

**EXPLORING PHARMACIST-MEDICAL PRACTITIONER COLLABORATION ON
OUTPATIENT PHARMACEUTICAL CARE AT MANKWENG HOSPITAL IN
LIMPOPO PROVINCE, SOUTH AFRICA.**

MASTER OF PHARMACY

in

PHARMACY PRACTICE

By

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by

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2022

DECLARATION

I declare that the **dissertation** hereby submitted to the University of Limpopo, for the degree of **Master of Pharmacy in Pharmacy Practice** has not previously been submitted by me for a degree at this or any other university; that it is my work in design and execution, and that all material contained herein has been duly acknowledged.

Bopape MS(Mr)

Signature



10 October 2022

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DEFINITION OF CONCEPTS

Clinical pharmacy: a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness and disease prevention (Dreischulte & Fernandez-Llimos, 2016).

In this study clinical pharmacy will be referred to as a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness and disease prevention to patients at Mankweng hospital outpatient section.

Collaborative patient care: is defined as health care professionals assuming complementary roles and cooperatively working together, sharing responsibility for problem-solving and making decisions to formulate and carry out plans for patient care (O'Daniel & Rosenstein, 2008).

In this study collaborative patient care will be referred to as a healthcare process in which pharmacists and medical practitioner work cooperatively and share responsibilities to enhance quality of pharmaceutical care,

Inpatient: a person who is formally admitted to a health-care facility and who is discharged after one or more days (O'Toole, 2013).

In this study inpatient will be referred to a person who is formally admitted at Mankweng hospital and discharged after one or more days without obtain healthcare services in outpatient department.

Interprofessional collaboration: a practice and education where individuals from two or more professional backgrounds meet, interact, learn together, and practice with the client at the centre of care (Prentice, et al., 2014).

In this study interprofessional collaboration will be referred to a practice and education from a group of pharmacists and medical practitioner at outpatient section with different backgrounds meet, interact, share responsibilities, learn together, and practice with the client at the centre of care process.

Medical practitioner: Generalist medical doctors (including family and primary care doctors) diagnose, treat and prevent illness, disease, injury, and other physical and mental impairments and maintain general health in humans through application of the principles and procedures of modern medicine (World Health Organization, 2008).

In this study a medical practitioner will be used as described by WHO.

Multidisciplinary care team: a partnership among health care workers of different disciplines inside and outside the health sector and the community with the goal of providing quality continuous, comprehensive and efficient health services (International Association of Physicians in Aids Care, 2011).

In this study multidisciplinary care team will be referred to the partnership between pharmacists and medical practitioners of different discipline in the hospital based practice with the goal of improving pharmaceutical care.

Outpatient: is a person who goes to a health-care facility for a consultation, and who leaves the facility within three hours of the start of the consultation (O'Toole, 2013). It shall be used as defined.

In this study an outpatient will be referred to a person who goes to Makweng hospital health-care facility for a consultation, and who leaves the facility within a day of the start of the consultation.

Outpatient care: all types of health services provided to patients who are not confined to an institutional bed as inpatients during the time services are rendered (O'Toole, 2013).

In this study outpatient care is referred to the healthcare service provided to patients who are not formally admitted for at least one day in the Mankweng hospital during the time of healthcare service provision.

Patient: is a recipient of a health care service (O'Toole, 2013).

In this study a patient will be referred to as any person including paediatrics, adolescents, adults and geriatrics who goes to Makweng hospital health-care facility for a consultation and receive care from the outpatient department.

Patient care: It includes, but is not limited to, anticipating and providing for each patient's needs and helping each patient achieve their health goals in light of their health condition (Yorke, 2016).

In this study patient care will be referred to the provision of healthcare service by collaboration among pharmacist and medical practitioner according to the patient's needs and helping them to achieve their goal of health condition through drug therapy and its supporting factors.

Pharmaceutical care is as a philosophy of practice in which the patient is the primary beneficiary of the pharmacist's actions which therefore focus on the attitudes, behaviours, commitments, concerns, ethics, functions, knowledge, responsibilities and skills of the pharmacist on the provision of drug therapy with the goal of achieving definite therapeutic outcomes toward patient health and quality of life (World Health Organisation, 1994).

In this study pharmaceutical care means the cooperative practice between pharmacists and medical practitioners in the aim of improving quality of patient care through focus on the attitudes, behaviours, commitments, concerns, ethics, functions, knowledge, responsibilities and skills of both groups of health professionals on the provision and management of drug therapy with the goal of achieving definite therapeutic outcomes according to individualised patient's needs.

Pharmacist: is a health professional who store, preserve, compound and dispense medicinal products. They counsel on the proper use and adverse effects of drugs and medicines following prescriptions issued by medical doctors and other health professionals. They contribute to researching, testing, preparing, prescribing and monitoring medicinal therapies for optimizing human health (World Health Organization, 2008). In this study a pharmacist will be used as described by WHO.

LIST OF ABBREVIATIONS

ACO-Accountable care organizations

CDSM-Chronic disease self-management

CDTM- Collaborative drug therapy management.

CEO- Chief executive officer

CMM-Comprehensive medication management

CPA-Collaborative practice agreement

DHS-District health system.

MTM-Medication therapy Management.

NDP- Non-dispensing pharmacists.

NPHPs- National public health programs.

PCMH-Patient centered medical home

TCA-Thematic content analysis.

SREC-School research and ethics committee

TREC-Turf-loop research and ethics committee

ABSTRACT

Introduction

Developing countries face huge challenges in provision of pharmaceutical care whereas some developed countries have developed and implemented measure to improve pharmaceutical care through collaborative practices. Collaborative patient care is referred to as the cooperative work or practice by healthcare professionals assuming complementary roles and sharing responsibilities for decision making and problem solving to formulate and furnish quality patient care. Pharmaceutical care is governed by the principles and philosophy of patient centred pharmacy practice, where the main responsibilities, roles or action of a pharmacist are based on patient care. Collaborative pharmaceutical care practice for outpatient requires collaborative action of a pharmacist with other healthcare practitioners. Pharmacist-medical practitioner collaborative care practice is one of the recently emerging aspects in developing countries' hospitals such as in South Africa which can enhance patient care.

Method

A qualitative study using semi-structured interviews was conducted with a purposeful sample of 8 pharmacists and 9 medical practitioners at Mankweng Hospital in Limpopo province, South Africa. In the study we used audiotaped interviews that were transcribed exactly as said and analysed using thematic content analysis.

Results

Three main themes emerged from the study's interview analysis, description of the current relationship and collaborative practices; the perspective of the pharmacists and medical practitioners on collaboration; the barriers affecting pharmacist-medical practitioner collaboration; and recommendations on the ways, strategy and model to improve pharmacists-medical practitioner collaboration. This highlighted that the relationship among pharmacists and medical practitioners is moderate and there a need for improvement in the relationship. The recommendations range from established

educational and interactional platforms, improved resource supply, clarity in terms of roles and responsibilities and enhanced managerial structures and functions.

Conclusion

The current relationship among pharmacists and medical practitioners is moderate. There is still a need for improvement in the relationship to achieve quality collaborative practice for pharmaceutical care in outpatient.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter gives a background to the study, a summary of what is generally known about the topic, why the study was conducted and what it seeks to achieve.

1.2 BACKGROUND AND RATIONALE FOR THE STUDY

Developing countries face huge challenges in provision of pharmaceutical care whereas some of developed countries, have developed and implemented measure to improve pharmaceutical care through collaborative practices (Upadhyay & Ooi, 2018). Areas such as the United States has also expanded the collaborative drug therapy management (CDTM) legislation due to the advancement of pharmacist's role and recognition. There are several factors hampering the provision of adequate pharmaceutical care in developing countries. Such factors include the rising cost of healthcare, lack of workforce in the healthcare sectors, inefficient healthcare systems structures, increased disease burden, and the socially, technologically, economically, and politically altered environment encountered in the healthcare system (Upadhyay & Ooi, 2018). In South Africa the practice of collaborative pharmaceutical care is limited and often provided to inpatients only (Bronkhorst, Schellack, Gous & Pretorius, 2012) (Pretorius, Schellack, Gous & Becker, 2011) (Sello & Dambisya, 2014).

Pharmaceutical care is an area of healthcare practice in which a patient is the principal beneficiary of the pharmaceutical services mainly the pharmacist's action in patient care. The fundamentals to the provision of pharmaceutical care include attitudes and behaviour, roles and responsibilities, the commitments, ethics, knowledge, and skills of the pharmacist on the provision of pharmacotherapy (World Health Ogranisation, 1994). The ultimate goal is achieving definite therapeutic outcomes toward patient health and quality of life (World Health Ogranisation, 1994). Pharmaceutical care necessitates the co-operation or collaboration of a pharmacist with patients and other healthcare professionals in designing, implementing, and monitoring a therapeutic care process of a patient to produce quality therapeutic outcomes (Cousins, 2012). Models to improve

pharmaceutical care have been developed including pharmacist-medical practitioner collaboration of which it's not eminent in South Africa of their existence or practice.

Pharmaceutical care practice that requires collaborative action of which pharmacist-medical practitioner collaborative care relationship is one of the issues that has been overseen in developing countries' hospitals such as in South Africa which can enhance patient care. Collaborative patient care refers to the cooperative work or practice by healthcare professionals assuming complementary roles and sharing responsibilities for decision making and problem solving to formulate and furnish quality patient care (O'Daniel & Rosenstein, 2008). Collaboration between healthcare professionals enhance awareness of among team member's roles, diverse knowledge, and skills, yielding continued improvement in decision-making and more importantly the core "patient care" which involves pharmaceutical care (Rees, Smith & Watson, 2014).

Contrary to pharmaceutical care's required standards of an integrative relationship the current pharmacist-medical practitioner relationship as seen in many studies, is based on drug dispensing, procurement, and inventory control (Azhar, Hassali, & Ibrahim, 2010). The relationship focus on the internal tasks and overlooks collaborative care which focuses on therapy management and patients centered care (Mohiuddin, 2019). Pharmacists and medical practitioners do not view their roles as equally important and complementary (Agwo & Wannang, 2014).

Few studies highlighted an inadequate transparency and articulation in the provision of pharmaceutical care in South African hospitals among pharmacists and medical practitioners (Bezuidenhout, 2015) (Bronkhorst, Schellack, Gous & Pretorius, 2012). This is in terms management of patient affected by both chronic and acute medical conditions therefore result in insufficient understanding on each other's roles on collaborative pharmaceutical care process. The separation between the two professions may contribute to reduced chance of an improved level high quality service offered in patient care. And also, separation seems to occur due to the presence of personnel related barriers ranging from interaction, individualized practitioner and environmental factors (Abdullatif, 2014). The issue of separation has also advanced in the present of the "Batho pele" principle (Department of Public Service and Administration, 1997).

Therefore, compromised patient care has a high probability in our public hospitals and reduced trust on the public services.

The existence of pharmaceutical care in terms pharmacist-medical practitioner collaboration it is generally practiced at the level of inpatient and is often limited to theoretical aspects as highlighted by research evidence, the practice is less in South Africa (Bronkhorst, *et al.*, 2012) (Pretorius, Schellack, Gous, & Becker, 2011). The low practice is limited to a certain inpatient or certain medical conditions leaving the majority of outpatient without quality pharmaceutical care. The limitation is exhibited by pharmacist not being involved in outpatient care and patient counselling as the counselling rooms are not proper and not utilized in South Africa and Africa in general (Surur, Teni, Girmay, Moges, Tesfa & Abraha, 2015) (Sello & Dambisya, 2014).

The current lack of structured system for collaborative practice in the provision of pharmaceutical care on outpatients in South Africa is not desirable and need to be addressed. However, for a suitable structured system or a model to exist for collaborative pharmaceutical care, there must be an understanding of the current collaborative relationship and hence this study. This study will lay grounds for the development of suitable collaborative model for outpatients in South Africa.

1.3 PROBLEM STATEMENT

Efforts to foster collaboration in South African hospital settings is limited to a level of inpatient care in the wards (Sello & Dambisya, 2014). While most of the patients who visits the hospital are outpatients, there is no identifiable evidence of pharmacist-medical practitioner collaboration in the outpatient department. It is evident that the lack of pharmacist-medical practitioner collaboration for outpatients along with poor health service in most public hospitals often give the impression that outpatients are not given similar attention to inpatients. Furthermore, the idea of collaboration is inhibited by the patient care services offered in co-existence with barriers such as healthcare practitioners' interactional factors and environmental factors (Van, Costa, Mitchell, Abbott, & Krass, 2012). Even though pharmacist-medical practitioner collaboration practice is deemed a necessity, it is unclear to what extent pharmacists and medical practitioners working in Mankweng Hospital Outpatient department collaborate. In

addition, the barriers limiting their collaborative practice for outpatients are not known and have not been studied. There is, therefore, a need to explore pharmacists-medical practitioner collaborative practice in the provision of pharmaceutical care for outpatients.

1.4 RESEARCH QUESTIONS

What is the current relationship between pharmacists and medical practitioners in an outpatient setting at Mankweng hospital for pharmaceutical care services?

What are the perspectives of both pharmacists and medical practitioners on the pharmacist-medical practitioner collaboration?

What are the barriers affecting the pharmacist-medical practitioner collaboration in an outpatient setting for pharmaceutical care at Mankweng hospital?

1.5 PURPOSE OF THE STUDY

1.5.1 Aim of the study

To explore the pharmacists-medical practitioner collaborative practice in the provision of pharmaceutical care in the Mankweng hospital outpatient department.

1.5.2 Objectives of the study

The objectives of the study are as follows:

To explore the current collaborative relationship between pharmacists and medical practitioners in an outpatient setting for pharmaceutical care service at Mankweng hospital.

To assess the perspective of both the pharmacists and medical practitioners on the collaborative care practice.

To determine the barriers affecting pharmacists-medical practitioner collaboration in an outpatient setting at Mankweng hospital for pharmaceutical care.

1.6 SIGNIFICANCE OF THE STUDY

This study will make hospital management to be aware of the current relationship between pharmacist and medical practitioners including its shortcomings. It will foster the relationship between pharmacists and medical practitioners. The other focus part of the study will be to explore the development of a collaborative care practice, ways or strategies that will enhance provision of pharmaceutical care which will include strategies to improve the relationship between pharmacist and medical practitioners as far as proactive working relationship is concerned. Furthermore, to enhance participation of pharmacists in pharmaceutical care and reduce the level of risk associated with patient care in outpatient department in the public hospitals. The study also anticipates to strengthen the application of collaborative care and open networks for further research. It will be for the first time a collaborative method of this kind is developed this will help enhance the body of knowledge related to inter-professional practice and open network for further research.

1.7 SUMMARY

According to the literature, pharmacist-medical practitioner collaboration on pharmaceutical care provision can improve the provision of patient care and it also states the progress of implementation of pharmaceutical from developed countries to developing countries such as South Africa. It goes further to state the challenges faced through the process of collaboration and their impact on patient care.

The study was conducted with aim of exploring the pharmacists-medical practitioner collaborative practice in the provision of pharmaceutical care in the Mankweng hospital outpatient department. The study was also conducted with the expectation that collaboration among pharmacists and medical practitioners can bring about improvement in provision of patient pharmaceutical care. As indicated in the chapter study's objectives were to explore the current collaborative relationship between pharmacists and medical practitioners, to assess their perspective and determine the barriers affecting pharmacist-medical practitioner collaboration in outpatient hospital setting for pharmaceutical care.

CHAPTER 2

LITERATURE REVIEW

2.1. INTRODUCTION

This chapter presents research work that has already been conducted around the world at large regarding pharmacist-medical practitioner collaboration and pharmaceutical care. This chapter also covers the conceptual framework of the study as the foundation of the process of exploring the pharmacist-medical practitioner.

2.2. PHARMACIST-MEDICAL PRACTITIONER COLLABORATION FOR PHARMACEUTICAL CARE PRACTICES.

Pharmacist-medical practitioner collaboration is defined by pharmaceutical care, and it is guided by its principles. The introduction of pharmaceutical care in developing countries is a challenge but the developed European countries have a long tradition in provision of pharmaceutical services and care in a collaborative manner (Morak, S., Vogler, S., Walser, S. & Kijlstra, N., 2010). In the Netherlands pharmaceutical care is enhanced by the high motivation from community pharmacy than in hospital pharmacy through models (Cipolle, *et al.*, 2012). In Canada, many pharmacists offer clinical and pharmaceutical care all over the country in line with introduction of a clinical collaborative care models (Nazir & Taha, 2018). In developing countries such as India, hospital pharmacy service is limited to drug dispensing in hospitals (Sreelalitha, Vigneshwaran, Narayana, Reddy & Reddy, 2012).

In Africa the provision of collaborative pharmaceutical care is at an infancy stage. For example, in the Arabic middle east countries pharmacists are not overly enthusiastic to engage in anything approximate to pharmaceutical care until there is legislation support (Cipolle, *et al.*, 2012). In 2009, countries such as Ethiopia introduced harmonisation and implementation of a clinically centered undergraduate pharmacy program with anticipation to improve collaboration among medical practitioners and pharmacists (Ayalew, *et al.*, 2019). However, the processes written as protocols and guidelines are hardly applied on the actual practice as care is still perceived to be in physician's hands (Ogbonna & Odili, 2019). On that note, the provision of collaborative pharmaceutical

care in South Africa is a rare practice and still limited to inpatient services (Bezuidenhout, 2015) (Bronkhorst, *et al.*, 2012) (Pretorius, *et al.*, 2011).

Increased interaction among pharmacists and medical practitioners in developed countries managed to achieve a significant level of effective, safer and less costly drug therapy (Sabry & Farid, 2014). Medical practitioners and pharmacists in developing countries such South Africa interact in terms of stock control, procurement of pharmaceuticals and medication dispensing (Azhar, Hassali, & Ibrahim, 2010). The traditional view of pharmacy in South Africa has made healthcare professionals reluctant to accepting role of collaborative clinical health care (Sello & Dambisya, 2014). While instruments to measure pharmacist–medical practitioner collaboration have been established in developed and developing countries, most the instruments concentrate on measuring attitudes toward collaboration rather than collaborative practice behavior of the healthcare professionals (Van, Costa, Mitchell, Abbott, & Krass, 2012.). In addition, most research carried out only focus on the medical practitioners' perspective. Medical practitioners in some studies do show to accept the expansion of the pharmacists' roles toward collaboration but their expectations on the pharmacist's roles are not clear (Azhar, Hassali, Iqbal, Akram, Attique-Ur-Rehman, *et al.*, 2014).

Nonetheless most of the collaborative practices or inter-professional models in patient healthcare processes that exist focus on certain disease conditions or specialties than broader area healthcare. For example, a study which focused on pharmacist-medical practitioner co-management of hypertension and reduction in 24-Hour ambulatory blood pressures showed that the intervention group had more patients with a controlled blood pressure than in the control group (75.0% vs 50.7%) ($P < .001$) (Weber, Ernst, Sezate, Zheng & Carter, 2010). Another study at a local hospital also focused on the role of pharmacist in the renal multidisciplinary team which highlighted less participant of pharmacists in the team (Manyama, *et al.*, 2020).

2.3. COLLABORATIVE PHARMACEUTICAL CARE MODELS

As highlighted above pharmaceutical care models and studies exist in many countries around the world with different approaches however their main goal is cooperation towards provision of patient centered care. The integrative process is for optimising the

therapeutic response or to manage therapy related drug interactions or complications through face-to-face interaction, thus bringing about interventions (Breedon, Isetts, Buffington, Coffey, Davidson, Kahlon, 2014) (Breedon, *et al.*, 2014). That is a ration of pharmaceutical care which is practiced through collaborative model that extent the concept of team practice and the leadership focus model where healthcare providers corroborate as needed by ensure stability and continuity in provision of safe, high-quality care than autonomous practice (Centers for Disease Control and Prevention, 2017). There are several collaborative models which also include use of collaborative practice agreement (CPA) (Centers for Disease Control and Prevention, 2017), collaborative prescribing; patient centered medical home (PCMH); medication therapy management (MTM); comprehensive medication management (CMM) and/or chronic disease self-management (CDSM) (Matzke, *et al.*, 2018). Other model of similar components includes collaborative drug therapy management (CDTM) and accountable care organizations (ACOs) from the US (The American College of Clinical Pharmacy, 2015).

Most of these models are in practice but not limited through collaborative practice agreement which is one of the concepts that can be used as a practice policy agreement in a model or a model. As mentioned above CPA is referred to as:

- An agreement between several licensed pharmacists and or number of healthcare practitioners in a collaborative practice environment that outlines their competency as collective.
- It is based on the roles and responsibility of each healthcare provider with acknowledged shared risk and responsibilities for patient outcomes the process that take place within this are governed laws or policies or protocols e.g. the public healthcare institutions (Saskatchewan College of Pharmacy Professionals, 2017).

CPA reflects a cooperative practice relationship between pharmacists and a medical practitioners or other healthcare practice group(s) with the legal authority to carry out patientcare processes and it is not limited as the use is broad (Centers for Disease Control and Prevention, 2017). According to Saskatchewan College of Pharmacy Professionals (2017), CPA contains the following:

- Practice Model and Organisation of Care: this foundational framework of the organization guiding duties of the healthcare professionals
- Written declaration by the collaborating team specifying their roles, responsibilities, duties and liabilities, including names and contact information and credentials of team members;
- Common goals for the collaborative patient care processes.
- Roles and responsibilities of team members based on their competency standards and understanding each healthcare practitioner' scope of practice with defined roles and responsibilities for collaborative practice.
- Leadership: who is responsible to coordinate and facilitate the process of collaboration within team.
- Trust and respect.
- Location: description about area or environment of practice.
- Barriers: describes the factors preventing access to quality healthcare and the correcting actions by healthcare team ;
- Liability: describes the action required for accountability and insurance coverage by each healthcare personnel;
- Regulatory bodies: talks about the involved regulatory bodies and their roles
- Documentation: the documentation processes agreed upon, protocols and procedures.
- Communication: the selected mode of communications, protocols and procedures that govern information sharing.
- Technology: the type of documentation method which the utilising technology for documentation and communication makes it easy
- Compensation: the mode and procedures required to compensate each practitioner for their duties.
- Boundaries: specification in terms of scopes of practice including level of dependency or independency.
- Funding: describe how the rendered services will be funded;

- Contract expiry: provisions on validity duration of the agreement, the evaluation processes and continuity. (Saskatchewan College of Pharmacy Professionals, 2017).

As mentioned above there are models such PCMH (also referred to as medical home, or advanced primary care) which is an innovative healthcare delivery system designed to improve patient experience and population health, and also lowers the healthcare costs (Patient-centred primary care collaborative organisation, 2006).

PCMHs incorporate collaborative care approach, with medical practitioners and other healthcare professionals of a healthcare facility mainly in primary health care (Higgins, *et al.*, 2015) (Robert Graham Center, 2007). The PCMHs are community centered medical practice groups which provide care integration which assist patients, mainly vulnerable ones to gain access to the health care services for example, specialists, hospitals, home health, other health care ancillary services thus enhancing access to community resources that support their health, ensure quality healthcare and well-being (Patient-centred primary care collaborative organisation, 2006). Through provision of this advanced collaborative primary care, the practice focus on enhanced trust relationships of healthcare providers with patients, families, and caregivers by ensuring that they are the focal point the care process as most individual likes a personal directed care. The PCMH is based on five principles, namely: “comprehensive care, patient-centered approach, coordinated care, accessibility of services and quality and safety” (Higgins, *et al.*, 2015).

Another model called collaborative prescribing exist in Canada and United States, here the medical practitioner’s role is diagnosis and initial treatment decisions for the patient while the pharmacist ‘s role is selection, initiation, monitoring, modification, continuing, and discontinuing the pharmacotherapy as appropriate to achieve the desired patient outcomes (Task Force on Pharmacist Prescribing, 2001). In addition, most of research clearly emphasis the effective respond and the importance of following protocols and availability of quality assurance supervision.

Furthermore, in comparison to this study there is MTM which is not specific to a facility but to the care providers. Medication therapy management (MTM) is a different type of

healthcare service system that optimise therapeutic outcomes for individual patients (American Pharmacists Association and the National Association of Chain Drug Stores Foundation, 2005). It is composed of five elements which clearly portrays the principles of pharmaceutical care. The elements are as follows: “Medication therapy review; personal medication record; medication-related action plan (MAP); intervention and/or referral; and documentation and follow-up” (American Pharmacists Association, National Association of Chain Drug Stores Foundation, 2008).

According to study report conducted in the US in California provision of MTM has limitations which include its use of healthcare services system which exhibit that only the knowledge about the prescribed medication is required with less focus on patient’s clinical status (Butler, *et al.*, 2015) (Butler, *et al.*, 2017). On the other hand, there is CMM which is seen as an extension of MTM to improve its limitation. CMM is the healthcare service system that ensures individual patient’s medications, irrespective prescription of non-prescription are individually assessed to determine the appropriateness for the patient, efficacy , safety given the comorbidities and drug-drug interactions, and capability of patient to take or administer as intended (The American College of Clinical Pharmacy, 2015).

Furthermore, there is chronic disease self-management model, a model used for mainly patients with a variety of chronic medical conditions as it based on the element that most people with chronic diseases have similar or related concerns and, can effectively manage their medical conditions with guidance on specific skills and training (Health Information and Quality Authority, 2015). This model is based on care coordination, care management and wellness or coaching provided to individuals with chronic conditions who receive behavioural health and primary care services at the integrated clinic (Salerno, 2016). However, CDSM also emphasis the self-management which is refers to the tasks undertaken by an individual living with one or more chronic diseases to maintain their health. This also incorporates improving confidence to in dealing with the medical condition’s management needs, role management and emotional management in relation to the medical conditions. CDSM is delivered in a variety of formats such as, education programs, telemedicine, health coaching and motivational interviewing as mostly are derived from the Stanford model (Savage, 2009).

Another model is CDTM, a collaborative practice between pharmacists and medical practitioners wherein pharmacists working in the context of defined protocol are allowed to assume professional responsibilities for assessing patients; therapy-related laboratory tests drug ordering ; administering drugs; and selection, initiation, observation, continuation and adjustment of the pharmacotherapy (Hammond, et al., 2003).

All the above motioned models emphasised patient care in terms of practice, but there is Accountable Care Organisations (ACOs), also seen as solution for improving healthcare outcomes, patient experience and care cost reduction (Peiris, *et al.*, 2018). ACO is a model of multi-dimensional healthcare service system or organisations integrated collectively through bringing multiple providers who are accountable for financial and quality healthcare outcomes for a defined population (Varacallo & Torre, 2019). Its principles are based on the concept of care that assist through gathering resources while reducing care costs.

Collaborative agreements vary from states to states based on the legislations, practice environment and the type of education and training of pharmacists. The model or strategies that will be developed in this study will be based on the South African public health environment, legislations with regards to provision of public health and the provision of pharmacy practice education by institution. However, the targets the model or strategies to be developed will be based on multifunctional and collaborative practice, advanced quality pharmaceutical, flexible, accommodative, proactive, spontaneous, and adaptive approach to patient care. Most of the above-mentioned models focus on the same outcomes but in different areas.

