
26-32yrs	6(13.9)	37(86.1)	
33-40yrs	2(8.0)	23(92.0)	
41-48yrs	1(25.0)	3(75.0)	
49-56yrs	3(33.3)	6(66.7)	
57-64yrs	3(75.0)	1(25.0)	
65+yrs	4(50.0)	4(50.0)	
Educational level			0.07
no formal education	1(50.0)	1(50.0)	
primary	3(75.0)	1(25.0)	
junior high graduate	2(10.5)	17(89.5)	
senior high graduate	9(18.4)	40(81.6)	
university graduate	19(20.0)	76(80.0)	
others	7(29.2)	17(70.8)	
Pharmacy visits in last six months			+0.3
yes	40(22.4)	139(77.7)	
no	1(7.1)	13(92.9)	
Type of pharmacy visited			+0.9
community pharmacy	26(24.8)	79(75.2)	
hospital pharmacy	3(17.7)	14(82.3)	
both community and hospital pharmacy	11(20.0)	44(80.0)	
others	0(0.0)	2(100.0)	
Preferred Pharmacist			0.1
male pharmacist	5(11.1)	40(88.9)	
female pharmacist	10(20.8)	38(79.2)	
no preference	26(26.0)	74(74.0)	

+ (Fisher's exact), * (Statistically significant p≤ 0.05)

4.1.4. PHARMACIST COMMUNICATION RELATIONSHIP WITH ADHERENCE

Tables 4.4a and 4.4b below indicate the results of the bivariate analysis (Chi Square) of variables of pharmacist communication and patient medication adherence. The analyses were done by cross-tabulating each of nine specific communication experiences of respondents on a five-point Likert scale. Most of the pharmacist communication factors did not have significant associations with adherence to medication. However, out of those who strongly agreed that the pharmacist listened to everything they had to say, only 32.1 percent were adherent, ($p = 0.04$).

Table 4.4a **Pharmacist communication associated with adherence to medication**

Variables	**Adherence to Medication**		**X^2**
	Adherence (n = 41)	**Non adherence (n = 152)**	**p-value**
The Pharmacist Listened to everything I have to say			**+0.04***
strongly disagree	4(28.6)	10(71.4)	
disagree	2(33.3)	4(66.7)	
neutral	2(8.3)	22(91.7)	
agree	15(16.1)	78(83.9)	
strongly agree	18(32.1)	38(67.9)	
Pharmacist made it feel like you were wasting his time			+0.1
very much	2(20.0)	8(80.0)	
a fair amount	0(0.0)	14(100.0)	
not too much	4(14.3)	24(85.7)	
not at all	35(24.8)	106(75.2)	
I mind how my pharmacist communicate			+0.6
very much	30(23.1)	100(76.9)	
a fair amount	7(17.9)	32(82.1)	
not too much	3(14.3)	18(85.7)	
not at all	1(33.3)	2(66.7)	
Pharmacist tells everything truthfully, frank and upfront			+0.2
very well	17(26.2)	48(73.8)	
quite well	8(21.6)	29(78.4)	
well	11(14.3)	66(85.7)	
not well	5(35.7)	9(64.3)	

+ (Fisher's exact), * (Statistically significant p≤ 0.05)

Table 4.4b **Pharmacist communication associated with adherence to medication**

Variables	**Adherence to Medication**		**X^2**
	Adherence (n = 21)	**Non adherence (n = 172)**	**p-value**
Pharmacist encourages questions			0.2
very well	16(28.1)	41(71.9)	
well	11(16.9)	54(83.1)	
quite well	6(13.6)	38(86.4)	
not well	8(29.6)	19(70.4)	
Pharmacist explains how to take medication			+0.5
very well	29(24.6)	89(75.4)	
well	6(13.6)	38(86.4)	
quite well	4(17.4)	19(82.6)	
not well	2(25.0)	6(75.0)	
Pharmacist smiles			+0.2
very much	24(28.6)	60(71.4)	
a fair amount	11(15.3)	61(84.7)	
not too much	4(14.3)	24(85.7)	
not at all	2(22.2)	7(77.8)	
Pharmacist maintains eye contact			+0.7
very much	20(25.0)	60(75.0)	
a fair amount	11(18.0)	50(82.0)	
not too much	7(17.9)	32(82.1)	
not at all	3(23.1)	10(76.9)	
Pharmacist used understandable words			+0.07
very well	22(30.6)	50(69.4)	
well	10(13.0)	67(87.0)	
quite well	7(20.6)	27(79.4)	
not well	2(20.0)	8(80.0)	

+ (Fisher's exact), * (Statistically significant p≤ 0.05)

4.1.5. REASONS FOR CLIENTS ASKING QUESTIONS AT THE PHARMACY

Pharmacy clients had several reasons why they felt the need to ask questions at the pharmacy. Knowing exactly what the medicine would do for the client was one of the reasons stated. One client stated that "I needed to know whether the medicine is used for the intended purpose". Another client also stated "I wanted to know that medicine and what it can help solve" as her reason for asking questions at the pharmacy.

Some patients usually resort to herbal medicine before seeking medical attention from the hospital. They are sometimes confronted with the situation of having to take prescribed medications dispensed at the pharmacy alongside their herbal medicine. This gives reason for some pharmacy clients to ask questions. One respondent stated, "I wanted to know if I could take the medicine together with the herbal medicine I was already taking" as a reason for asking questions at the pharmacy.

Knowing about the expiry date of the drug gave cause for some clients to ask questions at the pharmacy as stated by one respondent: "I just wanted to be sure of the expiry date because I didn't know where to find it on the medicine container".

Patient's curiosity about differences in opinion of pharmacists and doctors gave reason for some clients to ask questions. A respondent stated that "the doctor gave an indication of what to go and buy but I wanted to know if the Pharmacist had a different opinion".

Knowledge on side effects of medicines was given as a reason why some clients asked questions at the pharmacy. A respondent stated that "I wanted to know the side effect of the medicine". Perceived friendliness of the pharmacist on duty was stated as a reason why some clients asked

questions at the pharmacy. One respondent stated that "I would usually not ask questions at the pharmacy, but if pharmacist was extremely friendly and handsome then I would ask a question".

4.2. ANALYSES OF PHARMACIST DATA

This section presents the analyses of pharmacist's data, which comprises of socio-demographic characteristics of pharmacists, nature of pharmacist communication, and test of differences in communication scores amongst pharmacists by groups and barriers to pharmacist communication.

