AN ANALYSIS OF HOW COLLABORATION BETWEEN PHYSICIANS AND PHARMACISTS MIGHT FACILITATE IMPROVED HEALTHCARE IN NIGERIA

A Thesis submitted in partial fulfilment of the degree of Master of Science (MSc) in Pharmaceutical Business and Technology (QQI)

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DECLARATION FORM

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of the MSc in Pharmaceutical Business & Technology, is my own; based on my personal study and/or research, and that I have acknowledged all material and sources used in its preparation. I also certify that I have not copied in part or whole or otherwise plagiarized the work of anyone else, including other students.

Signed: MOYOSORE OLUWATOYOSI OSOKO

Dated: 26TH AUGUST 2020

DEDICATION

This research project is dedicated to Almighty God, my family, my lecturers and friends.

ACKNOWLEDGEMENTS

I am what I am by the grace of God, whatever height I attain is as a result of His loving-kindness and tender mercies.

The story of my life is incomplete without my parents Mr. and Mrs. Oluwatoyin Osoko, they are like the proverbial rock of Gibraltar in my life, I am grateful, mum and dad for all your sacrifice for me.

I will also like to give an honourable mention to Adeosun Adebola, you mean the world to me, to my siblings Taye and Kehinde Osoko, you give me hope and a reason to stay true to my goals because you look up to me. To all my friends, Charles, Mayokun, Philip, Tobi, Seun, Rebecca, Oyin the list is endless, I'm grateful for all of you.

To all the respondents to my survey questionnaire, patients, physicians, pharmacists, thank you for taking the time during this bleak period in the world to answer.

Finally, this research would not have been possible without the education and encouragement from my lecturers at Griffith College, Dublin, and my supervisor, Dr Annemarie Larkin who guided me at every step of the way.

ABSTRACT

The relationship between healthcare professionals impacts the delivery of quality healthcare. Interprofessional collaboration among healthcare workers has been proven repeatedly to increase good clinical outcomes and cause patient satisfaction which is the goal of healthcare. The collaboration between physician and pharmacist is the most impactful of this interprofessional collaboration because physicians come in contact most with patients and as professionals have an in-depth knowledge of the pharmacology and therapeutic effects of medicines. Hence pharmacists can directly influence the health and wellbeing of patients. This research aimed to analyze how the collaboration between physicians and pharmacists might facilitate improved healthcare in Nigeria by seeking the opinion of physicians, pharmacists and patients, identifying factors that may hinder this collaboration and exploring ways of establishing and improving this relationship in a developing country like Nigeria.

The methodology employed used a mixed-method questionnaire consisting of both qualitative and quantitative approaches with the aim of getting relevant results that are unbiased. Secondary research indicated that if this collaboration is established and enforced properly, it does facilitate improvement of healthcare. This research was undertaken to confirm or dispute this fact. To this end, 150 questionnaires was sent out to a cohort of respondents consisting of physicians, pharmacists and patients garnering an 80% response rate. The patients responded the most, followed by the pharmacists, then physicians. Community pharmacists showed the most responses confirming the finding from primary research that they are overlooked a lot but have the most interaction with patients. The results also showed that physicians trust pharmacists and acknowledge their contribution to quality healthcare delivery and will therefore welcome the relationship, patients also had more trust in their pharmacists, causing physicians to work with them.

Consequently, the government in Nigeria can create accountable care organizations to bridge the gap of information access and confidentiality that hampers the relationship. Such an approach would likely involve the two main bodies governing both professions (the Nigerian Medical Association and the Pharmaceutical Society of Nigeria) so they can potentially introduce the study of this relationship into the modules of physicians and pharmacists' education programs to ensure that graduates in these disciplines have an extensive knowledge of this collaboration and ultimately lead to improvement of healthcare in Nigeria.

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ABBREVIATIONS

WHO- World Health Organization

UNDP- United Nations Development Program

PHC- Primary Healthcare

BHS- Basic Health Services

NHIS- National Health Insurance Scheme

NAFDAC- National Agency for Food and Drug Administration and Control

OTC- Over the Counter

PPCI- Physician- Pharmacist Collaborative Index

ACOs- Accountable Care Organizations

COLLABORATE- Capturing Outcomes of Clinical Activities Performed by a Rounding Pharmacist Practicing in a Team Environment

NHS- National Health Services

GP- General Practitioners

OOP- Out- of- Pocket

EMR- Electronic Medical Record

NMA- Nigerian Medical Association

PSN- Pharmaceutical Society of Nigeria.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The word collaboration evokes a sense of cooperation and partnership, it means engaging in actions with a common aim, established on trust and good communication. This cannot be more important than in the field of healthcare where effective inter-professional collaboration can be the difference between a patient getting well or another deteriorating (D'Amour *et al.*, 2005). There needs to be a re-evaluation among health professionals that thought of their colleagues as competitors rather than collaborators, they need to become selfless because the goal is to have excellent patient outcomes. A good number of physicians and pharmacists work in environments and organizations that present hindrances to efficient delivery of healthcare services, from the management, to inadequate resources and lack of manpower making the delivery of quality healthcare difficult (D'Amour *et al.*, 2005). There is a long history of interprofessional collaboration that goes as far back as the second world war. During this time, physicians and nurses had to work together to treat wounded soldiers (Hojat *et al.*, 2012). This ushered in an era of collaboration and teamwork among healthcare practitioners which has grown progressively. The goal of healthcare delivery should always be the enhancement of patient's safety profile and good clinical outcomes, an environment of professionalism established on principles of effective collaboration and teamwork makes this possible. Physicians and pharmacists working hand in hand has led to remarkable improvements in patient care, this includes, collaborating in patient sensitization and education to enhance their self-care ability, educating them on drug-drug interactions, forestalling prescription errors and ensuring cost effective use of medicines (Hojat *et al.*, 2012).

The process of collaboration between physicians and pharmacists which is termed "interprofessional collaboration" between healthcare workers describes working in tandem to communicate and make good, progressive decisions with a goal of ensuring patients are well, in good health, satisfied and doing this while having mutual respect and acknowledging each other's roles (Zillich *et al.*, 2005). Several reports have commended the importance and effectiveness of physician-pharmacist collaboration (including the American college of Physicians, American society of internal medicine) and its role in ensuring appropriate management of medication (Zillich *et al.*, 2005). For a long time, pharmacists have borne the brunt of dispensing medicines which were prescribed by physicians, recently though, this thinking has evolved. In medicine and pharmaceutical science, a lot of emphasis has been laid on interdisciplinary education and interprofessional cooperation between physicians and pharmacists to effectively make use of their training, education and experience to enhancing patient care and clinical outcomes (Hojat *et al.*, 2012). The dynamic progression in medical and pharmaceutical sciences, intricate drug interactions, financial ramifications of drug-related deaths, the potential increase in errors

of medication and the ever-increasing cost of healthcare have led to a need for a collaborative relationship between physician and pharmacist.

Health as defined by the World Health Organization (WHO) is total physical, mental and social wellness not just the absence of a disease. This places a charge on the healthcare system of any nation to ensure the complete wellbeing of its citizens (E Obi *et al.*, 2018). There should be a consistent improvement of the quality and safety of its healthcare delivery system for its citizens to benefit maximally. One of the ways of doing this is ensuring an excellent collaborative relationship between its healthcare professionals to reduce the burden of healthcare delivery on any of them at one time and this is most important in a developing country like Nigeria. Healthcare cuts across different spheres, from ensuring patient care, to improving patient care, advancing inpatient and emergency care, overseeing controlled substances, forestalling medication errors, adherence to medicines, to mention a few. This is a lot of responsibility on just one group of professionals, there should be an agreed process of partnership between different healthcare professionals to ensure a seamless process of the highest quality, safety and efficacy (Chui *et al.*, 2014).

Nigeria is the most populous black country in the world with an estimated 200 million people with that number rising steadily. The country at a time is always faced with myriads of health challenges; life expectancy for men is 53 years while that for women is 55 years, the mortality rate for children 5 years of age or less is 124 per 1000 live births, the mortality rate for mothers is 560 per 100,000 live births, HIV occurrence is within the range of 2,030 per 100,000. The occurrence of tuberculosis is about 161 per 100,000 people, malaria prevalence is 28,710 per 100,000 people. These paints a bleak picture of the healthcare system in Africa's largest economy (The Lancet, 2015). The measure of the health status of Nigeria is low, the United Nations Development Program (UNDP) human development index ranks the country 187th in a ranking of 2000 countries. The Nigerian government contributes to this problem by not making healthcare a priority, the healthcare system is poorly managed and is evident in the never ending cycle of disease and poverty faced by its citizens (Chukwuani *et al.*, 2006). Nigeria's public hospitals are underfunded with a lot of healthcare professionals going unpaid making them resort to strike actions in order to get paid. The private hospitals on the other hand offer good healthcare services but ae expensive, most of it citizenry cannot afford this as approximately 42% of its populace live below the poverty line.

The healthcare system in Nigeria is structured into three: Primary, Secondary and Tertiary healthcare. The federal government of Nigeria through the federal ministry of health takes charge of tertiary healthcare in the country that consists of teaching hospitals, specialist hospitals and the federal medical centres (Olaronke *et al.*, 2013). In addition to this, the federal government also enacts healthcare policies and offer technical support to the healthcare system. The state government takes charge of secondary healthcare through the general hospitals, regulate and offer support to primary healthcare. The local

government is in charge of primary healthcare comprising of primary care centres and health centres (Olaronke *et al.*, 2013). This careful distinction is depicted in the diagram below:

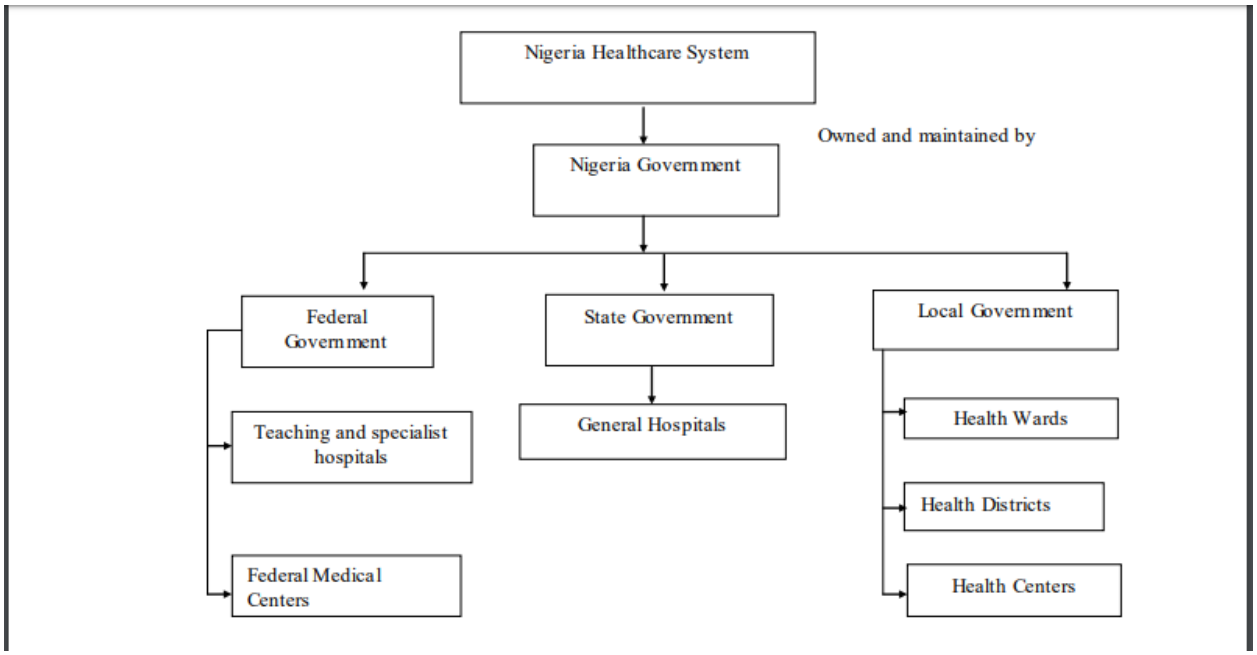

Figure 1.1: Structure of the Nigerian Healthcare system

Source: (Olaronke *et al.*, 2013).

There have been several initiatives over the years created to improve the healthcare system in the country, the Primary Healthcare (PHC) Act was created in 1978 from the Basic Health Services (BHS) scheme as a result of the 1978 Alma-Ata declarations and resolutions. The PHC scheme has suffered due to different economic downturns and a constant reshuffling and this has affected the delivery of quality healthcare to all its citizenry (Chukwuani *et al.*, 2006). One of such schemes is the National Health Insurance Scheme (NHIS) in Nigeria which was established in 2005 with the aim of providing access to excellent quality healthcare to its citizens. Unfortunately, since its inception, out of 36 states in the country, only 2 have endorsed the program. The NHIS was established to ensure universal health coverage but only federal workers are eligible for this, there have been steps to ensure this extends to workers in other spheres in order to guarantee universal coverage for all citizens (Uzochukwu *et al.*, 2015). The National Health Insurance Scheme (NHIS) since 2005, its inception has not lived up to its billing, more surprising is that it was created to cater for only government workers, but in a country where the vast majority of its citizens are unemployed, how does such a policy combat the woes of healthcare? In a country of approximately 200 million people, it is appalling to find out that there are only 12 medical schools and 8 regional psychiatric centres, the healthcare policy setup by the government is so abysmal that 95% of the population do not qualify for it, making them resort to getting health care from private clinics where the costs are exorbitantly high but provide good healthcare, state hospitals that do not have enough resources (manpower, technology), community pharmacies (that

sometimes peddle fake drugs) and healing/herbal centres (which are not registered with the drug regulatory authority, the National Agency for Food and Drug Administration and Control (NAFDAC), giving false hope to patients) (Okala and Ijeoma, 2014).

The healthcare system in Nigeria has been ravaged by several negative issues including but not limited to high level of infant and maternal mortalities, recurring deadly epidemics that have been eradicated in other parts of the world like cholera, polio, meningitis, failure to pay its workforce resulting in strikes and civil actions (Alubo and Hunduh, 2017). The health care system is coordinated at the federal level making it complex, this has been ineffective as each of its 36 states needs its own health care structure particular to the environment that oversees the delivery of healthcare in different regions. The NHIS covers <5% of its population (Alubo and Hunduh, 2017). Factors that have contributed to the poor healthcare system in the country include bad administration and low investment in healthcare, constant violent conflicts in different parts of the country and migration of its skilled healthcare workers to developed countries to name a few (Adeloye *et al.*, 2017). The financial burden of healthcare in Nigeria is mostly borne by the patients through out-of-pocket payments, this is because the government is cheap in their financial investments in healthcare, to help relieve this, pharmacists reduce the costs of medicines, volunteer to sensitize their patients, make house calls and generally reassure the patients on their health. This has earned them the trust of the patient population even more than the physicians.

The government does not invest enough in healthcare neither do they care about the wellbeing of their citizenry, in fact most of them do not even trust the healthcare system in the country to avail of it but would rather fly abroad at the slightest inconvenience, indulging in medical tourism (Okala and Ijeoma, 2014).

Furthermore, approximately 70% of healthcare needs in the country is serviced by private clinics which shows the dire situation in the country and incompetence of the federal government. The corruption in the country has also impacted healthcare delivery, the government supposedly spend billions of naira on healthcare annually, focusing on hospitals in urban areas but 70% of the country live in rural areas, so where does all this money end up? The so-called federal government hospitals available offer lackluster services, the management do not disburse available funds equally, there is a shortage of manpower due to unpaid salary of its healthcare professionals, little to no innovation, novel technologies and apathy of the policymakers to all these issues makes the situation bleak. Healthcare professionals have steadily migrated to better climes that recognize and appreciate their expertise, the U.S alone has over 5000 practicing physicians from Nigeria, the country is blessed with brilliant minds that are some of the best in the world, this is evident in their continued success in developed countries (Okala and Ijeoma, 2014). The healthcare system in Nigeria is also ravaged by high costs, increasing eruption of diseases like HIV/AIDS, malaria and other chronic disease (Olaronke *et al.*, 2013), violence and insecurity, corruption, poverty, brain-drain of its workers etc. Healthcare professionals especially

physicians and pharmacists, if adequately remunerated and supported can cooperate and work together to improve patient's clinical outcomes and overall quality of life of patients in Nigeria. In Nigeria, as a result of an increasing access to technology, especially the internet, patients are googling their symptoms, making use of the online platform, WebMD, this has affected healthcare delivery because it has led to a lack of communication, miscommunication and wrong diagnosis which affects the patients negatively. Another lingering issue in the healthcare system in Nigeria is the loose regulations on medicines specifically over the counter (OTC) drugs. Many Nigerians buy medicines without a written prescription from physicians and a lot of clinical pharmacists and community pharmacists sell these medicines readily.