2.4. OUTPATIENT PHARMACEUTICAL CARE

Outpatient pharmaceutical care provision in South African hospitals is limited by the number of patients and the waiting time (Bezuidenhout, 2015) (Hammouda & Hammouda, 2012). Whereas internationally outpatient pharmaceutical care is provided under the model of ambulatory pharmacy practice (Helling & Johnson, 2014). In South Africa pharmaceutical care for pharmacist-medical practitioner collaboration is limited to inpatient clinical pharmacy which is still at a developing state (Sello & Dambisya,

2014) (Manyama, Tshitake & Moloto, 2020). This collaborative care process is also executed through focus on certain disease conditions or based on a certain project for a certain time interval (Bronkhorst, *et al.*, 2012) (Marais, *et al.*, 2014) (Pretorius, *et al.*, 2011). A good example in South Africa is the antimicrobial stewardship program (Schellack, *et al.*, 2016). For an example, Brazil's Health Ministry started qualifying pharmaceutical care processes through SUS National Qualification Program of State Pharmaceutical Assistance Program thus investing in pharmaceutical care service implementation programs. While majority of these services began as normal, they are prone to failure because due lack of strategic implementation, with inadequate planning and systematisation of processes (Silva & Fegadolli, 2020).

As mentioned, "Ambulatory care pharmacy practice is the provision of integrated, accessible health care services by pharmacists who are accountable for addressing medication needs, developing sustained partnerships with patients, and practicing in the context of family and community. This is accomplished through direct patient care and medication management for ambulatory patients, long-term relationships, coordination of care, patient advocacy, wellness and health promotion, triage and referral, and patient education and self-management" (Helling & Johnson, 2014).

2.5. PHARMACEUTICAL CARE AND CLINICAL PHARMACY

There are phrases that have been utilised to describe pharmaceutical care practices including medication review, medication management, clinical pharmacy services and cognitive services yet all these care processes are defined by a common practice (Babar, *et al.*, 2018). The practice of clinical pharmacy is an essential component of pharmaceutical care of which most collaboration practice models are based on. Pharmaceutical care is defined as, "a co-operative, patient-centered system for achieving specific and positive patient outcomes from the responsible provision of medicines" (Walker & Whittlesea, 2012). Whereas clinical Pharmacy is defined as, "a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness and disease prevention" (Dreischulte & Fernandez-Llimos, 2016). According to South African Pharmacy Council (2010), clinical pharmacy is defined as, "the overall management of medicines in the ward through advice on safe handling and formulary management". As described above

pharmaceutical care is broader to clinical pharmacy of which is the part of the pharmacy practice that contributes directly to patient care with the development and promotion rational and appropriate use of medicinal products and devices. Pharmaceutical care definition emphasis the patient-focused care through medication, provided by the pharmacists and the pharmacy personnel aimed at improving the outcomes of therapy (Walker & Whittlesea, 2012). This derives the pharmaceutical care provider by defining their roles through assessment of a patient's drug-related needs which encompasses indication (understanding), effectiveness (expectation), safety (concern), and convenience (medication non-adherence behavior) to prevent or solve drug-related problems (DRPs) resulting improved patient's health-related quality of life (HRQoL) (Sakthong & Sangthonganotai, 2018). Pharmaceutical care is described as a generalist practice while clinical pharmacy is described as a specialist practice of care (Cipolle, *et al.*, 2012).

Pharmaceutical care goes beyond and emphasis the “collaborative drug therapy management” (CDTM), as defined by Abdullatif (2014) and Avalare Health LLC (2014). This is specifically for our public hospitals. It is referred to as a collaborative practice agreement between one or more medical practitioners, other healthcare workers and pharmacists. The qualified pharmacists in this state are working within the context of a defined protocol that allow them to be professionally responsible in enhanced scope of practice for patient assessments; ordering drug therapy-related laboratory tests; administering drugs; and selection, initiation, observation, continuation, and adjustment of drug regimens (Abdullatif, 2014) (Avalere Health LLC, 2014). However, as most research shows that there is evolution among the two phrases, clinical pharmacy was focused directly to inpatient and pharmaceutical care focus largely on both inpatient and outpatient care (Abduelkarem, 2014). This clearly provide direction in terms the practice of pharmaceutical care by pharmacists in hospitals.

Clinical pharmacy is viewed as the one carrying weight in the provision of collaborative health care services but the persistence on the tradition or culture should not always be about waiting for specialty to carry out our duties as health professionals as pharmacy schools currently offer their education in a patient-centered care manner. This is exhibited by pharmaceutical care of which the original purpose of clinical pharmacy is

clearly described and made to be understood as encompassed in (Abdullatif, 2014). One study from University of Limpopo Turf-loop campus highlighted the importance of introduction of ward rounds into the curriculum which applies to the importance of patient centered pharmaceutical health care provision system, but the results pointed out lack clarity in roles or scope of practice in clinical pharmacy and interaction between pharmacists and doctors (Sello & Dambisya, 2014).

On the other hand, the provision of patient centered care is supported by the growing evidence of high-quality care needs leading to necessary and maintainable outcomes for chronic diseases (i.e., clinical markers, cost savings, care experience, care quality, etc.). This as per patient centered care definition is positively impacted by “care that is respectful of, and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions” (Olson, *et al.*, 2021).

2.6. PHARMACEUTICAL CARE STANDARDS

As mentioned above pharmaceutical care is a practice that requires certain standards of which most of them the pharmacist is held accountable to implement or during the implementation process (da-Costa, van-Mil & Alvarez-Risco, 2019).

According to the written statement by American Society for Health System pharmacy in 1993, pharmaceutical care can be applicable and achievable by pharmacists regardless of practice settings thus the provision of pharmaceutical care goes beyond in inpatient, outpatient, or community settings, and also academic, or to pharmacists with certain degrees, specialty certifications, residencies or other credentials (da-Costa, *et al.*, 2019). Pharmaceutical care is mainly based on direct personal, professional and responsible relationship with a patient resulting in optimal use of medication is that optimal and improved or optimisation in the patient's quality of life (da-Costa, *et al.*, 2019).

The statement clearly emphasis the existence of pharmaceutical care in the practice of pharmacy thus the process of carrying out is essential in the healthcare system on patient care process due to the present the present of a pharmacist.

The required standards of pharmaceutical care process are as follows (Cipolle, *et al.*, 2012):

1. Individual practitioner standards.

- Collection of patient-specific information.
- Assessment of drug-related needs.
- Identification of drug therapy problems.
- Development of goals for the therapy.
- Statement of interventions.
- Establish schedule for follow-up evaluation.
- Follow-up evaluation.

2. Professional standards for community of pharmaceutical care practitioner.

- Quality of care: ensuring that high quality care is provided.
- Ethics: caring out one's scope of practice in an ethical manner.
- Collegiality: being able to work other team members with positive contribution.
- Collaboration: collaboration with other healthcare professionals, patients and family.
- Education: this is about the required practitioner's qualification according to the practice of pharmaceutical care such pharmacology, pharmacotherapy and pharmaceutical care practice.
- Research: the participation in research and use by the healthcare practitioner.
- Resource allocation: planning and allocation resources according to their availability.

These standards of pharmaceutical care process clearly highlight the knowledge that pharmacist and medical practitioners should possess during the collaboration process for pharmaceutical care.

2.7. SCOPE OF PRACTICE OF PHARMACIST AND MEDICAL PRACTITIONER IN CONSIDERATION OF PHARMACEUTICAL CARE.

The current curriculum in higher institutions is moving pharmacy to a patient centered service provision by preparing the graduate to work in a clinical setting (Janse van Rensburg, 2016). In practice collaboration of pharmacists with other health professionals is not advanced and there less clarity on the responsibilities of a pharmacist to efficiently collaborate with other healthcare professional such medical practitioners (Hazen, 2018). As per pharmaceutical care standards there should be a comprehensive medication management (CMM) which is often facilitated through collaborative practice agreements (CPA), where the pharmacist directed by the authority of the medical practitioner is allowed to initiate, modify, monitor, and discontinue drug therapy (Butler, *et al.*, 2017).

Pharmaceutical care in terms of the scope of practice of a pharmacist is clearly explained in the Regulation relating to the practice of pharmacy (GNR.1158 of 20 November 2000) in terms of section 35A of the Pharmacy Act 53 of 1974 under the acts pertaining to the profession which state:

“(1) the provision of pharmaceutical care by taking responsibility for the patient’s medicine related needs and being accountable for meeting these needs, which shall include but not be limited to the following functions:

- a) evaluation of a patient’s medicine related needs by determining the indication, safety and effectiveness of the therapy;
- b) dispensing of any medicine or scheduled substance on the prescription of a person authorised to prescribe medicine;
- c) furnishing of information and advice to any person with regard to the use of medicine;
- d) determining patient compliance with the therapy and follow up to ensure that the patient’s medicine related needs are being met; and
- e) the provision of pharmacist-initiated therapy.”

This clearly exhibits that pharmacist should not neglect their responsibilities as this is one of the needed measures by the patient and the profession itself to develop. This is even emphasised in the gazette under competency standards for pharmacists in South Africa in domain 5 of professional and personal practice in both patient centered care and collaborative practice (The South African Pharmacy Council, 2018).

This is a way of establishing a program that address clinical risks in terms of pharmaceutical care or pharmacotherapy (Department of health, 2017).

The scope of practice for medical practitioners is attached to medical practitioner and support personnel of which pharmacists seems to have a separate relationship. As per required standards of pharmaceutical care these two groups should act collaboratively thus their scopes of practice must be intertwined at certain areas.

The scope of practice of a medical practitioner according to section 33 of Health Professional Act of 1974(Act, No: 56) is as follows:

- a. “The physical medical and/or clinical examination of any person;
- b. performing medical and/or clinical procedures and/or prescribing medicines and managing the health of a patient (prevention, treatment and rehabilitation);
- c. advising any person on his or her physical health status;
- d. on the basis of information provided by any person or obtained from him or her in any manner whatsoever-
 - diagnosing such person’s physical health status;
 - advising such person on his or her physical health status;
 - administering or selling to or prescribing for such person any medicine or medical treatment;
- e. prescribing, administering or providing any medicine, substance or medical device as defined in the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965);
- f. any other act specifically pertaining to the medical profession based on the education and training of medical practitioners as approved by the board from time to time” (Health Professional Council of South Africa, 2009).

The scope of practice of both pharmacists and medical practitioners clearly indicates that collaborative pharmaceutical care can be one of the major ways of improving patient care as they highlight interdependency.

2.8. INTEGRATION LEVEL AND CURRENT PHARMACIST-MEDICAL PRACTITIONER RELATIONSHIP STATE

In the South African health care system, the integration means that the existing vertical pharmaceutical service requires a shift from an isolated nature of practice to a team-based one, with linkages to each DHS (district health system) stream (Bheekie & Bradley, 2016). This means the fragmented system and the nature of focusing on separate department as per pharmacist-medical practitioner relationship should change as presented in previous studies in Africa and world-wide (Yeung, 2018) (Agwo & Wannang, 2014). Medical practitioner and pharmacists interact in terms of stock control, procurement of pharmaceuticals and medication dispensing (Azhar, *et al.*, 2010) (Abdel-Latif, 2017). This process of interaction is presented by one of the studies done at local hospital on the role of pharmacists in the renal multidisciplinary team which presented the need for more participation of pharmacists in the care process than stock management and dispensing (Manyama, *et al.*, 2020). This might be one of the state that results in a number of medical practitioners thinking of themselves as solely responsible for the patient and reluctant to interact with pharmacist through clinical issues (Agwo & Wannang, 2014). On that note also, medical practitioners and pharmacists are mostly seen as opponents (Abdel-Latif, 2017).

2.9. PERSPECTIVES OF THE HEALTHCARE PROFESSIONALS.

The collaboration is viewed as an opportunity for improvement in terms of patient care (Venkata, Kielgast, Udumansha & Airaksinen, 2017). The process of collaboration in a hospital should not be viewed as a rivalry among the medical practitioners and pharmacists, as medical practitioners in the communities consider that collaborative relationships with pharmacists be viewed as business rivalry in community pharmacies (Hasan, *et al.*, 2018).

There are challenges such as demarcations in terms of the roles of a pharmacist as seen in several collaborative model of patient care. For example, a study in KSA on

community pharmacist and primary care medical practitioner collaboration highlighted medical practitioners' view stated that it is very important to maintain the relationship between pharmacists and medical practitioners in such a way that medical practitioners prescribe, and pharmacists dispense (Mazhar, Phil, Ahmed, Haider, & Alghamdi, 2017). The issue is also present in a hospital setting environment. This is supported by the negative attitude that pharmacists come across when contacting the medical practitioner and the negative questioning of the participation in the process of therapeutic decision making as most medical practitioners perceived themselves as most capable and most responsible for patients' medication (Löffler, Koudmani, Böhmer, Paschka, Höck. *et al.*, 2017). In this case the pharmacists perceive that as lack of respect to the role played by pharmacists in the provision health care. The collaborative relationships with pharmacists may also not be perceived as favorable due as patient are mainly used to the medical practitioner-patient, which might be met with resistance as pharmacist will be viewed as intruders (Hasan, *et al.*, 2018). In addition to that, pharmacists present the perspective of just being dispenser by medical practitioners as one of the challenges in improving collaboration between the two groups of health care providers (Bradley, Ashcroft & Noyce, 2010).

Another study suggested that before implementation of a model involving collaboration, there needs to have a clear definition and allocation of functions, responsibilities, and limitations for the pharmacists and medical practitioner through established protocols or guidelines that have been approved by relevant regulatory bodies (Hasan, *et al.*, 2018). As most practice methods or environment gives medical practitioner leadership authority might mean that they remain in the leadership and maintain the ultimate responsibility for final decisions within the team as a condition for collaboration.

Most studies point out the sight of medical practitioners. A survey on pharmacists in national public health programs in India by Venkata, *et al.* (2017) exhibited differences in views among junior and senior medical practitioners which state that, the longer the medical practitioners' practice experience mostly resulted in thinking it is better excluding pharmacists' involvement in patient care process.

There is one study which encapsulated the medical practitioners, nurses and pharmacists in Canada. The medical practitioners and nurses recommend and support the present of pharmacists in the team which include medication reconciliation and making recommendations (Chevalier, Neville, Thompson, Nodwell & MacNeil, 2016). Most of medical practitioners highlight the need to know more about the capability of pharmacists in a clinical setting as the collaboration takes place. There are several barriers to collaborations however the co-location reduces concerns over the present of a pharmacist within the team. And also on patient privacy and confidentiality which allows better control over the practice environment, and enhance of access patient records directly by pharmacists thus improved clinical care (Hasan, *et al.*, 2018).

2.10. BARRIERS

The rivalry between pharmacists and medical practitioners has been in existent for a long time since their co-existence which let to separation of the two professions (Altman, 2017). There are current ways developed and continuously developing in which are to extent the role pharmacy through pharmaceutical care and collaboration. With the developed ways there are factors which determine and influence their type and extent effects on pharmacist-medical practitioner collaboration that include both facilitators and barriers. Research has presented that in those ways there are co-existing challenges such as trustworthy, respect among the professions, lack of communication, lack of clarity in terms of role and responsibilities among this health care professional groups (Hager, Murphy, Uden & Sick, 2018). And also individualised healthcare professional related factors which include professional training, attitudes, confidence and comfort levels, power and communication issues. Furthermore, logistic barriers of time, workload, proximity, resistance to establish and adopt regulations, and payment models which also have a direct impact on collaborative or inter-professional relationship among health care providers (Law, Gupta, Hata Hess, Klotz. *et al.*, 2013). In escalation to that some of the factors that goes unnoticed in most incidences shortage of staff in terms of healthcare professionals in the hospitals so as the number of pharmacists (Janse van-Rensburg, 2016).

In details a challenge such as trustworthy is one of the main barriers in every aspect of health care group integration process. A study on the influence of pharmacists' expertise

on medical practitioner prescription decisions indicated the high potential significances in trustworthy of a medical practitioner towards the word offered by pharmacist on the prescriptions presented to them as the strengthening tool of the idea of pharmacist-medical practitioner collaboration model in the practice arena (Murshid, Mohaidin & Nee, 2016). Findings shows that medical practitioners, especially senior residents, have high expectations regarding the pharmacists' clinically defined roles however they are uncertain about their confidence in taking up with the responsibilities (Alipour, Peiravian & Mehralian, 2018). This clarifies that the best way to maximise medical practitioner's trust is to show pharmacists' competence through providing beneficial clinical recommendations that improve patient health (Al-Jumailia, Al-Rekabi, Doucettea, Hussein, Abbasb & Hussein, 2016).

On the other hand, there are issues in relation to communication which still goes together with trust and are strongest predictors of the pharmacist-medical practitioner collaboration model (Murshid, *et al.*, 2016). Communication between pharmacists and medical practitioners is dominant in terms of just few telephonically conversation with something much intense or nothing much intense that might have no follow up and this is not sufficient for collaborative patient care. This is also highlighted by the opinion which state that when interactions are more frequent among healthcare practitioners, medical practitioners and pharmacists shared similar perspectives and trust each other, this is demonstrated by being comfortable when communicating out of hours to ask for favours based on mutual understanding (Rathbone, Mansoor, Krass, Hamrosi, & Aslani, 2016). Furthermore a study in prioritising interprofessional collaboration for optimal patient care presented how communication beyond a telephone can improve collaborative patient care method by for example looking into cases where patients are discharged with the discharge information package(discharge prescription, medical discharge summary and contact information for the most responsible hospital pharmacist) provided to the pharmacist of a patient's and also available to that pharmacist for follow-up (Gobis, Yu, Reardon, Nystrom, Grindrod & McCarthy, 2016).

As mentioned above it also depend on the type of communication provided, there are two main types identified, reactive and proactive interaction. Reactive is when the contact is induced by the present of an issue in the prescription or the patient whereas

proactive include even face-to-face with suggestion on how to tackle issue of patient care beforehand (Carthey, de-Leval & Reason, 2001). The issue of face-to-face method of tackling patient care service between pharmacists and medical practitioners is viewed as a huge problem in terms of communication as it is inadequate (Rathbone, *et al.*, 2016) and (Hashemian, Emadi & Roohi, 2016). Another study entrenched the important of pharmacists' contribution to proactive approach of pharmaceutical care in hospitals as the expansion of their clinical role in the workplace including both hospital and community pharmacy (Abduelkarem, 2014). The face-to-face communication might seem a bit disrespecting towards medical practitioners however it is essential.

Some of the factors that goes unnoticed in most incidence is scarcity of pharmacists in the hospitals as one would find that the available of pharmacists are only at the prescription service site in the pharmacy (van-Rensburg, 2016). Pharmacists have also not been active in fostering a closer relation with medical practitioners in terms of treatment intervention and the lack of participation or lack of policy for directorates of each group in terms of medical practitioner-pharmacist collaboration (Abdulkadir, *et al.*, 2016). This is also the cause of unstable scheduling of pharmacists responsible for fulltime pharmaceutical care. In ideal conditions required to be carry out pharmaceutical care, pharmacists are approved to take legal responsibilities of suitable standards are to be met (Dreischulte & Fernandez-Llimos, 2016).

In the case of outpatient pharmaceutical care, time is one of the main factors that affect inter-professional relationship and provision of pharmaceutical care as one study on the pharmacists' responses and the collaboration between pharmacists and prescribers towards hospital medication errors presented that 56 (29.50%) of the respondents strongly agreed that one pharmacist dispenses a huge number of prescriptions from many medical practitioner which hinder the contact between them. This is also a case in terms of pharmaceutical care as dispensing time is usually short with less time to provide information required to the patient, to contact the medical practitioner in the present of issues and carry out follow-ups. Generally, this has also been indicated to reduce patient knowledge about their medications as pharmacists are not fully applying all the steps of dispensing due time constrains (Marais, *et al.*, 2014). In this form pharmacists attempt to reduce waiting time thus compromising counseling, education,

and medication reconciliation services in state of coming up with innovative ways to permanently to solve the problem (Hammouda & Hammouda, 2012).

Overall indication for these barriers requires extensive consultation with major stakeholders in collaborative pharmaceutical care, such as the hospital management, pharmacy personnel and other health professionals, especially the medical practitioners and nurses as it was highlighted through a study on the view of pharmacists on the involvement in ward rounds which suggests this is also needed in the outpatient consultation area and pharmacy (Sello & Dambisya, 2014).

In conclusion to these barriers, it is clear that they can be categorized into professional boundaries(historical experience with collaboration, attitudes , roles and responsibilities , power ,and trust and respect); perceived skills and knowledge (communication, shared goals, capabilities and different perspectives); structural and organisational facilitators and barriers(environment, time , remuneration, management support and access) and education training (Bollen, *et al.*, 2019).

2.11. DIFFERENCE BETWEEN TRADITIONAL PATIENT CARE AND COLLABORATIVE CARE

Collaborative care practice happens when multiple healthcare practitioners with diverse backgrounds and roles work together with patients, families, caregivers and communities in provision of high-quality patient care (World Health Organization, 2010).According to Uhlig & Raboin (2015), on the field guide to collaborative care, the different between collaborative care and traditional patient care is as follows:

Traditional health care practice,

Traditional health care practice,

- is centered on an individual practitioner's professional roles;
- has more vertical hierarchical structural process;
- focus on treating or preventing disease as according to the scientific and professional perspectives not individualised patient's therapeutic process;

- it is not based on direct or face to face communication, and patients and family members are do not participate; and
- patients are not involved, or powerless and even decision-making primarily in healthcare practitioners' hands according to their professional roles.

Instead, collaborative care,

- is based on the collective participation of healthcare professional teams, with families, patients and caregivers the in care and decision making processes;
- is participatory and inquiry-based process with an inclusion of all stakeholders consulted be it the patients, families, and practitioners;
- is centered on providing understanding to the participants about the disease and therapeutic processes, especially the patients.
- it accounts for a mixture of extensive communication process with rich understood knowledge based on shared experiences, reflective conversations, and collective learning to achieve coordination and goal orientation throughout the process with all participants comprising of patients and families involved;
- and it acknowledge the roles of all participants with distribution of power and decision making among all stakeholders involved including both patients, family member and healthcare professionals (Uhlig & Raboin, 2015).

These concept of care emphasis the establishment of the pharmacist-patient relationship and bringing supplementary innovation and value to the therapeutic process and outcome by being actively involved in the patient pharmacotherapy process (Toklu & Hussain, 2013).

Most of the current practices of care in the healthcare system mostly exhibit the traditional management characteristics of practices based on hierarchy, command, and control. These processes inhibit productivity of a successful teamwork, due to prevention of creativity, engagement and efficiency, specifically in knowledge-based organisations (Mirkov, 2018).

2.12. PHYLOSOPHY OF COLLABORATIVE CARE

Collaborative care has been defined with various terms such multidisciplinary and integrated care. The terms are mostly used interchangeably in research and in practice while they mean different processes. Collaborative care is a process of integrative care defined as the collective efforts used in maintaining the activities and relationships among different team members in a cohesive way while maintaining the respect for each members' autonomy and recognising their interdependence (Waldow, 2014). The integrative care is divided in the vertical/targeted integration referred as a liner arrangement of organisational structures with different hierarchical levels under one management umbrella and horizontal/non-targeted integration it is based on shared processes and activities across the organisations that are at the same stage in service delivering by coming together (World Health Organization, 2016). For example, horizontal integration refers to the method a clinic follows for providing behavioural health services to patients who present with a range of concerns, to the degree of support needed are population based, in that a wide net is cast to help all patients to improve their overall health (Curtis & Christian, 2012). Whereas vertical integration employs the use of protocols for working with specific subpopulations of patients where providers such as in the integrated primary care settings serving large populations may decide to streamline care by defining treatment protocols to target a few key conditions that frequently affect subpopulations of their patients (Curtis & Christian, 2012). Collaborative care is most defined as a horizontal integration whereas multidisciplinary is defined as a vertical integration process. In philosophy of integrative care, collaboration is regarded as a practice where practitioners maintain a certain level of autonomy in terms of practice (Boon, *et al.*, 2009).

Collaborative patient care from the introduction is defined as, "health care professionals assuming complementary roles and cooperatively working together, sharing responsibility for problem-solving and making decisions to formulate and carry out plans for patient care" (O'Daniel & Rosenstein, 2008).

Collaboration as a term is broadly defined as "joint effort toward a group goal" to be the most consistent and universal thus collaborative research has focused on goals in the context of, e.g., group formation, motivation, continuity, productivity, satisfaction, and

success (Randrup, Druckenmiller & Briggs, 2016). Collaboration in care is about the synergistical effect of individual knowledge, roles and skills of healthcare professionals in the patient care process through interprofessional communication and decision-making process. (Iliadi, 2010). It is problem-solving process which emphasis shared responsibility in decision-making and the capability of a team to carry out a care plan through working towards a common goal (Saint-Pierre, Herskovica & Sepúlveda, M., 2018).

Furthermore, collaborative care is another type of leadership process where people are encouraged to share roles, skills, experiences, and knowledge. This is also about acknowledging and respecting each one's space thus contributing to the development and improvement of the quality healthcare service for patients, family members and the community. Collaborative care also refers to initiatives process aimed at strengthening bonds and interaction amongst different healthcare providers working together in a partnership characterised by common goals. The process extent to recognition of and respect for individual's participation in the care through their strengths and differences, equitable and effective decision-making and focus on the patient with clear and regular communication (Bullock, *et al.*, 2017).

As defined above collaborative care in most research and health care system takes interdisciplinary care structures. The term interdisciplinary is mostly used as a reference to situations in which more than one healthcare discipline is responsible in either a patient's care or health related education. In others area of practice interdisciplinary is used to describe situations where various disciplines are comes together to reach a common goal, bringing diverse expertise and skills. On the other hand healthcare professionals use the term by referring to situations where healthcare disciplines specificity is unclear, roles and expertise overlap based on the interaction process at hand (Clark, *et al.*, 1986)An interdisciplinary team is a "group of persons who are trained in the use of different tools and concepts, among whom there is an organised division of labor around a common problem with each member using his own tools, with continuous intercommunication and re-examination of postulates in terms of limitations provided by the work of the other members and often with group responsibilities for the final product" (Clark, *et al.*, 1986). However, for interdisciplinary team or collaborative

care to function the structures, function and properties of each discipline must be understood within and across the disciplines (Maki, 2016).

Most research identified five core principles of a collaborative-care model which are as follows:

- “Patient-centred care;
- Evidence-based care;
- Measurement-based treat to target;
- Population-based care; and
- Accountability” (Bullock, *et al.*, 2017).

The identified umbrella principle governing the whole process of collaborative care is “Team driven” (The American Psychiatric Association (APA) and the Academy of Psychosomatic Medicine (APM), 2016).

Collaborative team interactions typology by Saint-Pierre, *et al.* (2018) are as follows:

Co-located collaboration: here the healthcare practitioners or teams works at closer proximity to one another or under one building with area of practice in a highly coordinated manner done through regular sharing of information via direct meetings and face-to-face communication with unshared consultations. Furthermore, there is selected leaders to facilitate the interaction process and management of certain aspects or area in a coordinated manner (Saint-Pierre, *et al.*, 2018).

Non-hierarchical collaboration: this is the type of interdisciplinary process that depict a horizontal integration process of collaboration with direct and face-to-face communication between members.

Collaboration through shared consultations: this is a care process where healthcare professional teams collaborate through shared consultations per patient. These consultations are referred, coordinate or mediated using a case manager and holding regular meetings to design and monitor intervention plans. The care teams are mostly co-located, with the direct/ face-to-face communication mode. This mean is a horizontal communication process found across all diagnoses.