4.2.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PHARMACIST

The results of the pharmacist data analysis on socio-demographic characteristics are presented in Table 4.7. This information will help find out any relationship between pharmacist's socio-demographic characteristics and tendencies for pharmacist-client communication, and consequently medication adherence. Results as indicated in Table 4.7 below show that majority (63.8%) of pharmacists interviewed were females, (30 out of 47 questionnaires). Seventy-six percent (36 out of 47 questionnaires) of pharmacist respondents were less than 33 years old. The majority (53.2%; 25 out of 47 questionnaires) of the pharmacists had worked one to five years as pharmacy staff. Pharmacists who worked 40-59 hours per week were in the majority (51.1 %; 24 out of 47 questionnaires).

Table 4.7 Socio-demographic Characteristics of Pharmacist (n=47)

Variable	Frequency	Percent
Gender		
Male	17	36.2
Female	30	63.8
Age Categories		
18-25yrs	18	38.3
26-32yrs	18	38.3
33-40	7	14.9
41-48	3	6.4
49-56yrs	1	2.1
Duration of work as a Pharmacy staff		
<1 year	10	21.3
1-5 years	25	53.2
6-10 years	5	10.6
11-15 years	4	8.5
16-20 years	1	2.1
>20 years	2	4.2
Duration of work at current Pharmacy		
<1 year	19	40.4
1-5 years	21	44.7
6-10 years	4	8.5
11-15 years	2	4.3
16-20 years	1	2.1
Number of hours of work at Pharmacy per week		
<20 hours	6	12.8
20-39 hours	13	27.7
40-59 hours	24	51.1
60-79 hours	3	6.4
>99 hours	1	2.0

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4.2.2. NATURE OF PHARMACIST COMMUNICATION

The data that follows presents findings on the nature of pharmacist communication in terms of skills employed and use of verbal and nonverbal cues.

4.2.2a. PHARMACY COMMUNICATION PRACTICE SKILLS

The study sought to find out communication practice skills amongst pharmacists. Communication practice skills, as used in this study, refer to most of the actions taken by pharmacists as they discharge their duties of interacting with patients. Here, questions about how pharmacists go about their interaction with patients were assessed. Pharmacist respondents were asked questions such as, regularly asking patients for verbal or written feedback on ways to improve communication (counselling, patient brochures) amongst others questions. Distribution of communication practice scores among pharmacists indicated in Figure 4.8 below, shows that from a score rating of 10 to 50 (10 being the lowest communication practice score and 50, the highest, most of the pharmacists had scores above the mean practice score (40.5 ± 4.80). The distribution was largely negatively skewed with the modal group (48.94%), scoring between 37 and 43. The highest communication practice score was 48 and the lowest, 17. This implied that most pharmacists self-assessed as having good communication practice skills, and only a few reported having poor communication practice skills. The result is indicated below.

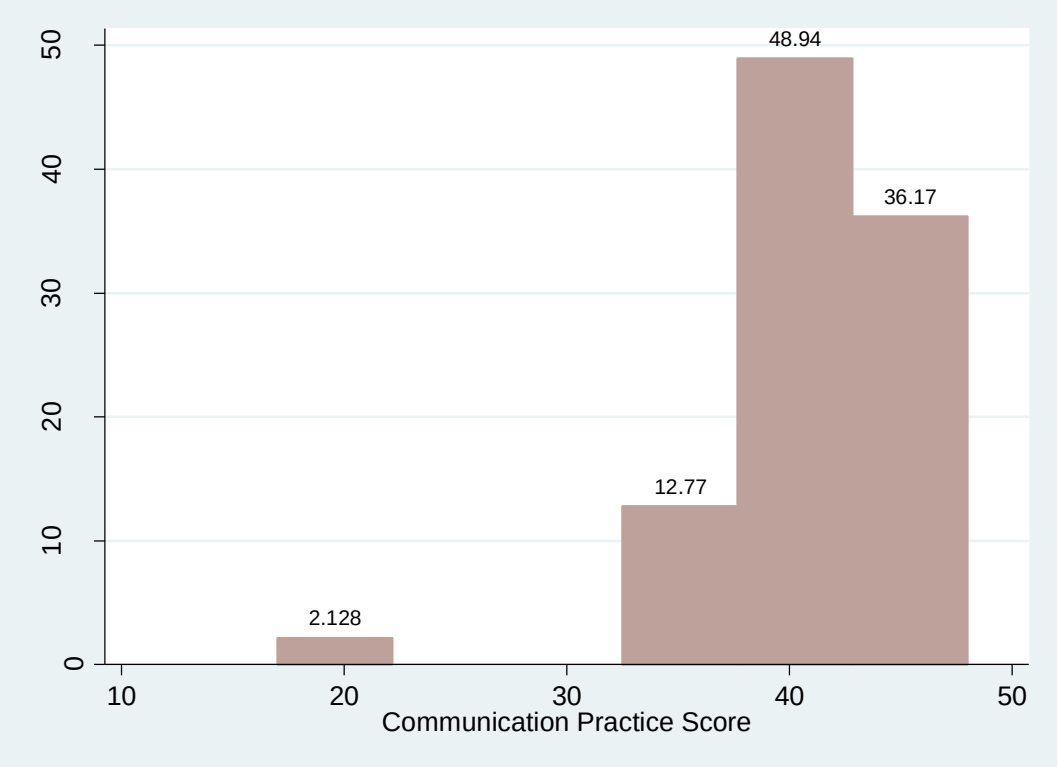

Figure 4.8 Histogram of Communication Practice Scores

4.2.2b VERBAL COMMUNICATION OF PHARMACIST

In order to measure and assess verbal communication practices and competencies of pharmacists, respondents were asked several questions that sought to explore the construct of verbal communication. Questions such as: pharmacist using an easy way to explain medical jargon, pharmacists checking if patients understood medication information by making them repeat back key points, the pharmacist providing a private space to discuss confidential information, amongst

other questions were asked. All these questions sought to help draw out the construct of verbal communication as reported by pharmacists.

Distribution of verbal communication scores among pharmacists indicated in Figure 4.9a, below shows that, from a score rating of eight to 40 (where eight stands for the lowest and 40 stands for the highest) pharmacists had scores around the mean score of 29.5 ± 3.80. The distribution appeared to be symmetrical with the modal group (39.3%) scoring between 29 and 32. The highest verbal communication score was 38 and the lowest being 21, implying that on average most pharmacists reported that they had good verbal communication skills.