This healthcare system is not restrictive though as there is an interchangeability, the local government can finance and provide resources for the federal government hospitals within their jurisdiction as well as the state government financing primary care centres. The primary care centre in Nigeria which is the most viable way of providing healthcare to patients in Nigeria is plagued by some problems including but not limited to:

a. Lack of a proper health bill that focuses on providing enough resources for primary care.
b. Inability of healthcare professionals to work together to deliver quality healthcare. (Asuzu, 2005).

This healthcare system consists of a good number of public and private care organizations including physicians, nurses, pharmacists, dentists, physiotherapists, community-based care providers, chemists and even traditional practitioners (Cremers *et al.*, 2019). It is an ever-growing industry that is starting to progress in healthcare delivery due to the abundance of highly skilled manpower resulting from its rigorous education system, there is a potential for long lasting progress in this sector and one way of ensuring that is teaching the concept of effective collaboration between healthcare workers early on in medical schools, school of health sciences, nursing schools and the different schools of pharmacy. Currently, the COVID-19 global pandemic ravaging the world has also contributed to the challenge of healthcare delivery in Nigeria.

Conversely, there has been a scarcity of knowledge on the collaboration between physicians and pharmacists in Nigeria and this research aims to add to the knowledge on this topic by delving deep into the nitty-gritty of physician-pharmacist collaboration from secondary research and highlight the importance of this collaboration, the various hindrances to this collaboration, how this collaboration can be improved, how the commencement of effective physician-pharmacist collaboration has the capacity to improve the delivery of healthcare in Nigeria. To the best of my knowledge, this study is the first of its kind in Nigeria.

1.2 Purpose of the Research

The goal of this research was the analysis of physician-pharmacist collaboration and to check if this collaboration will function effectively to facilitate improved healthcare in Nigeria. In different developed countries of the world, interprofessional collaboration specifically among healthcare workers has been proven to improve clinical outcomes, ensure patient satisfaction etc. leading to improved healthcare. The other side of inadequate interprofessional collaboration among healthcare workers has resulted in a rise in medication errors, increased self-diagnosis, inappropriate use of drugs, medication adherence, to name a few. This has led to the government of those countries spending a lot of money combating these issues facing the healthcare sector when a careful investment in and encouragement of effective interprofessional collaboration would have alleviated the issues.

Consequently, in order not to make these same mistakes, the author deemed it fit to embark on this research, first of its kind in Nigeria. This was achieved through careful analysis of the current state of the Nigerian healthcare system, suggesting ways in which interprofessional collaboration between physicians and pharmacists can be enforced, drawbacks to this collaboration including ways in which it can be enhanced in Nigeria and also getting the perspective of patients as it also affects them.

1.3 Study Implication

This topic is immensely underreported in literature specifically in developing countries. It is also not adequately taught in medical and pharmacy schools. In Nigeria, there is some form of interprofessional collaboration established between physicians and nurses. Nurses have been known to not only prescribe drugs but are also involved in dispensing of drugs. Pharmacists on the other hand are left in the cold, the physicians do not work effectively with them, relying more on nurses. Community pharmacists are worse off, for health professionals that come in contact most with patients in Nigeria, they interact the least with physicians. This research aims to address that by establishing the importance of pharmacists and community pharmacists, highlighting the need for this effective collaboration and how it will be beneficial for all participants i.e. physicians, pharmacists, 9iand patients.

1.4 Objectives of the Research

- To analyze interprofessional collaboration among healthcare professionals specifically, physicians and pharmacists in Nigeria.
- To evaluate the factors that hinder and can improve this collaboration in Nigeria.
- To suggest feasible solutions that will bolster this collaboration between physicians and pharmacists in Nigeria.

1.5 Research Framework

This research was designed in such a way that the primary data for analysis will be recovered using an online survey (questionnaire). The questionnaire was divided into five sections and was structured in such a way as to accommodate the three major participants i.e. physicians, pharmacists and patients. The first two sections of the questionnaire were directed to physicians and pharmacists in a government hospital, primary healthcare centre and community pharmacies. The last three sections were directed towards patients that have interacted with physicians and pharmacists in the settings listed above.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter of this body of research aims at discussing the relevant literature that guides interprofessional collaboration among healthcare workers specifically physician-pharmacist collaboration in different settings. It talks about the definition of interprofessional collaboration among healthcare professionals, then the contemporary model of measuring physician-pharmacist collaboration, importance of physician-pharmacist collaboration, how the relationship can be established, enforced and documented cases of improved clinical outcomes of patients due to the success of this collaboration.

2.2 What is Interprofessional collaboration?

Interprofessional collaboration entails healthcare professionals from different fields cooperating together to achieve good patient care to the best of their abilities (Van *et al.*, 2012). Collaborative care as observed in healthcare in the simplest form means effective communication and agreeing in decisions geared towards achieving patient satisfaction, wellbeing and overall quality of life while acknowledging and honoring each other's input (Makowsky *et al.*, 2009). Several studies on the subject have discovered that to administer excellent care for severely ill patients, healthcare professionals have a responsibility of working in tandem to breach the gap in delivery of healthcare and positive clinical outcomes (Van *et al.*, 2012). There are different variables that affect interprofessional collaboration, the changing nature of healthcare with novel approaches and innovations, increasing cost of healthcare, lack of human resources, difficult access to specialists in some cases, poor communication etc. Chief of all these issues which is the most challenging is poor communication. The problems associated with poor or total lack of communication in some cases stems from misunderstanding and inability to function in cross functional teams by some healthcare professionals (Zwarenstein *et al.*, 2013).

Furthermore, being unable to understand each patients' health needs as a result of being ill-equipped with respect to the patient's information also contributes to this issue. It causes patient dissatisfaction, severe adverse events, readmission and in fatal cases might cause death. The burden of this does not lie on one particular professional but should be shared by all involved (Zwarenstein *et al.*, 2013).

2.3 Contemporary model of measuring Physician-Pharmacist collaboration

Positive health outcomes have been correlated with the level of relationship between healthcare workers, this is most recognized in physician-pharmacist collaboration in which the strength of collaboration differs. A hypothetical approach to this relationship was first developed by Zillich *et al.*,

in their hypothesis, they posited that a collaborative relationship is created in five developing levels: ranging from level 0-4.

a. Level 0- represents Professional Awareness.
b. Level 1- represents Professional Recognition.
c. Level 2- represents Exploration and Trial.
d. Level 3- represents Professional Relationship Expansion.
e. Level 4- represents Investment in the Collaborative Working Relationship (CWR) (Zillich *et al.*, 2005).

This partnership like any other is impacted by the attitude of the players and the type of social interactions, these interactions between physicians and pharmacists are seen as "exchanges". The type of exchange in level 0 is basic, exchange in level 1 is influenced by one of the players and the latter levels is when it becomes bidirectional and confidence is established. The attitude and type of social interaction that makes the relationship flourish was measured using 7 subject matters that were taken from concepts derived from interpersonal, business and healthcare partnerships. They traverse: collaborative method of care, commitment, interdependence, bilateral communication, trust, initial attitude and resolving conflict (Zillich *et al.*, 2005). This hypothetical model can be used by pharmacists to measure physicians perspective on their importance to a collaborative relationship, hospital administrators to measure the development and strength of physician-pharmacist collaboration in an inpatient setting and by healthcare professionals to measure the strength of their partnership with other colleagues. This model is known as the Physician-Pharmacist Collaborative Index (PPCI) (Zillich *et al.*, 2005). Three characteristics influence a budding collaborative relationship: Individual, Context and Exchange variables. Individual characteristics are personal and include age, education attained and years of experience. Context characteristics include personnel, working environment (facilities) and how the organization is built. Exchange characteristics reflect the magnitude of social interactions between the players (Zillich *et al.*, 2004).

2.4 How is this relationship established?

In a study to test the validity of the theoretical model of physician-pharmacist collaboration, it was discovered that pharmacists a greater number of times, take the first step in establishing this relationship and they do this by recognizing how they might be of help to physicians and this was received positively by the physicians. Bidirectional communication that was established in person is a good facilitator of this effective collaboration. In the business world, this is vital as you are more likely to buy goods and give audience to a salesman that initiates a conversation with you in person than say a telemarketer and this also is relevant in collaborative relationships between physicians and pharmacists. Apart from in-person collaboration, recognizing other methods of communication preferred by the physician or pharmacist also helped enhance the growth of this relationship (Brock and Doucette, 2004). For this

relationship to be grounded, its development needs to be progressive but not rushed, for instance, the physician first recognizes the pharmacist as a treasure trove of information on medicines, then the physician accepts their patients getting education on medicines from the pharmacist. Eventually, the pharmacist begins to request patient information from the physician to be of better help and the physician becomes receptive to this. The pharmacist begins with overseeing a patient's drug therapy and advices the physician on clinical drug therapy, reporting any changes in the patient's medication use and drug therapy profile. All these will not happen seamlessly but is a good place to commence. Provision of convenience in terms of reducing the workload on physicians is also influential in developing this good working relationship. Convenience for physicians establishes the value of the pharmacist in the physician's eyes. Easy access to the physician or pharmacist i.e. proximity also is a good indicator and helps improve physician-pharmacist relationship (Brock and Doucette, 2004).

2.5 How is this relationship enhanced?

There has been a lot clamoring for the establishment of Accountable Care Organizations (ACOs) whose sole aim would be to oversee the provision of excellent and affordable care to patients. The main ethos of ACOs dictate that there should be progressive collaboration between healthcare workers from different healthcare backgrounds like hospitals, primary care centres and community pharmacies (Chui *et al.*, 2014). A good number of patients at any time in any country will be afforded medical attention from different healthcare organizations and pharmacies that do not belong to a similar healthcare body. This makes easy access to a patient's information to provide quick, efficient healthcare services a difficult process. This necessitated the development of ACOs that will cut across all spheres of healthcare. Physicians and pharmacists working in different environments should not find it difficult to communicate, share ideas and be forthright in their delivery of topnotch, patient-centric care (Chui *et al.*, 2014).

In a COLLABORATE (Capturing Outcomes of Clinical Activities Performed by a Rounding Pharmacist Practicing in a Team Environment) trial, the following was identified as enhancers of successful collaboration:

a. Succinct comprehension of the role of pharmacists by physicians.
b. The understanding and recognition of the pharmacist's wealth of knowledge in patient care also contributed to successful collaboration and therefore better patient outcomes.
c. The commitment of physicians to ensuring they function adequately in a team-based care environment also encouraged successful collaboration,
d. Recognizing the contribution of pharmacists by everyone involved including the management in a hospital, physicians, nurses and thereafter rewarding this with adequate financial remuneration and manpower also helped achieve seamless collaboration.

e. A conscious effort to encourage the continued professional development of healthcare workers through adequate training in successful team-based care also facilitated successful collaboration.
f. Providing support like tools of communication and organizing sessions or meetings also successfully facilitated collaboration (Makowsky *et al.*, 2009).

Another way of enhancing this collaboration is incorporating the importance of this collaboration in the course curriculum of medical and pharmacy students in Nigeria. This is because medical students are more knowledgeable in clinical science and skills and pharmacy students are well versed in the science of drug preparation and interactions. A combination of these equally important life sciences established on effective collaboration will benefit patients immensely and help to improve healthcare delivery in Nigeria.

The challenges impacting this relationship are similar in both developed and developing countries, although in Nigeria there has been a scarcity of research into this topic, there have been extensive studies carried out in countries like the US, UK, Ireland, Australia, Netherlands to name a few. According to (Gallagher and Gallagher, 2012), in Ireland, the Department of Health in 2004 propagated a primary care strategy which does not recognize the importance of pharmacists in enhancing improved patient outcomes through collaborative practice but rather sees them as spectators even though this ignores the authority of pharmacists as established through the Irish Pharmacy Act (2007), clause 9 which legally endues pharmacists with the power to execute review of medications, counseling with respect to medications, patient consultation, upholding and monitoring the standards of prescribing and ensuring the cost effective use of medicines. Despite this, there is an ongoing review of enhancing the collaborative working relationship between physicians and pharmacists in Ireland which will lead to an improvement in collaboration. Even for a country as developed as Ireland, a lot needs to be addressed to establish a strong working relationship between physicians and pharmacists, this should be a lesson to Nigeria because the country has a lot of catching up to do in the area of healthcare delivery and a good place to start will be effective interprofessional collaboration among its healthcare workers especially physicians and pharmacists.

Other ways of enhancing the relationship include: ensuring bidirectional communication, SOPs for general procedures (Chui *et al.*, 2014), governments also have a role to play by establishing relevant policies and legislation that gives power to pharmacists to be able to do more than merely dispense because pharmacy as a profession has a lot to offer in order to improve healthcare (Gallagher and Gallagher, 2012). Physicians should acknowledge and welcome the usefulness and resourcefulness of pharmacists in improving patient outcomes and work together to break-down barriers to an effective collaborative working relationship (Gallagher and Gallagher, 2012).

2.6 Importance of Physician-Pharmacist relationship

Physician-Pharmacist collaboration has recently gained a foothold in primary care as a guiding light to teaching proper interprofessional collaboration among healthcare professionals. This is as a result of a lot of studies showing the positive impact of physician-pharmacist collaboration on patient outcomes. In this collaboration, the physicians are responsible for prescribing and supervision. The pharmacists on the other hand are involved in getting the medication histories of patients, recognizing hindrances to medication adherence, modifying the dosage regimen, checking vital signs, going over laboratory guidelines and thereafter requesting the required tests for patients, educating patients and checking for any drug interactions (Hwang *et al.*, 2017). When good collaborative care comes together seamlessly, it has the undeniable effect of enhancing the care of patients, advancing patient safety and invariably lessening the problems due to the enormous responsibility of healthcare delivery among healthcare workers. Several reports have postulated that the contribution of pharmacists to healthcare is inconsequential or even impacts healthcare negatively, these outrageous claims though have been debunked as recent review of literature has described the positive impact of pharmacist care to enhancing clinical patient outcomes. These studies provided irrefutable indirect confirmation of the merits of healthcare professionals working collectively together (Makowsky *et al.*, 2009). Another major reason for this collaboration is it benefits all patients irrespective of race, orientation, socio-economic status or creed. Patients that cannot afford treatment or are uninsured go to a physician who attends to them and then directs them to an appropriate pharmacist for further sensitization and receipt of drugs. This would not have been possible if a cordial working relationship had not been previously established between physicians and pharmacists (Hwang *et al.*, 2017).

Furthermore, unlike in Nigeria where the importance of this relationship has not been highlighted, in Australia due to the effective collaboration between physician and pharmacist, there exists several cases of enhanced outcome in severe illnesses like asthma, cardiovascular diseases, diabetes, depression, palliative care, to mention a few. There has also been a remarkable decline in hospitalizations, reduced medication adherence, professional contentment and an over-arching savings in healthcare costs (Dey *et al.*, 2011).

2.7 Documented cases of Improved Clinical outcomes

Pharmaceutical care is deeply embedded in patient interaction and there is an increasing shift from the long-established role of dispensing to a more patient-centric role. Despite this shift which will be beneficial for both professions, there is an underlying problem of improper communication and cooperation which is universal and opposes the progression of this collaboration and affects the patients negatively (Gallagher and Gallagher, 2012). Specific documented cases of improved clinical outcomes because of improved communication as extensively reviewed by Gallagher and Gallagher include:

a. In a randomized clinical trial in the U.S, physician-pharmacist collaboration enhanced uncontrolled hypertension among adults. This was achieved by pharmacists involving themselves in an international interventional guidance to physicians in the study involving the test subjects, this eventually led to a reduced systolic and diastolic measure of blood pressure against the non-interventional test subjects (Carter *et al.*, 2008).
b. A study of sufferers of diabetes who acquired pharmacist driven medication management and this in conjunction with physicians in private hospitals showed remarkable changes in their weight, blood pressure and glycemic control (Nkansah *et al.*, 2008).
c. There have been numerous cases of improved outcomes in asthma due to pharmacist led medication management when working with physicians (Benavides *et al.*, 2009).
d. Pharmacists being involved in the review of patient's medication has also resulted in improved clinical outcomes and an upturn in longstanding illnesses leading to a new lease of life for several patients ((Krska *et al.*, 2001); (Zermansky *et al.*, 2001)).
e. Involvement of clinical pharmacists in different hospitals has resulted in improved level of healthcare for patients, cost effectiveness, reduction in medication errors and medication adherence. These merits can only be achieved by the successful incorporation of pharmacists into the ambulatory setting and being a vital part of a physician led collaborative team undertaking ward rounds and patient review thereby having a say in prescribing patterns ((Bond *et al.*, 2001); (Schellens *et al.*, 2008); (Daniels, 2008); (Schumock *et al.*, 2003); (Kaboli *et al.*, 2006)).
f. Antibiotic pharmacists have also reduced the incidence of nosocomial infections in hospitals by being integral members of physician-pharmacist teams in hospitals and doing so by functioning as equal to the physicians in order to make quick judgements and decisions without solely following the physicians' direction (Hand, 2007).