Collaboration via referral and counter-referral: These types of teams provide individual consultations with non-direct/non-face-to-face communication and mode interaction is through referrals and counter-referral of patients among healthcare professionals. Is it difficult in this type of practice to establish common goals. (Saint-Pierre, *et al.*, 2018).

Collaborative care is broad hence multidisciplinary team can act as part of collaborative care process or as a care process. Multidisciplinary care team is defined, “as partnership among health care workers of different disciplines inside and outside the health sector and the community with the goal of providing quality continuous, comprehensive and efficient health services” (International Association of Physicians in Aids Care, 2011). The terms interdisciplinary or multidisciplinary are broader and include all members of healthcare teams, professional and non- professional (Nancarrow, *et al.*, 2013). In a multidisciplinary team refers to a group of professionals from two or more disciplines working on the same project, independently or in parallel (Saint-Pierre, *et al.*, 2018).

A multidisciplinary team is made of members from two or more discipline providing a boarder patient care services where participants work independently with formal interaction. Multidisciplinary teams work parallel from each other resulting in less awareness of activities of other disciplines. There is a project manager or team leader who can bring the parallel efforts together at the end of or certain state of the patient care process. Appropriate specialist of healthcare practitioner from different professions handles different aspects of the patient care process independently (Mental Health Commission, 2006). Here the patient’s medical issues are allocated and treated in rather parallel than collaboratively, with each available provider responsible only for his or her own speciality (Fitzpatrick, *et al.*, 1998). (Mental Health Commission, 2006)

Collaborative care covers each professional’s contribution to the healthcare process with each profession being recognised for the roles performed. Collaboration care is supported by the recognition of each member or discipline’s equality, and, at the same time in the parity, that is in respect for their differences (Waldow, 2014).

There are different levels of collaboration which clearly align the interaction level of health care professionals. With the philosophy of collaboration presented above there are qualities that are needed for healthcare professionals to collaborate.

Examples of required elements for a healthcare profession in collaboration (Haddad, Doherty & Purtilo, 2019).

Individual attribution to collaboration

- Self-awareness (professional identity)

This is about the ability to self-evaluate or reflect on individual's knowledge, roles, skills, and capabilities and is derived from understanding of personal identity based on one's own value set. This is about the unique characteristics that an individual brings to the team such as personality and position.

- Competence

The process of being confident in one's capabilities and playing the expected role as per speciality or healthcare discipline which allows the healthcare practitioner to explore, understand and appreciate the contributions of other disciplines.

- Trust

Trust is described as more of a qualification to teamwork of any type. The ability to trust depend on the extent of knowledge about a certain discipline. This is about healthcare professionals having confidence with present of a certain discipline.

- Commitment to team goals and values

The will to uphold unified team goals and values that guide and motivation for individual within the collective.

- Flexibility

Flexibility is defined as, the ability of the healthcare professional to maintain an open attitude, accommodate different personal values, and be receptive to the ideas of others

- Acceptance

The healthcare professional must be able to be accepting of and be open to the differences between the team members.

Team skills for collaboration

- Mutual respect

The availability of trust and appreciation of each other's contribution among team members that develops into mutual respect over time.

- Communication skills

All applicable basic verbal and nonverbal communication skills required in inter-professional communication, regardless of the diverse language, roles, practice methods and communication skills by healthcare professions.

The table below shows the level of collaboration according to the range of interaction by researchers from several disciplines (Curtis & Christian, 2012).

Table 2.1: A Range of Goals for Collaborative Practice: Levels or Bands of Collaboration (Curtis & Christian, 2012).

Table 1.1 A Range of Goals for Collaborative Practice: Levels or Bands of Collaboration

Model	1	2	3	4	5
	Minimal Collaboration	Basic Collaboration From a Distance	Basic Collaboration On-Site	Close Collaboration in a Partly Integrated System	Close Collaboration in a Fully Integrated System
Doherty, McDaniel, and Baird (1995)*	Separate systems Separate facilities Communication is rare Little appreciation of each other's culture; little influence sharing	Separate systems Separate facilities Periodic focused communication mostly by letter or phone View each other as outside resources Little understanding of each other's culture or sharing of influence	Separate systems Same facilities Regular communication, sometimes face-to-face Some appreciation of each other's roles and general sense of larger picture, but not in depth Medical side usually has more influence	Some shared systems Same facilities Face-to-face consultation, coordinated treatment plans Basic appreciation of each other's role and culture; share biopsychosocial model Collaborative routines are difficult—times and operations barriers Influence sharing—but with some tensions	Shared systems and facilities in seamless biopsychosocial web Patients and providers have same expectation of a team Everyone committed to biopsychosocial; in-depth appreciation of roles and culture Collaborative routines are regular and smooth Conscious influence sharing based on situation and
Handles adequately	Routine, with little biopsychosocial interplay and management challenges	Moderate biopsychosocial interplay (e.g., diabetes and depression with mgmt of each going reasonably well)	Moderate biopsychosocial interplay requiring some face-to-face interaction and coordination of tx plans	Cases with significant biopsychosocial interplay and management complications	Most difficult and complex biopsychosocial cases with challenging management problems
Handles inadequately	Cases refractory to tx or with significant biopsychosocial interplay	Significant biopsychosocial interplay; when care plan is not satisfactory to either MH or medical providers	Significant biopsychosocial interplay; those with ongoing and challenging management problems	Complex, with multiple providers and systems; tension, competing agendas, or triangulation	Team resources are insufficient or breakdowns occur in the collaboration with larger service systems
Seaburn et al. (1996)	Parallel deliver: clear division of labor not flowing into each other significantly	Informal consultation: MH professional helps physician deal with a clinical problem, but usually not contact with the patient	Formal consultation: MH professional has direct contact with pt. in typical relationship as a consulting specialist	Co-provision of care: patient care is shared and the professionals may see the patient or family together	Collaborative networking: provider team is extended to include family and other medical specialists, educators, and community resources

Strosahl (1998) and Peek (1998)	Traditional referral-between-specialties models		Co-location models	Organization integration or "primary care mental health" models	
MH provider might say:	"Nobody knows my name."	"I help your patients."	"I am your consultant."	"We are a team in the care of our patients."	"Together, we also teach others how to be a team in care of patients and design of the care system."
Medical prov. might say:	"Who are you?"	"You help my patients, but not me."	"You help me as well as my patients."		

Source: Reproduced by permission from Peek, C.J. (2009). Collaborative Care: Aids to Navigation. White paper prepared for *Creating a Research Agenda for Collaborative Care*, a research agenda-setting conference of the Collaborative Care Research Network, Denver, CO, October.

During the collaboration process as an individual, it is suggested that one need to have what is called an emotional intelligence (Haddad, *et al.*, 2019). According to Haddad, *et al.* (2019), emotional Intelligence consisting of the following four domains:

Domain 1: Self-awareness, this about a team knowing himself or herself which include the presents of strength and weakness.

Domain 2: Self-management, this domain includes ones confidence in the emotional self-control, and adapting to the practice environment. For example, in presents of conflict is inevitable.

Domain 3: Social awareness, this is about being aware of the environment around an individual and being able be part of the environment.

Domain 4: Relationship management, this last domain is about creating a relationship and maintaining the relationship including conflict management and collaboration. This about facilitating the process of having a relationship by problem solving and conflict resolution and enhance the overall performance of collaborative teams."

2.13. COMPETENCY STANDARDS OF COLLABORATIVE CARE PRACTICE

According to Orchard and Bainbridge (2016) competency defined as "an observable ability of a health professional, integrating multiple components such as knowledge, skills, values and attitudes". Competence refers to how well an individual or group can

perform the actions described by the expected as per scope of practice (Orchard & Bainbridge, 2016). There are three types of interprofessional collaboration competencies by Bainbridge *et al.* (2010), which are:

- Common competencies (shared between all or several professions).
- Individual professional competencies: complementary (where uniqueness that distinguishes one's profession from another).
- Interprofessional collaborative competencies (sharing occurs across professionals and others) (Bainbridge, Nasmith, Orchard & Wood, 2010).

There are also interprofessional collaborative practice competency domains (Interprofessional Education Collaborative Expert Panel, 2011):

Competency Domain 1: Values/Ethics for interprofessional practice include being able to work with individuals of other professions to maintain a climate of mutual respect and shared values. In the case of health care sector healthcare practitioners ensures that patient, family member or communities are valued participants of the care process in designing and implementing care/services (Orchard & Bainbridge, 2016).

Competency Domain 2: Roles/Responsibilities is about the incorporation of the diverse knowledge of individual healthcare professional's roles and responsibilities to appropriately assess and address the healthcare needs of the patients.

Competency Domain 3: Interprofessional communication is based on quality of communication processes among healthcare practitioners and also patients, families, and communities in a responsive and responsible manner for promotion of collaborative patient care process.

Competency Domain 4: Teams and teamwork is about applying in practice the relationship-building values and dynamic team principles resulting in effective practice and participation of individual in a team. And therefore, carry out different team roles to plan and deliver patient-/population-centered care that is safe, timely, efficient, effective, and equitable.

2.14. COLLABORATION AND CLINICAL DECISION-MAKING PROCESS

The process of pharmacists-medical practitioner collaboration will have effect on the process of clinical decision making to achieve quality patient centered care or pharmaceutical care. Clinical decision making is a formal process that defines the way a practitioner arrives at a decision from the information at hand (Duffull, Wright, Marra & Anakin, 2018). In terms of collaborative care or interdisciplinary care, clinical decision making is distributed , combination of expertise ranging from the professionals contributing specific aspects of patient's care that originate from their diverse knowledge, experience and skills in addition to their different scope of practice and roles in practice (Liu, *et al.*, 2016) (van-Baalen & Carusi, 20196). In collaborative care clinical decision making can also be based on mutual adaptation in terms of problems solving. Clinical decision making is summarised in a model for clinical decision making in pharmacy and education as information gathering, clinical reasoning, clinical judgment and decision (Wright, *et al.*, 2018).

The expanded model for clinical decision-making in the philosophy of professional pharmacy practice is described through the foundational principles of bioethics. The principles are described as beneficence (to do good), non-maleficence (to avoid bad), justice (equality of healthcare for all) and autonomy (patient choice) (Kelling & Aultman, 2014). The role of pharmacists and medical practitioners either independently or in collaboration seems to align more with beneficence and non-maleficence. In traditional pharmacy practice pharmacist acts as non-maleficence practitioner and the doctor acts beneficence practitioner (Kelling & Aultman, 2014). For example, the pharmacist's goal is to reduce risk of harm to the patient in only relation to the provided drug which emphasis service of a dispenser and clinical checker through limited access to patient information thus not certain of the therapy in relation to the condition (Duffull, *et al.*, 2018).

In the 21st century and collaborative practice pharmacists and medical practitioner acts as beneficence practitioners of which the pharmacist also has access of clinical information of the patient. Firstly the pharmacist can act as secondary beneficence to the doctor (primary beneficence) where the pharmacist is involved in decision-making up to and including the clinical judgment step which also include influence in reasoning,

judgments or initiated decisions, e.g. medicine review to optimize the therapeutic choices (Duffull, *et al.*, 2018)(Wright, *et al.*, 2018). Secondly the pharmacist and medical practitioner act as co-beneficence service providers where they work in collaboration and share responsibilities for decisions e.g. in a setting where a physician share prescribing roles with the pharmacist meaning, a the physician assign the diagnostic label and identify the overall therapeutic approach then the pharmacist may identify and enact a particular therapeutic intervention, manage and optimize the therapy (Duffull, *et al.*, 2018). In full collaborative care both practitioners work in partnership to arrive at a common decision.

In depth the relationship between pharmacists and medical practitioners should evolve to the level of what is called collaborative or interdisciplinary reasoning as per required standards of collaborative pharmaceutical care. This based on the fact their collaboration will mean collaborative clinical decision process. Collaborative, interdisciplinary reasoning is defined as the process of integration through disciplinary contribution to create a system cooperative communication and practice with inter-subjective standards to enhance understanding among individuals and ensure high quality in the collective working process (Laursen, 2018).

2.15. DIFFERENT BETWEEN GENERAL TRADITIONAL PHARMACY PRACTICE IN HOSPITALS AND PHARMACEUTICAL CARE

Pharmaceutical care as explained is co-operative provision of healthcare while the traditional dispensing system is non-cooperative process (Walker & Whittlesea, 2012). Another study highlighted that pharmaceutical care is a practice in which the pharmacist practitioner takes responsibility for an individual and unique patient's drug-related needs, and is held accountable for this commitment thus exhibiting being accountable for the society's needs of which to take responsibility in a hospital setting in a traditional pharmacy practice is a reactive process (Sakthong, 2007). With the traditional role of pharmacy, the pharmacist is responsible for ensuring that the right product is received by the right patient which is just a dispenser per definition, where only drug products knowledge is essential and drug delivery system than direct therapeutic relationship with patients to fulfil the standards of pharmaceutical care (Toklu & Hussain, 2013).

Pharmaceutical care also brings about what is known as evidence-based medicine and enhanced clinical reasoning and judgment to pharmacy practice. Evidence based medicine is defined as, “a final decision-making process for implementing the best treatment plan for the patient according to the external medical evidence that is compatible with national health policy and patient factors” (Toklu, 2015). It is known by majority as the use accredited published research evidence by medical practitioners to optimise clinical decision-making (Sandeep, 2016). In pharmacy practice it is referred to the practice of making decisions, which aligns current best accredited research evidence by the pharmacist and his or her expertise, and the needs and preferences of the patients (O'Toole, 2013). Clinical reasoning is defined as a higher order of thinking where the healthcare provider is guided by best available evidence or theory, observations and relationship among concepts and phenomena in question to develop an understanding of their significance (O'Toole, 2013). And clinical judgment means the application of information based on gathered evidence and actual observation of a patient lead to a conclusion.

2.16. DIFFERENT BETWEEN OUTPATIENT AND INPATIENT PHARMACEUTICAL CARE.

Outpatient pharmaceutical care is a co-operative provision of a patient centered care provided to patient who are not occupying hospital bed or any other inpatient (Hammouda & Hammouda, 2012). It covers both chronic and acute care however here care can be supplied directly or indirectly to the patient. Whereas inpatient comprise of healthcare professionals taking responsibility on patients' medication related needs. Meaning in outpatient the patient or the indirect person (caregiver) should have sufficient knowledge in terms of pharmaceutical care to maintain the process of the treatment when discharged which is the responsibility of the pharmacist irrespective of the setting of care (Marais, Schellack & Meyer, 2014).

Hospital outpatients have patients who are on acute medication, chronic medication and it also an area where patients are admitted at times and also get their medications reviewed and pharmacists are responsible monthly bases provision of medication. Most studies focus on inpatient pharmaceutical care whereas outpatient which has a huge number of patients retain a compromised pharmaceutical care provision system.

Outpatient pharmaceutical care provision in South African hospitals is limited by the number of patients and the waiting time (Bezuidenhout, 2015) (Hammouda & Hammouda, 2012), while inpatient pharmaceutical care is limited by the availability and competency of a pharmacists (Abdullatif, 2014).

The different between outpatient and inpatient pharmaceutical care it is also mimicked by the transition of care within one location even though their difference presents the ideal care process is that the quality of care for the patient must not be compromised (Sen, Bowen, Gabetsky, Hadley, Melody, *et al.*, 2014).

There are studies which highlight the impact of collaborative practice through either generalist practice or specialist practice. As study on effect of clinical pharmacist intervention on medication discrepancies following hospital discharge presented that following 30 days of patient discharge with pharmacist intervention presented reduced medication complications with enhanced quality of care and life through medication reconciliation, post discharge communication, education and follow-ups utilising a care plan for outpatient for the patient, however with reduced intervention up to 90 days that is also diminished (Farley, Shelsky, Powell, Farris & Cater, 2014). This clearly may derive a reduced time and cost spend on trying to achieve pharmaceutical care to chronic outpatient patients. It has also been shown in a study by Dalton and Byrne (2017), that pharmacists' contribution in admission and discharge yielded reduced medication errors and adverse drug effects, with recognised reduction in the rate of all-cause emergency department visits and readmissions which as highlighted post discharge chronic patients and patient requiring care is limited to the pharmacist in that particular hospital (Dalton & Byrne, 2017). Meaning if the collaborative complementary pharmaceutical care is also refocused to outpatient consultation section of the hospital and outpatient pharmacy there will be enhanced pharmaceutical patient care.

2.17. ETHICAL AND LEGAL ISSUES.

In the process of enhancing the patient care traditional link between academic institutions, health services and communities can be enhanced and aligned through the formation of cooperative teams such as in collaborative care, to address the skills scarcity or quality in the public healthcare system (Bheekie & Bradley, 2016). The four

foundational principles of bioethics which include beneficence (to do good), non-maleficence (to avoid doing bad), justice (equality of healthcare for all) and autonomy (patient choice) governs the ethics of the profession and its integration process however the collaboration means moving up to the level of incorporation of both non-maleficence and beneficence (co-beneficence between pharmacists and physicians specifically) (Duffull, Wright, Marra & Anakin, 2017). On promotion of ethical principles pharmacists and other healthcare provider should strive to incorporate strategies that lead to the promotion of these ethical principles, autonomy, veracity, non-maleficence, beneficence, and justice, to improve the goal of patient care and population health (Kelling & Aultman, 2014). This is also guided and influenced by what is highlighted in the theory of planned behavior as behavioral control affect the ethical principles (Ajzen, 1991).

The South African pharmacy council has emphasised on the code of conduct under the principle of “co-operation with health care professionals” that the pharmacist must work co-operatively with other healthcare professionals to achieve the best possible quality therapeutic outcomes for the patient and shall respect the skills and competencies of other health care providers. And also ensure that they put effort to work co-operatively with them to optimise the health outcomes of mutual patients and the public. They also developed competency standards with three levels, the entry level into practice as a pharmacist (first three years of practice), intermediate (from three to seven years) and advanced practice (more than seven years) also depicting the level in which one can be involved in collaborative and patient centered care from level 2-3 (The South African Pharmacy Council, 2018). The level 2(intermediate) upward includes practicing in a multidisciplinary team with cognisance of the roles and services delivered by healthcare and other related professionals. However, the principle of pharmaceutical care and educational curriculum recognise pharmacist to have capacity to be involved in a collaborative practice.

Ethical issue that applies to the practice of pharmaceutical care in a collaborative practice in provision of clinical skills include confidentiality, patient autonomy, duty to warn and the pharmacist’s competencies (Duffull, *et al.*, 2017). Confidentiality include the willingness of the patient to disclose information to the pharmacist as it is unusual

for the to practice in this situation and also pharmacist's competency in terms of balancing between the best therapeutic management and minimisation of drug costs, cost effectiveness of drugs, cost utility, cost benefit, overall cost of illness, cost consequences (Noordin, 2012).

The autonomy requires a pharmacist to inform a patient about possible side effects of medication however, which result into a challenge archiving a successful drug therapy due the patient's fear of the side effects (Gurzawska, 2015). Furthermore, autonomy is also based on the duty of the pharmacist to warn patients on pharmaceutical issues and products, of which that must be balanced with the doctor's instructions to avoid a conflict (Noordin, 2012). Despite enhancing collaborative practice medical practitioners believe pharmacists challenge their authority leading to tension in their working relationships. The ethical issue may also arise in the situation when a pharmacist only assists the medical practitioner in a therapy but is not allowed to comment on shortcomings involving other professionals (Gurzawska, 2015).

However, in even when interaction between pharmacists and medical practitioners has some ethical dilemmas pharmacists need to understand different patient management that exist from each section of a hospital and the one done by surgeons and physicians (Johnson, 2013).

2.18. THE IMPACT OF PHARMACIST-MEDICAL PRACTITIONER COLLABORATION ON PATIENT CARE.

In general collaborative practice is known by improving qualities of the healthcare system such as access to and coordination of health-services; appropriate use of specialist clinical resources; health outcomes for people with chronic diseases; and patient care and safety. And reduce issues such as cost of care, patient complications, hospital stay, tension and conflict among care givers, staff turnover, hospital admissions, clinical errors, and mortality rates (World Health Organization, 2010).

The main purpose of pharmaceutical care is focused on the outcome of the healthcare service towards the patient which is quality of care (Toklu & Hussain, 2013). This is covered in detail from when promoting patient treatment adherence thus reducing or

eliminating irrational use of drugs such as overdosing, underdosing, adverse drug effects, and irrational prescribing (van-Rensburg, 2016).

The main goal of a models of such kind as highlighted is to improve patient care as defined ideally in pharmaceutical care. A study on collaborative pharmaceutical care in an Irish hospital, uncontrolled before and after indicated a decreased prevalence of any medication error at discharge (adjusted OR 0.07 (95.00% CI 0.03 to 0.15)); number needed to treat by (95.00% CI 2 to 3) and no collaborative pharmaceutical care in Tallaght (PACT) patient experienced a potentially severe error (NNT 20, 95% CI 10 to 142) and patients aged ≥ 65 years (n=108) improved the medication appropriateness index(MAI) score from preadmission to discharge($p < 0.05$) (Grimes, Deasy, Allen, O'Byrne, Delaney. *et al.*, 2013).

This is also seen another study in Nigeria which exhibited a significant changes in number of patients that achieved 'control' after 12 months of intervention in following parameters: HbA1c $< 7.00\%$: 17 (18.28%); $P = 0.0466$; Obesity: -10 (10.75%); $P = 0.0364$, Overweight: -16 (-17.20%); $P = 0.0067$, and high-density lipoprotein cholesterol (HDL-C) > 40 mg/dl: 19 (20.43%); $P = 0.0195$ (Adibe, Obinna, Uchenna, Michael & Aguwa, 2014).

A metanalysis study was conducted on a randomized controlled trials (RCTs) studies which at basically looked at studies that observed the pharmaceutical care, collaboration and pharmacists interventions which found a significant improvement in patients' short-term outcomes for a number of conditions including diabetes, depression, respiratory disorders, epilepsy, osteoporosis, interventions in older adults and cardiovascular conditions, however indicated that other conditions such as depression are less well researched (Babar, Kousar, Murtaza, Azhar, Khan & Curley, 2017).

As the above-mentioned studies indicated an improvement. One study on the assessment of the need of pharmaceutical care in intensive care unit and high unit research also exhibited an improvement in the prescribing of antibiotic, quality of care

in the units and perception of nurses and medical practitioners which led to a conclusion of the need of a full time pharmacist in the ward (Bronkhorst, *et al.*, 2012).

Furthermore, another study on assessment of the need of pharmaceutical care done in surgical ward presented that there was an improvement with a number of, 188 interventions suggested, 153 interventions were accepted, giving an achievement rate of 81.40% (Pretorius, *et al.*, 2011). In the process some of the medical practitioners disagreed with the idea of a pharmacist being part of the ward while nurses fully agreed. These are local inpatient studies which highlight the need for intervention in outpatient setting. And on top of the clinical benefit this collaborative practice helps the hospital to save on cost of treatment and the cost of care for the patient (European Directorates for the Quality of Medicines & Healthcare, 2012).

2.19. CONCEPTUAL FRAMEWORK

A conceptual framework is a structure which the researcher believes can best explain the natural progression of the phenomenon to be studied (Adom, Hussein & Agyem, 2018) (Adom, *et al.*, 2018). It is the researcher's explanation of how the research problem would be explored. Conceptual framework assists in identifying and constructing his/her worldview on the investigated phenomenon (Grant & Osanloo, 2014). Pharmaceutical care highlights the impact of shared responsibilities to wards improved quality of care (Centers for Disease Control and Prevention, 2017).

In this study, the researcher adapted Midwife-Medical practitioner collaboration conceptual framework to explore the pharmacist-medical practitioner collaborative practice in the provision of pharmaceutical care. Midwife–physician interprofessional collaboration is defined through 4 dimensions (organizational, procedural, relational, and contextual) and 12 concepts (trust, shared power, synergy, commitment, and respect, among others) (Smith, 2015). The framework is depicted in figure 2.1.

This constructed framework provides the foundation similar to this study on interprofessional collaborative process.

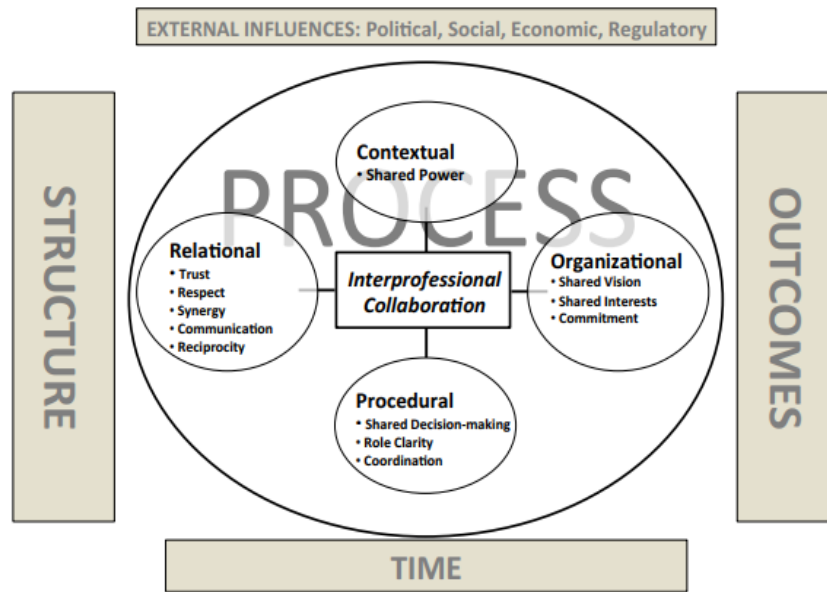


Figure 2.1. Midwife–Physician Collaboration: A Conceptual Framework for Interprofessional Collaborative Practice (Smith, 2015)

This framework was used to explore the pharmacists-medical practitioner collaborative practice in the provision of pharmaceutical care in the Mankweng Hospital Outpatient Department.

The researcher considered the following aspects of the framework during the interview of which are divided into three dimensions with components within, which are as follows:

Contextual dimension

Refers to the regulatory processes, cultural, and political environments influence the working relationship of healthcare professionals and in this case is the collaborative relationship among pharmacists and medical practitioners. The concept within this dimension is shared power.

Shared power refers to the control of the relationship or practice-controlled control in favour of a collective. At this state successful collaborations can be achieved by empowering both sides of the pharmacist and medical practitioner partnership by promoting horizontal integration relationships. The misuse or uneven demarcation of

power which create hierarchal dilemmas and favouring of the interests of one professional over the other may result in negative effect on the collaborative working relationship, ultimately preventing team development and cohesion yielding no potential for collaboration (Smith, 2015). Both the pharmacists and medical practitioners should take full control the relationship by agreeing about their roles, responsibilities and levels of interaction and dependence in provision of pharmaceutical care to outpatients.

Relational/interaction Dimension

The relational dimension also known as exchange characteristics includes the factors and influences that affect process of professionals' interaction, such as issues of accountability and attitudes, thus the existing relationships that are present between providers (Champion, 2008). This is based on activities among the professionals that highlight interest in collaboration (Liu, *et al.*, 2010).

The concepts in this dimension include communication, trust, respect, synergy, reciprocity, and commitment.

Effective communication is described through terms such as continuous, emphasised, regular, frequent, and open communication (Smith, 2015). In this case there are variety of communication mechanisms which are direct interaction, verbal and non-verbal such as meetings and written communications. For example, reports and medical documentation all of which must be secured when conducted formally and informally. In most cases the information channels are compromised thus collaboration among healthcare providers is hindered. The practiced communication in public hospitals is main reactive than proactive (Carthey, *et al.*, 2001). Information here is shared among healthcare professions strengthening the practice's overall operations and provision of quality pharmaceutical care.