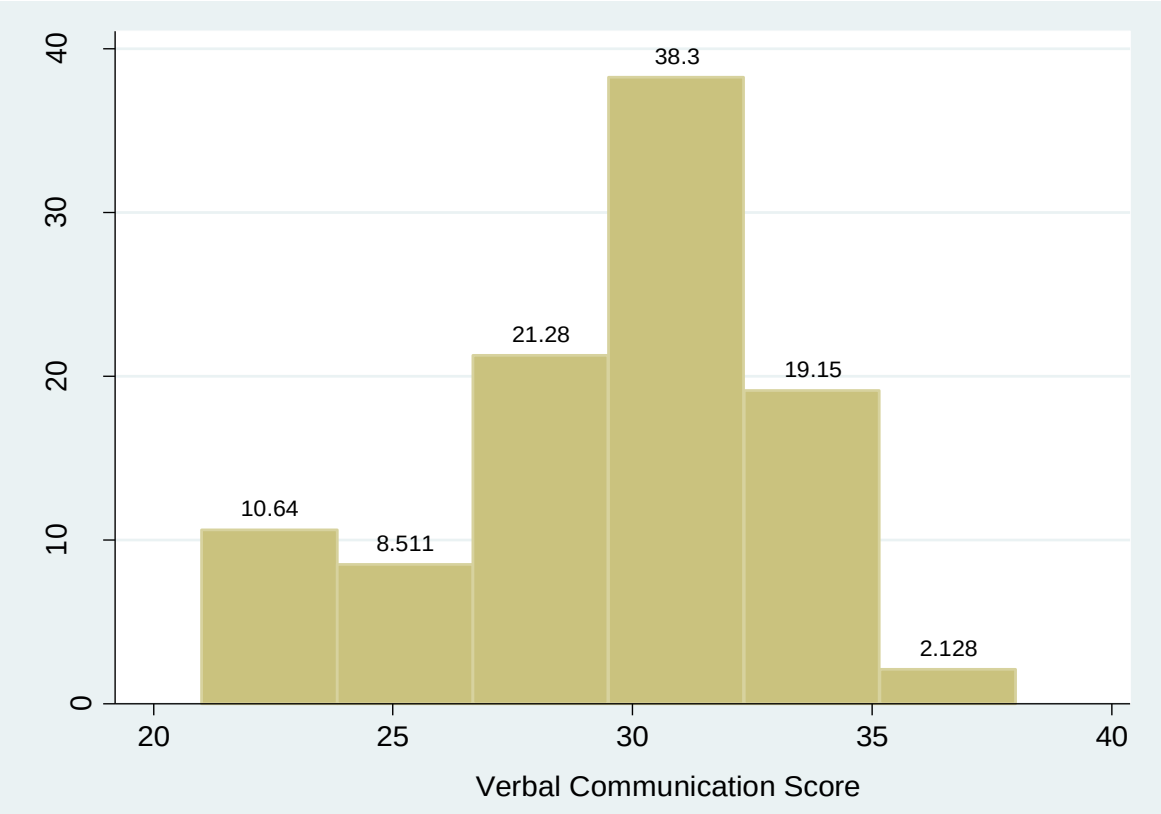

Figure 4.9a Histogram of verbal communication scores

4.2.2c. NON-VERBAL COMMUNICATION OF PHARMACIST

Opinions of pharmacists on some indicators that explored the construct of non-verbal communication were sought. This section assessed communication between pharmacists and patients using print materials and other nonverbal cues. Questions such as: pharmacists using printed materials to inform patients about their services, the use of gestures when talking to patients, looking into patient's eyes when talking to them, smiling as patients approach them and many other questions that further explored the construct of nonverbal communication were asked.

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Below is a histogram showing the distribution (Figure 4.9b). Figure 4.9b below shows that, from a score rating of 21 to 105, the mean non-verbal communication score was 75.8±10.4. The distribution appeared to be symmetrical with the modal group (31.9%) scoring between 71 and 79. The highest non-verbal communication score was 96 and the lowest, 47. These results show that there were some pharmacists who reported to have exhibited the two extremes of non-verbal communication competencies: very good or very poor. However, the majority of pharmacists assessed to have exhibited average nonverbal communication skills.