Other examples of documented cases that impacted this collaboration which were comprehensively reported by Hwang *et al.*, include:

a. Patients suffering from hypertension that were privileged to get physician-pharmacist collaborative based care reported a great reduction in their systolic blood pressure resulting in a desirable blood pressure (Borenstein *et al.*, 2003).
b. Patients suffering from diabetes improved upon enrollment in a physician-pharmacist collaborative management program (Kiel and McCord, 2005).
c. Patients involved in a prospective, cluster randomized controlled trial to study the comparison between physician-pharmacist collaboration and the normal care in blood pressure management saw a vital improvement in the respondents' blood pressure (Carter Barry L. *et al.*, 2015).

d. Patients suffering from type II diabetes mellitus involved in a cohort trial showed that physician-pharmacist collaboration reduced their risk of suffering from cardiovascular diseases (Howard-Thompson *et al.*, 2013).
e. Patients with asthma in a prospective study achieved a reduction in asthma-related hospitalizations, enhancing the control of their asthma and overall quality of life (Gums *et al.*, 2014).
f. Patients that suffered from hypertension and were uninsured but still got treated also showed an improvement in blood pressure (Sisson *et al.*, 2016).

All these patients have reported an improvement in disease control, patient satisfaction and overall quality of life. A lot still needs to be done in establishing a perfect, concrete model of physician-pharmacist collaboration, physicians need to recognize the importance of pharmacists in disease management, dispensing appropriate medicines, knowledge of drug-interactions, knowledge of patient management and therefore communicate better with the pharmacists, welcome their input as fellow healthcare professionals and trust their judgement.

2.8 Perspectives of both sides of the divide.

It is important to seek the perspective of the two healthcare professionals in question as this will give a clarity of purpose to the discussion.

2.8.1 Professional perspective of Physicians towards Pharmacists

There are varying perspectives that physicians harbor towards pharmacists ranging from insulting to cordial and respectful.

a. (1). Some physicians see pharmacists as mere gatekeepers and not equal colleagues, some even go as far as terming pharmaceutical care service as a business-oriented sector.
b. (2). Some physicians often view pharmacists as a threat to their absolute dominance and control of the healthcare clime, the pharmacists in this case also add to this narrative by ascribing all power to the physicians and not being responsible for their own patients (Gallagher and Gallagher, 2012).

2.8.2 Role of Pharmacists

Pharmacists are extremely important to the healthcare delivery system. Their role goes beyond mere dispensing of medicines, it includes an understanding of adverse effects, dosage, optimal drug routes, drug-food and drug-drug interactions, pharmacokinetics, pharmacodynamics and a close watch on drug effects (Emmerton *et al.*, 2005). It also encompasses translation of prescription orders, compounding, labeling, patient monitoring and intervention, education and sensitization on using drugs and medical devices etc. (Mohiuddin, 2019). Despite this wealth of knowledge, laws still exist that expressly

prevents pharmacists from prescribing medicines. In some countries, this is changing but recognition of pharmacists as worthy prescribers of drugs is still a long way to go. Studies have revealed that allowing pharmacists prescribe drugs to patients has benefited physicians by reducing the workload, benefiting them, and allowing pharmacists to deliver patient-centric medicine management and drug therapy monitoring which has been shown to improve patient outcome. Certain countries even have over-the-counter or "pharmacist only" medicines lending credence to the confidence in pharmacist's prescribing (Emmerton *et al.*, 2005). Pharmacy practice is divided into community, clinical and hospital pharmacy. In the clinical and hospital setting, physicians are beginning to welcome the contribution of pharmacists to patient-based care, clinical pharmacists have helped lessen the burden of patient care and enabled physicians concentrate on their diagnostic and prescribing roles while pharmacists assisted in medication management, patient education and counselling. The responsibility of physicians and pharmacists is equal, this is well depicted in the bowtie phenomenon of collaborative care in the diagram below:

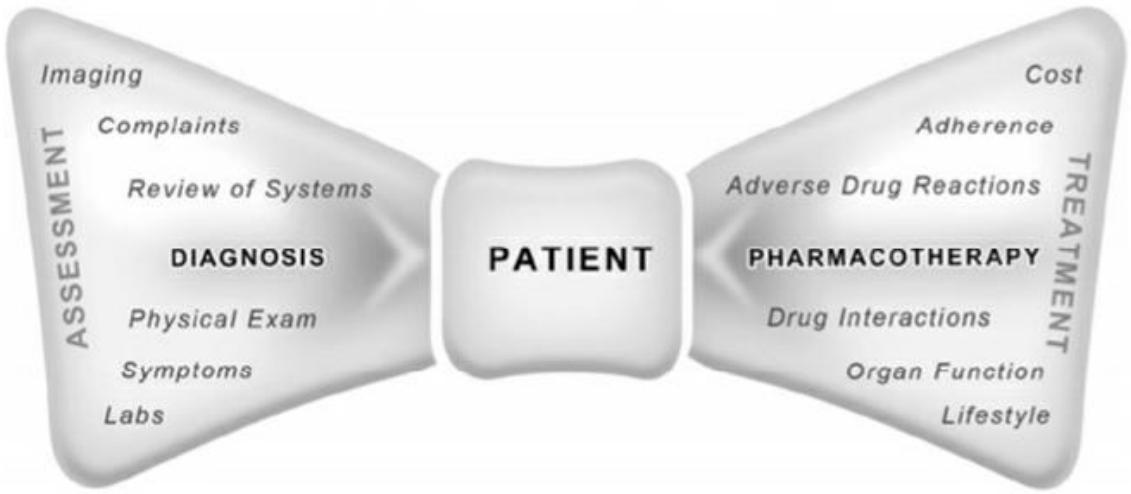

Figure 1. *The Bowtie Phenomenon of Team-Based Care.*

Figure 2.8.2: The Bowtie phenomenon of collaboration

Source: (Mohiuddin, 2019).

2.8.3 Expansion of the perceived role of Pharmacists

The dynamics of physician-pharmacist relationship has always revolved around the perception of pharmacists as dispensers and physicians as prescribers. This role must be expanded in order to guarantee quality, safety and efficacy of medicines including medication adherence. Pharmacy needs to evolve from its early role as being a science of producing and dispensing drugs to a place where pharmacists become vital members of the clinical team and focus on achieving excellent patient

outcomes (Hamadi *et al.*, 2015). Pharmacists are becoming advocates of the safe use of medicines by their patients and not just focusing on the safety of the medicines in questions. This is increasing their value and recognition as important contributors to patient care and as influenced studies into the effective collaboration between physicians and pharmacists. These studies though have only gained a footing in developed countries where there is an undeniable recognition of the value of pharmacists. In developing countries, there are still a lot of issues to be dealt with for this to work out. There is a general consensus that for this partnership to flourish, there has to be mutual respect, recognition, communication and trust between physicians and pharmacists (Hamadi *et al.*, 2015).

2.8.4 Pharmacists contribution to the relationship

The effective, safe prescribing and dispensing of drugs rests solely on pharmacists because they receive greater knowledge on this branch of science ranging from dosage regimens and dosing, drug-drug interactions, pharmacology, adverse drug reactions, adverse effects, pharmacovigilance and drug monitoring than other healthcare professionals, even physicians (Gallagher and Gallagher, 2012).

Surprisingly though, pharmacists prescribing drugs in a multitude of developed countries is frowned upon despite its widescale, global recognition. There is still some opposition to pharmacist's independent prescribing but there is a leeway to some form of dependent prescribing which consists of: protocol prescribing, repeat prescribing, prescribing by formulary, collaborative prescribing, to mention a few. The knowledge within healthcare is intertwined and as a result of this, physicians and pharmacists need to work together instead of working alongside one another (Gallagher and Gallagher, 2012).

2.9 Why have Community Pharmacists been left out of the discussion?

A section of healthcare professionals has always remained isolated from team based collaborative working relationships. Despite it being a well-researched part of the model, community healthcare specialists including pharmacists still shy away from being involved in team based patient care (Dobson *et al.*, 2006). Several reasons have contributed to this reduced level of involvement:

a. Seclusion from other health professionals by being remote.
b. Inadequate time to engage in collaborative practices.
c. Community pharmacists doubting their wealth of knowledge due to the derogatory character of other professionals.
d. Stringent regulation and health guidelines that stifle collaborative care.
e. Controlled access to patient details (physician-patient confidentiality).
f. Insufficient financial incentives and remuneration (Dobson *et al.*, 2006).

Physicians have also contributed to this poor narrative of community pharmacists in collaborative care, this is because they've always regarded community pharmacists as outliers, "shop-tenders" instead of the important healthcare professionals that they are, this has affected the progress of effective

collaboration deleteriously resulting in community pharmacists being left out of the big picture of healthcare delivery (Dobson *et al.*, 2006). Community pharmacists like clinical pharmacists also undergo the same rigor of education and have earned the right to be closely involved in healthcare delivery, they can enhance positive patient outcomes by being the team's drug specialist and community health liaison. They represent the group of healthcare professionals closest to the patient population especially in developing countries like Nigeria and this contributes to their undeniable importance.

Furthermore, there is documented evidence that shows a similar situation in the UK like in Nigeria where the citizens find community pharmacists more readily accessible and go to them first for their health issues rather than physicians. The role of community pharmacists isn't limited to just dispensing drugs but also includes giving healthcare recommendations. In Nigeria, their role has grown over the years because patients cannot afford the increasing cost of healthcare and so visit their community pharmacists for a variety of health conditions ranging from mild to severe, diagnosing as well as advice. They are a staple of the community and deserve more recognition (Bradley *et al.*, 2008). In the healthcare setting in a developed country like the UK, when compared to community pharmacists, pharmacists have always been more recognized and thought of highly. The department of health in the year 2000, acknowledged pharmacists as essential to the National Health Service (NHS) family and for improved collaboration between pharmacists and General Practitioners (GP) (Bradley *et al.*, 2008). The government of the U.K have recently started proceedings to increase the level of collaboration between general practitioners and community pharmacists because they are aware of the benefits of this relationship on healthcare services (Hindi *et al.*, 2019). This is because in the UK the patients see community pharmacists as more easily reachable and go to them rather than their general practitioners (Agomo *et al.*, 2018).

2.10 Hindrance to effective collaboration

There are several drawbacks to the implementation of this collaboration:

a. Some physicians are still reluctant in accepting the expertise of pharmacists and this is a result of reasons that include but are not limited to inadequate knowledge on pharmacist's training and an inability to coordinate effectively with pharmaceutical care services (Hwang *et al.*, 2017). A lot of physicians do not realize the treasure trove of knowledge that a pharmacist possesses not including the years spent acquiring this knowledge and the fact that like medical professionals, pharmacists also have to undergo training (placement) after pharmacy school, write pharmaceutical board examinations and sometimes undergo higher education in pharmacy before they are recognized, get jobs in hospitals and health centres, or allowed to open their own pharmacy centres (Hwang *et al.*, 2017). Other physicians find it difficult to coordinate with other professionals outside the medical field, this can be as a result of bias to

other professionals and a perceived superiority complex. This will only act to hinder the progress of such relationship.

b. Inadequate resources also contribute to hinder the establishment and success of physician-pharmacist collaboration. A lot of primary care services cannot afford to employ a pharmacist resulting in the patients going to an outside pharmacist for drug dispensing. The effect of this is that there is no form of communication between the physician and pharmacist and this will affect the therapy management of the patient (Hwang *et al.*, 2017).
c. Poor communication has always led to issues involving medication errors. A substantial part of this problem was as a result of bad physician-pharmacist communication (Gallagher and Gallagher, 2012). Physicians contribute to this problem by going ahead with rational drug prescribing even though they do not have comprehensive training in this method. This can be corrected by introducing the study of rational drug prescribing to the curriculum of medical students so they learn this before becoming qualified, also proper training in effective communication with other healthcare professionals, particularly pharmacists will help to reduce errors of prescribing (Gallagher and Gallagher, 2012).
d. Pharmacists viewed poor patient sensitization as adding to the workload of primary care on both physician and pharmacist, because an ill-informed patient does not report symptoms early and so the illness can't be tackled in its infancy (Dey *et al.*, 2011). Pharmacists also identified a perceived territorial system on the path of physicians, they see the incorporation of pharmacists into their work environment as an encroachment and affects the relationship negatively. Patients were also seen as adding to the burden of the relationship when they do not take to instructions or the advice of either the physicians or pharmacists (Dey *et al.*, 2011).

2.11 Systems to Ensure Effective Collaboration in Nigeria

The healthcare system in Nigeria is not where it should be right now, but with the right policies and a change of status quo it can get better, an improvement in physician-pharmacist collaboration will go a long way in facilitating this. The following steps can also be taken:

a. The government should be more proactive and increase the budgetary allocation of healthcare, they can achieve this by introducing pioneering health initiatives at all tertiary, secondary and primary healthcare centres.
b. The local government authority should receive better support from the federal and state government because a good number of the population reside in rural areas and this should be the focus of innovative policies.
c. Providing excellent remunerations and good working environment for healthcare professionals to encourage them as a recognition of their tireless sacrifice.

d. The tentacles of the National Agency for Food and Drug Administration and Control (NAFDAC) should be spread to rural areas to combat fake prescriptions and substandard drugs, this is geared towards ridding healthcare of unscrupulous elements and establish an atmosphere of trust and mutual respect among physicians and pharmacists (Duru and Nwagbos, 2007).
e. Investment in technology and electronic-health systems, this will also help facilitate communication between healthcare professionals, enhancing interprofessional collaboration (Olaronke *et al.*, 2013).

2.12 Summary of Literature and literature gap

This study aims to analyze this physician-pharmacist collaboration with the goal of evaluating and validating this in a developing country, specifically Nigeria. From the Literature reviewed, there has been a scarcity of this type of study in Nigeria underlying the importance of this study in Nigeria and examining the current system in Nigeria and if it can facilitate improved healthcare in the Country.

CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter describes the methodology that will be employed in this body of research. It consists of the research philosophy, research approach, research strategy, research design, study and size of the population, method of data collection, ethical consideration, inclusion and exclusion criteria and sampling technique that will be utilized in this study.

3.2 Research Philosophy

My research is focused towards a positivist and constructivist/interpretive approach employing a mixture of quantitative and qualitative approaches through an online survey. These approaches were employed in this study to describe the information garnered from survey respondents to help in bringing a reasonable and appropriate conclusion to this research. The significance of this research to the real world was predicated on observations that are measurable and contributed to the appropriate statistical analysis of data recovered from the survey respondents. The questionnaire was devoid of bias and appropriately designed to be relevant to this study. There was no form of interference in this study on the part of the author and this conferred fairness and authenticity to the method of data collection and reporting. The qualitative approach is phenomenological centered around their daily experiences with the aim of understanding how physician-pharmacist collaboration works and show a connection between this relationship and enhancement of healthcare in Nigeria. The patients will also be contacted, this is to ensure a right balance between both divides, the perspective of patients is important because improving patient's clinical outcomes and patient satisfaction is the goal of interprofessional collaboration and overarching healthcare delivery.

3.3 Research Approach

In order to research the analysis of how collaboration between physicians and pharmacists might facilitate improved healthcare in Nigeria, the author employed a mixed method approach by the use of a questionnaire, making use of qualitative data quite alright to ask the questions, but it uses it in setting the stage for quantitative data and its subsequent analysis. The questionnaire (survey) was dispersed electronically to the main subjects of the research, physicians and pharmacists that form the main research subjects and incorporation of patients to seek their perspective on this important issue. The main objective of this research is

improvement of healthcare through enhancing clinical outcome of patients and this necessitated the involvements of patients in the study. The questions in the survey were designed to help the author garner adequate information and appropriate statistical data for analysis. It was geared towards ascertaining the level of physician-pharmacist collaboration in Nigeria, on which professional does more of the burden lie, the perspective of patients on the importance and level of the relationship. A lot of the studies on this topic have been addressed from the perspectives of the physicians leaving out pharmacists and especially community pharmacists but this study aims to show the importance of pharmacists in striking a balance in this relationship especially in a developing country.

Consequently, through the analysis of this collaboration in Nigeria, the author was able to identify the enhancers of this relationship, the drawbacks, the role of community pharmacists and propose ways in which the relationship can be enforced and enhanced in Nigeria.