Trust is the confidence and reliance on the ability and capability that inter-professionals have with one another (Stutsky & Spence-Laschinger, 2014). Development of trust allows for the more effective use of process, openness, understanding, flexibility, cooperation, and compromise thus enhanced patient care (Smith, 2015). It is one of the major contributing factors in collaborative care and highly affects communication among

the healthcare providers (Murshid, *et al.*, 2016). Both professions trust each other despite their different professional.

Respect is an appreciation to the presents of a certain individual, aspect or profession and for what each profession contributes to the partnership and provision of care. In respect and trust are words that are intertwined and are likely to have same relation in terms of collaboration. This about the role, knowledge and skills of each profession which must be appreciated and respected

Synergy is described in science as the process in which two organs, substances, or agents work simultaneously to enhance the function and effect of one another, (O'Toole, 2013). Hence in this case pharmacist and medical practitioners will be working towards a positive effect on outpatient pharmaceutical care. There is a better working relationship to achieve patient therapeutic goals than when both professions work apart.

Reciprocity is mutual responsibility and accountability between partners, evidenced by each profession (Smith, 2015). Both professions can count on each other to meet the patient obligations.

Commitment is the willingness by healthcare providers and patients or team members to work together which is collaboration's fundamental principle. This can be influenced the individual's social and cultural background, the past experience to collaborative environments or interprofessional relationships (Champion, 2008).

Organisational Dimension

The organisational dimension refers to the development of protocols, guidelines and structures that governs the collaborative care relationship which includes feedback mechanisms on performance, leadership, and innovation (Smith, 2015). The components that support this dimension are organisational structures and leadership, philosophy, values, shared vision, shared interests, and commitment.

Organizational structures and leadership often refer to the working environment and the leadership structures. The advised structure of practice is horizontal organisational

structures are than vertical or hierarchical structures when working to foster collaborative practice which is important for teamwork, open communication, shared leadership and decision making can foster collaboration (Champion, 2008).

Philosophy, Values and Shared vision: these elements are defined by common goals, philosophy, and shared guiding principles that essentials in collaborative practice (Smith, 2015). Organization's philosophy and values should be aligned with principles of collaborative practice (Champion, 2008).

Shared interest is defined as the combining of resources such as knowledge, skills, assets, and finances within the collaborative practice to bring about desired outcomes. The struggle of team members to share may lead to conflict resulting in incompatible goals and scarce resources(Smith, 2015). However, interdependence always conveys elements of cooperation and competition. When team members view conflict as a way achieving the element of common goals through shared interest, there is a potential of yielding cooperative outcome for collaborative care (Maxwell, *et al.*, 2014). At this state the diverse healthcare professionals' knowledge and resources are combined and used for benefit of all from the collaboration.

Commitment is the dedication and determination process to the success of the collaborative care partnership and to succeed despite presents hindrances. Commitment reflects the belief about the importance of the collaborative relationship (Smith, 2015). In this case team members should see worthy to have a healthy collaborative working relationship.

Procedural Dimension

The procedural dimension refers to the implementation and management of the collective resources, rules, protocols, policies and tasks of the organisation and for each participant accordingly (Saskatchewan College of Pharmacy Professionals, 2017). This includes the legal and ethical process of exchanging information within the organisation or team by establishing professional restrictions, accountability, and responsibility (Smith, 2015). The dimension components include the concepts of shared decision making, coordination, conflict resolution and role clarity.

Shared decision making and conflict resolution is the ability to have shared thoughts on certain concepts and issues then develop shared conclusions and potential solutions to issues that affect collaborative care. It is one of the fundamental principles reflecting the capability of both professions to work through issues or concepts to reach an agreement. (Saskatchewan College of Pharmacy Professionals, 2017). Conflict affects clinical decision making as it unavoidable and persevering part of our everyday life personally, professionally, and organisationally. The management process of conflict can start personally to extent of an organisation and can lead to tensions and derived relationships than the conflict itself. Both healthcare professions can partner to develop resolutions to address patient related problems.

Coordination is referred as the ability of the collaboration care system to arrange structures to ensure achievements of its goals through task assignment, resource allocation, and short-term and long-term care planning (Smith, 2015).

Role clarity is based on element of team members or collaborating partners understanding their scope of practice and professional boundaries, their link as well as the scope of practice of their partners (Smith, 2015). This is seen on the confusions in most research on the perspective healthcare profession on pharmaceutical care and role of a pharmacist in a multidisciplinary team (Sello & Dambisya, 2014). This is about ensuring that each profession understands their role and responsibility

In addition to the main conceptual framework background theory derivation were used through the literature which led to addition of the theory of planned behaviour (TPB) and the collaborative development process theory which directly and indirectly govern the inter-professional collaborative process.

The addition of TPB is because every process or procedure done by an individual, group or an organisation is turned to be controlled by the behaviour of the individuals involved. In this model one of the aims is to come with a managerial strategy towards behaviour, hence the theory is going to be used as the foundation because one's behaviour is always controlled by their intention throughout the process of collaboration (DeMik, *et al.*, 2013). The TPB as it was developed from the theory of reasoned action (TRA)

explains that the perception of an individual towards a behaviour can be predicted by the intention construct, which in turn is influenced by attitudes, subjective norms, and perceived behavioural control of an individual towards the certain behaviour (Ajzen, 1991).

Then in the collaborative relationship development there are 5 stages of relationship development as far as collaboration is consent (Liu, *et al.*, 2010). This is because for inter-professional collaborative practice (ICP) to exist and be successful inter-professional practitioners must first truly believe in the concept of ICP (Stutsky & Spence-Laschinger, 2014). The stages include the following: (0) professional awareness, (1) professional recognition, (2) exploring and trial, (3) professional relationship expansion and (4) commitment to the collaborative working relationship (Zillich, *et al.*, 2004) (Liu, *et al.*, 2010).

Diagrammatic representation of the concepts of TPB and collaborative relationship development.

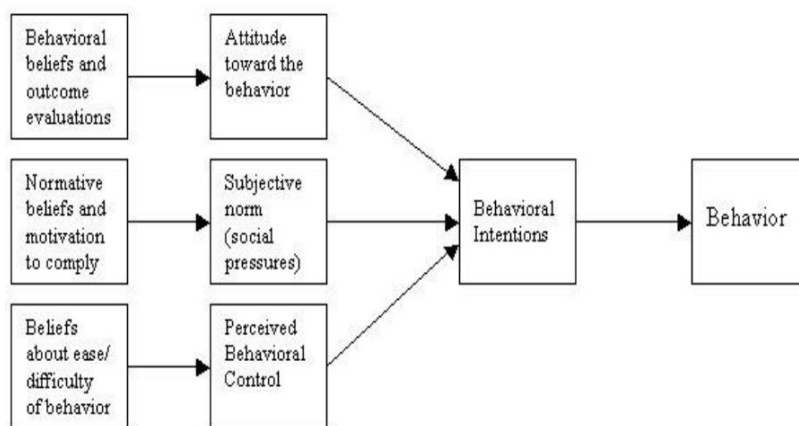


Figure 2.2: The Theory of Planned Behaviour (Ajzen, 1991) (Shah, 2013)

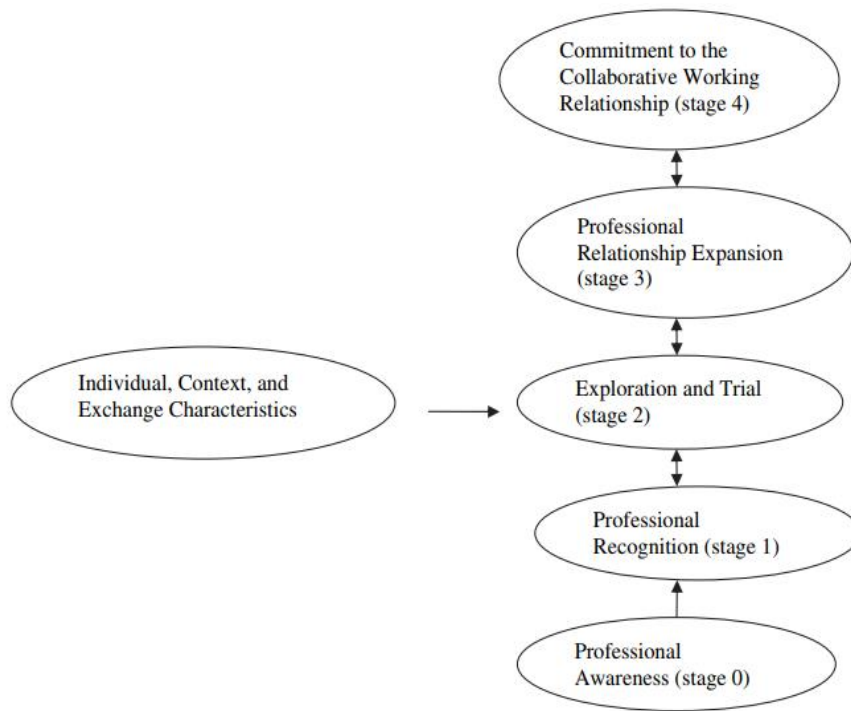


Figure 2.3: Collaborative working relationship by McDonough and Doucette

2.20. SUMMARY

Pharmaceutical care is a broad and insufficiently applied practice in our hospital outpatient departments. The literature presented here shows that collaboration between pharmacists and medical practitioners is critical for the improvement of outpatient pharmaceutical care services. This chapter clearly furnished the process of pharmaceutical care, collaborative practice, the roles of each profession and the required standards to bring about improvement in the hospital outpatient department. This covers the objectives of this study.

CHAPTER 3

METHODOLOGY

3.1. INTRODUCTION

This chapter provide a detailed description of the research methodology used in this study. This includes the research design, sampling method, data collection, data analysis, methods to ensure trustworthy and ethical considerations.

3.2. METHODS

3.2.1. Study site

The study took place at Mankweng Hospital in Limpopo province, South Africa. The hospital is part of Mankweng- Polokwane Complex under Capricorn district. The hospital is roughly about 2 kilometres from the University of Limpopo, Turfloop Campus (Figure 3.1.). This is a tertiary hospital which has a broad level of specialties and satellite pharmacies served by professionals from pharmacist interns to qualified pharmacists and medical interns to medical specialists.



Figure 3.1: Map showing the location of Mankweng Hospital.

3.2.2. Study design

This is an exploratory study that followed qualitative research method which include a face-to-face questionnaire based on open ended questions. The qualitative interview method allowed investigation of the deep insight of the pharmacist-medical practitioner collaboration for pharmaceutical care. And also an interdisciplinary field which encompasses a wider range of epistemological viewpoints, and interpretive techniques of understanding human experiences (Rahman, 2017). Furthermore, it was an in-depth interview process in which freedom is given to the participants describe fully during interaction to explore the pharmacist-medical practitioner collaboration through centralised and follow-up questions in greater depth. The results obtained were used to develop strategies and model to improve provision of pharmaceutical care through pharmacist-medical practitioner collaboration using the conceptual frame work by Smith(2014).

3.2.3. Study population

The study population included both pharmacist and medical practitioners from Mankweng hospital. The hospital has 43 pharmacists and 192 medical practitioners. The individuals in this study included pharmacist from different grading levels with at least one year of outpatient experience and medical practitioners from second year of intern then community service medical practitioner, specialists and consultants.

3.2.4. Sampling

A purposive sampling method was used to select the most appropriate participants (pharmacists and medical practitioners) for this study. Purposive sampling is the selection of participants or sources of data to be used in the study, based on the predicted richness and relevance of information that they can provide in relation to the study's research questions (Gentles, *et al.*, 2015). In this study the medical practitioners and pharmacists were selected based on their level of experience in the hospital outpatient department which from one year of experience in outpatient department. The use of purposive sampling in this study brings advantage as interviewees or participants were selected based on their rich depth of their knowledge and experience in terms of provision of pharmaceutical care in the outpatient department.

3.2.5. Sample size

Due to the nature of the study, the data was collected until data saturation which determine the sample size. Data saturation means that no additional data or information is being acquired whereby the investigator can develop properties of the category as he or she finds as similar instances and characteristics repeatedly (Saunders, *et al.*, 2017). The grounded theory state saturation as a stage that established categories are fully accounted for, the variability between them is explained and the relationships between them are tested and validated and thus a theory can emerge (O'Reilly & Parker, 2012). This is a point at which there are fewer undiscovered information acquired which means no more emergent patterns in the data. In this study, the saturation point was reached at a sample size of 17 participants with 8 pharmacists and 9 medical practitioners.

3.2.6. Inclusion criteria

The participants of this research were the fulltime pharmacist and medical practitioners who works directly or indirectly at outpatient department.

All the participants had at least one year of outpatient department experience.

3.2.7. Exclusion criteria

The pharmacists and medical practitioners who excluded themselves through the desire not to participate.

The pharmacists and medical practitioner who did not give in their informed consent.

Community service medical practitioners as they went to the clinics on daily bases and not available at the hospital.

Outreach pharmacist who was allocated to be at the clinics and also handling the COVID-19 vaccination program at the clinics.

The pharmacists and medical practitioners on leave.

3.2.8. Data collection

The data was collected through face-to-face individual interviews by use of an audio device and semi-structured questions. The interviews took place at time and place agreed between researcher and participants provided that there was no interference with their duties. Most of the time the interviews were done in the morning and afternoon, and during lunchtime as the participants were not busy or not seeing patients at all. The interviews were based on the centralized open-ended questions (APPENDIX A) followed by probing questions. Probing questions were used to get more information based on the direction of the interviews. The data collection tool composed of two sections, the first one was demographic information, and the second section were centralised questions about pharmacists-medical practitioner collaboration for outpatient pharmaceutical care. The data was collected through audio records and notes taken throughout the interview. The recordings were stored in a password protected file which was handled by the researcher and supervisor only. The information was transferred from audio records to paper by the researcher and all physical documents or hard copies were kept in an office that is locked with access being granted by the researcher and the supervisor. Participants were not identified with their names but rather assigned numbers.

3.2.9. Data analysis

The data collected was captured and analysed through thematic analysis, which is the process of identifying patterns or themes within qualitative data (Creswell & Poth, 2018). This method was selected due to the exploratory nature of the study to allow gathering of common views and important information from the participants. The recorded audio interviews were transcribed exactly as they were recorded and then analysed.

The analysis process is according to Creswell & Poth (2018) of which the steps of thematic analysis that were used in the research for identifying, analysis and reporting the results are as follows:

1. Managing and organizing the data.

This include storage of data whereby the collected information is put into digital file form which are password protected, named in categories according to participants codes, categories of participants and date of collection. From this research the categories were divided into two, pharmacist and medical practitioners and further into different levels of practice and specialisation. In from the two groups of the data was subdivide into dates and different level of experience.

2. Reading and memoing emergent ideas

The reading and memoing is basically focused on familiarising and understanding the research with the content of the whole data. This was done through writing notes/memos when listening to records and revisiting the notes taken during interviews and during transcription process. This also included a summary of each discussion along the process.

3. Describing and classifying codes into themes

Here the data was described, classified into codes and also interpret. Then when the data made sense from codes followed, the process was followed by aggregating the codes into themes. In this study codes were in the form of statements that portrays similar characteristics. The statements were put together and aggregated in the form of summary which were defined as codes.

4. Code classification (making themes)

Under this step the researcher highlighted the noteworthy codes which also include explaining the importance and creating diagrams representing the codes' relationship and summaries into themes. On that note study the researcher selected codes that are valuable, refine and put them in the form schematic diagram according to their degree of importance and relativity. This was done using two phases, where the themes will be checked in relation to the coded extracts (phase 1), and then for the overall data set (phase 2).

5. Developing and assessing theme interpretations

The step is based on defining the themes into an understood language and comparing the researcher's findings with relevant literature, existing data and initial hypothesis. In this process the data was refined and defined into themes and potential subthemes presenting an understood language within the data, to link them. This was achieved by providing theme names that defined the gathered data of each theme in a concise and effective manner; and to immediately ensure understanding to the reader.

6. Representing and visualizing the data

In this step, the data has been embodied by packaging the results into ways that will ensure understanding to the reader through figure forms such as tables and diagrams representing a mode of language to the reader.

7. Writing a report

The final step is writing a report based on the final views extracted (Braun & Clarke, 2006). In this case a report with the concluding statements were written based on the final information produced through the themes and information gathered throughout the analysis process.

In addition to main technic depending on the data requirements Microsoft excel was used to assist in bring understanding using diagrams and graphs as per standard of each question and also through thematic analysis as per questions asked with questions and answers coded under each theme.

3.2.10. Measure to ensure trustworthiness

Trustworthiness in qualitative research is referred to as to the degree of confidence in data, interpretation, and methods used to ensure the quality of a study (Polit & Beck, 2014). It is measured by evidence of transferability, credibility, dependability, and confirmability in the study (Hadi & Closs, 2016). This study has adopted criteria mentioned by Polit & Beck (2014) and Hadi & Closs (2016), which are as follows:

1. Credibility

Credibility is defined as the confidence that can be placed in the truth of the research findings (Anney, 2014). The credibility of the research findings of this study was guaranteed through the use of individual interviews with participants who have a diverse experience in the hospital outpatient department. This included pharmacists and medical practitioners with different grades with different views and level of experience in the provision of clinical care and pharmaceutical care.

Furthermore, the study applied the use open-ended questions which some of the quotes were taken as the participants answered and not changed to ensure credibility. This also included the use of probing question and revisiting some of the answered question that the researcher deems important and in relation to other response. Apart from carrying out the research itself the method was discussed colleagues who are detached individuals from the research but familiar with the topic studied to further enhance the credibility by reviewing the results. This included specifically the supervisor but not limited to that. After transcription, a copy of the transcript was given to an independent coder who is well-experienced in qualitative data-analysis to conduct a data analysis independently and different from the researcher's results so to ensure quality by reviewing and comparing the attained results. The researcher went forth to clearly explain the nature of the study and that participation is voluntary.

2. Transferability

With transferability the main ideal objective lies in demonstrating degree that the results of the study being carried out with a wider population, different environment or other contexts (Korstjens & Moser, 2018). Meanwhile the results of a qualitative study are limited to a small number of environments, groups and individuals, in this case it was possible to demonstrate that the findings and conclusions are applicable to other situations and population as the hospital that the study was carried out is a tertiary hospital with different cultures and small outlet practices involved. And again, then the study was immersed in existing literature that contains similar characteristics as this study which the researcher has indicated by means of detailed literature review the applicability of the study in multiple environments.

3. Dependability

Dependability is defined as the ability of a study to produce similar results if not identical, when other researchers in the same settings repeat the same procedures (Shenton, 2004). The procedures of this study as mentioned above were written extensively to ensure that one can repeat as direct as it is provided in the research. This includes the methods mentioned under credibility and transferability. The study responses obtained through the scheduled interviews were, in addition to the researcher also provided to an independent coder where the researcher and the independent coder then scored independently to check correlation. And also, the data was collected up until saturation.

4. Conformability

The degree to which the findings of the research study could be confirmed by other researchers of which it must be demonstrated that the results are clearly linked to the conclusions in a way that can be followed and, as a process, replicated (Moon, et al., 2016). It is based on establishing that data and interpretations of the findings are not figments or ideas of the researcher imagination but are evidently obtained from the collected data (Korstjens & Moser, 2018). As mentioned above that detailed methods of the study were provided, including all the procedures that took place from the initial step of the study to the completion. This also was supported using audiotaped interview of each session of the research.

3.2.11. Bias

Bias is any influence that produce a distortion of statistical findings of the study from the true values or that strongly favours the outcomes of a particular finding of a research study (Delgado-Rodriguez & Llorca, 2004). Bias in qualitative studies is an ever-existing issue. To ensure that there is control on bias as in this kind of study the researcher was not working alone as the management system of the pharmacy has supervised, the medical practitioner team in consultation and the head of clinical medicine also has supervised the work. The interviews were carried out through recording and writing

which each record serves as evidence for the information provided in the documentation.

3.3. ETHICAL CONSIDERATIONS

3.3.1. Approval

The research proposal was submitted and approved by the School Research and Ethics Committee (SREC), Faculty higher degree Committee and Turf-loop Research and Ethics Committee (TREC) for the study to comply with the standard required by the University of Limpopo Turf-loop campus research committee. The permission to conduct the study at the Mankweng hospital of Polokwane-Mankweng hospital complex was also acquired from the Department of Health (APPENDIX C) and chief executive officer (CEO) (APPENDIX D). The pharmacist and medical practitioners that took the interview were made aware by the head of the sections and supplied with an informed consent form at the beginning of the interview as far as the research process is concerned for them to accept and be familiar with the topic.

3.3.2. INFORMED CONSENT AND VOLUNTARY PARTICIPATION

Participation in this study was voluntary. The participants were provided with full explanation of the study with the purpose of emphasising participants understanding on the nature of the study. To also further emphasis their voluntary participation included, and they were provided with details on the methods that were used. The participants were provided with an informed consent as an agreement between the researcher and the participants to ensure that study is carried out as explained and provided in the methodology without violation of the terms (APPENDIX E). This allowed participants to withdraw at any time during the sessions of the interviews if not feeling comfortable.

3.3.3. CONFIDENTIALITY AND ANONYMITY

Confidentiality in the study was assured and was maintained as the information obtained is not going to be used for any other purposes other than for research purposes and development of the in-need strategies or a model to improve pharmacist-medical

practitioner collaboration. The names of the informant were not included in the study or any information that might lead to linking the informant with the study. The participants in the study were coded to ensure no names are used e.g., “participant 1”. The coding process was explained to the participants to make them fully aware of the extent to which confidentiality will be maintained.

3.4. HARM TO PARTICIPANTS

Due to the nature of the study, participants were not subjected to any physical or emotional harm. As exploring means inquiring in detail then probability of unexpected reaction from different individuals might be high. The researcher has ensured that the interview with the participants is healthy, maintained the professional standard asking questions and not ask any irrelevant information than that stipulated in the data-collecting tool. The study was neither sensitive nor emotional, however if it was to happen that the participants’ emotions are evoked at any way and at any stage of the interview the researcher was going to give informant a moment to be calm and refer to relevant officers such as psychologist within hospital premises.

3.4. SUMMARY

In this chapter, the methods used during the collection and analysis of data have been described to show the significance and the need for each step carried out in the study. This leads us to the results and discussion in chapter 4.

CHAPTER 4

RESULTS AND DISCUSSION

4.1. INTRODUCTION

This chapter provide in detail the results of the study obtained from the interviews and the themes that emerged during data analysis. The aspects that are covered in this chapter include the demographics, the results through the themes the were developed and the discussions.

4.2. DEMOGRAPHICS

In this study seventeen participants were interviewed. The number includes eight pharmacists (47.06%) and nine medical practitioners (52.94%). The pharmacist were six female (75.00%) and two males (25.00%) with two women working at the outlet pharmacies, eye pharmacy and paediatric pharmacy. The number medical practitioner comprised of five women (55.56%) and four men (44.44%) with seven (77.78%) working at specialist outlets departments (psychiatry, paediatric and eye department) and two (22.22%) at main general outpatient. There are more female pharmacists in South Africa this also corelate with the bigger number of female pharmacist participants in the study as the statistics of registered pharmacists in South Africa presents the number of females being approximately double number of males (South African Pharmacy Council, 2022). The participants ranged between the age group of 20-29 (11.76%), 30-39 (70.58%), 40-49 (11.76%) and more than 50 year (5.80%). Majority of the study population was at age range of 30-39 years. Their working experience ranged from 5-6 (52.94%), 7-8 (23.52%) and more than 10 years (17.65%) with 5-6 years of experience as the majority. These work experience of 5 years and more, clearly exhibit the richness of the experience in patient care process. In addition to the purposive sampling method through ensuring increased chance of acquiring relevant information to the study, this work experience served an advantage to high probability of enhanced experience of the study topic.

4.2.1. Table 4.1: Pharmacists' demographics

Healthcare professional				Departments			
Pharmacists (P)	Gender Male(M) Female(F)	Age	Years of experience	GOPD	Eye	Paediatric	Psychiatry
Participant 3	F	30-39	5 to 6	√			
Participant 4	M	30-39	5 to 6	√			
Participant 7	F	40-49	≥ 10			√	
Participant 8	F	20-29	5 to 6		√		
Participant 10	F	30-39	5 to 6	√			
Participant 11	F	30-39	5 to 6	√			
Participant 12	M	30-39	≥ 10	√			
Participant 13	F	30-39	≥ 10	√			

4.2.2. Table 4.2: Medical practitioners' demographics

Healthcare professional			Departments					
Medical practitioners (MP)	Gender Male(M) Female (F)	Age	Years of experience	of GOPD	Eye	Paediatric	Psychiatry	
Participant 1	F	40-49	5 to 6		√			
Participant 2	M	30-39	5 to 6				√	
Participant 5	F	30-39	≥ 10				√	
Participant 6	M	30-39	7 to 8				√	
Participant 9	M	≥ 50	≥ 10		√			
Participant 14	F	20-29	5 to 6			√		
Participant 15	F	30-39	7 to 8			√		

Participant 16	F	30-39	5 to 6	√
Participant 17	M	30-39	7 to 8	√

4.3. RESULTS FROM THE INTERVIEWS

As per analysis the results from the interviews generated four themes with a number of sub-themes.

Table 4.3: Themes and sub-themes

Themes	Sub-themes
Description of the current pharmacist-medical practitioner relationship	Individual based relationship.
	Partial collaborative characteristics of the relationship level.
	Reactive interaction relationship
	Hierarchical relationship and collaboration process among the professionals
	Pharmaceutical product centred relationship and collaborative practice.
	The effects of collaboration on prescribing process, interaction, and patient care.

The barriers affecting pharmacist-medical practitioner collaboration

Lack of proactive system for stock management.

Lack of direct/ face to face interaction and communication.

Time deficiency

Attitude and personality differences among pharmacists and medical practitioners.

Lack of knowledge about the role and skills of each professional.

Workload among the healthcare professionals.

Hierarchical system of decision making and communication.

Recommendations on the ways, strategies or model to improve pharmacists-medical practitioner collaboration

Establishment of regulated and continuous platforms for interaction.

Establishment of learning and training platforms among the healthcare professionals.

Improved infrastructure and availability of stock and resources needed to collaborate.

An enhanced understanding and appreciation in the roles and responsibility of the healthcare professionals in collaboration.

Establishment of protocols suitable for collaboration.

Established proactive system for collaboration process facilitated and strengthened from or up until management.

4.3.1. Description of the current relationship and collaborative practices

This theme describes how pharmacists and medical practitioners in the outpatient department interact and communicate based on their current relationship and any interactive collaborative practices regardless of the extend of interaction. The subthemes covered under this theme are as follows:

The individual based relationship

Both medical practitioners and pharmacists highlighted the existence of an optimal relationship among both professionals depend on an individual as factors. This was presented by the fact that during interaction process both professionals expressed that they prefer to work with certain group of professionals than others or a certain shift.

P4 "relationship is good but anyway it depends on an individual..."

To further support the statement there is four participants (23.53%) who mentioned that there were difficulties in carrying out the prescription process inquiries and dispensing process inquiries especially during the in-need state.