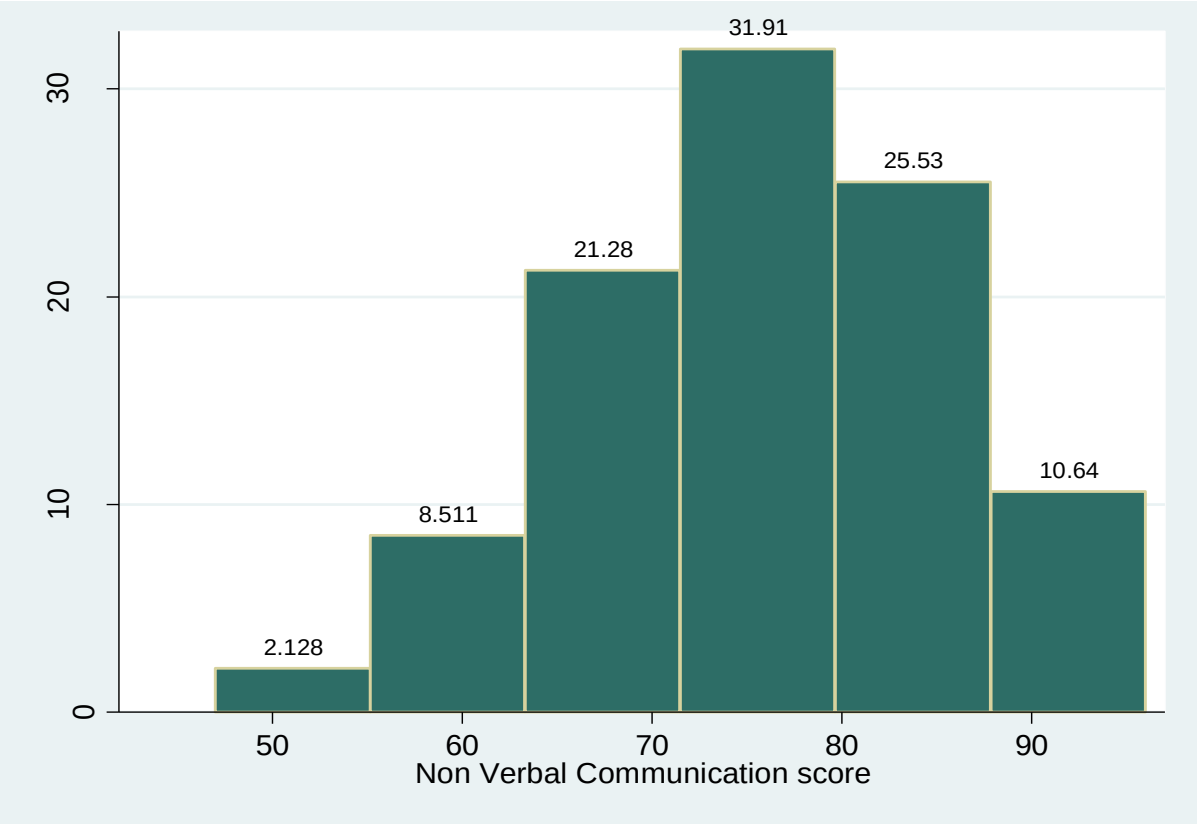


Figure 4.9b Histogram of non-verbal communication scores

4.2.3. TEST OF DIFFERENCES IN COMMUNICATION SCORES AMONGST PHARMACIST BY GROUPS

4.2.3a. T-TEST COMMUNICATION SCORES BY GENDER

This study was also interested in whether gender of pharmacist influenced the way they communicated. Results from T-test of each of the three communication scores (practice, verbal,

non-verbal) disaggregated by gender revealed that there were no significant differences in the mean scores of all three communication scores. Male pharmacists and female pharmacists had p-values of 0.58, 0.46, and 0.38 respectively. In a nutshell, the gender of pharmacists does not appear to have influenced pharmacist communication practice.

4.2.3b. COMMUNICATION SCORES BY AGE, YEARS OF PRACTICE AND TIME SPENT AT WORK

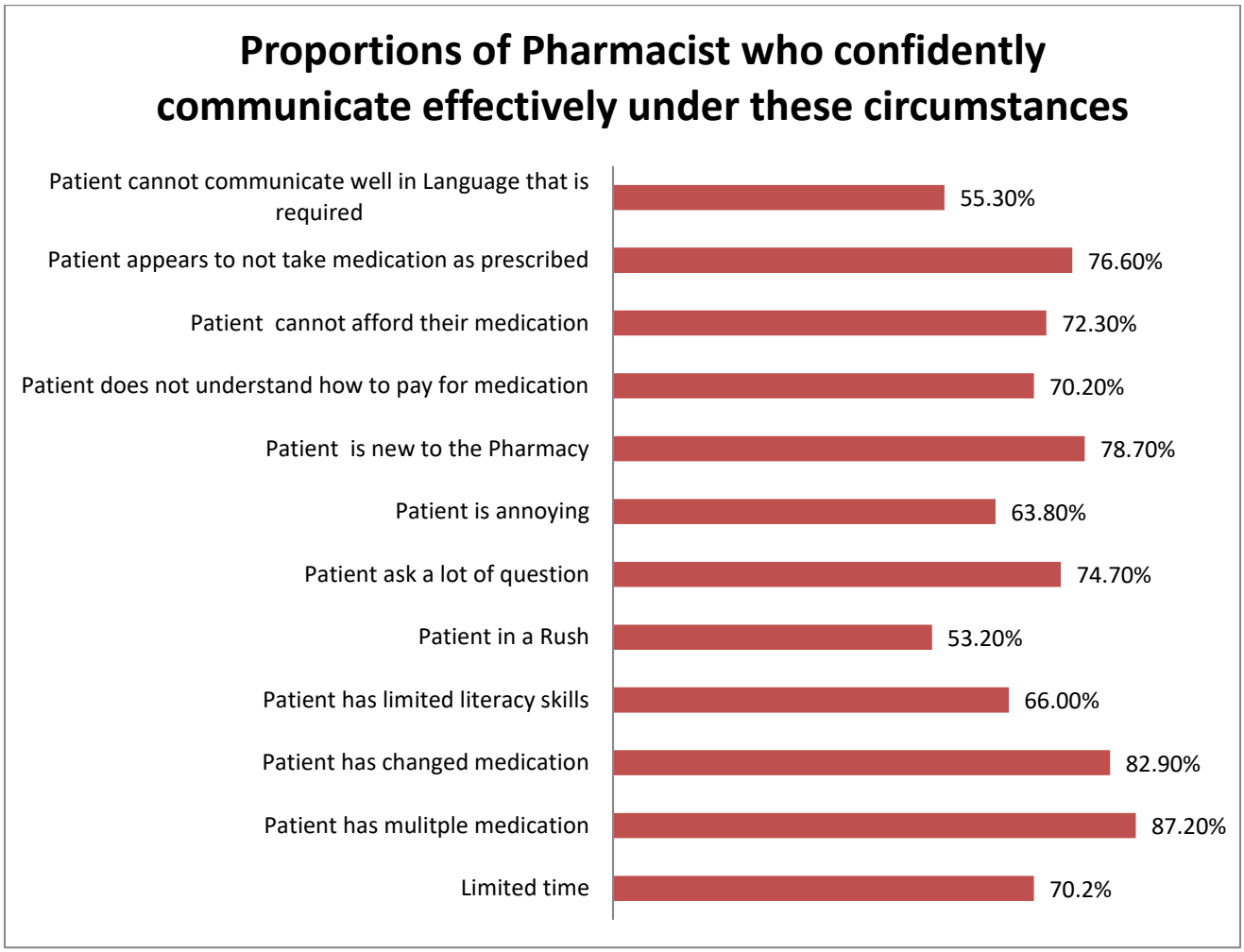
Results from ANOVA of each of the three communication scores (practice, verbal, non-verbal) by age categories revealed that there were no significant differences when all three communication scores were tested against the various age categories with p-values (Prob.>F) of 0.42, 0.21, 0.41 respectively. Also testing each of the three communication scores (practice, verbal, non-verbal) by "duration of work as pharmacist" revealed that there were no significant differences between duration of work and all three communication scores with p-values (Prob.>F) of 0.82, 0.25, 0.66 respectively. In addition, each of the three communication scores (practice, verbal, non-verbal) by "duration of work at current facility" revealed that there were no significant differences between the various communication scores and duration of work at current facility (p-values (Prob.>F) of 0.67, 0.63, 0.67 respectively).