3.4 Research Strategy

The strategy of this research involved an analysis of the nature of physician and pharmacist collaboration, checking if this relationship exists in the healthcare system in Nigeria, report on the drawbacks to this relationship in Nigeria, how it can be enhanced and see if it will act to improve patient's clinical outcome and therefore healthcare in Nigeria. This research is novel and intends to shed light on an important but massively underreported topic among healthcare professionals in Nigeria, to the best of my knowledge, it's the first of its kind to directly address this topic in the field of healthcare in Nigeria. The survey respondents were duly informed of the significance of this research and understand the ramifications of their answers to the addition of knowledge and for the author as partial fulfillment of his masters qualification. The questionnaire was in a language that was easy to understand and was distributed to 150 physicians and pharmacists in a government hospital, community pharmacists, physicians in primary care centres and patients in both environments. I chose this method i.e. generalization taking into consideration hospitals, the community and primary healthcare centres because in Nigeria, a large chunk of the population cannot afford private hospitals and at the same time are not adequately insured in order to make use of government hospitals, for this reason, a large section of the population get treated by community pharmacists.

3.5 Research Design

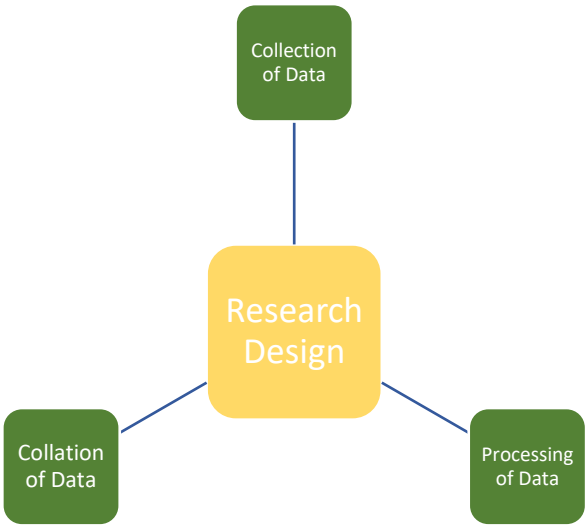

Figure 3.5: Schematic representation of the Research Design

The design of the research study above describes how the research was conducted traversing collection, collation and data processing. The questionnaire was dispersed to healthcare professionals and patients using the online Google forms application. The data generated was examined using Microsoft Excel to validate the information gathered using various methods of statistical analysis like bar and pie charts. The type of data collected will be coded transforming the words into figures. The different demographic and specific characteristics of the survey respondents will be analyzed by the method of descriptive analysis, this comprises the use of tables and percentages. The research makes use of a mixed method approach as earlier stated and utilizes a questionnaire to obtain responses from physicians, pharmacists and patients. Questionnaires are a proven method of gathering data from a large population as they guard against bias. The world currently is facing an unprecedented global health crisis as a result of the COVID-19 pandemic, this has made all types of research be it quantitative or qualitative, more difficult. Furthermore, with the world moving towards more of an online presence, completion of online survey presents the opportunity of being the most reliable way of obtaining valid data. This phenomenon has affected the timeline of the research but also is cost-effective and aids in collecting data in the most unusual of circumstances and within the shortest time possible. All questions asked in the online survey were relevant to the subject matter and cut across the involvement of physicians, pharmacists and the perspective of patients. The questions were precise, easy to understand and the questionnaire was not lengthy

or cumbersome. This gave the respondents the encouragement to answer the questions honestly within the shortest time frame.

3.6 Study and respondents

The population of study in this body of work will be physicians in teaching hospitals, government hospitals, private hospitals, primary care centres, hospital pharmacists, community pharmacists and the patient population at large. The reason for this widely varied population is because in a country like Nigeria, this research is first of its kind and requires a wide range of participants to glean reliable and valid information. Another reason is to get different variables i.e. the perspective of physicians and pharmacists working in a high impact environment like government hospitals and physicians in primary health centres interacting with community pharmacists. This will also allow a proper analysis of the perspectives of patients who at one time or another would have been present in both environments.

Community pharmacists have a huge role to play in this research because as a developing country, Nigeria is plagued with a lot of lapses in healthcare delivery and the healthcare system at large. The country has a lot of factors militating against its healthcare system including but not limited to poor funding and investment in healthcare, poverty, insecurity and violence, inadequate education of patients on the quick reporting of adverse effects, corruption and so on. The list is endless, patients cannot afford hospital bills due to many the population not being covered by health insurance and a prevalence of out-of-pocket (OOP) payments. This has made community pharmacy thrive and as a result of this have gained the trust of patients. Most patients in rural areas do not bother to visit the primary healthcare centres or even hospitals that might be around but would rather go to their community pharmacy where they can get discounted drugs and free advice without paying through their teeth.

3.7 Method of Data Collection

The questionnaire (survey) was designed making use of the online survey tool, Google forms. The survey which included an addendum for consent and an encouragement to fill the online survey was dispersed electronically to physicians, pharmacists and patients. The questions ranged from asking about their age and gender to practice setting, practice type, frequency of interaction between physicians and pharmacists, cause for interactions, comparison of the principles of trustworthiness, defined roles and onset of relationship, physician's satisfaction with pharmaceutical care services, physician's outlook on pharmacist's professionalism,

physician's specific involvement with pharmacists, hindrance to effective collaboration on the part of the physicians and pharmacists.

The patients were asked who their first port of call was for common illnesses like headaches, flu, fever, ulcer etc. They were also asked specific questions about their relationship with physicians and pharmacists. The questions asked about demographics included age, gender, practice type, practice setting. A 3-point Likert scale (never/rarely, once a day, once a week) was used to measure frequency of interactions, physicians view of pharmacist responsibility was also evaluated using a 3-point Likert scale (Satisfactory, Moderately Satisfactory, Unsatisfactory), the same applied to physician's outlook on pharmacist's professionalism and physician's experience with pharmacists using a 3-point Likert scale (Agree, Neutral, Disagree). Hindrance to effective collaboration got evaluated using a 3-point Likert scale (Fairly Agree, Agree, Strongly Agree). A 4-point Likert scale (Disagree, Agree, Fairly Agree, Strongly Agree) was used to evaluate patient's perspective of physician-patient and pharmacist-patient relationship.

3.8 Ethical Consideration

The design of the survey was done in such a way that no personal question was asked of the participants and all questions were specific to the research. The respondents had the choice of declining to participate or withdrawing their participation, no one was cajoled into responding to the survey.

3.9 Inclusion and Exclusion Criteria

All correspondents to the questionnaire were voluntary including the healthcare professionals made up of physicians and pharmacists, without also leaving out the patients as their contribution was of immense importance. Anyone that did not feel comfortable answering the questions was asked to ignore the link to the form. These set of people were automatically excluded from the study. This formed the basis of the inclusion and exclusion criteria.

3.10 Sampling Technique

The sample of respondents chosen for this body of work will be chosen carefully to be representative of the general population. Careful sampling helps to lessen the time taken to complete a research and reduces the cumbersome workload. This research makes use of purposive sampling which is predominantly used in qualitative research for choosing samples laden with information for the topic of interest (Palinkas *et al.*, 2016).

3.11 Summary of research approach

This research study made use of a mixed method questionnaire consisting of 5 major sections. The first 2 sections were significant to the healthcare professionals i.e. physicians and pharmacists while the subsequent 3 sections were specific to patients. The philosophy of this body of work centered on a positivist and interpretivist approach ensuring inference from the data generated and a varying perspective to conventional ways of measuring this collaboration through the incorporation of patients to the overall study. The goal of this is to evaluate the contribution of patients to this relationship among healthcare professionals especially in a country like Nigeria where the government is lackluster on the subject of healthcare refusing to invest in healthcare, help the indigent citizens that cannot afford healthcare, establish laws that make it mandatory to establish such working relationships and also reinforcing trust in the healthcare system by being partakers of this and not just jetting off to developed countries due to any slight inconvenience. The careful examination of this body of work from the questionnaire is adequately presented in the chapter following.

CHAPTER FOUR

RESULTS AND ANALYSIS

4.1 Introduction

This chapter will depict the responses collated from the online survey (questionnaire) as elaborated in the preceding chapter, this is to help the author properly analyze, make sound conclusions and recommendations as to if effective collaboration between physicians and pharmacists might facilitate improved healthcare in Nigeria.

A total of 150 questionnaires was sent out. The physicians received 40, pharmacists got 50 and 60 questionnaires were equally distributed to the patient population.

Furthermore, of the 150 questionnaires distributed equally, 120 responses were received, which gives a percentage response rate of 80%.

4.2 DEMOGRAPHICS

4.2.1 Gender

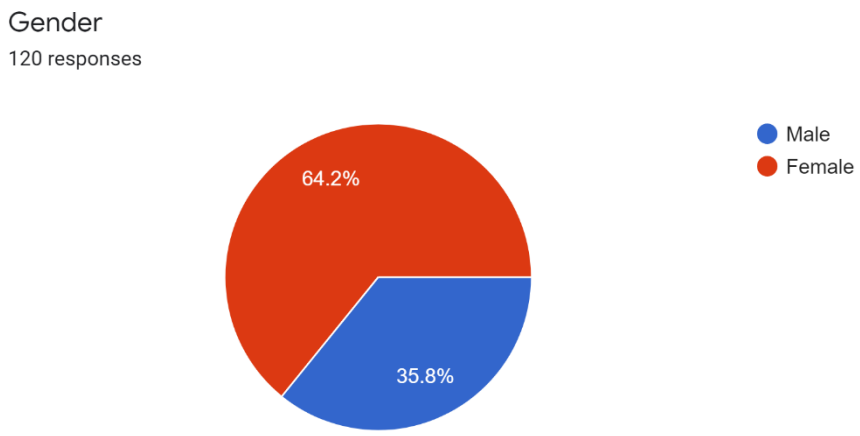

Figure 4.2.1: Gender of survey respondents

Of the 120 participants who responded, 77 (64%) of them were female while 43 (36%) were male.

4.2.2 Age in Years

Figure 4.2.2: Age in years

From a total of 120 respondents that filled the survey, 104 of the responses were from young adults aged between 18 to 30. 11 of the respondents were aged between 31-40, 2 of the respondents were aged between 41 and 50. The remaining three responses were from respondents 50 years and older.

4.2.3 General Attributes of Survey Respondents

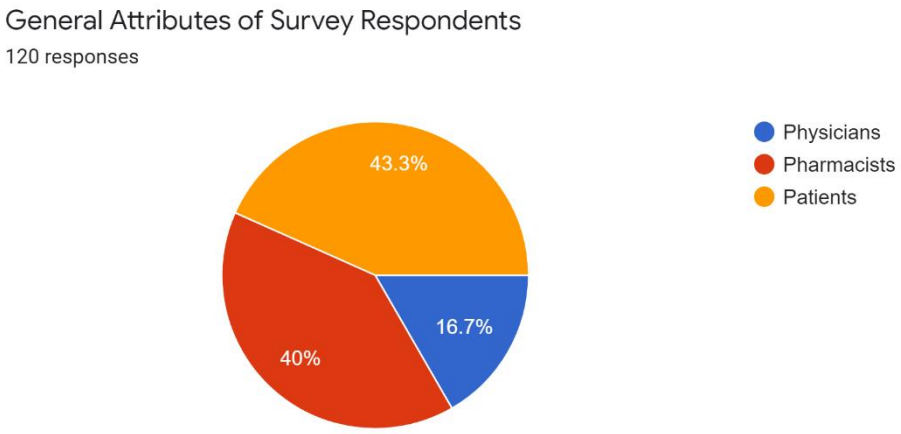

Figure 4.2.3: General Attribute of survey respondents

The general attribute of survey respondents was significant in this research. As expected, there was a significant number of patients responding to the survey as they accounted for 43.3% of the total responses. This shows that the patients are invested in their healthcare and are always willing to learn new information that will help in improving their health as well as readily giving out information needed to help improve the delivery of healthcare. This proactive attitude in patients in Nigeria is seen as the

secondary research described in majority of patients having to pay out of pocket for their healthcare needs because they know the government does not cater for them as much as they should.

Pharmacists responding to this survey accounted for 40% of the total responses from the survey. This statistic lends credence to the information from the secondary research that explained that pharmacists all over the world regardless of being clinical or community pharmacists are always willing to collaborate with other healthcare professionals in order to enhance the delivery of healthcare. There is a readiness on their part always to learn of new ways to help the patients and proffer solutions or educate their colleagues and patients in different ways of improving patient outcomes.

The physicians responding to this survey accounted for 16.7% of the total responses from the survey. When compared to the number of responses gathered from pharmacists and patients, we see that there was not enough willingness on the part of physicians. This corroborates the finding from secondary research that physicians have not always welcomed this relationship as much as pharmacists do. They have always worked better with other healthcare professionals like nurses, dentists, physiotherapists etc. The attitude of physicians towards pharmacists has always been characterized by seeing them as shopkeepers and ordinary prescribers, unfortunately though this notion is not different in Nigeria.

4.2.4 Practice Type (Physicians)

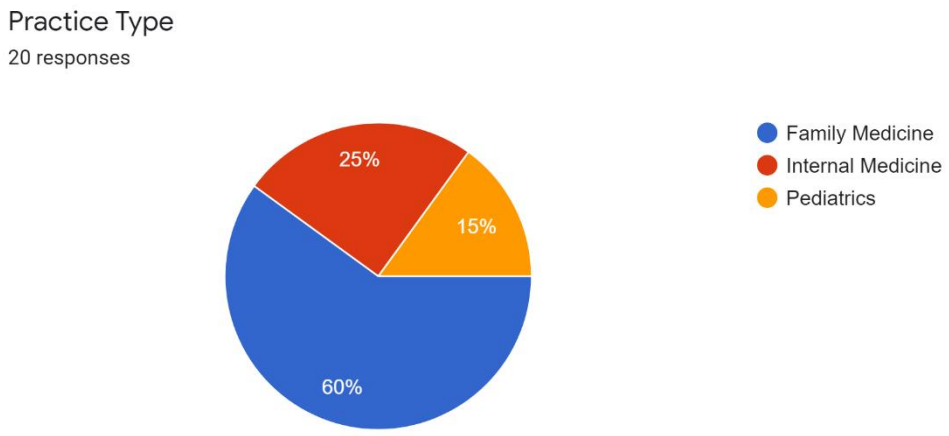

Figure 4.2.4: Physician's practice type

Out of the 20 responses for the practice type, 60% of the physicians practiced family medicine, 25% practiced internal medicine and the remaining 15% were in the field of pediatrics.

4.2.5 Practice setting (Physicians)

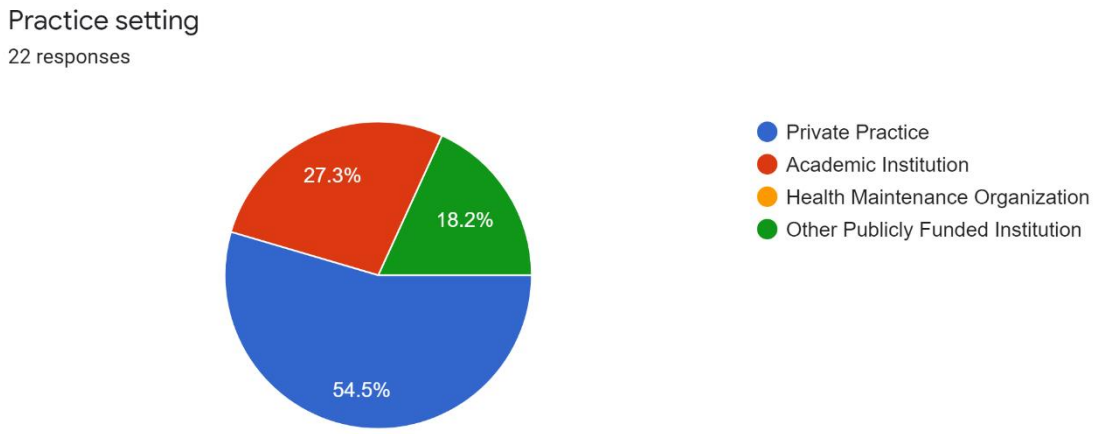

Figure 4.2.5: Physician's practice setting

Two physicians that responded to this had one of them working in private practice and the other in an academic institution did not respond to the practice type section of the survey meaning they did not belong to any of the three as prompted by the survey.

In the responses generated for the practice setting, 54.5% of the respondents were working in private practice, 27.3% of the respondents worked in academic institutions e.g. University teaching hospitals and 18.2% worked in other publicly funded institutions like government hospitals, state hospitals and primary healthcare centres.