For example, pharmacists:

P4 "other doctors, they... you know work with us nicely when we want to modify the prescription but other don't what to listen to us"

P7 "The relationship is good, but I can say I depend on the individuals. I am saying that because some doctors when we intervene with them some do not have problem, they do understand why we are intervening and take it positively so... Some think that we are

trying to correct their mistake, or we are just looking for their mistakes whereas we are not doing that we just trying to do that for the sake of the patient.”

For example, medical practitioners here mentioned the attitudinal factors of the pharmacist and their personal characteristic which leads to interaction failure.

MP5 “Again it also depends on the pharmacist and their year of experience. People differ, we do have that pharmacist who will just turn the patient back and that one who will call knowing that when they turn patient back it takes time.”

MP6 “We do work together depending on the pharmacist on duty on the day, there are certain days that the pharmacist do not interact with us at all and there are certain days that the pharmacist would work with us, interact, they call us will then communicate and work together.”

Furthermore, the participants especially the medical practitioner talked about an advantage of being known by the pharmacy staff as an individual because of frequent and quality interaction.

MP9 “I have been working at Mankweng hospital for 11 years, the relationship and collaboration between medical practitioners and pharmacist, it’s very good... And we just have to keep improving. I have been working here for a long time, I think with intern doctor / new doctors there is hesitation.”

The participants mentioned individual experiences as a facilitator in their relationship and collaboration. What they highlighted is the unfamiliar protocols, standards and clinical skills required in collaborative pharmaceutical care process the junior staff must cover. This led to healthcare professionals having to choose working with individuals who are more experienced, might be at a certain area or seniors.

MP5 “Again it also depends on the pharmacist and their year of experience... It’s more of, some things you cannot expect them to be taught at school so the must just know that and must just have passion for patients and their degree. And also it’s all about patients.”

P13 "What I have learned here at Mankweng, when you speak to this juniors they are the ones give problems that's why me personally, I will end up checking if its peads pharmacy, I will just call straight to their supervisor that's where get help and move on."

Partially attained characteristics of the relationship and collaborative practice.

The participants mentioned the presents of a partial relationship and collaborative practices as some mentioned that it was good and others that mentioned the relationship and collaborative practices need a lot of improvement.

MP2 "I think we have a good relationship..."

MP9 "the relationship and collaboration between medical practitioners and pharmacists its very, very good..."

MP5 "It depends on the hospital, here at Mankweng I will give it 6/10 but other hospitals such as Thabamopo hospital its extremely poor."

MP6 "Okay, am..., the relationship is there, as much as is not what we would have liked...Its not all good or all bad it needs some improvement but as it is now am not really happy with where we are we can still do better to help our patients."

P7 "some medical officers do take it positively. Some think that we are trying to correct their mistake ... Like I said, it depends on the individual some is good and some take it is very bad as they take negatively"

P8 "So far what I have seen the collaboration between pharmacists and doctors it's a two-way process sometimes we can agree on some things or sometimes we disagree...I can say we are still 50/50."

Some of the participants went further to be doubtful of the relationship and collaborative practices even if they mention that it was good. As the interview continues one would then realise that there is a lot that compromise the quality level of their relationship.

P11 *"I can't actually say it's up to the required standards because it seems there are inferiority /seniority relationship somebody thinks that... everyone thinks they must outshine one another so the patient gets to suffer"*

Reactive interaction relationship

This theme investigates the process characteristics, methods and reasons for interaction.

In most of cases of interaction pharmacists and medical practitioners are involuntary forced by the presents of an issues during patient care processes. There only a few incidences of planned meetings or interactions.

P10 *"If we encounter any problem with regard to medication the first thing that we will do is to call the doctor so that we can sort out whatever issues to improve the patient's health outcomes...."*

MP14 *"Well, we never have complaints between us and the pharmacist if there is a problem, we both communicate".*

And this is also supported by the medical practitioners highlighting that interaction is mainly based on present of issues with stock availability where one has to prescribe alternatives.

MP1 *"we have the pharmacy which we need their treatment most of the time... But what I like about them, is that if there anything not available they simply take a call to discuss the alternative or come to me"*

MP5 *"Most of the time they don't interact with us e.g., if like they don't have medication and you prescribe it then they will call you".*

The used reactive methods of interaction or communication among the pharmacists and medical practitioners include phone calls, face to face interaction, meetings, pharmacist writing a piece of paper/ message in the file and use of a patient as mediator.

P3 "...if we are having any challenges whereby the drug is not matching the diagnosis, we are able to physically go to the doctors to communicate with them..."

P4 "... sometimes we do have meetings then we discuss the patients..."

MP6 "...pharmacist would work with us, interact, they call us we will then communicate and work together... The only interaction we get is when the pharmacist would write a little piece of message to say we do not have this..."

P8 "... so I wrote a note and sent the patient back to the doctor to rectify so she called me because she knows that am at eye pharmacy..."

In all these processes both participants highlighted lack of quality in terms of the standard of interaction or communication as compared to face-to-face thus a compromised patient care process.

P10 "So, we can minimize the patient's waiting time resulting from writing script for the doctor while he might not even understand what we are trying to say so physical or contact communication its way better for us to go that route as it gives the pharmacist and doctor an understanding on how we should improve the patients' health outcome."

The detailed interaction process among pharmacists and medical practitioners includes issues of drug therapy problems, stock availability and management, and prescribing protocols.

In the case of medical practitioner there is a huge issue in terms of pharmacists playing their role in terms of stock availability which compromise pharmaceutical care service delivery.

MP6 "The interactions that I would like to have is, a regular update especially for specialized clinic to say today it's a Tuesday psychiatrist having a specialized clinic, in terms of the items this is what available on stock."

MP14 "Usually medications, what is available and if that is not available what's the alternatives."

As for most of the pharmacist participants, issues that were raised are that of drug therapy problems and prescribing protocols. Under drug therapy problems issues that were raised are clear indication for prescribed items in relation to the diagnosis, dosage adjustments and the state of the patient in relations to the prescribed medication.

P3 “And you will also find that sometimes a patient will be prescribed a certain medication, but their kidneys will be failing. You find that doses need to be adjusted and sometimes, especially when working with intern doctor you would find that they are not really aware that certain doses need to be adjusted then we talk over that, and doses are adjusted or whatever issues that we have we with them we are able to resolve”

MP16 “Availability of particular medication, alternatives, dosages, things like that and challenges regarding particular patients as I was saying currently there is a problem with supply chain.”

P8 “...the doctor wrote a prescription and she didn't, there is no practice number, the legality of the prescription was not there, so I wrote a note and sent the patient back to the doctor to rectify so she called me because she knows that am at eye pharmacy and told me that since when are you consent about us writing practice number because I have been writing like this. I have been writing as doctor so and so and I said what do you know about the legality of the prescription in that state according to her it's enough because it shows that she is a doctor.”

Resources management and stock management is based on the availability, accessibility and proactive management of both in the hospital to ensure good relationship and collaborative practices.

In terms of stock management, both groups of participants presented that the process of ensuring that the stock is available, and accessible needs a proactive system. Which will have to include a proactive system of stock supply process and proactive communication system of ensuring that both healthcare professionals know about the stock levels. This was suggested highly by the medical practitioners as it fatally affect the prescribing process thus patient care in terms of adherence and general treatment provision state.

MP6 "...today it's a Tuesday psychiatrist having a specialized clinic, in terms of the items this is what available on stock...So, we need to have like that regular update every day if possible, all the departments. It's unfortunate we do not have a database where we can all get updates in the morning, so when I go to work, I know these items are not available so when I prescribe, I can put alternatives"

According to some participants, it affects the quality of communication among the medical practitioners and pharmacists as accessibility of pharmacists and medical practitioners is occasionally.

MP5 "Most of the time they don't interact with us e.g., if like they don't have medication and you prescribe it then they will call you... that pharmacist who will just turn the patient back and that one who will call knowing that when they turn patient back it will take time."

P13 "I don't know how to rate it maybe it's a matter of we don't meet it just a person behind the phone but if we get a chance as pharmacists working at dispensary with the patient's file once in whatever time just to share our challenges"

The hierarchical relationship and collaborative practice among the professionals.

Both the pharmacist and medical practitioner emphasised the issue of hierarchy or power. They mentioned it in terms of medical practitioner versus pharmacist and management versus the ground force of pharmacists and medical practitioners.

Among the two professionals most of the pharmacists mentioned that medical practitioners create difficulties by built attitudes and title issues as they feel more power in the patient care process like they are the sole service provider.

P11 "I can't say it's up to the required standards because it seems there are inferiority /seniority relationship... that pharmacist thinks she is an expert as far medicines and doctors thinks he/she is an expert as far as the medical field is concerned"

P13 “Because some doctors will say this my patient, but at the end of the day you need to show that am the custodian before I sign the prescription, I should know what am doing.”

The biggest of them all is management impact on both service provision and interaction. This comes as most participants mentioned the effect of a very hierarchical decision-making system in terms of patient care process and interaction. Some participants even highlighted that the failure of the ground force to interact is derived from the culture of the hierarchical system in department of health, within the hospital and within the departments.

MP16 “We do discuss when there are challenges, but the reality is that some of the challenges are beyond us and the pharmacist helping...I think it’s very hierarchical in the hospital environment, in OPDs it works well but am just talking about generally because a lot of the committees where pharmacist and medical practitioners work together or are in together are the higher ones where our managers are. So, us on the floor sometimes it becomes difficult to speak especially when there is a particular conflict, so at times you don’t get to prevent some of the stuffs.”

MP17 “The problem might be most of the problems we encounter here are not related to them because sometimes we have things like shortage of medicine, I mean the pharmacist cannot do anything as the medication was not supplied... But in terms of us and them I think satisfactory, ‘yes’ but if you go on the inside, I think that one it’s another question.”

The hierarchical relationship is expressed by pharmacists in terms of its existence on medical practitioners to other healthcare professionals like pharmacists.

P4 “...if maybe I go deep into this thing e.g now the medical practitioners they are respected too much than other profession like right now it’s not easy for you to can talk to an intern... it is in such a way that they don’t see other profession as if they are important in the health system, so it’s really going to be tough I don’t know how that will happen”.

The participants especially those at the clinic satellites mentioned that the collaboration they see is at higher positions such management. This also support the part of a well-established relationship at higher positions.

MP 16 *"I think it's very hierarchical in the hospital environment, in OPDs it works well but am just talking about generally because a lot of the committees where pharmacist and medical practitioners work together or are in together are the higher once where our managers are"*

Pharmaceutical product centred relationship and collaborative practice

The relationship and collaborative practices that occur between pharmacists and medical practitioner as expressed by participants, appears to be more product centred than patient centred. This is shown when most by medical practitioners who also demonstrate their understanding of a pharmacist's role as a pharmaceutical product handler.

MP 1 *"... we have the pharmacy which we need their treatment most of the time and that's why/all I refer the patient to... But what I like about them, is that if there anything not available they simply take a call to discuss the alternative or come to me to say Dr when did you get the new guideline because what we..."*

MP 5 *"Most of the time they don't interact with us e.g. if like they don't have medication and you prescribe it then they will call you."*

MP 6 *"The only interaction we get is when the pharmacist would write a little piece of message to say we do not have this particular item...The interactions that would like to have is a regular update especially for specialized clinic to say today it's a Tuesday psychiatrist having a specialized clinic, in terms of the items this is what available on stock"*

P12 *"And secondly the interaction when it comes to the type of products that we keep, you find doctor prescribing some things that are not on our list of keeping so it shows*

that our interaction or our relationship it's not that good because if it was good they will know and prescribe what we keep."

Pharmacists highlighted the need for clinical interactions or patient centred issues as per some of their interaction with medical practitioners. That is where the difficulty in a relationship or collaboration arise as medical practitioners demonstrate the product centred understanding of a pharmacist's role in the relationship.

P7 *"I say intervention, you will find that the doctor write a certain strength for peads and when we calculate the dose you find that dose is too high for the child so when we trying to show the doctor that according to the EDL if the child is weighing this it means e.g. augmentin it means the dose should be this..."*

P9 *"Lets' say the patient is having a certain diagnosis and the doctor writes. Let say it's an infection and the doctor write, then I check the guideline and it does not match so if I communicate with doctor tell him that a certain diagnosis on there you cannot prescribed on there for such a condition, so they do listen to us and change the script."*

P11 *"We actually do not have an established relationship it's not there, it like we force it most the times. If ever we could be let's say there is a platform where we can discuss such thins maybe it was going to be better."*

It was brought forth by both medical practitioners and pharmacists that during the process of patient care, the patient is likely not be considered as part of decision makers to a certain extent. One medical practitioner highlighted the process of patient centred care which brings understanding to the patient in terms of care provision.

MP17 *"For the practitioner, is...to talk to the patient about the side effects and if the medication is not available to see if there is something else you can change to. To the pharmacists... And also know how to counsel the parent or care giver who is coming in to collect the treatment. I think the impact should be measured according to the satisfaction of the care giver because when a care giver brings their children to you what they expect form you is to make sure that their children are fine."*

P4 “We have to collaborate because many patients can’t have a good outcome because the collaboration between the doctor and pharmacist is not good. If we collaborate maybe patients are going to be saved and their life expectancy will improve.”

Both medical practitioners and pharmacists supported the fact that they should learn to put their difference aside and focus on the patients’ benefits during the patient care process.

MP5 “I think the pharmacists also need to consider patients, most of them consider us medical practitioner and forget that the person who is suffering or benefiting at the end it the patient”

P10 “My general view is that, like as pharmacist and doctor our differences should be aside, we must put the patient outcomes first not say am the prescriber or dispenser.”

The effect of collaboration on prescribing process, dispensing and patient care.

Most of the conflicts as mentioned by a lot of pharmacist participants are promoted or exacerbated by quality of the prescribing processes. It was not clear on what promoted these prescribing malpractices. The hope of the pharmacist participants is for this to also improve in a collaborative pharmaceutical care practice.

P7 “When I say that I mean that if we can meet if we can discuss I think there will be improvement on the prescriptions...”

P4 “...let’s say there is a prescription from the OPD we don’t have or the doctor prescribed a certain item that we don’t keep in our province or its out of stock and then maybe you have an alternative to what he prescribed and then when you call others will just tell you that, “ you know what my patient will not use whatever you are suggesting... On our side if a doctor comes and wants to prescribe something not suitable for the patient some of the pharmacists will listen to the doctor depending on the doctor explain the case clearly but then other even if the doctor explains the case clearly, they will not agree to dispense the item to that patient. And if I agree I can dispense that and writes

that the doctor mentioned that he prescribed this item for this asthmatic patient due to this reason.”

P13 “...Usually it might be the issue of dosing, people prescribing outside guidelines wherein we came together to show which guideline did we use e.g. treating h.pylori and the doctor did not prescribe accordingly...I came across a prescription there was a baby who they had prescribed ciprofloxacin then I tried to engage with the doctor say can we give to the baby (3year old) and then when tried to say can't we start with the imperial treatment to give augmentin the doctor was like okay especially the lab results , we cannot just shot to ciprofloxacin.

The doctor ended up saying like okay if that's what you want you can give but if you know the expectation that we are together in achieving the care of the patient wouldn't be having those problems and we are still having them”

MP 15 “So when you collaborate you sort of fill in each other's gaps e.g., yesterday I wrote cyclokapron and the pharmacist was aware of that had written on my notes that this patient has this condition, so she called me to say this particular patient are they still bleeding for you to write cyclokapron. In my vision I was still think that the patient is not currently bleeding but still in a period of a re-bleed. So it's where we are sort of bridging the gap in managing the patients... Like in an example of say polypharmacy if a doctor has written a scrip with 4 items which one covers for two or one cover for the whole class. So, if a pharmacist is able to pick that up that there is something batter...”

Most of the pharmacists mentioned that the legalities and validities are things that delays patient care process which should not be the case.

P12 “If I understand your question for me to provide the service that is needed, firstly the prescription should be or whatever information is receive from the doctor should be clear, legal and relevant to the diagnosis”

What most of the participants highlighted about collaboration during the interviews are the process of proactive interaction in such a way for example a medical practitioner

would be able to contact a pharmacist prior to prescribing and discuss issues in related to the prescribed medication.

P7 "When say that I mean that if we can meet if we can discuss I think there will be improvement on the prescriptions; I think there will be improvement in communication between pharmacists and prescribers and I think we will be on one level."

MP "The interactions that would like to have is a regular update especially for specialized clinic to say today it's a Tuesday psychiatrist having a specialized clinic, in terms of the items this is what available on stock. So that we do not go back and forth, send patients up and down."

P11 "It's going to be a good one because now we are going to going to engage differently, we would discuss things that are not happening at the moment, discuss certain situation prior encountering."

The participants believed that collaboration could result in enhanced quality patient care including reduced waiting time, costs, readmission, hospital visits and increase stable patients.

Patient care process is covered by both hospital costs and patients' costs. In the outpatient department both healthcare professionals mainly, the pharmacists believed that reduced cost of treatment will be one of effect of collaborative pharmaceutical care.

P8 "Its going to help the patient and minimize cost for the patient and increase life expectancy. If those patients were not treated fine, then it's going to cost. So if we can reach a common ground and make sure that the patient it getting the correct medication the cost will be minimized. The patient will not be at the hospital for a long time, it will reduce the hospital cost."

P10 "Impact will be more stable patients being down referred; will there not be drug-drug interaction or the patient will not come back to the hospital, due to toxicities."

Another pharmacist participant mentioned in mentioned the important collaboration in the form of patient stability and down referral to reduce hospital visits costs.

P10 “We will have more space, like to be able to give optimum care to those who are not stable, those who needs critical care because for Mankweng mostly we see stable patient...”

4.3.2. The barriers affecting pharmacist-medical practitioner collaboration.

This theme contains subthemes which represent the important hindering factors that should be considered during collaborative practice for pharmaceutical care in public hospital setting. The subthemes covered under this theme are as follows:

Lack of proactive system for stock management.

One of the major reasons for pharmacists and medical practitioner to interact is due to medication stock movements. Most of the medical practitioners mentioned the need for a proactive system of stock management this include from ordering, stock usage and delivery to the respected personnel.

MP1 “It is just that there are drugs that they do not have but communication and helping us with our patients that one it’s been done.”

MP2 “You know for me as a doctor its sometimes not communicated to me when stock of a certain drug is running low/ or when a certain drug is been discontinued, you know... So it would help if they are proactive with communicating to us the shortages their side of the pharmacy.”

P10 “Another barrier will be out of stocks because if something is out of stock how do I provide that optimal pharmaceutical care.”

Lack of direct/ face to face interaction and communication resources.

Communication does take place between pharmacist and medical practitioners however most of the times both professionals expressed that its difficult when interacting via a phone, notes, or use of patient as mediator than in person interaction. They expressed issues that are not clearly understood and delt with sometimes when directing via the phone or use of piece of messages.

MP6 "Instate of pharmacy having a direct line they would rather have a small piece of message to write on the patient's file now to say the patient must go back to the doctor room... The barrier it's the mode of communication and the resources."

MP15 "A general lack of communication between the two parties can cause a big problem."

Even if the use of other methods is taken into consideration there is limited resources for that, for examples pharmacists not having their own direct lines to communicate.

Medical practitioner explained that due to the fact of pharmacists being centralised it is not easy to establish communication or interaction. This is mostly expressed by those who are at specialised clinic that does not have a pharmacist within.

MP6 "1., most pharmacist are centralized and meaning we do not have a direct communication with pharmacy... If we can have the doctor and pharmacist directly speaking."

This is supported also by pharmacist who mentioned that when they encounter an issue, the doctors are far away even in general outpatient department is not easy to find the doctor which makes it difficult to establish collaborative practice.

P7 "...like where we are working you find that the doctor cubicles are far from pharmacy so it's not going to be easy for a pharmacist to get out of the pharmacy and go to the cubicles to intervene with the prescriber because if you sent a patient still its going to be a problem because the patient will be doing up and down movements whereas some of the patients can't work properly."

The most of medical practitioners presented that the location of the pharmacist or pharmaceutical services point is a very import facilitator in terms of their relationship and collaborative practices. And only a few pharmacists mentioned the issue.

P10 "the challenge that we have is that we are not on the same place doctors see patients on the other side and we also on the other side."

P12 "From the experience that I have, we are a bit far from each other in such a way that when a prescription has been prescribed for one to give inputs or contact the doctor if there are any challenge on the prescription you might straggle a bit or might even not see that doctor."

This is supported by the medical practitioners who works at the outlets department than main outpatient such psychiatric clinic, paediatric and eye clinic of the Mankweng hospital. This departments presented an improved relationship and collaborative practises due to the closer proximity of the pharmaceutical services and availability of the pharmacist when in need. And also, with less issues to question about.

MP14 "view I don't see any problems like the communication is good, like ever since I have worked in this eye department, I have not seen any unless for other departments."

MP15 "we have a good relationship with pharmacist in general, I can say it's because I can't speak for main pharmacy because we have our own dispensary hare."

MP17 "I can say that in terms of collaboration we do have a very good relationship and I think the fact that the pharmacy is just close to us it's very easy for us to interact."

Most of the participants agreed that the pharmacists and medical practitioners, to a certain extent they do work together however the state the relationship is insufficient to attain collaborative practice care standards.

P3 "I still believe that we both have a lot to work on because some doctors feels that pharmacists undermine them when they call to ask about therapy related issues and sometimes you find that pharmacists feel sort of undermined by the doctors because whenever pharmacists try to make an interaction, they kind of feel like they are not receptive of the inputs"

P13 "To me it's not enough, if it was enough and we will be having same expectations."

MP15 "There is gaps on both our sides us, filling the gaps the end product is of good quality...So many brains are better than one that what I think is the whole point be multidisciplinary it that we are all bringing different views to treat one thing..."

MP17 "So, I think communication between pharmacist and doctors needs to be at a higher level"

The collaborative relationship is strained however the good outweighs the bad. This is supported the fact that most of the time respondents mentioned that there is no collaborative relationship instate it's a forced interaction.

P8 "In general I can say the goods out ways the bad, It's good but not 100%"

MP6 "The view is that we are having rather a strained relationship where in every now and then we fight over little things."

P11 "We actually do not have an established relationship it's not there, it like we force it most the times."

The part of good collaboration is supported by outlets pharmacy practice areas in clinic which has their own pharmacists making it easier for interaction however the challenges they are having are beyond to ground force.

MP14 "For here I think the communication is enough like we have our own pharmacy this site and other departments because it's one pharmacy that they are using maybe it's a different situation because here only us..."

Most medical practitioners especially those practicing from specialised clinic expressed the limit factor are the centralised location of pharmacists and their centralised communication method which delays the progress of care process. This is emphasised by other medical practitioners not having a lot of issues due to the present of a pharmacist within the department.

MP14 "In my view I don't see any problems like the communication is good , like ever since I have worked in this eye department I have not seen any unless for other departments... like we have our own pharmacy this site and other departments because it's one pharmacy that they are using maybe it's a different situation because here only us and we are able to communicate."

MP 16 “And I think already in terms of dose and interactions we communicate well on that.”

MP17 “Paediatric OPD really doesn’t give us problems, when you look on the side of the practitioner and pharmacist, we really never have problem.”

Time deficiency

Both pharmacists and medical practitioners expressed that the conflicts available among the two professionals also affect patient care time as they spent certain time attending issues that they could have dealt with if there was collaborative relationship. And, for pharmacists it’s also difficult to leave the dispensing area to attend patient care issues with a faraway doctor which will take time.

P3 “...you can’t live the service and have to travel 15minutes from the service to go see that person.”

P3 “You have to send the patient, sometimes you find that the patient goes there the medical practitioner is no longer there move to another clinic now they have to come back to the pharmacy and yah! the patient suffers”

Attitude and personality differences among pharmacists and medical practitioners.

Attitude is an aspect that both pharmacists and medical practitioners portray as having effects in many areas of practice for example attitude of young professionals to interacting with seniors, the attitude of each profession to one another as they bring issues of titles and egocentric behaviour into the patient care process.

P4 “...and if a pharmacist is calling a doctor, other doctors just have this natural attitude to say am a doctor, I went to school for six years you can’t tell me what to prescribe.”

MP5 “Attitudes than the workload.”

MP9 *“barriers personally depend on doctor to doctor, sometimes they hesitate, sometimes...”*

P12 *“For me, I think the barrier it’s that thing of say am a pharmacist or a doctor, not really check that we are both are here for the sake of the patient”*

Yet again, there is personality difference which promote certain type of attitude which one might have or have developed, thus affecting interaction with other healthcare professionals and interference with the progress of patient care.

MP15 *“I think the one barrier would be and it shouldn’t be a barrier, but it can be if you are having like personality different and I don’t think it’s even fair to classify it as a barrier because you are bringing your own sort of self-interference with what the patient need.”*

Lack of knowledge about the role and skills of each professional.

Within the interaction process of the two professionals, it was highlighted that there is conflict over the roles and competition in provision of patient care process. This was exhibited difficulties clarifying their responsibility as one pharmacist even mentioned that maybe pharmacist also needs to specialise.

P12 *“One will think he/she is competing with the other ...There is that conflict between the two professions, their limits also because somewhere somehow, because as pharmacist we are custodians of medication but still the doctor interferes or still, I want to suggest on what to prescribe but I did not diagnose.”*

MP17 *“How we need to avoid that is to always be professional and know that as medical officer my scope of practice is one, two, three and the as a pharmacist the scope of practice is one, two, three.”*

P4 *“Before that, the other problem is that us as pharmacist we don’t spacialise that is why we are having a serious problem and we are going to have a serious problem to collaborate with the doctors because if now you meet with a pediatric specialist / cardiologist you don’t have much information about the cardiac issues.”*

Both groups' participants highlighted the presents of hindering perspectives and culture to collaboration which is rooted in the within the departments, the hospital and the department of health itself. For example, pharmacists expressed the issue of being viewed more like juniors when compared to medical practitioners during the interaction process. They are also viewed as people who are just dispensing and always policing medical practitioners with their roles not being understood.

P3 "...some doctors feels that pharmacists undermine them when they call to ask about therapy related issues and sometimes you find that pharmacists feel sort of undermined by the doctors because whenever pharmacists try to make an interaction, they kind of feel like they are not receptive of their inputs."

P4 "Yahh!, we can collaborate if maybe we have the same point, if we are not there to say am a pharmacist and the other one say am a doctor I can't listen to a pharmacist or the other way around,..."

P10 "My general view is that, like as pharmacist and doctor our differences should be aside we must put the patient outcomes first not say am the prescriber or dispenser."

P13 "What I have learned here at Mankweng, when you speak to this juniors they are the ones give problems that's why me personally I will end up checking if it's peads pharmacy, I will just call straight to their supervisor that where get help and move on."

MP6 "We can work together in state of me saying am the doctor am the one doing the prescribing you are the pharmacist you are supposed to issue we can sit together and say am going to prescribe and do my part...."

The culture and perspective that exist between about their roles and scope of practice in patient care makes it worse during the patient care process as each profession always have to demonstrate its role when in conflict. This study demonstrates lack of knowledge about the role of a pharmacist in certain areas of patient care.

P8 "Okay, some doctors undermine us, some are okay they understand where we are coming from and everything that we explain to them saying you can do this for the

patient's sake... But some, I think it's personal preferences...and thinking that they know better."

P11 "In summary I think, the culture that is already existing... We don't think there could be that relationship because we feel like what a doctor can do, I can also do or the other way around... If ever we had the culture that we work together would not be having case wherein we have to fight for the suitable therapy for the patient..."