Results from ANOVA of each of the three communication scores (practice, verbal, non-verbal) by "hours of work per week" revealed that, of all three communication scores did not have significant difference on the hours per week the pharmacist spent at work (p-values (Prob.>F) of 0.81, 0.37, 0.15 respectively). The results above show therefore, that age, duration of work as pharmacist, duration of work at current facility and hours of work per week of pharmacist did not seem to significantly influence pharmacist communication.

4.2.4. BARRIERS TO COMMUNICATION

Barriers to communication were assessed when pharmacists were made to answers questions on some challenging circumstances in which they were able to discharge their duty of effectively communicating with patients using plain language principles. Challenging situations here included: when patient appears to not take medication as prescribed, when there is limited time within which pharmacist and patient can communicate, when patient is annoying, when patient is in a rush amongst many other questions. Findings from this analysis show that the higher the percentage of pharmacists' response towards a particular question, the higher their ability to effectively communicate using plain language principles. Though they reported to have not been able to handle these challenging issues with perfection, the results demonstrated that the proportion of pharmacists who could confidently communicate were reduced when patients were in a rush (53.20%), when pharmacists had to use a language the patient would understand (55.3%), when patients were annoying (63.8%) and when patients had limited literacy skills (66%). However larger proportions of pharmacists reported to have been able to confidently communicate in other challenging circumstances such as when patients were new to their pharmacies (78.7%), if patients had changed their medication (82.9%) and when patients had multiple medications (87.20%).

Also some pharmacists reported to have fairly showed confidence in communicating effectively when it came to patients appearing not to take medications as prescribed (76.6%), if patients could not afford medication (72.3%), patients did not understand how to pay for medication (70.2%), patient asked a lot of questions (74.70%) and when was limited time for interaction between patients and pharmacists (70.2%). As discussed earlier, pharmacists reported to have showed good communication practice; however, some assessed to have not communicated confidently in challenging situations.



** Multiple Responses**

Figure 4.5 Proportions of pharmacist who can confidently communicate using plain language under these circumstances.

4.3 SUMMARY

This chapter started with an introduction to the results of the study. Two separate data sets were analysed in a quest to achieve the objectives of the study. For the patient data, it was realized that most of the clients that visited pharmacies at the La Nkwantanang district had no preference for the gender of the pharmacist. However, those who had a preference for female pharmacists were 24.9 percent as compared to those who preferred male pharmacist who were 23.3 percent. Also there was no significant association between patient demographics and adherence; except for the age of clients that showed a significant association with medication adherence. In addition, pharmacists reported to have exhibited commendable communication skills. Age, gender, duration of work, number of hours' pharmacists worked were not found to influence pharmacist communication. Pharmacists were reported not to have been able to communicate confidently in certain circumstances, hence showing barriers like language and health literacy impeding pharmacist communication.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.0 INTRODUCTION

This study was conducted to investigate pharmacist communication and patient medication adherence. In this chapter, the key findings are summarized and discussed in relation to the objectives of the study, the theoretical perspective and related studies reviewed in earlier chapters. The limitations of the study are also acknowledged and relevant recommendations made for further studies as well as for policy and practice.

5.1 DISCUSSION

The study entailed the administration of questionnaires to two sets of populations within the pharmacist-patient communication chain, to find out the possible role of communication in medication adherence. These were, pharmacists, to access the nature of their communicative engagement with clients who patronized their facilities and clients of the facilities and services of pharmacists. The study also sought to identify any barriers there might be in the way of communication from the perspectives of pharmacists and patients. A total of 196 questionnaires were administered to patients and 60 questionnaires to pharmacists for this study. However, the analysis was based on 193 questionnaires from patients and 47 questionnaires from pharmacists; producing of a 98.5 percent response rate for patients and a 78.3 percent response rate for pharmacists.

This study was set out to achieve three objectives: 1) To investigate the nature of communication between pharmacists and patients in pharmacies in Accra; 2) to examine the relationship between pharmacist communication and patient medication adherence in the La Nkwantanang Madina District; and 3) to identify some of the barriers to effective pharmacist communication.

NATURE OF PHARMACIST COMMUNICATION

The first objective of the study was to find out the nature of pharmacist communication. Three constructs were measured: pharmacy communication practice skill, verbal communication, and nonverbal communication. The distribution of the communication practice score amongst pharmacists can be found in Chapter 4, Figure 4.8. Most of the pharmacists self-assessed as having good communication practice skills and only few reported having poor communication practice skills. A similar study conducted by Aina and Ogunbiyi, (2012) concluded that there were good communication practice skills amongst pharmacy students. Aina and Ogunbiyi's (2012) study supports the idea that pharmacy communication practice skills are formed right from school during the training of pharmacists, hence supporting this current study of pharmacists reporting to have good communication practice skills. This result supports the ideal that contemporary pharmacists should be good communicators (WHO, 1997).

Also, the distribution of verbal communication among pharmacists (Figure 4.9a) appeared symmetrical, implying that there were some pharmacists who reported to have practiced very good verbal communication and others that reported to have practiced very poor verbal communication. Majority of pharmacists self-reported as when it came to the practice of verbal communication in their various pharmacies. Similarly, the evidence of a symmetrical distribution of nonverbal communication of pharmacists (Figure 4.9b) implies that there were some pharmacists who

reported to have exhibited the two extremes of nonverbal communication competences; but the majority of pharmacists were self-assessed to average nonverbal communication skills. This reflects the conclusion by Babinec et al (2010) that pharmacy practice researchers implicitly acknowledge that verbal communication takes place when it comes to pharmacist-patient interaction. In addition, one reason why some pharmacists might have reported to have exhibited very poor verbal communication and average nonverbal communication skill could partly be due to the lack of excellent communication skills imparted by some pharmacy institutions during their training as asserted by Arnold (2003: pg. 189) in the introduction.

When it came to the three communication scores (communication practice skills, verbal, and nonverbal communication) by gender of pharmacist, there was no significant differences between the mean scores of all three communication scores; implying that the gender of the pharmacist did not influence their ability to communicate with their patients or clients. Furthermore, results from ANOVA of each of the communication scores by the duration of work as pharmacist did not reveal any significant association. This means that pharmacist communication does not necessarily improve with the number of years a pharmacist practices as pharmacist. There was also no significant association when it came to the communication scores with the duration of work at current facility. The duration of work at current facility did not also influence the nature of pharmacist communication.