4.2.6 Practice type (Pharmacists)

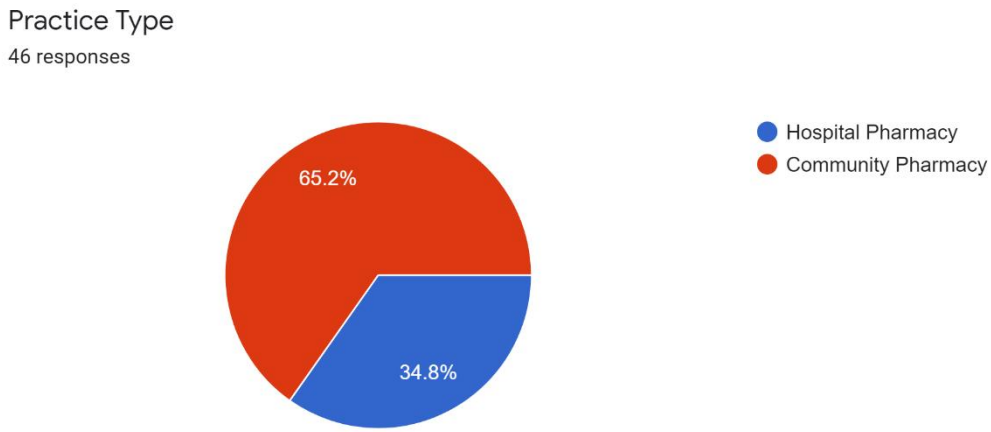

Figure 4.2.6: Pharmacist's practice type

a. There were 46 responses for the practice type for pharmacists, 34.8% of them worked in hospital pharmacies while 65.2% worked as community pharmacists. This supports the findings

of the secondary research where community pharmacists are being left out of the discussion but have a huge role to play in this collaboration.

b. This survey shows that there is a scarcity of clinical or hospital pharmacists in comparison to community pharmacists. This means out of all the physicians willing to engage in this collaboration, they will be collaborating with the wrong type of pharmacists because a physician-pharmacist relationship that does not put community pharmacists into consideration is bound to fail especially in a country like Nigeria where the majority of pharmacists work in the community and come into more contact with patients than physicians and hospital pharmacists.

4.2.7 Frequency of interactions

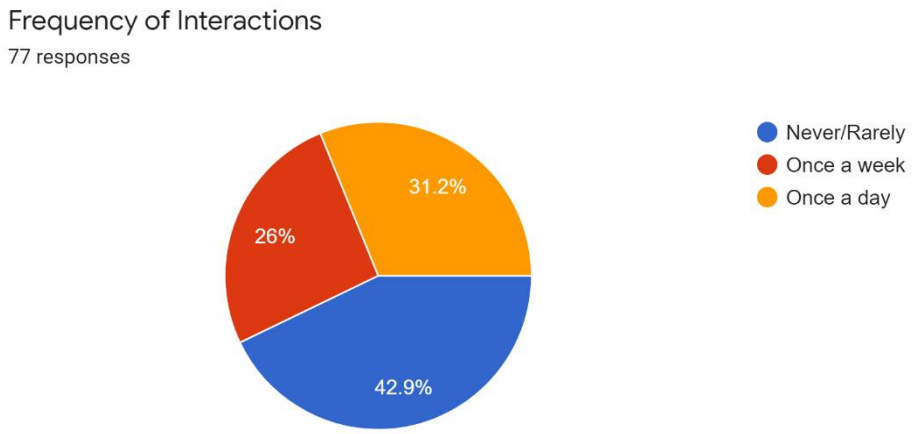

Figure 4.2.7: Frequency of interactions

For the question on the frequency of interactions between physicians and pharmacists, as answered by both physicians and pharmacists, 26% of them recorded that they interacted with the corresponding physicians and pharmacists once a week. 31.2% of them responded that they interacted with a physician or pharmacist once a day. Finally, 42.9% of the respondents said they rarely or never interacted with physicians as pharmacists or with pharmacists as physicians.

This result shows that the frequency of interaction between physicians and pharmacists even on a daily basis is almost non-existent and this is one of the underlying problems that this research aimed to uncover because in a quest to improve the relationship between these two healthcare professionals in order to improve healthcare delivery, there has to first be a level of relationship and interaction before any progress can be made.

4.2.8 Cause for interactions

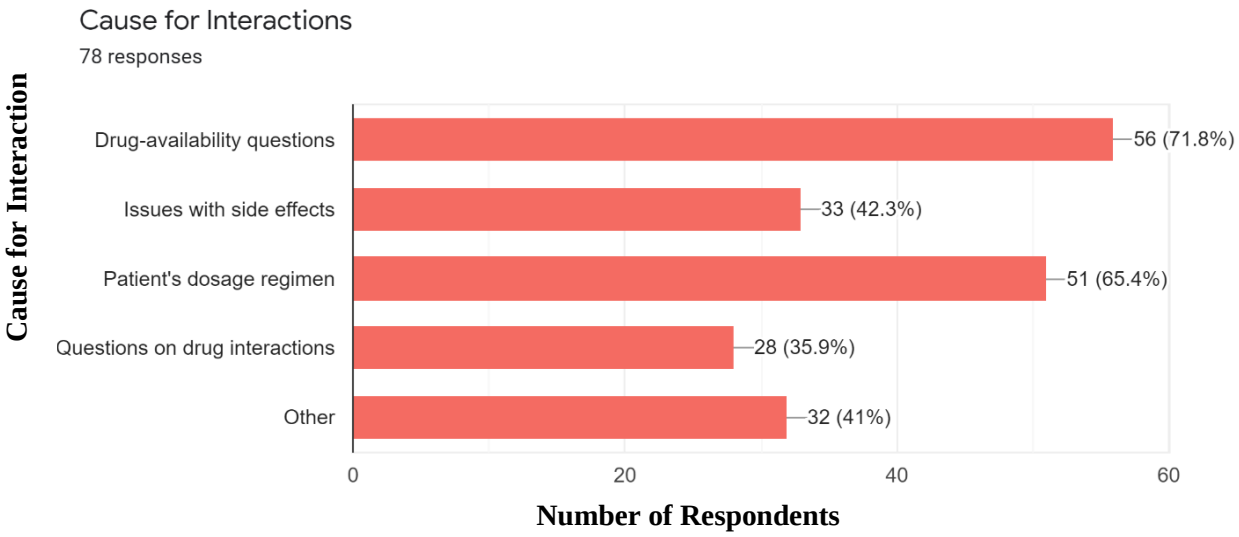

Figure 4.2.8: Cause for interactions

For the physicians or pharmacists that interacted with one another, there were several options as created by the author to show what accounts for the regular occurrence of interactions and include: drug-availability questions, issues with side effects, patient's dosage regimen, queries on drug interactions and other situations that may account for these interactions.

71.8% chose dug-availability questions as the reason for interactions between colleagues, 65.4% picked queries about the patient's dosage regimen as the reason for interaction with physicians or pharmacists. 42.3% of physicians or pharmacists responding chose issues with side effects as the reason for interaction, 35.9% remarked that questions on drug interactions accounted for the relationship between both healthcare professionals, 41% chose other situations not listed by the author as the reason for interaction. This result shows that as you would expect, questions on drugs will be the number one reason why physicians will interact with pharmacists because they know that pharmacists have superior knowledge on everything medicines. This is closely followed by patient's dosage regimen because they expect the pharmacist to be able to design this. Thirdly, issues with side effects also affects everyone involved and physicians expect pharmacists to have all the knowledge regarding this and communicate this to the patients. Finally, questions on drug interactions and other enquiries that may arise accounted for the remaining causes for interaction.

When comparing the principles of trustworthiness, defined roles and the commencement of relationship, the following response was gathered:

4.2.9 TRUSTWORTHINESS

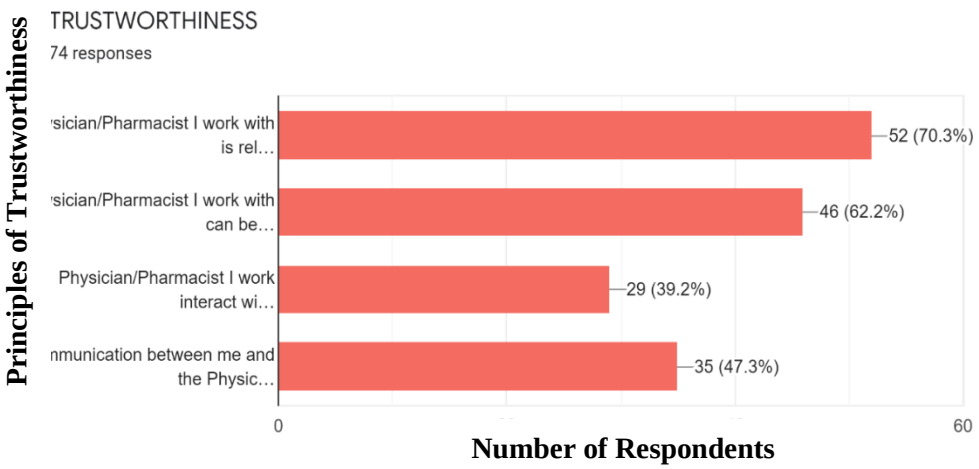

Figure 4.2.9: Principles of Trustworthiness

In responding to the issue of trustworthiness, 39.2% of physicians or pharmacists agreed that the physicians or pharmacists they work with are true to their word. 47.3% of respondents agreed that communication between physicians and pharmacists is bi-directional. 62.2% remarked that the physicians or pharmacists they worked with can be trusted, a further 70.3% of physicians and pharmacists said that the physicians or pharmacists they work with were reliable.

This result shows that physicians that have interacted with pharmacists are encouraged by this relationship and have come to trust those pharmacists, communication can be improved but these two professionals working in the same environment develop a trust for one another which is vital in enhancing delivery of healthcare in Nigeria.

4.2.10 Defined roles

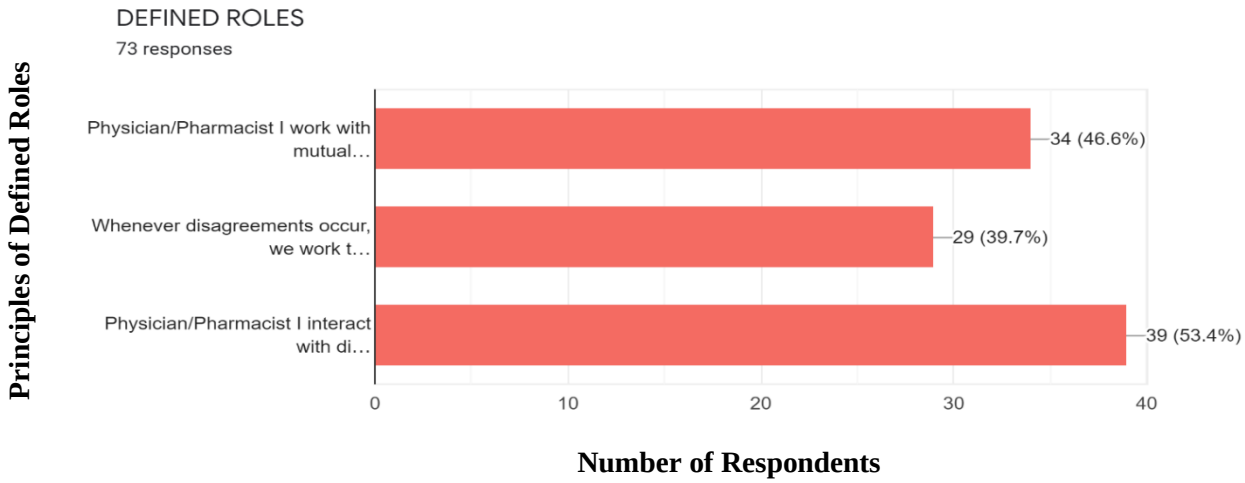

Figure 4.2.10: Principles of defined roles

When asked to respond to the subject of role definition, 39.7% affirmed that whenever disagreements occur, they work together to fix it, 46.6% also remarked that both healthcare professionals mutually depend on each other. 53.4% agreed that both healthcare professionals work together to discuss patient care and agree on the best method to achieve this.

4.2.11 Onset of relationship

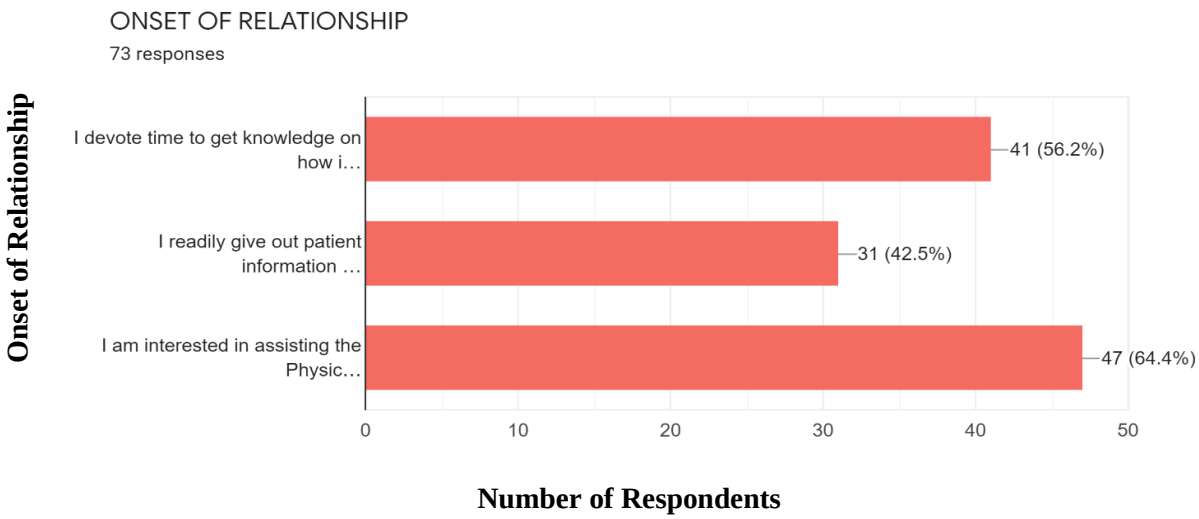

Figure 4.2.11: Onset of relationship

When responding to the portion of the survey dealing with the onset of relationship, 42.5% confirmed that they readily give out patient information to their colleagues, 56.2% of the respondents also agreed that they devote time to gain knowledge on how to help the physician or pharmacist as the case may be. 64.4% affirmed that they are interested in aiding the physician or pharmacist develop their practice. This result shows a capability to work together effectively if the relationship is established and this is good news for all involved as it will aid to improve healthcare delivery in Nigeria.

4.3 DYNAMICS OF THE RELATIONSHIP

The relationship between physicians and pharmacists is faced with a lot of drawbacks mostly from the physician's because they see themselves as superior to pharmacists even though this is not true. For this relationship to be effective both professionals need to work hand in hand.

4.3.1 Physician's Satisfaction with Pharmaceutical Care Services

This section of the survey looks first through the eyes of the physicians at their understanding of the responsibility of pharmacists and their experience with pharmacists, their opinion on pharmacist's professionalism. It then progresses by asking the opinion of both professionals on the hindrances to

effective collaboration, what is lacking in improving effective collaboration and finally recommendations to enhancing effective collaboration as suggested by the author.

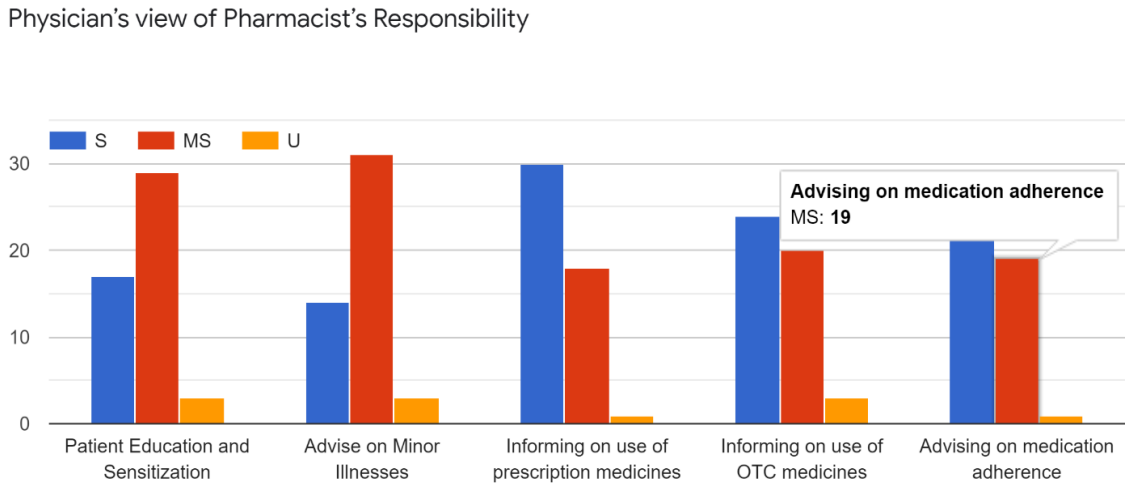

Figure 4.3.1: Physician's view of pharmacist's responsibility

***Key: S= Satisfactory; MS= Moderately satisfactory; U= Unsatisfactory.**

4.3.2 Physician's view of pharmacist's responsibility

- Patient education and sensitization

Majority of the respondent physicians agreed that they were moderately satisfied with the pharmacist's role in patient education and sensitization as depicted in figure 13 above.