Workload among the healthcare professionals.

Pharmacists professionals mentioned staffing issue as part of the problems that could hinder the provision of collaborative care practice which means less staff more workload.

P10 "Firstly, it will be the workload. if there is workload and that workload according to my opinion is seeing stable patients of which those patients are not the ones we should be seeing, only should see those need critical intervention."

Hierarchical system of decision making and communication.

It was explained during the interviews that medical practitioners and pharmacists fall under the same managerial structure, but it is still difficult for them to collaborate because of the hierarchical system.

P13 "I think this one is a matter of management issues because I would love to say let's meet them every month but who am I?"

Both professions demonstrated that they do interact however a well-established interaction is at the management level where issues are discussed but makes it difficult for the ground force to obtain the information.

MP16 "I understand ranks can be hierarchical but sometimes the interactions between those in the different hierarchies and how we treat each other so that's often spills over to different sector and that's how we become so compartmentalized because you only

suddenly meet when you are at the top. Instate of meeting throughout the different sectors.”

With that kind of decision-making process and communication it makes it hard for the ground force to give inputs on issues or establish collaborative relationship that their management did not authorise or facilitate.

MP16 “As I have said is very hierarchical, the hospital environment or even health in general so it’s almost like all the people on top must make all the decisions or all the communication and I do not think that how it needs to be.”

4.3.3. Recommendations on the ways, strategies, or model to improve pharmacists-medical practitioner collaboration.

This theme presents the incorporated processes, procedures, and strategies of what the medical practitioner and pharmacist went suggested could help in building a collaborative practice for pharmaceutical care. The subthemes covered under this theme are as follows:

Established leaning and training among the healthcare professionals.

In this study the participants expressed that there is a need of learning together at the postgraduate level or work environment to facilitate good relationship and collaboration among pharmacists and medical practitioners. This include from the lower level of working to facilitate understanding of what is expected of young professionals in the working environment.

P3 “I think CPDs, if pharmacists and doctors had a CPD forum whereby they sit together and discuss cases or inform each other of certain topics.”

MP5 “I think in each and every pharmacist that they employ, even if the books say this , here it’s a tertiary hospital we don’t follow the book and if they can learn from their seniors that all they have is to learn the good things and not bad... Strategy is seniors need to let them know of what is expected of them in a tertiary hospital. And with the medical practitioner the same, they teach them the manner in which pharmacy expect them to prescribe. So, it’s about learning with experience.”

M16 "I think definitely interacting at earlier levels. Maybe in internship they should be having some kind of particular, I mean a session together or whatever together, I mean we never really see each other everybody it just in their own sector except when it comes to medication."

Established platforms for regulated and continuous interaction.

Both pharmacist and medical practitioners highlighted the need formal platforms to interact to regardless their positions at work which are regulated and continuous among both parties.

MP2 "So I think it's important to have forums or multidisciplinary team meetings where the pharmacist meet with the medical practitioner from the relevant departments to discuss on a continuous basis whether its biweekly or monthly or every three months. Where we can both raise our challenges for example, they can tell us where we are not doing things okay or maybe we are not prescribing correctly or writing our qualification correctly."

P4 "Pharmacists and medical practitioner must always discuss or have meetings every day where a doctor and a pharmacist discuss patients, it should be about improving patients' therapeutic outcomes..."

P4 "we must specialise, and I think even the doctor are going to be happy. That doctor is going to be comfortable because we will understand each other."

MP9 "I will recommend frequent meetings with each other... The improvement can come only with the communication, we must attend their meetings, if one of our doctors be invited to the pharmacy."

The participants expressed that this could start at the lower to the higher positions as new staff need more understanding on the process of interaction among the professionals.

P10 "You see how the doctors are doing it, it's like the head of the sections are there and intern doctors are there presenting case that they found difficult so that they could

be questioned by their consultant, “what did you do?” and advice you could have done this.”

MP16 “I think definitely interacting at earlier levels”

Both participant groups mentioned that even the current existing committees or mode interaction should be improved to facilitate collaborative practice and promote more frequent interaction.

P11 “Can we create platforms wherein we meet with the medical practitioners and pharmacist and raise our challenges? How we, like the same way as pharmacists we meet alone to share experience and how best can we work together.”

P12 “One platform that I know it’s there but not utilized fully is issue of the DTC, those are the platform that should be used effectively because that’s where you get to discuss the kind of items that we keep and prescribe. If used effectively they ensure that collaboration is better.”

MP15 “I think what generally helps is meetings between the two department whether you are discussing a certain case study or a certain whatever, patient or topic, like along those line meaning the doctors will have a presentation or a pharmacist.”

Improved infrastructure and availability of stock and resources needed to collaborate.

As mentioned by medical practitioners there should be resources that can decentralise pharmacist from their department to be accessed throughout. One medical partitioner mentioned the wish for pharmacy at their practice clinic and increase resources in term of communication.

MP6 “We need to improve on things like infrastructure, I just mentioned that we do not communicate directly because there are no telephones, so would recommend telephones and if possible, the doctors could write their extension or room number as part of prescribing. So that it makes it easy. the pharmacist should also be provided with phones.”

Medical practitioners mentioned stock as the type of resource that is need for them to fully cooperate in provision of collaborative pharmaceutical care.

MP14 “I think us, as doctor can write specific medication for a specific condition knowing that this kind of treatment can pharmacy make the available for us. I think what we can improve on because sometimes you will see that there a certain specific condition which is coming but the medication is not available. We don’t know how we going to help the patient.”

The medical practitioners went further to emphasise the need for a technological system that could assist in proactive communication and stock management to improve prescribing process in terms of stock updates.

MP1 “Yes, what I feel we can recommend is that, if they have drugs that are running out and we use those drugs they have to inform us earlier”

MP6 “And also have a data base on stock update”

An enhanced understanding and appreciation in the roles and responsibility of the healthcare professionals in collaboration.

Both healthcare professionals highlighted that it is important to be open with their roles, this allows understanding and appreciation of each other’s roles in the collaborative pharmaceutical care practice.

MP5 “I think in each and every pharmacist that they employ even if the books say, here it’s a tertiary hospital we don’t follow the book and if they can learn from their seniors that all that they have is to learn the good things...Even with medical practitioners should be the same because most the relationship that is bad is because the other one had forgotten to prescribe certain things or themselves did not communicate back to you that this an alternative.”

Pharmacists also mentioned the need for improved competency in the clinical role of pharmacists when interacting with other professionals, they even went further to present the idea of a specialist pharmacist to improve collaboration.

P4 "I think us as pharmacist we have a lot of work. Because we are the once who must always try to convince the doctor to meet us and we must specialise, and I think even the doctor are going to be happy that doctor is going to be comfortable because will understand each other."

This is support by the fact that role clarity between medical practitioners and pharmacists prevent conflict thus results in enhanced collaboration.

M5 "Strategy is seniors need to let them know of what is expected of them in a tertiary hospital. And with the medical practitioner the same, they teach them the manner in which pharmacy expect them to prescribe."

The participants proposed that healthcare professionals knowing their roles and responsibilities in patient care and appreciating what each professional role in the collaborative relationship. Both professionals highlighted the importance of knowing each other's roles to promote competency and reduce conflict this brings awareness in terms the strength and weakness of the team.

MP6 "If we acknowledge to those roles and that they are different, there will be grey areas every now and that we might need each other's advice. We acknowledge that we are two different professionals working with the same thing with different knowledge but there are grey areas, but we can still advice each other."

P11 "I think we both must understand that we actually need each other because our scope is not the same, so we need each other's expertise to contribute to the ultimate therapy of the patient."

P13 "Everybody should know, what is my responsibility on this prescription, and we share that."

Both the medical practitioners and pharmacists agreed on the fact that mutual respect is the key to building a good collaborative relationship. One of the medical practitioners highlighted the fact that pharmacist and medical practitioner comes from two different background and that must be respected including their roles during interaction. In

support of that every healthcare professional brings forth different roles, therefore there must be an understanding on how they are going to work in respect of each other's' roles. Also respect the fact that their roles are going to merge at some point and there should be delegation according to the scope of practice and expertise or specialities.

MP3 "I think mutual respect where everybody is appreciating the expertise of the other person then the patient benefits as opposed to when two individuals are working together but the other one will be feeling have more knowledge at something but your knowledge it's not beyond/you are the same level as mine, if there is mutual respect then everybody is able to work well together and also appreciating each other's expertise."

P4 "Yah it's not going to be easy because our health department don't treat us the same, if maybe I go deep into this thing e.g., now the medical practitioners they are respected too much than other profession like right now it's not easy for you to can talk to an intern, do you get my point."

MP6 "If we want to be effective and competent from both sides it's a matter of one treating each other with respect, acknowledging the fact that we were trained differently, others were trained to deal with medication, and others were trained to dispense it."

Both groups of participants mentioned that one of the requirements of working collaboratively as good communication regardless of the level of experience or age.

MP2 "I think... communication is important you know, between members of the different departments in a healthcare system. So, I think communication between pharmacist and doctors needs to be at a higher level."

To support that, the pharmacist participants brought forth the idea of being open minded during interaction or communication and knowing that the process of patient care is patient based.

P11 "I think we both must understand that we actually need each other because our scope is not the same, so we need each other's expertise to contribute to the ultimate therapy of the patient."

P13 "Both sides to be open minded, to know that this is not my patient."

Most of the pharmacists spoke about quality and prescription protocols and legality. They mentioned this, 'a lot of prescribers are not compliant with the process of prescribing legalities.'

P7 "Like I said if we can have meetings and then we present our challenges because in most case is it not the challenge that we come across is what they have prescribed. If maybe we can make copies of those prescriptions and then make presentation to show them that when we check the GPP the doctor must write credentials, the doctor must write strength and also check the weight of the child."

P8 "If it not on the guideline but has a reference, then we teach each other, that I can't say am a pharmacist I know better or the other way around."

P10 "As a doctor follow protocols when prescribing like is something of label use or out of the ordinary provide pharmacy with evidence of where you are getting that information and the doses from. That will be their role, like there are EDLs so that we do not go around searching for things we do not find."

P12 "If I understand your question, for me to provide the service that is needed , firstly the prescription should be or whatever information is receive from the doctor should be clear, legal and relevant to the diagnosis."

Most of the medical practitioner had an issue with the competency of pharmacist in terms of stock management. While other medical practitioners felt like pharmacists should do more, others felt like the process is beyond the ground force of pharmacists. However, they wished there could be a proactive system with resources to improve stock availability and updates to the medical practitioners.

P12 “And secondly like mentioned before if the doctor can prescribe exactly what I keep in the pharmacy, then the service that I provide to that patient will be professional and even the waiting periods etc. will be fine... We know we service poor people, and they will be affected by coming back to come and get the meds that I have organized but if my relationship with the doctor its good will have a plan for medication.”

MP16 “I think communication channel, I mean there should be a way of already knowing which medications are available and not available before you actually prescribe them... And also, which once are close to expiring, I don’t know maybe is because of covid that things are not going well but I don’t know.”

Establishment of protocols suitable for collaboration.

With every establishment that brings a huge change in the process of patient care there should be policies, standards and laws to govern and improve the state of care.

MP8 “so many things are involved and prescription legality that’s the thing that always delays patient care... so we been having meetings to address this thing prescription legality”

P10 “Firstly, we must have protocols in place for, because we are a training institution for those that are coming in, they must know our protocols.”

MP17 “But I think in the medical practice we always have to, from time to time audit our work together with them. What we do and what they do we sit together we audit and maybe they will have something that they will tell us and help us improve.”

Established proactive system for collaboration process facilitated and strengthened from or up until management.

Both professionals especially the pharmacists mentioned the importance of management taking part and facilitating the process of improving pharmacist and medical practitioner collaboration for pharmaceutical care practice.

P3 “Both pharmacists and doctors have the same manager, we both reporting to clinical manager, if that office could actually arrange for such meetings to happen both professionals could actually engage or share ideas.”

P7 “...think that will be facilitated maybe by the managers because isn't that for the pharmacist to be released to go there their manager should release them.”

P11 “Motivation would be management and head of departments support.”

P12 “. We report to the clinical manager then the CEO, I belief that if our clinical manager can make sure that there is always that interaction or the workshop or meetings.”

MP16 “Political will or even here if our managers are willing to start that kind of a program it's very easy we have intern creators in healthcare in our sector and pretty sure even in pharmacy”

4.4. DISCUSSION

What is causing conflict between pharmacists and medical practitioners is that the medical practitioners view pharmacists from a product based relationship while pharmacists are trying to drive patient centred one.

This study explored pharmacist and medical practitioner collaboration for pharmaceutical care in an outpatient hospital setting. It is one of the few that has been conducted in outpatient hospital setting in South Africa presently. Most of the studies that are conducted on pharmacists and medical practitioner collaboration in South Africa are based in inpatient and are mostly specific to a certain disease condition. This is one of the studies that have observed the possibilities of providing the quality assured standard pharmaceutical care at a broader range in outpatient setting of a hospital in a developing country. Collaboration is also defined as a “joint communicating and decision-making process with the goal of satisfying the patient’s wellness and illness needs while respecting the unique qualities and abilities of each professional” (Zillich, Doucette, Carter & Kreiter, 2005).

The focus areas that were mainly explored in this study include:

- The current relationship and collaborative practices among both professions.
- Perspective of medical practitioners and pharmacist on collaboration presently or in the future for pharmaceutical care.
- Barriers and recommendations that could help improve the provision of pharmaceutical care.

4.4.1. Current relationship and collaborative practices between pharmacists and medical practitioners.

In the hospital outpatient department, pharmacists and medical practitioner do not practice in one environment. That exhibits challenges during interaction with one another in terms of the provision of pharmaceutical care. This study presented the availability of interaction among pharmacists and medical practitioners with difficulties available thus preventing quality interaction. This results in a weak bond or relationship among the two professionals and reduced quality in collaborative practice. The study is consistence with Dey *et al.* (2011), who reported that general practitioners and pharmacists had a basic or minimal relationship in professional engagement process as negative aspects to their relationship were present (Dey, de-Vries & Bosnic-Anticevich, 2011).

Individual based relationship.

The perspective of the participants on the current relationship presented that the medical practitioner and pharmacist relationship exhibit individual based characteristics. It is one of the factors that was encountered in the is interaction among individual pharmacists to medical practitioners or the other way around. The degree of interaction that occurs between an individual medical practitioners and pharmacists can vary greatly (Zillich, Doucette, Carter & Kreiter, 2005). Both teams mentioned that either pharmacists or medical practitioners has individual characters that determines their interaction towards collaborative pharmaceutical care relationship. As also explained by Hattingh *et al.*, (2020), it is also evident that the individual characteristics and mindset of the pharmacists even in this study were major factors affecting the success of service implementation and provision such as enhanced pharmaceutical care (Hattingh, Sim, Sunderland & Czarniak, 2020). This includes attitude and personality difference. One study on the provision of pharmaceutical care in Oman mentioned similar factors where

certain physician presented with lack of support on pharmacists' provision of pharmaceutical care (Abdullatif, 2014). This subject is escalated by the view that when goals are specific to individual healthcare professionals rather than for a team, the individuals are unable to work cohesively when they are in a team or collaborative practice (Hatton, *et al.*, 2021). And also the individual level of knowledge on certain topic or speciality and collaborative interaction for example, Fernandes *et al.*, (2022) uncovered similar issues, lack knowledge and collaboration process during implementation of medication reconciliation study.

Partial collaborative characteristics of the relationship level.

As also explained above the study also uncovered the present of a partial relationship that exist between pharmacists and medical practitioners. In the context of this study partial refers to the presents of irregular and infrequent interaction. This means for full potentiation of the relationship, the role of developed relationships in influencing how and when interactions occur should be given consideration to best maximize potential for designing collaborative care teams interaction processes (Mercer, *et al.*, 2019). In this study the pharmacists and medical practitioners interactions or communications presented to be without consistence relationship foundation. To the participant the interaction process was not satisfactory.

Reactive interaction relationship.

This study uncovered the existence of interaction among pharmacists and medical practitioners however it is always reactive than proactive interaction. In most of the interaction process, it was found that pharmacist are the ones who always foster the development of relationship, communication, or interaction. One study in Canada also found that generally pharmacists were the primary initiator on the interaction process (Mercer, *et al.*, 2019). This was also highlighted by Rixon, *et al.*, (2015) stating that, "reactive communication in which traditional roles were enacted accounted for pharmacists initiating most of the communication with doctors, about medication prescription matters". This presents the difficulties in initiating a relationship among pharmacists and medical practitioners thus interacting when there are issues. And this

could be due to their dissatisfaction with the status-quo hence seeking change to a practice that will benefit the patient (Agwo & Wannang, 2014). Another question would also be on the fact that pharmacists have a key strength in identifying and reducing medicines-related harm (Forsyth & Rushworth, 2021). Other than that, a study by Rixon, *et al.*, (2015) presented that communication among pharmacists and medical practitioners was largely reactive and outcomes focused, responding to, and centred on specific medication tasks that needed completing with short interactions due to the opportunistic and single tasks focused nature.

The study also found that communication is an essential part of collaboration process and known as one of the core competency standards required (Interprofessional Education Collaborative Expert Panel, 2011). The participants in the study highlighted that there is poor reactive communication among the pharmacists and medical practitioners. In general analysis of the interviews communication in the study mostly occurred when there were issues to be resolved in relation to the patient. One study on community pharmacy and general practitioners highlighted the process of unidirectional communication, in this case it is more of pharmacists to medical practitioner alone (Bradley, Ashcroft, & Noyce, 2012). Communication must be proactive and initiated by from both sides. Effective communication is key to building professional interactions and demonstrating trustworthiness. In addition, during the beginning of pharmacists and medical practitioners' collaborative relationship, frequent direct or face-to-face communication is needed (Centers for Disease Control and Prevention, 2017). A study on behavioural determinants of pharmacists' recommendations implementation by medical practitioners presented that direct or face-to-face communication is a key facilitator to medical practitioner's implementation of the recommendations and an additional advantage of bidirectional discussion and has proved to be an essential elements in developing collaborative working relationships between pharmacists and medical practitioners (Dalton, Fleming, O'Mahony & Byrne, 2021).

In the process of establishing or having an established relationship, there are methods of interaction such as phone calls, fax, notes, face-to-face or using a patient as mediator. The pharmacists and medical practitioners mentioned direct interaction/ face-to face interaction to be of high quality. Another study on, "Creating and maintaining

relationship between physicians and pharmacists in primary care settings” exhibited consistent results as medical practitioners and pharmacists expressed low quality of patient care and frustrations on establishing or maintain their relationship through methods such as phone calls, fax or using mediators for communication (Mercer, *et al.*, 2019). This is supported by the Center for Disease Control and Prevention, (2017) as they promoted frequent face-to-face interaction among healthcare practitioners when engaging in the form of a collaborative practice agreement. The matter of communicating distantly with pharmacists through telephones, sticky notes or medical notes negatively affects teamwork leading to failure in collaborative relationships development (Hatton, *et al.*, 2021).

The interaction process among pharmacists and medical practitioners in this study includes but not limited to issues of drug therapy problems, stock availability and management, and prescribing protocols. The drug therapy problems and prescribing protocols were brought forth by pharmacists of which are the main concern during pharmaceutical care process. Most occurring drug therapy problems were interaction about dosage adjustments, drugs not matching diagnosis and drug-drug interactions of which are mainly seen generally as traditional pharmaceutical services standards in the healthcare system. This is also consistent with the results on a study, “The Provision of Pharmaceutical Care in Oman” by Abdullatif (2014) stating that advanced activities (individualized patient-focused clinical activities), such as preparing therapeutic care plans, documenting interventions, and performing follow-up evaluations were the least frequently performed.

Furthermore, the stock availability and management issues were highlighted by medical practitioners as major during interaction processes. A study by Hayat, *et al.*, (2021) found that most of the physicians were interacted with pharmacists to obtain information about drug availability (53.80%), followed by drug alternatives (25.10%) and drug side effects (17.40%) (Hayat, *et al.*, 2021). This exhibit lack of knowledge about clinical competency skills of a pharmacists in the patient care process (Law, *et al.*, 2013).

Hierarchical relationship and collaboration process among the professionals.

The development of a strong collaborative relationship and interaction in the hospital outpatient were also facilitated by the management of power or hierarchical relationship. In the case of this study the managerial structures have an advantage in terms of initiating development and maintenance of a collaborative relationship. But instate the results are contradictory as the ground force of pharmacists and medical practitioners are the ones concerned about the development of the relationship. This study also mimicked Al-Jumaili, *et al.*, (2017),as the medical practitioners responses showed that their relationship initiation power had a significant positive effect on collaboration and they are possibly in a better position than pharmacists to initiate and, or negotiate the establishment of a collaborative relationship, due to the medical practitioners' higher power coming from their legal authorities(Al-Jumailia, Al-Rekabi, Doucettea, Hussein, Abbasb & Hussein, 2017). This may also be supported by the type of trust they receive from the built relationship with patients and the traditional cultural perspective of a medical practitioner within the healthcare system. This kind of relationship however promote a more vertical integration process during collaboration rather than a more horizontal integration which essential for collaborative care therefore modified to be suitable (Curtis & Christian, 2012) (World Health Organization, 2016).

It was also observed in the study that an interactive relationship and collaboration exist mainly at higher positions with less at lower level of which it's the pharmacists and medical practitioners interacting on daily bases with the patient. In this case the higher positions include the clinical management for both pharmacists and medical practitioners, and heads of sections for medical practitioners. Most of the time interaction on this level is more of administrative level than clinical interaction and dissemination of information is not efficient to reach the lower levels. According to Saint-Pierre, *et al.*, (2018) under collaborative team interactions typology, collaboration can be co-located collaboration, non-hierarchical collaboration, shared consultations and via referral and counter-referrals. The interviews with healthcare professionals presented that neither of the above-mentioned qualities were mentioned to exist.

Collaborative relationship is more a pharmaceutical product centred.

Pharmacists expressed the difficulties in establishing, maintaining, or improving relationships and collaborative practice with medical practitioners but most of the medical practitioners in this study highlighted a product-based relationship than the patient centred relationship. Medical practitioners highlighted the major portion of interaction as product based and that is how they viewed the role of pharmacists on interaction and collaboration. This is consistent with the study by Azhar et al (2010), who uncovered that the perspective of medical practitioners on reason for interaction was high on medication availability and offering alternatives (Azhar, et al., 2010). Consequently, they view pharmacist's functions being limited to drug dispensing, procurement, and inventory control. Most of the medical practitioners in this study motioned pharmacist as stock handler than being involved in patient care process of which might be the cause of a strained relationship and collaborative practice when initiating or involved in a patient centred process such as collaborative pharmaceutical care. Furthermore, one study stated the medical practitioner's support on advice on checking drug interactions, dosing and treating minor ailments (Waszyk-Nowaczyk, *et al.*, 2021). A study on "Perceptions of pharmacists' roles in the era of expanding scopes of practice" presented the absence of a collaborative relationship as pharmacists mentioned the need to work collaboratively with medical practitioners (Schindel, *et al.*, 2017).

The effects of collaboration on prescribing process, dispensing, interaction, and patient care.

Collaboration among pharmacists and medical practitioners as expressed by both groups should be patient centred. Both healthcare professionals should put their difference aside and focus on the patient and the quality of care provided. This means the patient should also be considered in the care process as the care provided will be based on the patient as an individual (Olson, *et al.*, 2021). This is also in line with the pharmaceutical care standards which state that in collaboration with other healthcare professionals a pharmacist must provide a patient centred care (Cipolle, *et al.*, 2012).

In this study most of the pharmacists mentioned the higher possibility of improved quality process of prescribing by medical practitioner if there was good collaborative relationship and practice. This because most of the reactive interaction process are also

based on prescribing issues such as prescription legality, prescribing outside hospital guidelines without clarity and general hospital prescribing protocols not followed. Reactive interaction is also based on reactive interventions called pharmacist-initiated interventions, stated as spontaneous advice to medical practitioners about change in drug, dose, frequency, route or any aspect of drug therapy considered significant and advisable or would improve the outcomes (Kumar, *et al.*, 2012). According to Kumar *et al.*, (2012), there is also passive intervention which involves provision of drug information to healthcare professionals on various aspects of drug ranging from dose, route of administration to adverse event and drug interactions. And among the two passive interventions seem to improve medical practitioners' prescribing behaviour while reactive is based more on the patient outcome. According to Dähne, *et al.*, (2019) collaborative practice proved to improve quality of care by improving the prescribing process, promote medication changes and resolution of drug-related problems(Dähne, Costa, Krass & Ritter, 2019).One study on heart failure treatment uncovered that as the results suggested that pharmacist–medical practitioner collaborative medication reviews are effective in improving also the medical practitioner's adherence to drug treatment guidelines (Kalisch, *et al.*, 2010). For patient collecting medication in the outpatient, it can also help with continuing care and preventing communication breakdown (Snoswell, *et al.*, 2021).

Both pharmacist and medical practitioners in the study agreed on improved quality of patient care. This in terms of reduced waiting time, cost, readmission, hospital visits and patient stability. One study on “physicians’ perspectives of pharmacist-physician collaboration” uncovered that, physicians thought that collaboration will lead to “high-quality work” and “patient-centred teamwork”, by having pharmacists assuring appropriate therapy through doing extra safety check within the system and assist in patients’ medication management (Hasan, *et al.*, 2018). The study is not on implementation stage however other studies that were implemented exhibited significant results that are consistent with the view the pharmacists and the medical practitioners. For example, another study where a clinical pharmacist was included in medical practitioner and pharmacist collaborative care based PCMH model presented significant improvements in patients’ medication-related clinical health outcomes and

reduced in hospitalisations (Matzke, *et al.*, 2018). This includes the improvements in primary clinical outcomes of HbA1c, SBP, and DBP ($p < 0.0001$, $p < 0.0001$, and $p = 0.0071$, respectively). And secondary clinical outcomes of improved SBP and DBP ($p < 0.0001$ and $p = 0.0449$, respectively). Lastly the number of hospitalised in the 12 months before the intervention decreased by 31.2% (from 984 to 677) and reduced cost of hospitalisation during the 12-month postintervention period of the PCMH model with a clinical pharmacist. Another study on heart failure treatment's results presented reduced hospitalisation and readmission of patients who were on the program of pharmacist-physician collaboration medication review (Kalisch, L. M., Roughead, E. E. & Gilbert, A. L., 2010).

4.4.2. The perceptive of pharmacists and medical practitioners on pharmaceutical care.

This study demonstrated the low knowledge about the quality and standards required on collaborative pharmaceutical care. This is in line with the study by Hajj, *et al.*, (2016) which state the lack of recognition of the patient role in the PhC, as it's a patient-centred care process it requires the pharmacist to work closely with the patient to promote health and to ensure the safety and effectiveness of drug therapy regimens (Hajj, AL-Saeed, & Khaja, 2016). In this study both healthcare professionals emphasised that pharmacists and medical practitioners need to focus on the patient rather than their themselves. And, for advanced pharmacy practice according to Forsyth & Rushworth, (2021), "We need pharmacist clinicians with an enhanced composite skill-set who are adept at delivering clinical care, can safely apply high-level clinical assessment, reasoning and judgement skills to uncertain clinical problems, drawing upon their extensive knowledge of physiology, clinical pharmacology and therapeutics". Pharmaceutical care necessitates that the pharmacist fully integrates activities such as patient assessment, patient counselling, setting therapeutic goals, documentation, and other activities (Hajj, *et al.*, 2016).