Also the hours that pharmacists worked per week did not have any significant impact on their communication. As Chan and Wuliji (2006) noted, working long hours did not guarantee an improvement in pharmacist communication; rather, long hours seemed to result in less time being

spent counselling patients, hence becoming a barrier to pharmacist communication. In addition, patient-pharmacist encounters differed from one patient to another depending on various factors, the age of the patient, educational background and some barriers to effective communication. In a nutshell, the gender, duration of work as pharmacist, duration of work at current facility and hours of work per week did not influence pharmacist communication.

RELATIONSHIP BETWEEN PHARMACIST COMMUNICATION AND PATIENT MEDICATION ADHERENCE

The morisky medication adherence scale (Morisky *et al*, 1986) was adopted to assess the level of adherence of clients. Out of the 193 respondents, only 21.2 percent of patients had a high morisky score of six and above indicating adherence to medication. This result agrees with a report by the World health organization (WHO) which stated that ‘‘adherence to long-term therapy for chronic illnesses in developed countries averaged 50% and in developing countries, the rates were even lower’’ (Sabate, 2003, p. 12). It is undeniable that many patients experience difficulty in following treatment recommendations (Sabate, 2003, p. 12). Mainstreaming and rationalizing communication into the pharmacist-patient encounter should improve these outcomes.

Pharmacist communication did not have a significant association with patient’s medication adherence (Table 4.4a & 4.4b). However, out of those who strongly agreed that the pharmacist listened to everything they had to say, only 32.1 percent were adherent. Most of them expressed very strong opinions on how they were interested in, or affected by, the way pharmacists communicated to them. Also, most clients agreed that pharmacists encouraged them to ask

questions and they were able to explain to them how they should take their medication. Also many of the clients mentioned forgetfulness as being one of the major causes of them not adhering to their medications. This supports Adisa, Alutundu and Fakeye's (2009) study that indicated that 49.6% of patients revealed forgetfulness as one of the major non-intentional reasons for non-adherence.

From questions asked on adherence, most of the respondents said that they usually became non-adherent if they got better after taking a few doses of their medication. Stopping medication when one gets better is a serious issue considering the nature of some medications such as antibiotics for which full doses need to be completed. In general, pharmacy practice researchers do not appear to acknowledge the importance of social interaction between pharmacists and patients as relevant to outcomes (Babinec et al, 2010). In other words, the communication perspective in Munro et al's (2007) five-point theory of factors of patient medication adherence was not being consciously acknowledged and practiced. However, clients need to be educated on how important it is to adhere to their medication. Though this study did not find any association between pharmacist communication and patient medication adherence, communication is very vital to medication adherence since medication adherence is multi-faceted. As Brown and Bussell (2011) put it, "poor medication adherence has multifactorial causes that need to be understood before interventions can be designed to improve medication adherence". Pharmacists should rather strive to understand the concept of adherence and how a collaborative approach to communication with clients, in cooperation with other health professionals would affect it.

BARRIERS TO EFFECTIVE PHARMACIST COMMUNICATION

Pharmacists who could confidently communicate were reduced when patients were in a rush (53.2%), when pharmacists had to use a language the patient would understand (55.3%), when patients were annoying (63.8%), and when patients had limited literacy skills (66%). When it came to situations such as patients appearing not to take medication as prescribed, when patients could not afford their medication, when patients did not understand how to pay for their medication in the pharmacy, when patients were new to a pharmacy, when patients asked a lot of questions, when they changed their medication or they had limited time to spend at the pharmacy, most pharmacists were able to handle such situations fairly well, though challenging.

In all, about four barriers to communication were observed from the study. These were language barrier, pharmacist-patient interaction time constraint barrier, attitude barrier, and limited health literacy barrier. Some of these barriers as stated in the literature include time constraint barrier and health literacy barriers and these were found to affect pharmacist's ability to engage in patient education (Ngoh, 2009). Education should promote consciousness of how to identify patients with low literacy skills and deliver approaches to boost understanding and adherence (Ngoh, 2009).

OTHER FINDINGS

Looking at the demographic statistics (Table 4.1) of client responses, majority of the respondents had visited a pharmacy in the past six months and the community pharmacy was the place of choice for most clients, even for those who had been to hospital pharmacies. In Ghana, the national health insurance does not cover or only partially covers some medicines that the clients may need (Ministry of Health, 2012). Most clients resort to getting their medications from community

pharmacies. This makes the pharmacist a uniquely pivotal part of the health delivery chain. Improvements in the counselling and consultation services of the pharmacist with their clients is therefore particularly paramount.

Patient's preference for male or female pharmacist did not show any significant association with medication adherence. More than half (51.8%) of patients had no preference for male or female pharmacists. In a similar study at Al Ain (United Arab Emirates) conducted by Alomar and Mellal (2015), almost half of participants used in their study were neutral towards the gender of pharmacists that they preferred. The findings of this study, therefore, correspond to the findings by Alomar and Mellal, (2015), implying that preference of pharmacist could be similar in different geographical locations around the world. Clients gave reasons why they asked questions whenever they went to the pharmacy. Most of these clients asked questions based on product information, or sought pharmacist opinion on what they were buying or just asked questions to engage the pharmacist either because they liked them or felt they were friendly.

Majority of pharmacists interviewed were females, accounting for 63.8% of pharmacist respondents. This is not surprising considering the fact that there is a higher percentage of female pharmacist in European and some African regions (Chan & Wuliji, 2006).

5.2 CONCLUSIONS

According to the literature reviewed for this study, pharmacist communication has been found to improve patients' medication outcomes. However, this study failed to establish any significant

association between pharmacist communication and patient medication adherence. Nonetheless the subject of pharmacist communication should not be discounted. It may require a mainstreaming of communicative acts in pharmacist-patient relations over time in order to build up the routines that are sufficient enough to produce observable effects on medication adherence. Medication adherence is multi-faceted in nature and pharmacist communication alone cannot be used as an outcome measure. In addition, pharmacists were reported to have exhibited some commendable verbal and nonverbal communication practice skills. The gender of the pharmacist was found not to influence pharmacist communication in any way. Also some barriers to pharmacist communication such as language, time constraint and health literacy barriers were identified.