- Advise on minor illnesses

When asked about giving advice on minor illnesses, majority of responding physicians were moderately satisfied with pharmacists giving advice to patients on major illnesses.

- Informing on use of prescription medicines

A good number of physicians that responded were satisfied with pharmacists informing patients on the use of prescription medicines.

- Informing on use of over the counter (OTC) medicines

Physicians responding to the survey were also satisfied with pharmacists informing their patients on the use of OTC medicines.

- Advising on medication adherence

Physicians that responded to the survey also were overwhelmingly satisfied with pharmacists giving advice on medication adherence

4.3.3 Physician's outlook on pharmacist's professionalism

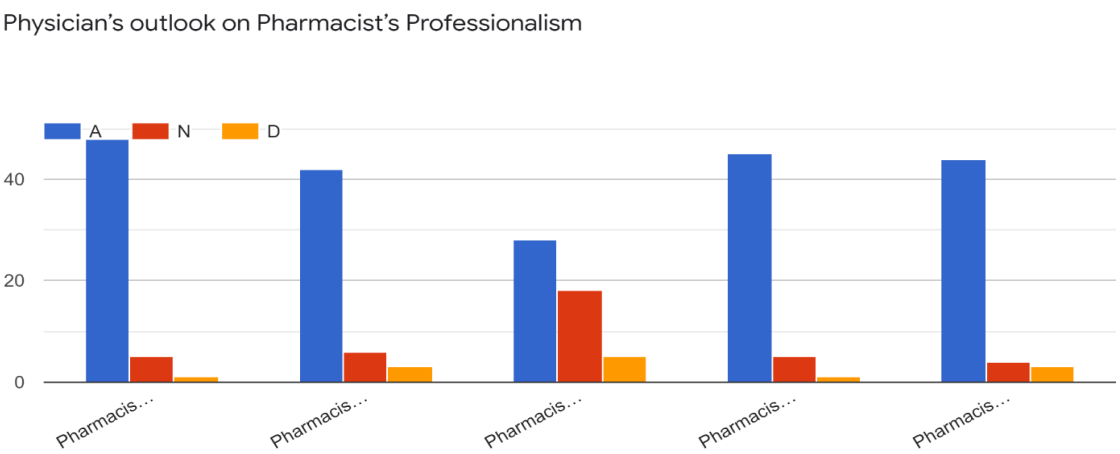

Figure 4.3.3: Physician's outlook on pharmacist's professionalism

***Key: A= Agree; N= Neutral; D= Disagree.**

- Pharmacists should have first-hand knowledge on all drug types

There was an overwhelming agreement by physicians responding to the survey that pharmacists should have first-hand knowledge on all drug types as depicted in figure 14 above.

- Pharmacist should be an expert in varying drug therapies

Physicians responding also agreed overwhelmingly that pharmacists should be experts in different drug therapies.

- Pharmacists should help in designing patient's drug therapies.

Physicians agreed that pharmacists should help in designing patient's drug therapies.

- Pharmacists should always communicate prescription errors ASAP

Physicians agreed that pharmacists should communicate medication errors as soon as it is detected.

- Pharmacists should help in patient's medication adherence and inform physicians on any deviations

Physicians agreed to this question in its entirety

4.3.4 Physician's experience with pharmacists

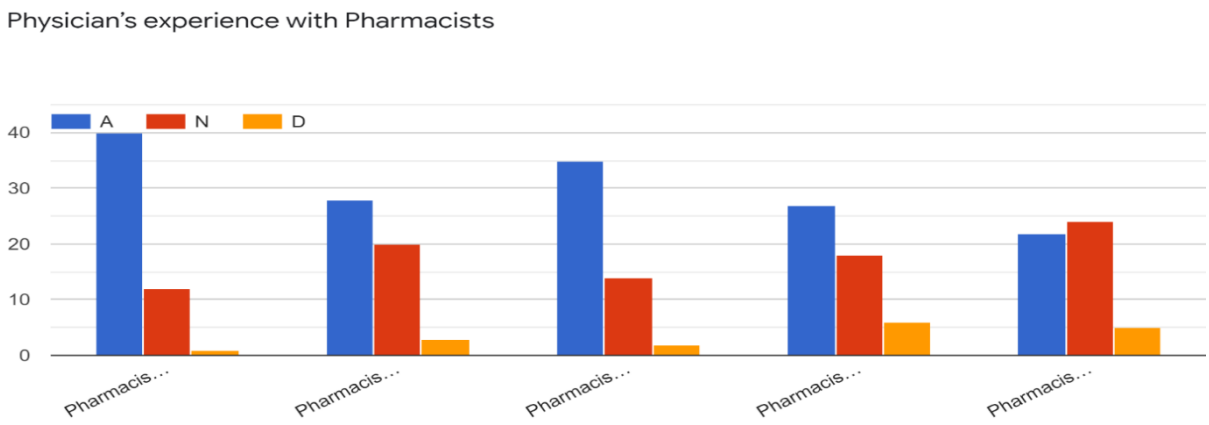

Figure 4.3.4: Physician's experience with pharmacists

***Key: A= Agree; N= Neutral; D= Disagree.**

- Pharmacist's give credible information on prescriptions

An overwhelming majority of physicians agree that pharmacists provide credible information on prescription drugs

- Pharmacists communicate observed patient medication problems

Physicians agreed that the pharmacists they interact with readily communicate observed patient medication problems

- Pharmacist's educate patients on drug safety

Physicians also agreed that the pharmacists they come in contact and interact with educate their patients on drug safety.

- Pharmacists suggest cheap substitutes to prescribed medicines

The answer to this question particularly raised eyebrows because it talks about physicians agreeing that the pharmacists, they have been in contact with suggest cheap substitutes to prescribed medicines

- Pharmacists communicate observed clinical deficiencies with prescribed medicines

While responding to this question, physicians were neutral to this subject suggesting that the pharmacists they interact with do not readily communicate observed clinical deficiencies with prescribed medicines.

4.3.5 Hindrance to effective collaboration

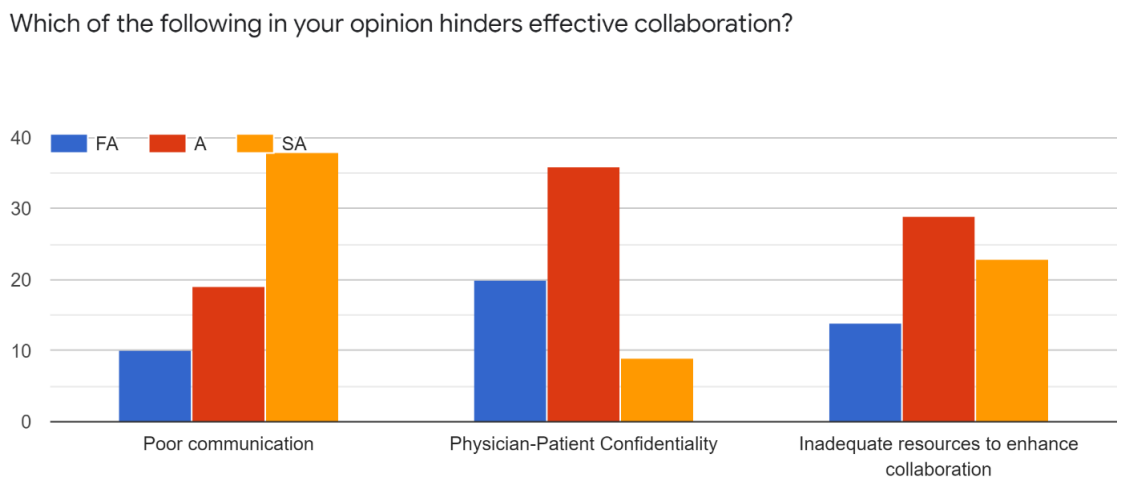

Figure 4.3.5: Hindrance to effective collaboration

***Key: FA= Fairly agree; A= Agree; SA = Strongly agree.**

- Poor communication

Physicians and pharmacists strongly agreed that poor communication acts to hinder effective collaboration.

- Physician-patient confidentiality

Physicians and pharmacists agreed that the severity of physician-patient confidentiality and the fact that physicians cannot breach this rule hinders effective collaboration because it restricts access to patient information by the pharmacists and will be a roadblock to pharmacists that can help. The literature review showed that accountable care organizations can help mitigate this and if this is introduced in Nigeria it will help to breach that gap.

- Inadequate resources to enhance collaboration

Both healthcare professionals also agreed that unavailability of resources that enhance collaboration also acts to hinder effective collaboration.

4.3.6 Improvement of effective collaboration

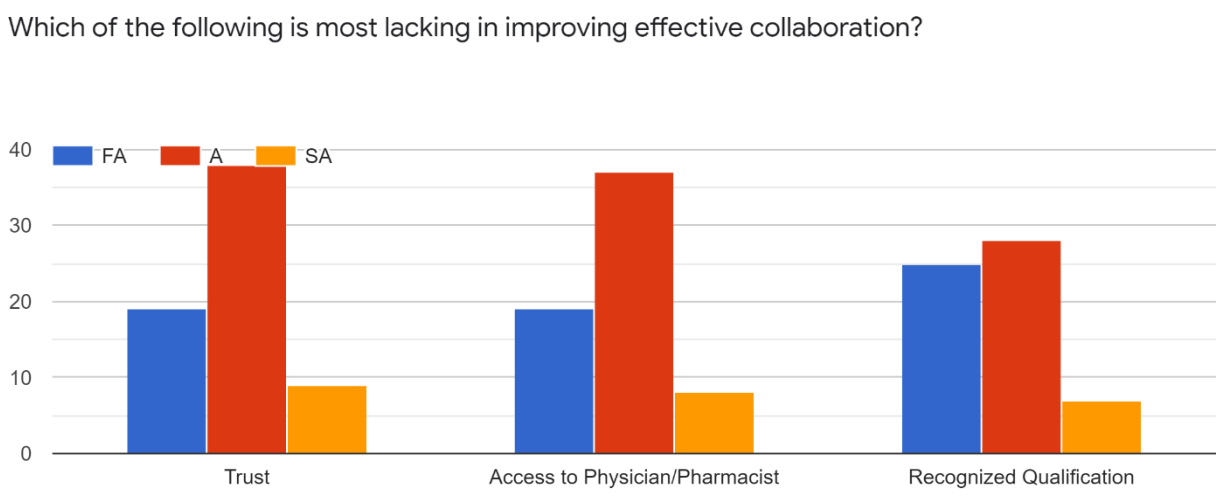

Figure 4.3.6: Deficiencies in improving effective collaboration

***Key: FA= Fairly agree; A= Agree; SA = Strongly agree.**

- Trust

There was an overwhelming agreement that trust will help improve the collaboration between both sets of professionals.

- Access to Physicians/Pharmacists

The survey respondents affirmed that increased access to physicians and or pharmacists will help improve this collaboration.

- Recognized qualification

There was also an agreement between physicians and pharmacists that qualifications of physician or pharmacists that was recognizable will help improve collaboration.

4.3.7 Proactive approaches to enhancing effective collaboration

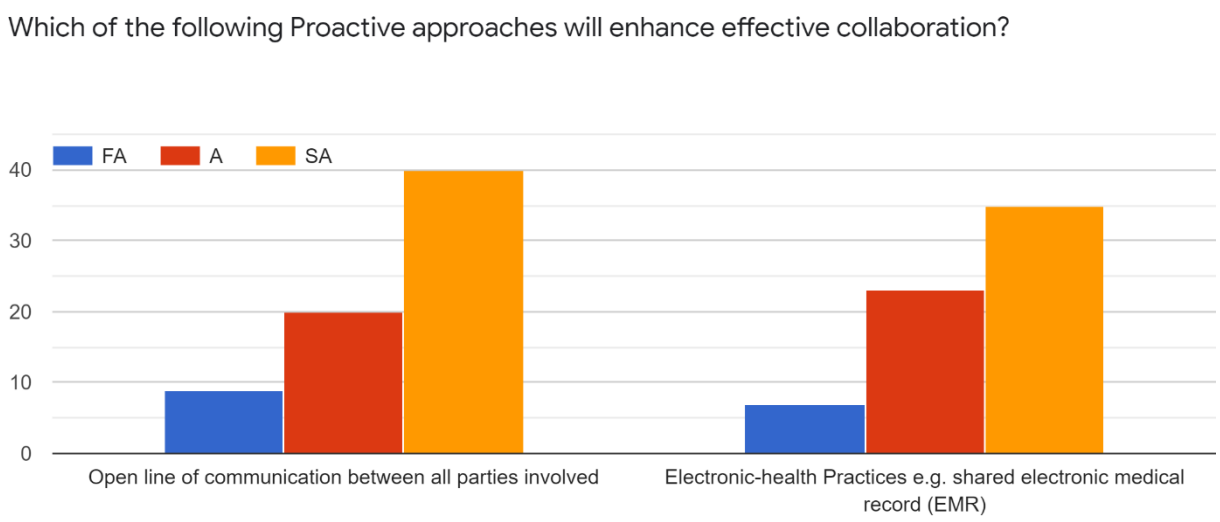

Figure 4.3.7: Recommendations to enhancing effective collaboration

***Key: FA= Fairly agree; A= Agree; SA = Strongly agree.**

- Open line of communication between all parties involved

There was a strong agreement in unison that an open line of communication between both parties will help enhance effective collaboration.

- Electronic health practices e.g. shared electronic medical record (EMR)

Both professionals also strongly agreed that enforcing and engaging in electronic health practices will be a proactive approach to enhancing effective collaboration.

4.4 PERSPECTIVE OF PATIENTS

Patients have the most to benefit from this relationship, they therefore have a say into how the relationship affects them.

4.4.1 Patients first port of call for common health issues

The importance of this section was to support a finding from the literature review that that patients visit community pharmacists as much as and if not more than they do physicians especially in a developing country like Nigeria. The question in this section is geared towards establishing the fac that pharmacists (community pharmacists) are more easily accessible to the patients and the patients would readily visit them especially for common ailments because the cost will be too much to bear in hospitals.

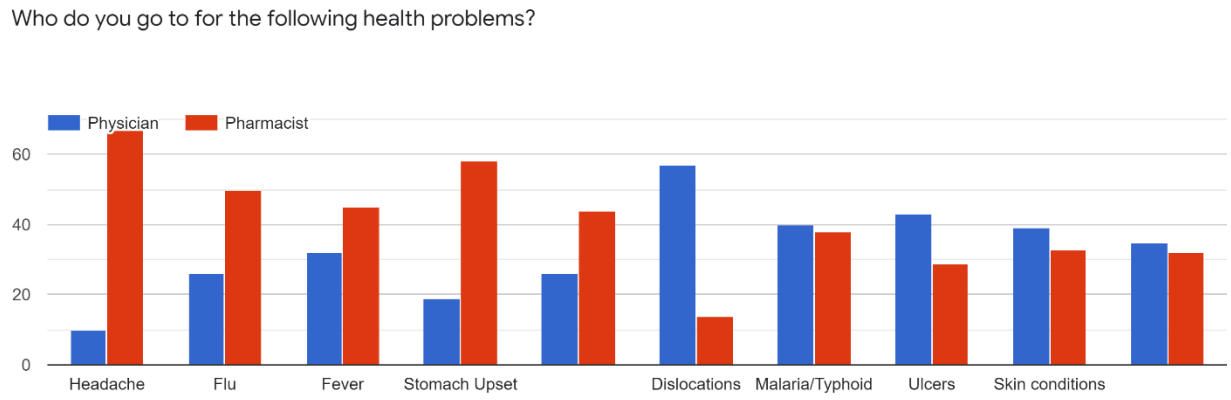

Figure 4.4.1: Patients first port of call for health problems

4.4.2 Who do you go to for the following health problems?

a. Headache – Pharmacists
b. Flu – Pharmacists
c. Fever – Pharmacists
d. Stomach upset – Pharmacists
e. Muscle strains—Pharmacists
f. Dislocations – Physicians
g. Malaria/Typhoid – Physicians
h. Ulcers—Physicians
i. Skin conditions – Physicians
j. Contraceptives – Physicians

This result shows that patients are most comfortable going to pharmacists particularly community pharmacists for relief to common ailments, this also supports the findings from literature review that patients pay out of pocket for healthcare predominantly in Nigeria and would rather go to their trusted community pharmacists than physicians in hospitals.