Generally, the healthcare department is reluctant to facilitate the provision of pharmaceutical care in the healthcare system and this function as a barrier for pharmacists to also carry out some of their clinical duties (Pereira, *et al.*, 2021). Even though both healthcare group practitioners couldn't instantly point but did highlight the

need for a formal system of helping them to work together. Most studies in the literature explored pharmaceutical care in a model-based form for example in collaborative drug therapy management (Alhossan & Alazba, 2019).

4.4.3. Barriers that affect provision of collaborative pharmaceutical care practice in outpatient.

The pharmacists and medical practitioners mentioned their view on the barriers causing a strained relationship and preventing collaboration which are as follows:

Lack of proactive system for stock management.

Poor stock management is one of the most presented issues by medical practitioner as to them it has a major effect on provision of normal patient care. This means in an enhanced pharmaceutical care practice there will be a need for proactive acquiring of medication and management. This is a similar case on specialised pharmacy practice, drug procurement and patient management are two important contributing factors as medication are ordered according to needs of the patient (Celario & Mistry, 2020). This is also how medical practitioners view the role and one of the main competency standards of pharmacist in the provision of patient care (Azhar, *et al.*, 2010).

Lack of direct/ face to face interaction or communication and resources.

A study on pharmacists' willingness to collaborate presented that hospital pharmacists lacked support from medical practitioners and experienced poor communication with other healthcare professional to carry out collaborative pharmaceutical care (Mohammed & Shayoub, 2015). The preferred method of communication in this study per results is mainly face-to-face. The face-to-face method is the highly preferred method in most literature and it can facilitate the development of collaborative relationship of good quality (Hager, *et al.*, 2018). Regarding the Infrastructure and equipment as in the public health facilities, the barriers mentioned that are consistent with this study in literature comprised of the lack of allocated infrastructure or space to perform pharmaceutical care, and inefficient documentation system (Pereira, *et al.*, 2021). This was also supported by Hajj, *et al.*, (2016) who stated that barriers for

collaboration in pharmaceutical care are lack of resources, insufficient staff, lack of space and lack of technology for keeping the patients' medical profiles.

In addition to that, there were comments about lack of resources to foster collaborative pharmaceutical care practices such as communication and infrastructural resources in the study. This should be one of the key focus as quality communication is vital to carryout collaboration as collaborative care competencies and team skills needed for collaboration (Interprofessional Education Collaborative Expert Panel, 2011) (Haddad, *et al.*, 2019). Literature suggests that poor communication between healthcare providers, including medical practitioners and pharmacists, underlies most medical errors and incompetency (Gallagher & Gallagher, 2012). On emphasising this, development of a strategies, infrastructure, and environment for achieving this is essential, to enhance skills development across the spectrum of the current and past system during early undergraduate and advanced career stages (Forsyth & Rushworth, 2021).

According to the study, the medical practitioner expressed that, pharmacists were not accessible, they were centralised or departmentalised which made hard for interaction. This might be due to the position of pharmacy unit as supporting institution in hospitals making it less visible with less equals treatment to other health professions preventing quality interaction process presenting poor patient care (Abdulkadir, *et al.*, 2017).The only areas where pharmacists were easily accessible are outlets departments with a separate dispensing service, thus a delegated pharmacist to the department. Literature revealed that across all the settings, the culture of independent or separate department made pharmacists less visible than medical and nursing practitioners, and other health professionals of the various disciplines largely works as a collective (Hatton, Bhattacharya, Scott & Wright, 2021). According to Hatton, *et al.*, (2021) when pharmacists physically work alongside other team members and easily accessible, results in them being recognised thus enhanced team integration with reduced conflict. The result of this study also suggests that might have also resulted from the staffing issues as some of the medical practitioner participants at clinic outlets such as psychiatry wished for the present of a pharmacist.

Collaboration is also facilitated by the location of each healthcare practitioner which is an important factor in collaboration for pharmaceutical care (Bradley, *et al.*, 2012). The study presented that the quality of collaboration between pharmacists and medical practitioner is affected by their location from one another with the closer proximity in favour of quality collaborative pharmaceutical care. According to Dalton, *et al.*, (2021), on physician's implementation of pharmacists' recommendation presented those successful interventions commonly involve pharmacists working closely with medical staff. Things such as co-locating the two professions and improving their ability to access each other's services at all times of the day are methods to enhance to proximity of the healthcare professionals, thus improved collaborative relationship for pharmaceutical care (Hager, *et al.*, 2018)(Hatton, Bhattacharya, Scott & Wright, 2021).

Time deficiency

Frequent interaction between these two diverse parties, pharmacist and the medical practitioner is needed as mentioned by the participants in the study. However due to the fragmented system as indicated in the study, interaction for collaboration among pharmacists and medical practitioners requires time as they are far apart. Despite some of the proved benefits of pharmaceutical care, the service is not consistently incorporated into patient care processes and facilities especially outpatient settings e.g. pharmacists sometimes needs to dedicate considerable time to administrative activities such as drug inventory control, thus resulting in less time for patient centred care services (Pereira, *et al.*, 2021) (Hajj, *et al.*, 2016) . With the issue of the availability of time due to the availability of the medical practitioner or pharmacist, one study's participants emphasised the advantage of having scheduled meetings such as ward rounds or multidisciplinary team meetings rather than spontaneous interactions, which interrupts workflow and increase the risk of error (Dalton, *et al.*, 2021). However, in the case of our public hospital service this will be difficult to work with due the nature of the current system.

Attitude, experience and personality differences among pharmacists and medical practitioners.

The study exhibited individual factors among the healthcare professionals which have a huge impact on facilitating interaction. Both teams mentioned that either pharmacists or medical practitioners has individual characters that affects their interaction towards collaborative pharmaceutical care relationship. This includes attitude and personality difference. There is one study on the provision of pharmaceutical care in Oman which presented same factors, where certain physician presented with lack of support on pharmacists' provision of pharmaceutical care (Abdullatif, 2014).

Lack of knowledge about the role and skills of each professional.

The study also focused on the knowledge of both professionals on pharmaceutical care and collaborative and on one another which included understanding on each other's roles and responsibilities to deliver a collaborative care. This meant that since there is less interactive relationship among the two as there is less knowledge about each profession skills or role that will be or can be played in collaborative pharmaceutical care. This is also supported by a study on medical practitioners and clinical pharmacists which exhibited a huge lack of knowledge by medical practitioners about the role of clinical pharmacists in different settings and no previous knowledge or experience in the concept of collaborative drug therapy management (CDTM) implementation by healthcare providers in different specialties (Alhossan & Alazba, 2019). A study on "Changing Relationship: Perceptions, Experiences and Expectations of Physicians in Hospital Settings in Jordan Regarding the Role of the Pharmacist" presented that the medical practitioners were sceptical about the advanced roles of a pharmacist such as designing, monitoring pharmacotherapeutic regimens and suggesting the use of prescription medications to physicians (Tahaine, *et al.*, 2009).

Moreover, the well-known cultural knowledge about pharmacy practices is about dispensing and stock management, of which the current study's results still significantly present that traditional pharmacist practice roles. The traditional pharmacist' roles are mainly designed for accuracy in dispensing and technical duties, including the product-based ability to correctly supply medication against a prescription which stereotypically also included the dispensing component focused on advice provision and patient education (Forsyth & Rushworth, 2021). This study presented that there still significant

existence of this cultural views that still hinder the progress of pharmacy practice to develop collaborative pharmaceutical care practice standards. Furthermore, some of the existing barriers mentioned were that some medical practitioners' perception of the pharmacist' role as being to monitor, audit or correct them and to put more focus on technical and administrative services (Pereira, *et al.*, 2021). To medical practitioner this would be like pointing out others' errors which is viewed as face-threatening acts as it is also seen as not being respected but just being imposed upon (Rixon, *et al.*, 2015). As also presented by, Fernandes, *et al.*, (2022), the pharmacists' roles are regarded by some medical practitioners as conflicting or overlapping with their roles and feels like "error seekers" resulting in lack of trust and underdeveloped clinical pharmaceutical care service (Fernandes, *et al.*, 2022).

Another barrier in the study, both medical practitioners and pharmacist expressed experience in terms of junior staff interacting with seniors e.g., intern pharmacist having less experience and interacting with a specialist or a medical intern prescribing which most of the time let to conflict between the two professions. The conflict is mainly the results of lack of communication skills and clinical skills. Another study suggested the lack of physician experience with clinical pharmacy services and formal collaborative practice legislation were also considered factors that negatively impacted the development of well-organised collaborative care (Law, *et al.*, 2013). Some of the interaction skills are limited by pharmacists being centralised and preoccupied with dispensing drug products. This may be constituting barrier to the acceptance of the advanced pharmaceutical care or patient-centred roles while product-centred roles, and inventory management continues to be their major responsibility (Mohammed & Shayoub, 2015). And also, the patient-centred care activities are second focus and are performed only when there is spare time or extra staff available. According to Al-Jumaili, *et al.*, (2017) pharmacists and medical practitioners' will to collaborate was also affected by the academic affiliation of pharmacists for further training which support pharmacist need for more training as mentioned by pharmacist participants in this study. According to Abdullatif (2014), most literature mentioned the lack of clinical knowledge by pharmacists which as per the study's results was in contrast, the surveyed participants' perception rated their clinical knowledge high. This highlights

the fact that to establish pharmaceutical care settings needs enhanced training and educational support (Alhossan & Alazba, 2019).

What this study also revealed is that the medical practitioners and pharmacists have doubts about their current interactive relationship in forming or bringing an established collaborative practice for pharmaceutical care. This is based on expression provide, that there is an unstable, forced, and fragmented relationship among medical practitioners and pharmacists. As per defined standards of collaboration it is a joint effort process with common competencies (Saint-Pierre, *et al.*, 2018). Most of the interviews presented no characteristics of trust. Most of the literature defined the existence of trust only in established collaborative relationships that are growing stronger or proves to be stronger (Centers for Disease Control and Prevention, 2017) and also as a prerequisite to for being in team (Curtis & Christian, 2012). These barriers also contribute to the medical practitioners' reluctance, corporatism and resistance to recognise and the insertion of the advanced pharmaceutical care service into the patient care process, which hinders mutual trust amongst the pharmacists, the medical practitioners and the rest of the healthcare team (Pereira, *et al.*, 2021).

Workload among the healthcare professionals.

In addition to that, even though most of the medical practitioners did not mention it, the pharmacy personnel highlighted workload as one of the barriers that reduce their capability to collaborate with medical practitioners. It is also supported by Dalton, *et al.*, (2021) by viewing it as a common thread throughout the transcripts by stating that, "pharmacist staffing levels; a greater pharmacist presence would increase accessibility to physicians and face-to-face discussions and allow more time for collaborative teamwork" (Dalton, *et al.*, 2021). Another study detailed workload in the form of challenges in decision making as the healthcare practitioners lacked availability of pharmacists in the emergency department, limited pharmacy personnel number after-hours, and competing responsibilities for dispensing with the patient-centred activities (Rosenfeld, *et al.*, 2018). Even though the study was not ward based but it clearly highlights issues that affect pharmacists in a hospital setting in terms of workload. Another study in Pakistan which is a sample of low-income or developing countries

mentioned the issue of pharmacist shortage (Hayat, *et al.*, 2021). This also promote reactive working procedure than proactive working procedure (Hatton, *et al.*, 2021). In outpatient settings, the available limited number of pharmacists sometimes needs to dedicate considerable time to administrative activities, such as pharmacy inventory management resulting less time and personnel to focus on patient care (Pereira, *et al.*, 2021).

Hierarchical system of decision making and communication.

Interaction in the healthcare system was mentioned to also be hierarchical by both pharmacists and medical practitioners. This was presented in terms of both profession-to-profession interaction and professionals to management interaction. In the case of medical practitioners, pharmacist expressed that, some reacted in a way that says they are in charge and are the sole provider of patient care. This also highlighted in a study about, “Collaborative pharmacy practice: an update”, where medical practitioners perceived that, their training even during undergraduate as an emphasis of their role as leaders who are deemed fully capable in making independent, major, and final patient related decisions among the healthcare practitioners (Law, *et al.*, 2013). It is also in consistent with the rational of that hierarchy with the medical practitioner as the team leader, creates feelings of intimidation diminishing other team members’ confidence (Hatton, *et al.*, 2021). This was viewed as something that brought less interest in collaboration as the medical practitioners' ingrained sense of the traditional hierarchy has a driving effect to the relationship (Dalton, *et al.*, 2021). In terms of management and the ground force of health professional, only collaboration was mentioned to be at the management level with decision making at that level and less interaction with the ground force.

With all the above-mentioned characteristics of the relationship and challenges. There were recommendations made that will be discussed further during the strategy implementation however they range from established educational platforms, improved resource supply, clarity in terms of roles and responsibilities and enhanced managerial structures and functions.

4.5. SUMMARY

This chapter composed of the demographics of the study, the results that were analysed through thematic analysis, the themes and subthemes, and the discussion that of the results that were obtained. This led to the development of strategies that are discussed in chapter 5.

CHAPTER 5

DEVELOPMENT OF A MODEL AND STRATERGIES FOR PHARMACEUTIACL CARE IN OUTPATEINT SETTING

5.1. INTRODUCTION

This chapter clearly outline the developed strategies and model that, after thorough consideration of the studies' results sought to be adequate in improving pharmacist-medical practitioner relationship, collaboration, and provision of pharmaceutical care in hospital outpatient. This chapter further explains the methods or steps and foundation used to derive the strategies and the model for collaborative pharmaceutical care in the outpatient setting.

5.2. DEVELOPMENT OF A MODEL AND STRATEGIES

The strategies and model in this study were developed based on the recommendations provided by participants from the interviews, literature and the researcher's perspective,

visions and understanding of collaborative pharmaceutical care. Prior to the development of the model and the strategies the researcher considered things such as issues, barriers and facilitating factors encountered during pharmacists and medical practitioner interaction on provision of patient care.

During the derivation and development process of the model and strategies for the problematic issues, barriers and facilitating factors, Nagy & Fawcett's five steps (Figure 5.1) of strategic planning were followed. The steps of the planning include developing a vision and mission statement, objectives, developing strategies and action plan (Nagy & Fawcett, 2003) (Moloto, 2019).

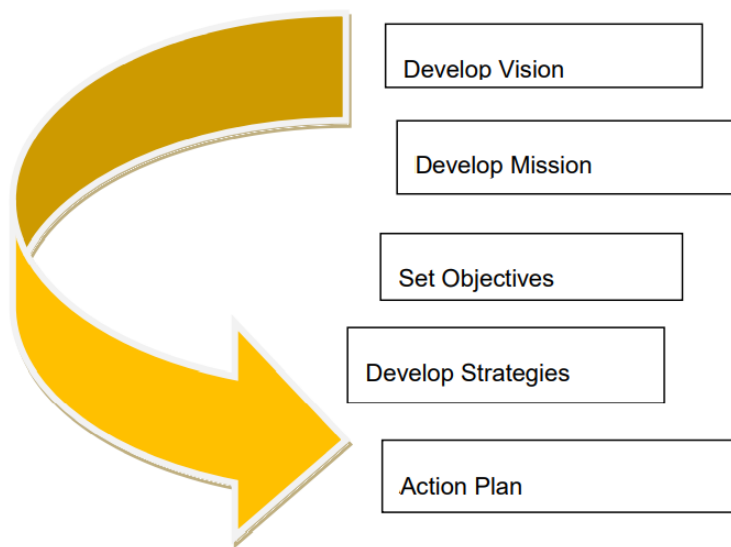


Figure 5.1: Nagy & Fawcett five steps of strategic planning (Moloto, 2019).

5.2.1. Development of vision and mission.

The mission statement follows from the vision. In this study, developing a vision statement will help both pharmacists and medical practitioners improve their working relationship and develop a collaborative working relationship.

To develop a pharmacist-medical practitioner collaborative practice for pharmaceutical care at Mankweng Hospital outpatient.

The mission statement will help state the basic reason of establishing and incorporating collaborative care practice which will enhance the quality of pharmaceutical care provision.

To improve interactive relationship among pharmacists and medical practitioners, enhance the practice pharmaceutical care through advanced application of pharmacy practice, pharmacotherapy and clinical skills, thus improved patient healthcare process. And optimise interaction and practice performance through collaborative care practice approach.

5.2.2. Objectives.

The purpose of setting objectives in this study was to adapt the statements of strategic vision and mission into results and outcomes

Improve interactive relationship among health professionals.

To encourage team-based care among healthcare professionals including pharmacy and medical profession.

To establish a formalised and advanced collaborative care practice in the healthcare system.

To establish and encourage advanced pharmaceutical care practice in the hospital outpatient.

To improve patient care process.

5.2.3. Strategies.

A strategy is a framework or plan of action designed to guides the choices that determine the nature and direction of an organisation (Moloto, 2019). In this study, strategies and the model were developed in consideration of the results, literature and the researcher's vision.

Strategies to establish and also improve provision of collaborative pharmaceutical care in outpatients.

5.2.3.1. Proactive collaboration process among pharmacists and medical practitioner

Pharmacist and medical practitioners come from diverse environments yet with same objectives to achieve associated with proactive collaboration pharmaceutical care outcomes. There are several areas that needs to improvement in the provision of collaborative pharmaceutical care in the hospital outpatient department. With the interaction process from the interview and literature there were derived key elements that could facilitate proactive process of collaborative pharmaceutical care practice. These strategies include but not limited to be used in initiating, fostering, and ensuring maintenance and continuity during collaborative pharmaceutical care process. This is in the process of bringing both individual and team skills together. This section comprises of elements to develop and sustenance of collaborative practice which also include strategies and a model for collaborative pharmaceutical care. The phrase collaborative pharmaceutical care practice is broad which means this process will cover the collaboration and pharmaceutical care.

5.2.3.2. Development of proactive collaborative pharmaceutical care.

This is the summary of elements that were used in development strategies that could be used to initiate, develop, improve, and sustain pharmacist-medical practitioner collaboration for pharmaceutical care in outpatient. These elements were derived from the consideration of the results, literature and a study in, "Population health management guiding principles to stimulate collaboration and improve pharmaceutical care" (Steenkamer, et al., 2018).

- Creation of agreements, policies and commitment based on a long-term vision.
- Foster cooperation and representation at management and lower levels.
- Use a more horizontal integration and layered governance structure.
- Create awareness at all levels of the healthcare process.

- Enable interprofessional collaboration all levels at all levels of the patient care process.
- Create a learning, training, and practice environment.
- Establish a level shared responsibilities among the healthcare professionals and the governing bodies.
- Adjust resource and financial strategies to the functionality of the collaborative pharmaceutical care practice.
- Promote and implement mutual gain processes.
- Align ground level agreements with the departmental, organisational, national policies and regulations. This about creating protocols and policies that accommodate the existing regulatory and governing policies.

Key elements of effective collaborative practice that can be utilised are as follows (Haddad, *et al.*, 2019):

- Cooperation is defined as the process of acknowledging and respecting others' perspective while being open to examine and change personal beliefs and perspectives to be able to work as a team.
- Assertiveness: this is instilling confidence in healthcare professionals during collaboration process both individually and collaboratively as a team.
- Responsibility: This means all team member must be aware every individual's role and responsibility within the team, also accept and share the responsibilities with active participation in decision-making. The team should collectively support the decision approved.
- Communication: is the process of effectively sharing of important information and exchanging ideas between the healthcare professional. Its competency standard is based on all members of the collaborative care team, pharmacists and medical practitioners willing to learn about, through, and with each other. This allows the development of a common language amongst the collaborating partners resulting from the cohesive process of their diverse cultures.
- Autonomy: this is about knowing and maintaining one's role and a certain level of independency while knowing the level of to be dependent one another in a team. But what should be kept is the collective goals and ensuring it's up to

standard in enhancing teamwork efficiency with Individual members of the team maintaining duties unique to their roles

- Coordination: the process of effectively aligning duties or task to the team member and the organisation as whole during collaboration process while maintaining the standards required to deliver patient-centred care.

5.2.3.3. Established proactive way of communication and interaction such as platforms for interaction, education, and training among the healthcare professionals with regulated and continuous interactions among both parties.

Literature emphasised the importance of communication in collaborative pharmaceutical care practice with good communication skills being an important factor (Farrell, et al., 2013). In this study the suggested type of communication with more positive influence on the pharmaceutical care process outcomes is face-to-face, thus the strong participant request for systems that could improve such in the hospital.

Since there is interaction among pharmacists and medical practitioners what is needed is adequate platforms for interaction which means from a social level to a professional. In other words, most of the forms of interactions encountered are important to establish relationship trust among healthcare professionals (Liu, *et al.*, 2010). The interactions can range from unarranged meetings to arranged meetings.

Furthermore, the education and training form an important part. With the advanced practice of collaborative pharmaceutical care there is a need for both pharmacists, medical practitioners and other healthcare professionals to be educated and trained more about this field of healthcare process. This is based more on awareness of the program, roles played by each profession, the importance and impact, and the available opportunities of provision of this collaborative pharmaceutical care process. It may

range from undergraduate, postgraduate and in practice. According to Pereira, *et al.*, (2021) the practice of leadership for pharmacists in pharmaceutical care should also include the following:

- The adequate awareness, coaching and training of pharmacists on leadership skills, how to approach medical practitioners and other healthcare professionals.
- The access and use evidence-based literature and clinical decision support systems (Pereira, *et al.*, 2021).

Educational background should also be the strength of pharmacist-medical practitioner collaboration through development of programs, protocol and learning activities at undergraduate academic institutions.

Examples of the process includes, social network platforms, team building activities, regular meetings, established clinical forums or governing bodies and collaborative CPDs among the pharmacists, medical practitioners, and other supporting teams.

5.2.3.4. Create protocol and schedule for collaborative interaction.

The creation of protocols and schedule for collaborative pharmaceutical care in outpatient should create an environment where healthcare practitioners are fully functional about their scope of practice. This should allow external personnel and patients to recognised and understand the process in place and also ensure that it is suitable for the environment of practice. The protocols must allow the collaborative pharmaceutical care practice to be scalable, sustainable, and financially viable in the evolving health care system (American Pharmacists Association Foundation and American Pharmacists Association, 2013).

5.2.3.5. Improvement of infrastructure and availability of stock and resources needed to collaborate.

Availability of resources in our public healthcare sector is always a big issue when there this form of innovative intervention such as advanced collaborative pharmaceutical care. Even though health care providers at the ground are willing to utilise the available

resource to accommodate some of huge changes such as this, the department of health also needs to step up to provide space, infrastructure and resources that are needed to instil such a model or advanced strategy to improve patient care process. Most of the quality standards of care depend on the willingness of the governing bodies in provision of resources required and most of the times they are reluctant.

In terms of stepping up, an area or space for practicing collaborative care is an important facilitator in terms of building and maintaining collaborative relationship as the location of the healthcare practitioners is also important in performing pharmaceutical care process (Mercer, *et al.*, 2019). So, bringing both pharmacist and medical practitioner together in one facility or co-located area is important.

And also there should be a system in place for stock management that allows proactive update for both pharmacists and medical practitioners. This could be done through introduction of a software or a computerised system that is accessible to health professionals from authorised department not limited to the pharmacy. It can be done by availing the system to each department or through software installed to the cell phones of selected healthcare practitioners.

5.2.3.6. An enhanced transparency, competency, understanding and appreciation in the roles and responsibility of the healthcare professionals including in collaboration.

Roles and responsibilities are very important contributors towards collaboration of healthcare professionals (Hatton, *et al.*, 2021). It might also be difficult for health professional at this state to establish and maintain their roles within the team, but it will be worthy (Farrell, *et al.*, 2013). With the pharmacists and medical practitioners in the provision of collaborative pharmaceutical care firstly transparency is needed in terms of their roles and their scope of practice individually and collaboratively. Transparency also means, an open and effective communication between multidisciplinary team members such as pharmacists and medical practitioners is a clear pre-requisite for collaborative practice (Hatton, *et al.*, 2021).

This will allow both professionals to know about the capability of each individual and the team. When each professional knows about these aspects then they would be able to understand and appreciate what each professional is bringing to the team and what the team is delivering to the pharmaceutical care process (Ret, *et al.*, 2012). This prevents the presence of conflict within the team then results into highly confidential and competent individual in a team and a competent team towards the provision of collaborative pharmaceutical care.

5.2.3.7. Established proactive system for collaboration process facilitated and strengthened from or up until management.

The collaborative pharmaceutical care process is not going to be an easy job if there is no system in place either in the hospital or within the department of health that support this process. Which means the government and management system need to take part in establishing a suitable system to accommodate these types of patient care process. Leaders and their actions have a major influence on individual and organizational routines (Farrell, *et al.*, 2013). This also refers to the establishment of laws, protocols and governing system that will promote, protect, maintain, and enhance this type of patient care processes. Within the hospital, the management will also have to take part and ensure that they strengthen the provision of this collaborative pharmaceutical care practice. This means most the awareness, promotion, protection, and maintenance process within the hospital is their responsibility. According to Farrel, *at al.*, (2013), the healthcare organisations must be capable of managing expectations by the frontline healthcare providers and patients thus promoting collaboration process through recognition and promotion of full scope of practice and practitioners' abilities.

5.2.3.8. Increased number of pharmacists or workforce

The process of advanced collaborative pharmaceutical care requires more time and workforce especially in the side of pharmacists. For both professions, pharmacists, and medical practitioners the full formal collaboration might be something out of the norm that requires more manpower or a professional that concentrate on collaboration. For pharmacists, there an established advanced scope of practice which will also require their extended time and scope of practice compared to their normal traditional pharmacy

practice duties (Farrell, *et al.*, 2013). This means there must be a person who must focus on the matter of collaboration and extended therapy management duties.

5.2.3.9. Regulatory bodies should show support on the process collaboration and specialisation by pharmacists.

Regulatory bodies such SAPC, HPCSA, Department of health, Hospital Management and other governing bodies need to come into play in terms of allowing collaboration among pharmacists and medical practitioners. They must support this process of pharmaceutical care provision through allowing specialisation in this area of practices. This process could be through establishment of laws, rules, regulations, and protocols that support and protect the provision collaborative pharmaceutical care. Also uphold, support, and protect the healthcare professionals participating in provision of this patient care.

South African Pharmacy Council and Health Professional Council of South Africa

- Help in creating formal proactive platform for collaborative interactions among pharmacists, medical practitioner and other healthcare professionals established polices.
- Should recognise and acknowledge specialities presenting in pharmacy profession and register them as such.
- The SAPC should promote the broadening and advancing of the scope of practice of pharmacists, as per advanced practice needs to encourage participation in collaborative pharmaceutical care.

Hospital management and department of health

- Create structured protocols, policies, and shared standard operating procedures for collaborative care practice.
- Create policies that will foster collaboration and continuous professional learning within the hospitals.
- Must create an environment for interaction through providing infrastructure such a practice area, material for communication and documentation and storage of information needed in a patient's profile.

- Can also help in development and installation of a software or a system that could facilitate the provision of pharmaceutical care such website and applications.

Create posts for pharmacists and medical practitioners.

5.2.3.10. Encourage establishment of academic training, practice and collaboration with the healthcare sector on provision of collaborative pharmaceutical care curricular.