5.3 LIMITATIONS OF THE STUDY

The study was limited in a number of ways. First, it was limited to patrons of pharmacy services in a community that may well be peculiar in terms of education and other socio-demographic attributes. Clients were chosen based on a recent encounter with their pharmacist. This was done in order to help them remember the encounter. This invariably made the reliance on non-probability sampling procedures inevitable. This study was done with a smaller sample size of pharmacist population than may have been desired; for the combined effects of the reasons stated but also for reasons of time and resource constraints.

5.4 RECOMMENDATIONS

It is recommended that a larger sample size be used for future studies examining alternative research sites. The possibilities of an experimental approach could also be explored and employed. These should improve the relative validity and generalizability of findings. Also the nature of communication and possible gratifications and consequent potentials of communication to contribute to therapy could be explored. In the domain of policy and professional practice, it is recommended that the values of patient-pharmacist communication should be mainstreamed into the curriculum of pharmacy training institutions. Similar interventions could be made for on-going professional development and certifications of practitioners already in the field.

It is important for pharmacists to take notes when interacting with patients since by employing some of these tactics, pharmacists could improve patient involvement and understanding, and consequently improve medication adherence.

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APPENDIX I

PHARMACIST QUESTIONNAIRE

MEASURE OF PHARMACY COMMUNICATION PRACTICE SKILLS

Please check the one response that most accurately describes your agreement with the following statements about pharmacy practice skills today;

1. SD- Strongly Disagree
2. D- Disagree
3. N- Neutral
4. A-Agree
5. SA- Strongly agree

Question	SD	D	N	A	SA
1. I am capable of contributing to the optimal use of medicines.					
2. I have effective spoken communication with;					
a. other pharmacy staff					
b. health professionals					
c. patients and customers					
d. other people(suppliers, representatives, cashiers)					
e. physicians					
3. I regularly ask patients for verbal or written feedback on ways to improve communication (Eg. counselling, patient brochure)					
4. I do not know how to approach people					

5. I am worried about contradicting doctors					

MEASURE OF VERBAL COMMUNICATION

This section assesses the communication between pharmacy staff and patients. Please check the one response that most accurately describes your agreement with the following questions;

1. SD- Strongly Disagree
2. D- Disagree
3. N- Neutral
4. A-Agree
5. SA- Strongly agree

	1	2	3	4	5
Questions	SD	D	N	A	SA
1. I use an easy way to explain medical jargon (Eg. diabetes= high blood sugar) to patients					
2. I check that patients understand the information given to them by asking them to repeat back key points					
3. When talking with patients about their medication, I routinely ensure that patients know their main problem					
4. I have been trained to look for signs that indicate a person may have limited health literacy skills (Eg. I forget my glasses at home)					

5. The pharmacy offers interpreters to patients for whom an alternative language is required than used.					
a. interpreters are formally trained					
6. The leadership of our pharmacy is committed to health literacy principles and clear patient communication					
7. The leadership of our pharmacy is committed to health literacy principles and clear patient communication because…… ……					
8. The pharmacy provides a private space if patients need to discuss confidential information					
9. The type of space used to discuss confidential information is;					
A. a private room					
B. window partition					
C. a section off area					
10. How often do you provide such services in a week (please specify)……..					
MEASURE OF BARRIERS TO COMMUNICATION					

11. I am confident that I can effectively communicate using plain language principles with patients when;					
A. time is limited					
B. the patient has multiple medications					
C. the patient has changes with their medication					
D. the patient has limited literacy skills					
E. the patient is in a rush					
F. the patient asks a lot of questions					
G. the patient is annoying					
H. the patient is new to the pharmacy					
I. the patient does not understand how to pay for their medication					
J. the patient cannot afford their medication					
K. the patient appears to not take their medication as prescribed					
L. The patient cannot communicate well in a language that is required to be used (Eg. English, Twi, Ga)					

MEASURE OF NON VERBAL COMMUNICATION

This section assesses the communication between pharmacy staff and patients using print materials and other nonverbal cues. Please check the one response that most accurately describes your agreement with the following questions;

1. SD- Strongly Disagree
2. D- Disagree
3. N- Neutral
4. A-Agree
5. SA- Strongly agree

Questions	SD	D	N	A	SA
1. The pharmacy uses the following printed materials to inform patients about its services;					
A. pharmacy services brochures					
B. signs					
C. informational posters					
D. Others (describe)…….					
2. The following print materials are designed in an easy to read format for adults with limited health literacy					
A. prescription label					
B. prescription warning label					
C. patient education brochures that the patient takes home (drug information dispensed with prescription)					

D. information posters and signs on pharmacy wall					
3. The following print materials are written in plain language;					
A. prescription label					
A. prescription warning label					
B. patient education brochures that the patient takes home (drug information dispensed with prescription)					
C. information posters and signs on pharmacy wall					
4. The pharmacy uses graphics and illustrators in the following print materials					
A. prescription label					
B. prescription warning label					
C. patient education brochures that the patient takes home (drug information dispensed with prescription)					
D. information posters and signs on pharmacy wall					
5. If I identify a problem with printed materials, I know who to contact in pharmacy for corrective action					
6. I sometimes nod my head in agreement with patient when interacting with them					
7. I smile most of the time when a patient approaches me in the pharmacy					
8. I use gestures when talking to patients					
9. I often shake hands with patients after interacting with them					
10. I often look at patients in the eye when talking to them					

11. I have received training in how to identify, prepare, and/or simplify materials so that they are written in plain language

    1. Strongly Disagree
    2. Disagree
    3. Neutral
    4. Agree
    5. Strongly agree

12. The pharmacy's policies specifically support activities and resources that help make the pharmacy accessible to people with limited health literacy

    1. Strongly Disagree
    2. Disagree
    3. Neutral
    4. Agree
    5. Strongly agree

BACKGROUND INFORMATION

This section would like to ask general questions about yourself to help us to better describe our sample pharmacists

1. Gender

    1. [ ] male
    2. [ ] female

2. Age

1. 18-25 [ ] 2. 26-32 [ ] 3. 33-40 [ ] 4. 41-48[ ] 5. 49-56[ ]

6. 57-64[ ] 7. 65 and above [ ]

3. How long have you worked as a pharmacy staff?

1. Less than 1 year [ ] 2. 1-5 years [ ] 3. 6-10years [ ] 4. 11-15 years [ ] 5. 16-20years [ ] 6. 21-more [ ]

4. How long have you worked in your current pharmacy?

1. Less than 1 year [ ] 2. 1-5 years [ ] 3. 6-10years [ ] 4. 11-15 years [ ] 5. 16-20years [ ] 6. 21-more [ ]

5. How many hours per week do you work in this pharmacy?

1. [ ] less than 20hrs per week
2. [ ] 20-39 per week
3. [ ] 40-59 per week
4. [ ] 60-79 per week
5. [ ] 80-99 per week
6. [ ] 100hrs per week or more

Thank you.