4.5 PHARMACIST AND PATIENTS

This relationship between patients and pharmacists is important especially in a country like Nigeria where pharmacists meet patients more than physicians do.

4.5.1 Pharmacist-patient relationship from the patient's mindset

This section of the survey was created to understand the pharmacist-patient relationship by looking at it from the perspective of patients. The various subsections include their views on medication, level and

quality of relationship and a relationship that is patient centric. This section was coded as explained in the previous chapter on methodology.

4.5.2 Views on medication

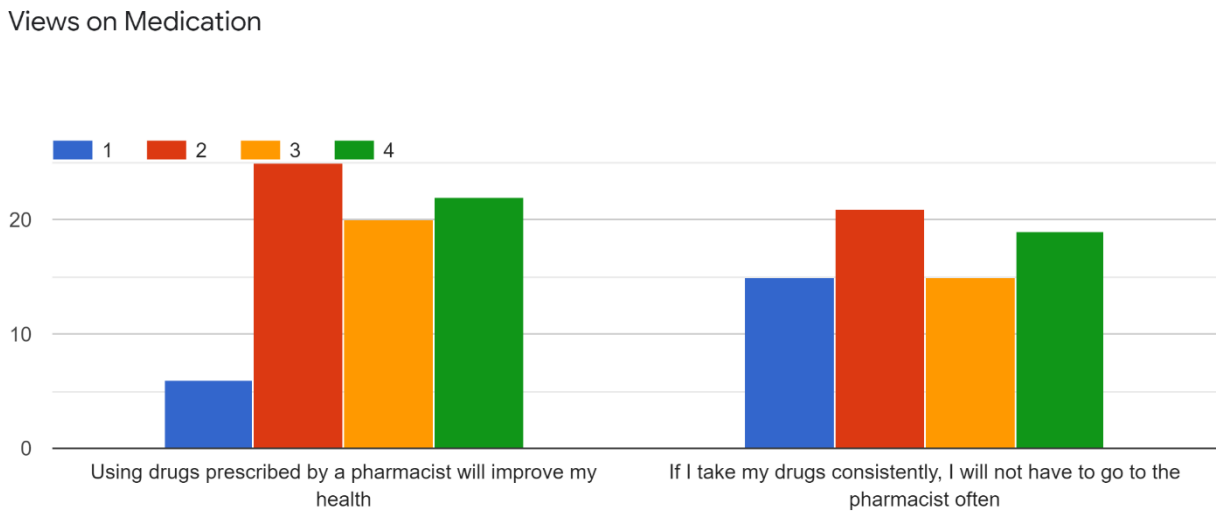

Figure 4.5.2: Views on medication

***Key: 1= Disagree; 2= Agree; 3= Fairly agree; 4= Strongly agree.**

- Using drugs prescribed by a pharmacist will improve my health

The responses to this portion of the survey consisted of most patients agreeing to this statement.

- If I take my drugs consistently, I will not have to go to the pharmacist often

The responses most generated for this section was patients agreeing to this statement.

4.5.3 Level and quality of relationship

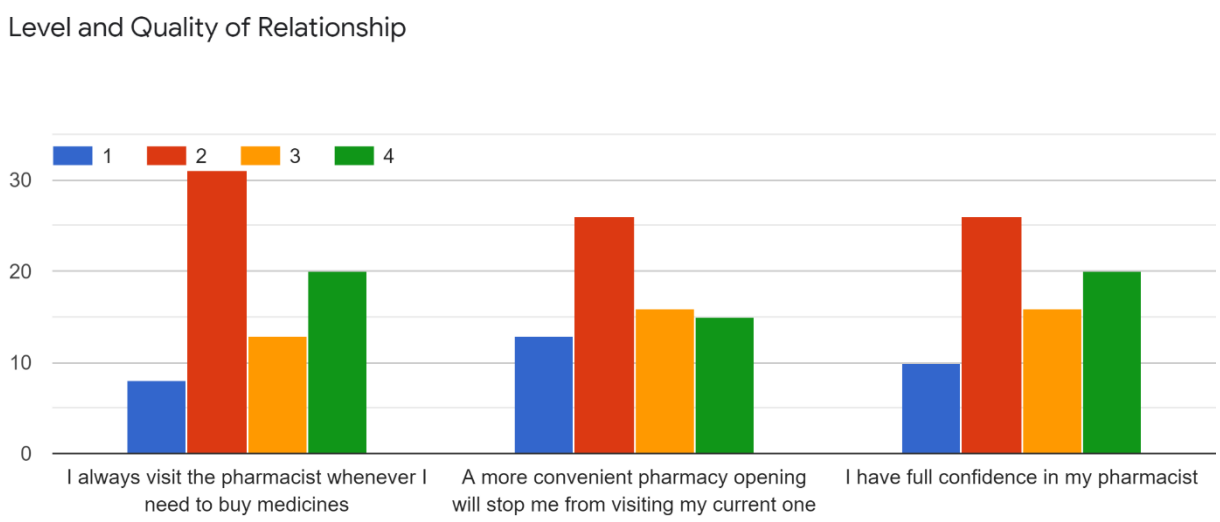

Figure 4.5.3: Level and Quality of relationship

***Key: 1= Disagree; 2= Agree; 3= Fairly agree; 4= Strongly agree.**

- I always visit the pharmacist whenever I need to buy medicines

There was an agreement in unison with this statement.

- A more convenient pharmacist opening will stop me from visiting my current one

Majority of patients agree with this statement.

- I have full confidence in my pharmacist

A good number of the respondents agree with this statement.

4.5.4 Patient centric relationship

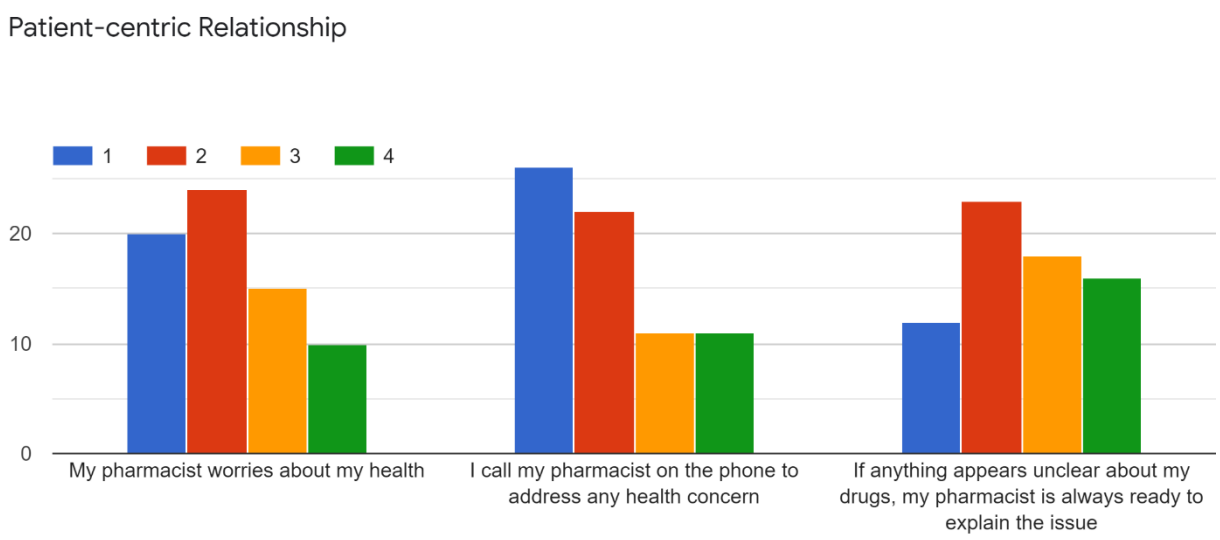

Figure 4.5.4: Patient centered relationship

***Key: 1= Disagree; 2= Agree; 3= Fairly agree; 4= Strongly agree.**

- My pharmacist worries about my health

A good number of the survey respondents (patients) agreed that their pharmacists worry about their health.

- I call my pharmacist on the phone to address any health concern

A substantial number of the survey respondents when answering this question disagreed that they speak to their pharmacists on the phone to address any health concern. This could be as a result of inadequate access to technology by the patients, a lack of understanding on the improved methods of communication and poverty that characterizes most patients in a developing country like Nigeria.

- If anything appears unclear about my drugs, my pharmacist is always ready to explain the issue

The patients in their response to this section agreed with this statement

4.6 PHYSICIAN AND PATIENTS

Physicians and patients in Nigeria have a good relationship, with proper investment in healthcare by the government, it can be improved and in so doing will enhance the delivery of quality healthcare.

4.6.1 Physician-patient relationship from the patient's mindset

This section of the survey was created to understand the perspective of the patients towards their physicians. This was done to suggest ways in which this relationship can be improved for the patients and in turn improve healthcare delivery in Nigeria.

4.6.2 Thoughts on the relationship

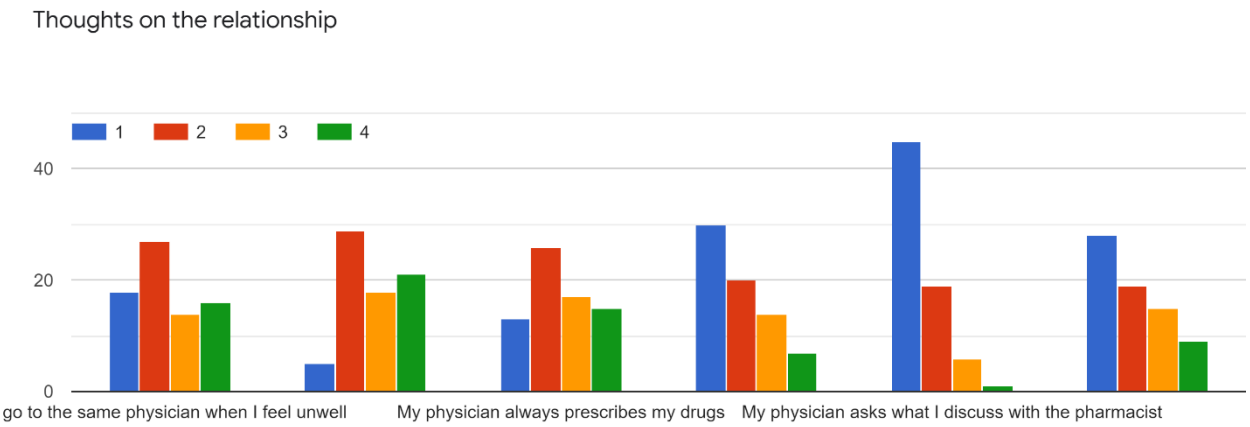

Figure 4.6.2: Thoughts on the relationship

***Key: 1= Disagree; 2= Agree; 3= Fairly agree; 4= Strongly agree.**

- I go to the same physician when I feel unwell

Majority of the survey respondents (patients) agreed with this statement

- I trust my physician

A good number of the survey respondents agreed with this statement

- My physician always prescribes my drugs

A lot of the survey respondents agreed that their physician always prescribes their drugs

- My physician directs me to the same pharmacist

A good number of the survey respondents disagreed with this statement, this is due to the lack of interaction between physicians and pharmacists.

- My physician asks about what I discuss with the pharmacist

Majority of the survey respondents disagreed with this statement.

- My physician advises me to listen to the pharmacist

Patients responding to this question also disagreed with this statement as generated by the author.

4.7 Summary

The key findings are highlighted below:

1. Physicians do not think highly of pharmacists, they still see them as mere shopkeepers and purveyors of medicines. In Nigeria, the physicians have a better relationship with nurses, dentists, and physiotherapists than they do pharmacists. Physicians that have some type of relationship with *hospital pharmacists* recognize their wealth of knowledge, experience and agree that a good relationship with pharmacists is beneficial to their patients. They agree that pharmacists are more knowledgeable on drug interactions and every other drug related enquiry and for this reason welcome a relationship with them. The result also shows that *community pharmacists* are more predominant than hospital pharmacists and for this reason should be brought into the discussion as they have a well-established relationship with patients. Unfortunately, *community pharmacists* have been relegated to the background and are not spoken highly of which should not be the case. This is because they are in their own rights also healthcare professionals who have received the same level of education as hospital pharmacists and deserve the same level of recognition as *hospital pharmacists*. They are vital to establishing this relationship because they will act to bridge the gap between physicians and patients.
2. Furthermore, patients in Nigeria as a result of not being able to afford the high cost of healthcare would rather go to their *community pharmacists* for everything from health education to life advice, they hardly go to physicians in hospitals except for severe cases. The government needs to realize this and establish schemes to encourage physician-pharmacist collaboration because it is in the best interest of their citizens. Trust is important in commencing the relationship, bi-directional communication enhances the relationship and introduction of electronic-health practices through accountable care organizations will also solidify the relationship and lead to improvement of healthcare delivery in Nigeria.

This research to the best of my knowledge is first of its kind in Nigeria, the next chapter provides a more in-depth analysis of the issues raised a seen from the secondary research and recommendations to improve this, the conclusions and need for further research.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Responding to the three main research questions

a. To analyze interprofessional collaboration among healthcare professionals namely, physicians and pharmacists in Nigeria.
b. To evaluate potential factors that may hinder this collaboration as well as those that can improve this collaboration in Nigeria.
c. To suggest feasible solutions that will bolster this collaboration between physicians and pharmacists in Nigeria.

5.2 Analysis of interprofessional collaboration among healthcare professionals specifically physicians and pharmacists in Nigeria

The answer to this question as observed from analysis of physicians and pharmacists response indicated showed that there is *some* level of interprofessional collaboration between these two health professionals, but the frequency of interaction needs to be improved. The result indicated that 42.9% of physicians and pharmacists rarely interacted with each other which indicates that a lot still needs to be done to fully establish interprofessional collaboration among physicians and pharmacists in Nigeria.

The major cause for interaction as observed was questions about drug availability. The relationship between physicians and pharmacists has the capacity if improved to bridge the gap of excellent healthcare delivery which is lacking in Nigeria. For a country with a healthcare system that is in shambles and in which the patients have lost faith in the government, the patients have come to trust their pharmacists, relying on them for health advice and treatment of various illnesses. Physicians can benefit from this by working with the pharmacists to deliver quality healthcare and good patient outcomes.

5.3 Factors that hinder and those that also act to improve this collaboration in Nigeria

There are different factors that hinder effective collaboration between physicians and pharmacists in a country like Nigeria. In the online survey distributed, these include poor communication, physician-pharmacist confidentiality, and inadequate resources to enhance this collaboration. Beyond these three factors, several other issues may impact this relationship negatively, they include government neglect of the health sector, rising poverty in the country, insecurity and volatility of some regions, misuse of allocated resources, a failing educational system, to name a few (Adeloye *et al.*, 2017). All these issues militate against the development of a healthy relationship between physicians and pharmacists, chief amongst these that requires urgent attention is the neglect of the health sector by the government, this is having a terrible impact on the life and wellbeing of its citizens. For this relationship to blossom, the

government need to be more invested in the healthcare of its citizens and can go about this by working with healthcare professionals from different fields to bring about a more structured healthcare system that will allow for interprofessional collaboration.

Conversely, the results from the online survey also showed that this relationship can be improved and made better than what is currently obtainable. Factors that can lead to the improvement of this relationship include: establishment of trust between physicians and pharmacists, removing the red tape that surrounds physicians and pharmacists having access to each other, physicians acknowledging pharmacist's qualification and contribution to this relationship, open line of communication between the two professionals and establishment of electronic health practices like a shared electronic medical record (EMR). Introduction of these practices will significantly enhance the relationship between physicians and pharmacists.

5.4 Suggesting feasible solutions that enhances collaboration between physicians and pharmacists in Nigeria.

The improvement of any relationship is never easy, the relationship must first be established on a solid foundation before it can then be improved upon. The interprofessional collaboration between physicians and pharmacists in Nigeria is one where both sides need to be in total agreement for any improvement generated to work effectively. This collaboration can be potentially improved by the following:

Bidirectional communication

Communication is vital to the progress of this relationship and it should not be one-sided.

Trust and Commitment

Both professionals need to have unwavering trust in each other's abilities and be committed to the relationship positively, this can be achieved by the physicians having more respect for the pharmacists and the pharmacists likewise being confident in their own abilities and capacity to deliver quality healthcare.

Respect and recognition

This burden lies mostly on physicians as they tend to view pharmacists as lesser health professionals, this needs to change because pharmacists have more to offer than just dispensing of medicines.

Government investment in healthcare

The government of the country need to pay more attention to healthcare by allocating a substantial part of the annual budget to healthcare because it is ridiculous to preside over an ailing population. A good investment in healthcare will improve the services of physicians and pharmacists and their relationship with each other.

Introducing this relationship to the curriculum and module in medical and pharmacy schools

The importance of this relationship needs to be appropriately taught in the modules of medical and pharmacy schools so that physicians and pharmacists graduating already have a well-grounded knowledge of the importance of this relationship and then apply it to the real world.

Education

Educating the population on the importance of such a relationship to their health to encourage them to work with the physicians and pharmacists.

Accountable care organizations

Some developed countries have established accountable care organizations (ACOs) which are bodies setup to bring together patient information into a common repository easily accessible to all healthcare professionals that understand confidentiality (Chui *et al.,* 2014). This is to create a seamless relationship between health workers. This will only work in an environment where there is technological advancement and tools in place to sustain this innovation. Nigeria is a developing country, the level of technological advancement cannot be compared to other developed countries in addition to a high rate of poverty and neglect from the government, insecurity and an economy that was once the best in Africa but now faces a lot of hardships. ACOs will do a lot of good to this relationship in Nigeria if the right systems are in place to encourage the success of such a relationship.

Comparing findings from primary and secondary research

From the secondary research, it was discovered that in developed countries this relationship has been researched extensively but there are still drawbacks to its implementation. These drawbacks encountered ranged from a lack of communication between both professionals, lack of trust and respect on the part of physicians towards pharmacists, inadequate knowledge on the impact of this relationship in the curriculum of medical and pharmacy students to name a few. Physicians and pharmacists also encounter these same issues in Nigeria, impacting the relationship. In contrast to what is applicable in Nigeria, the government of the developed countries invest substantially in healthcare, making the relationship easier on both parties, the citizens are well educated and sensitized on health matters, there is access to health insurance and good healthcare benefits and proper allocation of healthcare resources. This has allowed for cordial relationship between physicians and pharmacists but the same cannot be said for Nigeria. In fact, this research to the best of my knowledge is the first of its kind in the country and that says a lot about where the healthcare sector is in the context of this vital topic with regards to healthcare delivery and improvement. The Nigerian Medical Association (NMA), which is the governing body for physicians and the Pharmaceutical Society of Nigeria (PSN) that cater for pharmacists need to embrace the findings of this research and look to implement the findings of this

body of work as it will go a long way in initiating the change that needs to take place to improve physician-pharmacist collaboration in Nigeria.

The question on pharmacist's practice type supported a major finding from secondary research that showed community pharmacists being pushed to the background, but they have a big role to play in this relationship. This is especially important in Nigeria where the cost of healthcare is exorbitant, and patients do not have access to good quality healthcare because of poverty. This makes them resort to visiting their community pharmacists and the result of this survey showed that succinctly.

The question on the frequency of interaction showed that 42.9% of the respondents i.e. physicians and pharmacists never/rarely interacted with each other, the implication of this is that the collaboration currently does not exist properly in Nigeria. This research has highlighted why this relationship is important and is capacity to improve healthcare in Nigeria.

The question pertaining to physician's satisfaction with pharmaceutical care services i.e. physician's view of pharmacist's responsibility, physician's outlook on pharmacist's professionalism and physician's experience with pharmacist's, there was an overwhelming agreement and satisfaction with the contribution of pharmacists to the relationship in Nigeria correlating with the findings from secondary research that first highlighted this.

5.6 Limitations of the current research

Despite the current global pandemic ravaging the world, the author was still able to gather good responses, but these responses could have been better. Physicians were sent 40 questionnaires, pharmacists 50 and the patient population got 60, future research can include a wider patient population that is more representative. The physicians and pharmacists that responded to the online survey filled it correctly but there were some problems faced with the response from patients as some patients did not answer some questions while others responded to the wrong questions, some of them did not read the instructions carefully that stated that they only need to respond to sections 3,4 and 5, this is no fault of theirs because they would have been more comfortable and responsive to a paper-based questionnaire. The survey was not sent to older members of the population nor patients with chronic illnesses, but they should have been included because they offer a different perspective having had more contact with both sets of professionals over the years. The survey also had more response from the female population than the male population leading the author to believe that female population are more interested in the matters of health than their male counterparts.

Furthermore, another limitation encountered in the course of this research was non-existent papers or articles on this topic specific to Nigeria, this made this particular research novel and the author had to glean most of the knowledge for writing from other authors in other countries and then apply it to his country Nigeria, this made the work more arduous but in the end, fulfilling because this research can

go on to be the building block for further knowledge on this topic in Nigeria. This also means there is room for more research on this topic in Nigeria as it is a complex subject and most of the participants responded to the survey during a time of great pressure and uncertainty in the world, the current state of the world with the global coronavirus pandemic impacted this research, a lot of physicians, pharmacists and patients were reluctant to respond as they had a lot of things to contend with during this time. Subsequent authors need to document this and see where the research will lead to in a more stable world.

5.7 Recommendations for future research

The findings from this research came at an unprecedented time in the world, some of the responses reflected this, as a result future research should highlight this. Subsequent research should shed more light on the contributions of the different medical and pharmacy bodies like the Nigerian Medical Association (NMA) and Pharmaceutical Society of Nigeria (PSN) to this relationship, they also have a role to play in this relationship and should be brought into the fray.

Furthermore, hospitals (both public and private) need to contribute to this relationship because they play a significant role in establishing and enforcing this relationship, for this reason further research needs to be expounded into their role.

5.8 Conclusions

This research is titled an analysis of collaboration between physicians and pharmacists and how this might facilitate improved healthcare in Nigeria. The author began by researching available literature to obtain relevant knowledge on interprofessional collaboration between physicians and pharmacists available in literature with the aim of applying the knowledge garnered from these articles into a careful analysis of this relationship in Nigeria.

During this research in Nigeria, it was discovered that *community pharmacists* formed most of the pharmaceutical profession compared to *hospital pharmacists*. This means patients get to interact more with *community pharmacists* than they do physicians or *hospital pharmacists* which supports a finding from secondary research in ((Agomo *et al.*, 2018) and (Hindi *et al.*, 2019)) in the UK where patients feel more comfortable visiting their *community pharmacists*. For this reason, *community pharmacists* must be included more in the dynamics of this relationship for it to work effectively because they have the most access to patients.

A key result also showed that physicians rarely asked the patients what the pharmacists discussed with them nor if they take the advice of the pharmacists meaning the physicians do not show any interest in the relationship between patient and pharmacist, this needs to change also because knowledge of what the pharmacist recommended may be important in the physician's diagnosis.

Furthermore, patients also do not communicate properly with their pharmacists as the results indicated, patients should have a number for their community pharmacists that they can call in case of an emergency because the hospital emergency system in Nigeria does not function properly, if they know they can always get their pharmacist on the phone it will improve their relationship and then the *community pharmacist* in this case can share this knowledge with the physicians assigned to such patients.

Consequently, this research was novel as this is a massively under-reported topic in the Nigerian healthcare system allowing the author to follow the research to wherever it led without bias. In doing so, it showed the current bleak nature of the Nigerian healthcare system and the contributing factors to this dilapidation. For a country that claims to be the giant of Africa, the country is still way behind its closest rivals in terms of healthcare delivery and this has affected its economy because a failing healthcare system will result in a failing economic system. The onus lies on not only the government but healthcare bodies and organizations to work together to resuscitate the healthcare system and then build on improving different parts of this system including interprofessional collaboration between healthcare professionals.

Finally, the results obtained from this research shows the willingness of physicians and pharmacists to collaborate with each other to improve patient outcomes and this needs to be built upon as it is a good sign in the journey of effective interprofessional collaboration between physicians and pharmacists in Nigeria.

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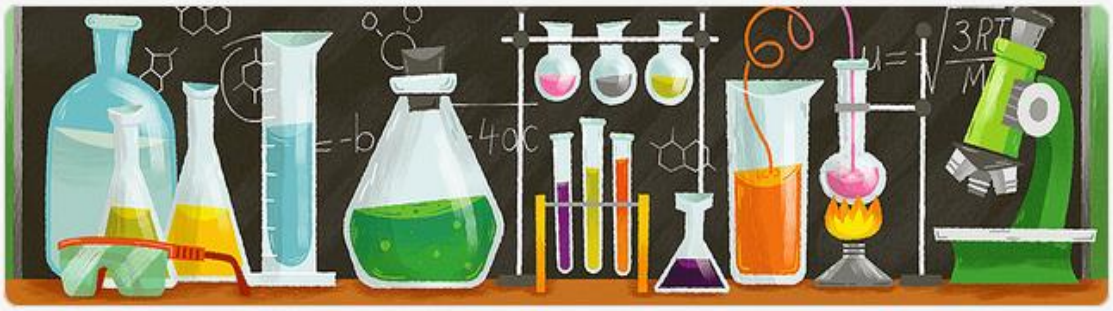
APPENDIX

SURVEY QUESTIONNAIRE



Analysis of Collaboration between Physicians and Pharmacists in the Healthcare sector in Nigeria

This Questionnaire aims to address the effect of collaboration between Physicians and Pharmacists in Nigeria and determine if it helps to improve the healthcare system in the country. There is also a section dedicated to the patient cohorts, with the aim of getting their perspective in this important discussion

The completed feedback from this questionnaire is highly appreciated as it adds to the knowledge on this massively under-reported topic.

The knowledge gleaned from this questionnaire will be utilized solely for this research project maintaining the utmost ethical standards. Hence, information given will be treated as strictly confidential.

****N.B. SECTIONS 1 AND 2 IS PARTICULAR TO PHYSICIANS AND PHARMACISTS ONLY. SECTIONS 3, 4 AND 5 IS SPECIFIC FOR PATIENTS ONLY.****

*Required

General Attributes of Survey Respondents *

Tick whichever category you belong to

- ◯ Physicians
- ◯ Pharmacists
- ◯ Patients

Gender *

- ◯ Male
- ◯ Female

Age in years *

Your answer

Practice Type

For Physicians Only

- ◯ Family Medicine
- ◯ Internal Medicine
- ◯ Pediatrics

Practice setting

For Physicians Only

- ◯ Private Practice
- ◯ Academic Institution
- ◯ Health Maintenance Organization
- ◯ Other Publicly Funded Institution

Practice Type

For Pharmacists Only

- ◯ Hospital Pharmacy
- ◯ Community Pharmacy

Frequency of Interactions

Frequency of Interaction between Physicians and Pharmacists

- ◯ Never/Rarely
- ◯ Once a week
- ◯ Once a day

Cause for Interactions

Frequency of Interaction between Physicians and Pharmacists (Pick all that is relevant)

- ☐ Drug-availability questions
- ☐ Issues with side effects
- ☐ Patient's dosage regimen
- ☐ Questions on drug interactions

Cause for Interactions

Frequency of Interaction between Physicians and Pharmacists (Pick all that is relevant)

- [ ] Drug-availability questions
- [ ] Issues with side effects
- [ ] Patient's dosage regimen
- [ ] Questions on drug interactions
- [ ] Other

TRUSTWORTHINESS

Comparing the principles of Trustworthiness, defined roles and onset of relationship (Pick all that is relevant)

- [ ] Physician/Pharmacist I work with is reliable
- [ ] Physician/Pharmacist I work with can be trusted
- [ ] Physician/Pharmacist I work interact with are true to their word
- [ ] Communication between me and the Physician/Pharmacist is bi-directional

DEFINED ROLES

Comparing the principles of Trustworthiness, defined roles and onset of relationship (Pick all that is relevant)

- [ ] Physician/Pharmacist I work with mutually depend on each other
- [ ] Whenever disagreements occur, we work together to fix it
- [ ] Physician/Pharmacist I interact with discuss patient care and agree on the best method to achieve this

ONSET OF RELATIONSHIP

Comparing the principles of Trustworthiness, defined roles and onset of relationship (Pick all that is relevant)

- [ ] I devote time to get knowledge on how i can help the Physician/Pharmacist I interact with
- [ ] I readily give out patient information to the Physician/Pharmacist
- [ ] I am interested in assisting the Physician/Pharmacist in developing their practice

PHYSICIAN'S SATISFACTION WITH PHARMACEUTICAL CARE SERVICES

Tick the box under the initials that applies. S = Satisfactory; MS = Moderately Satisfactory; U= Unsatisfactory.

Physician's view of Pharmacist's Responsibility

	S	MS	U
Patient Education and Sensitization	○	○	○
Advise on Minor Illnesses	○	○	○
Informing on use of prescription medicines	○	○	○
Informing on use of OTC medicines	○	○	○
Advising on medication adherence	○	○	○

Physician's outlook on Pharmacist's Professionalism

Tick the box under the initials that applies. A = Agree; N= Neutral; D = Disagree.

	A	N	D
Pharmacist should have first-hand knowledge on all drug types	○	○	○
Pharmacist should be an expert in varying drug-therapies	○	○	○
Pharmacist should help in designing patient's drug therapies	○	○	○
Pharmacist should always communicate prescription errors ASAP	○	○	○
Pharmacist should help in patient's medication adherence and inform Physician's on any deviations	○	○	○

Physician's experience with Pharmacists

Tick the box under the initials that applies. A = Agree; N= Neutral; D = Disagree.

	A	N	D
Pharmacists give credible information on prescriptions	○	○	○
Pharmacists communicate observed patient medication problems	○	○	○
Pharmacists educate patients on drug safety	○	○	○
Pharmacists suggest cheap substitutes to prescribed medicines	○	○	○
Pharmacists communicate observed clinical deficiencies with prescribed medicines	○	○	○

Which of the following in your opinion hinders effective collaboration?

Tick the box under the initials that applies. FA = Fairly Agree; A= Agree; SA = Strongly agree.

	FA	A	SA
Poor communication	○	○	○
Physician-Patient Confidentiality	○	○	○
Inadequate resources to enhance collaboration	○	○	○

Which of the following is most lacking in improving effective collaboration?

Tick the box under the initials that applies. FA = Fairly Agree; A= Agree; SA = Strongly agree.

	FA	A	SA
Trust	○	○	○
Access to Physician/Pharmacist	○	○	○
Recognized Qualification	○	○	○

Which of the following Proactive approaches will enhance effective collaboration?

Tick the box under the initials that applies. FA = Fairly Agree; A= Agree; SA = Strongly agree.

	FA	A	SA
Open line of communication between all parties involved	○	○	○
Electronic-health Practices e.g. shared electronic medical record (EMR)	○	○	○

Patient's first port of call for common health issues

Pick either of the two health professionals (Physician or Pharmacist).

Who do you go to for the following health problems?

	Physician	Pharmacist
Headache	○	○
Flu	○	○
Fever	○	○
Stomach Upset	○	○
Muscle strains	○	○
Dislocations	○	○
Malaria/Typhoid	○	○
Ulcers	○	○
Skin conditions	○	○
Contraceptives	○	○

PHARMACIST-PATIENT RELATIONSHIP FROM THE PATIENT'S MINDSET

Please rank the statements below using the marks and tick the box that is closest to your agreement/disagreement with them
Disagree (1) Agree (2) Fairly Agree (3) Strongly Agree(4

Views on Medication

	1	2	3	4
Using drugs prescribed by a pharmacist will improve my health	○	○	○	○
If I take my drugs consistently, I will not have to go to the pharmacist often	○	○	○	○

Level and Quality of Relationship

	1	2	3	4
I always visit the pharmacist whenever I need to buy medicines	○	○	○	○
A more convenient pharmacy opening will stop me from visiting my current one	○	○	○	○
I have full confidence in my pharmacist	○	○	○	○

Patient-centric Relationship

	1	2	3	4
My pharmacist worries about my health	○	○	○	○
I call my pharmacist on the phone to address any health concern	○	○	○	○
If anything appears unclear about my drugs, my pharmacist is always ready to explain the issue	○	○	○	○

PHYSICIAN-PATIENT RELATIONSHIP FROM THE PATIENT'S MINDSET

Please rank the statements below using the marks and tick the box that is closest to your agreement/disagreement with them

Disagree (1) Agree (2) Fairly Agree (3) Strongly Agree(4)

	1	2	3	4
I go to the same physician when I feel unwell	○	○	○	○
I trust my physician	○	○	○	○
My physician always prescribes my drugs	○	○	○	○
My physician directs me to the same pharmacist	○	○	○	○
My physician asks what I discuss with the pharmacist	○	○	○	○
My physician advises me to listen to the pharmacist	○	○	○	○