APPENDIX II

CLIENT QUESTIONNAIRE

DEMOGRAPHICS:

1. Gender

1. [ ] Male

2. [ ] Female

2. Age

1. [ ] 18-25 2. [ ] 26-32 3. [ ] 33-40 4. [ ] 41-48 5. [ ] 49-56

6. [ ] 57-64 7. [ ] 65 and Above

3. What is your level of education?

1. [ ] No formal education 2. [ ] Primary education 3. [ ] Junior high school graduate

4. [ ] Senior high school graduate

5. [ ] University graduate 6. [ ] Others (Pls. Specify)……..

4. Have you visited a pharmacy in the past six months?

1. [ ] Yes

2. [ ] No

4a. If yes to question 4 above, which type of pharmacy did you visit?

1. [ ] Community pharmacy 2. [ ] Hospital pharmacy 3. [ ] Both Community and Hospital pharmacies 4. [ ] others (Pls. Specify)……..

5. How would you respond to the following statement?

"The pharmacist listened to everything I had to say''

1. [ ] Strongly disagree
2. [ ] Disagree
3. [ ] Neutral
4. [ ] Agree
5. [ ] Strongly agree

6. Did you have questions about your medicine?

1. [ ] Yes

2. [ ] No

7. Did the pharmacist make you feel like you were wasting his/her time?

1. [ ] Very much

2. [ ] A fair amount

3. [ ] Not too much

4. [ ] Not at all

8. Did the pharmacist treat you with a great deal of respect and dignity?

1. [ ] Great deal

2. [ ] A fair amount

3. [ ] Not too much

4. [ ] None at all

9. If you could choose, would you prefer to be treated by a pharmacist who is male or female?

1. [ ] Prefer male pharmacist

2. [ ] Prefer female pharmacist

3. [ ] No preference

10a. If you prefer to be treated by a male pharmacist, what is your reason?

……

10b. If you prefer to be treated by a female pharmacist, what is your reason?

…….

11. When you visit the pharmacy, do you mind how the pharmacist communicate with you?

1. [ ] Great deal

2. [ ] A fair amount

3. [ ] I don't care

4. [ ] Not sure

12. How will you rate your communication with the pharmacist on the following?

12a. Telling you everything (being truthful, upfront and frank; not keeping that you thought you should know from you

1. [ ] Not well

2. [ ] Quite well

3. [ ] Well

4. [ ] Very well

12b. Using words you can understand when explaining treatment procedures

1. [ ] Not well

2. [ ] Quite well

3. [ ] Well

4. [ ] Very well

12c. Encouraging you to ask questions and answering them clearly; not avoiding your questions or lecturing you

1. [ ] Not well

2. [ ] Quite well

3. [ ] Well

4. [ ] Very well

13. How well did your pharmacist explain how to take your medication?

1. [ ] Not well

3. [ ] Quite well

4. [ ] Well

5. [ ] Very well

14. My pharmacist smiles most of the time as i approach him/her in the pharmacy.

1. [ ] Very much

2. [ ] A fair amount

3. [ ] Not too much

4. [ ] Not at all

15. My pharmacist usually looks at me in the eye as he/she interacts with me in the pharmacy

1. [ ] Very much

2. [ ] A fair amount

3. [ ] Not too much

4. [ ] Not at all

16. How well did your pharmacist explain how to take your medication?

1. [ ] Not well

3. [ ] Quite well

4. [ ] Well

5. [ ] Very well

17. Did you take your health concern pill yesterday?

1. [ ] Yes

2. [ ] No

17a. If yes to question 17, do you sometimes forget to take your [health concern] pill?

1. [ ] Yes

2. [ ] No

17b. People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your [health concern] medicine

1. [ ] Yes

2. [ ] No

17c. Why do you think you forget to take your [health concern] pill?

……..

18. Have you ever cut back or stopped taking your medication without telling your pharmacist, because you felt worse when you took it?

1. [ ] Yes

2. [ ] No

19. When you travel or leave home, do you sometimes forget to bring along your [health concern] medication?

1. [ ] Yes

2. [ ] No

20. When you feel like your health concern is under control, do you sometimes stop taking your medicine?

1. [ ] Yes

2. [ ] No

21. Taking medication every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?

1. [ ] Yes

2. [ ] No

22. How often do you have difficulty remembering to take all your medications? **(Pls. Tick the correct answer)**

1. [ ] Never/rarely

2. [ ] Once in a while

3. [ ] Sometimes

4. [ ] Usually

5. [ ] All the time

Thank you.

APPENDIX III

MORISKY MEDICATION ADHERENCE SCALE

You indicated that you are taking medication for your (identify health concern, such as "high blood pressure"). Individuals have identified several issues regarding their medication-taking behavior and we are interested in your experiences. There is no right or wrong answer. Please answer each question based on your personal experience with your [health concern] medication. Interviewers may self identify regarding difficulties they may experience concerning medication-taking behavior.

(Please circle the correct number)

	No=0	**Yes=1**
1. Do you sometimes forget to take your [health concern] pills?		
2. People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your [health concern] medicine?		
3. Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it?		
4. When you travel or leave home, do you sometimes forget to bring along your [health concern] medication?		
5. Did you take your [health concern] medicine yesterday?		
6. When you feel like your [health concern] is under control, do you sometimes stop taking your medicine?		
7. Taking medication everyday is a real inconvenience for some people. Do you ever feel hassled about sticking to your blood pressure treatment plan?		

8. How often do you have difficulty remembering to take all your medications? **(Please circle the correct number)**

   Never/Rarely.....**0**

   Once in a while.....**1**

   Sometimes.....**2**

   Usually.....**3**

   All the time.....**4**

Source: Morisky DE, Ang A, Krousel-Wood M, Ward H. Predictive Validity of a Medication Adherence Measure for Hypertension Control. *Journal of Clinical Hypertension* 2008; 10(5):348-354.

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Fig. 1. MAQ (Medication Adherence Questionnaire)