The provision of collaborative pharmaceutical care establishment could start at the undergraduate level through installation into the pharmacy and medical curricular. For both pharmacists and medical practitioners what should be emphasised is collaboration during the curricular and in practice. This must be driven into postgraduate and into the daily practice which means the academic level and practice environment must also collaborate. Implementation of interprofessional education is something they should be done as early as the academic curriculum as according to Hatton, *et al.*, (2021), pharmacy and medical student teaching of therapeutics by interdisciplinary pairing has been shown to be successful.

5.2.3.11. Encourage change in attitude and behaviour change by healthcare professional toward provision of collaborative pharmaceutical care.

During interaction process attitude and behaviour are the main facilitating factor as explain by the theory of planned behaviour (Ajzen, 1991) (Shah, 2013). This to factors also affect the perspective of the healthcare professional towards interaction with other healthcare providers. The attitude of the healthcare provider determines the behaviour towards carrying out certain type of practice during interaction. It was also mentioned in the study, that one of the individual factors that affect the provision of collaborative care is attitude that results into a certain behaviour. These changes in terms of attitude and behaviour can also be facilitated by change in cultures and belief about the role of a pharmacist in patient care process. The traditional beliefs and culture must also evolve as pharmacy practice has evolved to advanced practice of responsibilities in patient consultation, clinical services, and pharmaceutical care (Ret, *et al.*, 2012).

5.2.3.12. Addition of a formal section of pharmacotherapy progress notes documentation in the patient's file.

This process can be done in a form addition of a formal progress pharmacotherapy note sheet in the patient's file. Most of the time pharmacists use stick notes, informal notes or messages written on either the progress report sheet or the prescription sheet in the file. Insertion of this feature in the file will allow pharmacist to formal documents their comments, notes, and recommendations in the patient's. This will help the medical practitioners and other health care professionals to understand the communicated information and progress of patient's pharmacotherapy. This process also advances the practice of pharmacy in the patient care process and enhance role clarity to other professional about pharmacist's scope of practice.

5.2.3.13. Establish a supplementary prescribing practice under pharmacist-initiated therapy and interventions.

For further enhancement of the therapy, pharmacist-initiated therapy (PIT) can be used as a supplementary prescribing process (Cheong, Tat & Tan, 2017). This process is about establishing the practice of pharmacist-initiated therapy in a hospital-based institution and enhancing collaborative practice communication and relationship. It is also about enhancing the provision of pharmaceutical care in outpatient and to reduce difficulties in reaching medical practitioner. This process clearly needs adequate assessment about transferability and applicability, more resource and infrastructure however but it's an advantage to patient care and collaborative relationship (Dawoud, *et al.*, 2011). Furthermore, the prescription sheet can be divided into the main and the section of pharmacotherapy amendment section for pharmacists to formally document their initiated interventions. The process involves:

- Recommending addition of a certain medication on the prescription or treatment that are under PIT, S0 to S2 and even specified S3.
- This should be based on the review of clinical evidence and the patient's medical condition.
- The pharmacist can provide reasons, evidence and clinical supporting information about the addition or implementation of such procedure.

- The evidence, reasons and clinical support can be based on that, the medical practitioner excluded an important item or procedure that can be governed under PIT or the pharmacist see the need based on current status of the patient.
- Implementing the change with or without the present of a medical practitioner but communicated and or have a developed protocol, procedures and scope practice agreement on the extent of change a pharmacist could implement for PIT.
- Only after a confirmed communication between the pharmacist and the medical practitioner responsible can a pharmacist implement the addition of that item.
- The pharmacist can also do repeat prescribing for patients on collaborative care program after evaluation of the patient's medication and the state of medical condition.

The implementation of this kind of protocol will enhance participation of pharmacist in patient centred care and role clarity.

5.2.3.14. Consultant pharmacist

Consultant pharmacists are medication management specialist who provide expert either advice on pharmaceutical services, patient safety and drug therapy management. They either work as generalist consultants or on targeted consultant pharmacy services (Armistead, *et al.*, 2020)

The availability of a selected consultant pharmacists located in specific areas in a hospital and collaborate with other healthcare practitioner can enhance collaborative pharmaceutical care. In this case other healthcare professionals will know where to refer, who to contact or to interact with. This also improve interaction among healthcare practitioners resulting in proactive provision of patient care. In this study there is a clear demonstration that some of the suggested recommendation could be carried out by the consultant pharmacist. The benefits of this kind of services include decentralising of pharmacists and applying speciality, save time for providers, additional clinical and medication management support for healthcare practices yielding improved outcomes

for targeted patients. It will also reduce patient influx into the hospital's due to quality care (Armistead, *et al.*, 2020).

5.2.4. Pharmacist-medical practitioner collaboration pharmaceutical care.

This model was developed in consideration of the results of the study, interaction with the participants, literature and the researcher's background knowledge and perspective, visions and understanding of collaborative pharmaceutical care. This model also encompasses the strategies to develop a proactive approach to provision of collaborative pharmaceutical care. The model will be divided into two, the relationship building process and the clinical practice process.

According to the conceptual framework the development of this model is guided a foundation derived from the theory of planned behaviour which is important in building relationship (Ajzen, 1991) (Shah, 2013). This will be followed by the collaborative working relationship development model by McDonough and Doucette (McDonough & Doucette, 2000) ,and then interprofessional collaboration as described by Smith (2015).

The clinical process will be guided and derived from the principles of healthcare professional patient care process, pharmacy and medical practice, pharmaceutical care, and clinical care process. These processes will merge as the governing properties of collaborative pharmaceutical care practice.

5.2.4.1. Theory of planned behaviour (TPB).

The TPB function on the behaviour of an individual and a group towards a certain aspect of which in this case is pharmacist-medical practitioner collaboration for pharmaceutical care. On that state, the behaviour of both healthcare professionals has a huge role in developing a collaborative relationship which is going to be continuous. As stated under the conceptual framework, the TPB function on three behavioural factors which are controlled by the belief (behavioural, normative and control) system attitude towards the behaviour, subjective norm, and perceived behavioural control (Shah, 2013) (Abdullatif, 2014).

According to Abdullatif (2014), “the antecedents of attitude are behavioural beliefs (beliefs that the behaviour is associated with certain outcomes) weighted by evaluation of potential behavioural outcomes (value attached to each outcome). Normative beliefs (beliefs about whether each important referent approves/disapproves engaging in the behaviour) weighted by motivation to comply (motivation to do what each important referent thinks) are the antecedents for subjective norm. Control beliefs (beliefs about the presence of factors that likely facilitate or inhibit the performance of the behaviour) weighted by perceived power (perceived effect of each factor in making the performance of the behaviour difficult or easy) are the antecedents for perceived behavioural control”.

In reference to the results of the study this means, pharmacist-medical practitioner interactions in a collaborative practice can also be governed by their behaviour which is controlled by their beliefs and intentions towards certain processes, roles or duties. This was mentioned under attitude which is an individual factor subtheme acquired on analysis. Alteration of this factors can lead to what is called perceived behavioural control resulting into collaborative intentions then behaviour thus collaborative practice. Examples of aspects that fall under this as mentioned in the results are attitude, personality, conflict, existing culture, and perspective.

A positive change and channelling of this aspects leads to a developed positively controlled behaviour suitable for provision of a proactive collaborative pharmaceutical care practice.

5.2.4.2. Collaborative working relationship development model.

From the TPB if the behavioural control is achieved then one can focus on developing a collaborative working relationship which based on professional awareness, professional recognition, exploring and trial, professional relationship expansion and commitment to the collaborative working relationship (Zillich, *et al.*, 2004) (Liu, *et al.*, 2010).

These processes can exist separately with where there is change in behaviour to an acceptable controlled behaviour is achieved then later the development of the

relationship. And or co-exist where during all the steps one has to always revisit each factor for maintenance of behavioural control.

There are several activities that can be done to establish and promote the required standards of behavioural control and collaborative working relationship which include academic and professional practice education and training; creating protocols and policies that governs such; and creating or inserting it in the formal practice competency standards.

All the above-mentioned aspects will be combined with clinical aspects under pharmaceutical care process. This process will be designed in a way that to put into action enhance practice of quality care, advanced collaborative, and innovative pharmaceutical care.

5.2.4.3. Collaboration process.

The interprofessional collaboration process among pharmacist and medical practitioner is governed by the process of integration. There are two types, the horizontal integration and vertical integration of which in this model the one to be utilised at higher degree is horizontal integration (Curtis & Christian, 2012). This is because of the advantage of horizontal integrated care in communication and interaction process, decision making, information supply to each member and the range of conditions that are treated. The vertical integration process should be used at lower degree to allow managerial and leadership characteristics to take place and reduce the hierarchical dominance and believes by healthcare professionals.

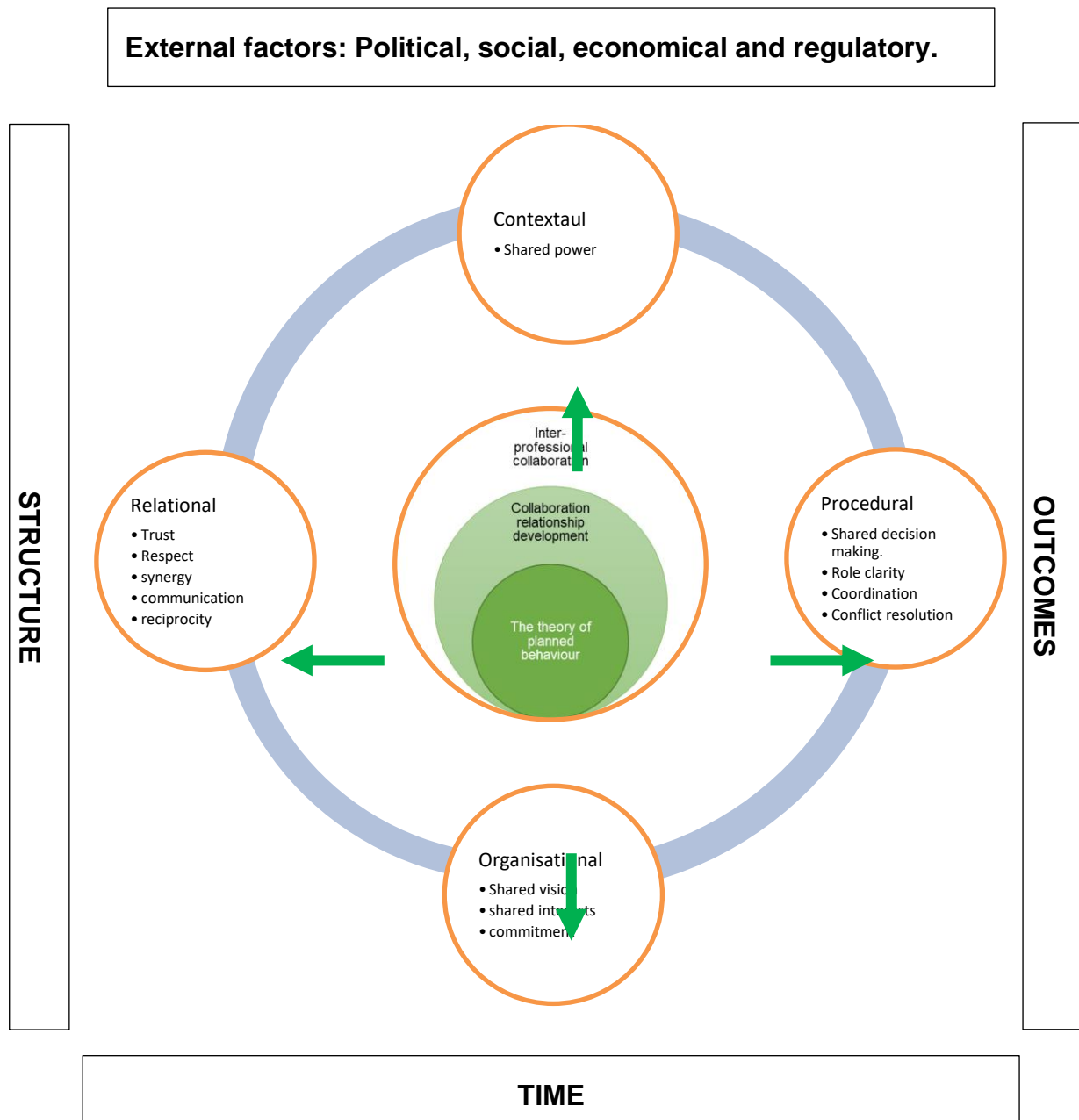


Figure 5.2: The expanded diagram of Collaborative Pharmaceutical care framework in reference to the theory of planned behaviour by Ajzen(1991) & Shah(2013) collaborative working relationship development model by McDonough and Doucette (2000) and Smith(2014).

5.2.4.4. Collaborative pharmaceutical care process for hospital outpatient.

The focus on this model under pharmaceutical care will be:

Incorporating the care process in outpatient care environment.

Outpatient hospital setting is one of the areas where less of clinical pharmacy process is practiced. It's also known as a portion of the healthcare services related to patient care are meant to diagnosis, treatment, prevention and rehabilitation of patients of which is in line with certain competency standards of the pharmaceutical care, hence the need (Pereira, *et al.*, 2021).

This means they will be a need for an established area for interaction for pharmacists and medical practitioners. This might be an established counselling area. There is one study which state that, pharmacists and other specialists when provided with a well-defined area or geographical region for practice they often achieve consistent and well-coordinated care (Celario & Mistry, 2020). The need for this is based on for example, the extensive data and information collection and a range of processes that occurs during patient care process. This can result in a long documentation process for the collaborative pharmaceutical care service, which if not provided with such resources may compromise the adequate integration of this service into working process (Pereira, *et al.*, 2021).

As collaborative pharmaceutical care in outpatient is about enhancing delivery of clinical services in outpatient, in reference to clinical pharmacy service the South African Pharmacy Council (2010), the minimum requirements for delivering of drug information service od such should have:

- An allocated space.
- Should be furnished with resources.
- A consultation system including specialists in the various fields for problem cases is necessary.
- A number personnel satisfactory for the size of the institution and the extent of the care process must be employed.

- The service must be available during normal pharmacy hours.

Patient care process procedure.

- Since outpatient care offer both acute and chronic patient care services, to avoid confusion the patients eligible to be attended under this care process should be chronic, acute and discharged patients who are unstable and are still in need of care supervision. Patients who are eligible for supervision include old people and chronic patients with long term condition who might sometimes develop acute conditions the threaten their quality of life. Literature on systemic review of randomised controlled trial studies from 2004 to 2017 suggest strong evidence to support pharmaceutical care in long term conditions affecting patients such hypertension and dyslipidaemia, and older patients hence the inclusion of chronic patients and critical (Babar, *et al.*, 2018).
- And for patients with medication issues such as adverse reaction management, patients with identified therapy problems and/or a potential medicine-related problem is anticipated to occur in the future (South African Pharmacy Council, 2010).
- Also, patients who attend specialised clinic such eye clinic, gynae, paediatric and psychiatric clinic.

Patient care process.

Eligible patients:

- The patients can either referred to by the medical practitioner.
- Patients identified by medical practitioners, pharmacists or specialists as needing of the program.
- If not working in the same place, patients can be referred to by other healthcare practitioner and use of booked appointments for patients (Cipolle, *et al.*, 2012).

According to Pereira, *et al.*, (2021), “Co-consultation sessions involving patient, physician and pharmacist were important to develop trust between all parts, and the pharmacist’s autonomy to prescribe some classes of drugs optimised the time as it prevented the patient from being referred to other health services”. This might mean

being under the same facility or referral within the same area could be beneficial and reduce challenges for our patients.

Establishing a formal form of referral among pharmacists and medical practitioners, and other healthcare practitioners. For example, sending of standardised referral dismutation, dissemination or letters to other health professionals that suggests the help or changes needed either in pharmacotherapy or any process of pharmaceutical care, and the use of a software program to record appointment data. (Pereira, *et al.*, 2021). And standardised digital system of referral.

Collaborative pharmaceutical care in outpatient care.

This step will focus more on how pharmacists and medical practitioners are going to collaborate to carry out pharmaceutical care. It focuses of establishment of interactive processes and the level of interaction among the health care professional.

1. The procedure here is based on pharmacists and medical practitioners conducting the care plan in a collaborative process. The care plan will be arranged in sections that include the pharmacist and medical practitioner's notes, comments, and interventions.
2. It is also about establishing collaborative role of pharmacists and medical practitioners from their scope of practices and the standards of pharmaceutical care.
3. Facilitating the process of pharmaceutical care included being part of the healthcare team with access to the patient's medical information, that understand and appreciate each other's role, skills and referral processes (Hattingh, *et al.*, 2020). This means ensure access of these records by both healthcare practitioners without difficulties.

Scope of practice under collaborative pharmaceutical care practice.

South Africa, however, does not have an established scope of practice for clinical practice of a pharmacist including pharmaceutical care and clinical pharmacists in outpatient. The pharmacists trained in these programs or advanced postgraduate courses in pharmacy end up performing activities that fall under the present “scope of practice of pharmacists” as stipulated in the Pharmacy Act 53 of 1974, which does not put any exclusive emphasis on clinical practice (Abahamye, 2018). The established scope of practice is a derivative from the current provided scope of practice for both healthcare providers.

Medical practitioner scope of practice

The medical practitioners may perform his/her scope of practice according to section 33 of Health Professional Act of 1974 (Act, No: 56) is as follows:

- g. “The physical medical and/or clinical examination of any person;
- h. performing medical and/or clinical procedures and/or prescribing medicines and managing the health of a patient (prevention, treatment and rehabilitation);
- i. advising any person on his or her physical health status;
- j. on the basis of information provided by any person or obtained from him or her in any manner whatsoever-
 - diagnosing such person’s physical health status;
 - advising such person on his or her physical health status;
 - administering or selling to or prescribing for such person any medicine or medical treatment;
- k. prescribing, administering or providing any medicine, substance or medical device as defined in the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965);
- l. any other act specifically pertaining to the medical profession based on the education and training of medical practitioners as approved by the board from time to time” (Health Professional Council of South Africa, 2009).

Under the advanced collaborative pharmaceutical care, the medical practitioner may also perform the following:

- Refer patients to the pharmaceutical care practice pharmacist and other specialist.
- Create a pharmaceutical care plan, it might be together with a pharmacist or independently but referred to a pharmacist.
- Care plan monitoring and review on an interval of patient medical practitioner visit. (e.g., 3 months and 6 months).

Pharmacist scope of practice

The pharmacist may perform his/her scope of practice in terms of section 35A of the Pharmacy Act 53 of 1974 under the acts pertaining to the profession which state:

“(1) the provision of pharmaceutical care by taking responsibility for the patient’s medicine related needs and being accountable for meeting these needs, which shall include but not be limited to the following functions:

- f) evaluation of a patient’s medicine related needs by determining the indication, safety and effectiveness of the therapy;
- g) dispensing of any medicine or scheduled substance on the prescription of a person authorised to prescribe medicine;
- h) furnishing of information and advice to any person with regard to the use of medicine;
- i) determining patient compliance with the therapy and follow up to ensure that the patient’s medicine related needs are being met; and
- j) the provision of pharmacist-initiated therapy.”

Under the advanced collaborative pharmaceutical care and in consistence with The Good Pharmacy practice (South African Pharmacy Council) and by Li & Radhakrishnan (2021), the pharmacist may also perform the following:

- History taking.
- Prescription monitoring.
- Provision of drug information and advice.
- Therapeutic monitoring services (also include creating a pharmaceutical care plan).

- Medication and laboratory results review service.
- Refer patient to the pharmaceutical care practice medical practitioner and other medical specialist.
- Medication adjustment and amendment in communication with the medical practitioner (Up to schedule 5 medication).
- Follow-up process and reporting to the team.
- Counselling about medication and reconciliation.
- Adverse effects management. (Li & Radhakrishnan, 2021) (South African Pharmacy Council, 2010).

The tools/instruments to action this model.

Table 5.1.: Collaborative practice agreement tool adopted from Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, 2017).

Collaborative practice agreement for pharmacist and medical practitioner in pharmaceutical care

SECTION A: AUTHORITY AND PURPOSE

I, [INSERT HEAD OF THE DEPARTMENT, HEAD OF THE SECTION OR TEAM LEADER], authorize the pharmacist(s) and medical practitioner(s) named herein, who hold an active license to practice as per South African Pharmacy Council, the Health Professional Council of South Africa, and the department of health to manage and/or treat patients according to the guided process of this agreement.

This authority follows the laws and regulations of South Africa as per respected healthcare profession. The purpose of this agreement is to facilitate consistent access to provision of pharmaceutical care for the collaborating providers' mutual patients.

To enhance collaborative pharmaceutical care and optimise medication-related outcomes, patient care services will be provided by the pharmacists and medical practitioners listed in Section B of this agreement. The services will include those listed in Section D of this agreement. The pharmacists and medical practitioners will deliver these services in a manner consistent with the parameters outlined in this collaborative practice agreement and in compliance with the protocols included in the appendices to this agreement in line with the practice environment.

SECTION B: PARTIES TO THE AGREEMENT

Department of health Pharmacist representative/management	Medical practitioner
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Eligible patients

Patients whose therapy may be managed pursuant to this agreement include those who are:

- Currently on chronic and acute medication and are unstable.
- Discharged with critical conditions that needs intense attention.
- Patients who are currently on an established care or disease management program that needs intense attention

SECTION C: PATIENT CARE FUNCTIONS AUTHORIZED

Pharmacist(s) and medical practitioner(s) included in Section B of this agreement will have the authority to manage and/ or treat patients in accordance with this section. In managing and/or treating patients, the pharmacist(s) and the medical practitioner(s) as per agreement with the regulatory bodies and the governing department (department of health) may:

The medical practitioners may perform his/her scope of practice according to section 33 of Health Professional Act of 1974 (Act, No: 56)

Additional activities under collaborative pharmaceutical care practice

- Refer patients to the pharmaceutical care practice pharmacist and other specialist
- Create a pharmaceutical care plan, it might be together with a pharmacist or independently but referred to a pharmacist.
- Care plan monitoring and review on an interval of patient medical practitioner visit. (e.g., 3 months and 6 months)

The pharmacist may perform his/her scope of practice in terms of section 35A of the Pharmacy Act 53 of 1974.

Additional activities under collaborative pharmaceutical care practice

- History taking
- Prescription monitoring
- Provision of drug information and advice
- Therapeutic monitoring services (also include creating a pharmaceutical care plan)
- Medication and laboratory results review service
- Refer patient to the pharmaceutical care practice medical practitioner and other medical specialist
- Medication adjustment and amendment in communication with the medical practitioner (Up to schedule 5 medication).
- Follow-up process and reporting to the team.
- Counselling about medication and reconciliation.
- Adverse effects management. (Li & Radhakrishnan, 2021) (South African Pharmacy Council, 2010).

SECTION D: PATIENT CARE FUNCTIONS AUTHORIZED, SUCH AS INITIATE, MODIFY, OR DISCONTINUE DRUG THERAPY

Services offered includes but not limited to, medication reviews, patient monitoring, chronic medication management critical patient care support and patient support care.

If appropriate, based on current literature and clinical judgment. The pharmacist(s) will refer the patient back to the medical practitioner(s) for issues that, needs the medical practitioner's attention, are outside the scope of this agreement or relevant referral channels when there is a need. And the medical practitioner(s) do such as the pharmacist.

SECTION E: TRAINING/EDUCATION:

All parties to this agreement are expected to maintain up-to-date competencies and knowledge of current guidelines for disease states and practices covered under this agreement.

SECTION F: LIABILITY INSURANCE

All parties to this agreement are regulated under the department of health and shall maintain the practice as per standards allocated by the hospital for outpatient pharmaceutical care, the responsibilities for liability insurance are governed by the department of health or a practitioner may also have a personal liability insurance that covers their duties during the term of the agreement.

SECTION F: INFORMED CONSENT OF THE PATIENT

The pharmacist and medical practitioner shall obtain written informed consent from the patient upon first meeting and must kept as evidence in the patients records. A record of provision of care by a pharmacist and the medical practitioner shall be maintained in the patient’s medical and pharmacy record, which is available to the pharmacist and the medical practitioner.

Consent form sample

I..... have agreed to participate on the pharmaceutical care process at Mankeng hospital outpatient. I was explained to me by the both the pharmacist and medical practitioner or healthcare practitioner on the about the pharmaceutical care process that I will be receiving and that every information will be shared among the responsible practitioner for the purpose of care only. Other than that, it shall be kept confidential. The practitioner did explain the reason for my participation and the impact that this process could bring to my life in terms of improving my health and the needs of this program.

Patient name:..... Signature :..... Date:.....

Practitioner's name :..... Signature :..... Date :.....

SECTION G: DOCUMENTATION [SHARED ACCESS TO DOCUMENTATION]

The pharmacist and/or medical practitioner responsible shall document each scheduled visit with the patient in the patient's medical record. The documentation contained include but not limited to medical and medication history, assessment, recommendations, care plan initiation and monitoring, educational interventions, and decisions made including medical issues and drugs initiated, modifications, or discontinuation.

SECTION H: COMMUNICATION

The pharmacist and medical practitioner shall agree on changes and the communication process that needs to take place in terms of therapy, treatment plan or care plan modification. This will depend on the location and access from one another as per organisational arrangements. However the preferred way of interaction is face-to-face with practitioners co-located, or arranged way to access each other such practicing in one clinic and/or having a computer software that is to share information from demographics, medical records, laboratory records to pharmaceutical care and interventions

SECTION I: QUALITY ASSURANCE [MORE GENERAL LANGUAGE]

Care provided as a result of this collaborative practice agreement will be routinely evaluated on monthly intervals based on the severity or stability of the patient's condition then, 3 months to 6 months interval to assure delivery of high-quality patient care. The three months evaluations for the pharmaceutical care process will include the pharmacy section and medical section in terms of the standards of quality assurance under pharmaceutical care process.

SECTION J: REVIEW OF THE AGREEMENT AND MAXIMUM PERIOD OF VALIDITY:

This agreement shall be valid for a period not to exceed 2 years from the effective date. However, it may be reviewed and revised at any time at the request of any signatories.

SECTION K: RETENTION OF RECORDS

Members of the collaborative care practice shall keep a signed copy, written or electronic, of this agreement on file at their place of practice. All records of therapeutic interchange processes for patient shall be maintained in the patient's record accessible to both the pharmacist and medical practitioner in charge.

SECTION L: RESCINDMENT OR AMENDMENT OF AGREEMENT

A participant may withdraw this agreement, or a patient may withdraw from treatment under this agreement at any time if she/ he feels it's necessary. The pharmacist or medical practitioner may disregard this agreement whenever they deem such action necessary or appropriate for a specific patient without affecting the agreement relative to other patients and be done with consultation to affected parties.

SECTION M: REFERENCE

SECTION N: AGREEMENT SIGNATURES

This agreement includes parties under the care of the medical practitioner(s) and pharmacist(s), it may be amended from time to time based in the provided evidence or patient not agreeing continue.

Pharmacist: Signature: P No:.....

Date.....

Medical practitioner:..... Signature:..... MP No:

Date:.....

Table 5.2: Adopted pharmaceutical care plan process tool (Cipolle, et al., 2012)

ASSESSMENT				
PATIENT INFORMATION				
CONTACT INFORMATION	Name		Surname	
	Address			
	Cell phone numbers		Telephone	
	PHARMACY INFORMATION			
	Pharmacy name		Clinic name	
Tel		Tel		
DEMOGRAPHICS				
DEMOGRAPHICS	Age		Date of birth	
	Gender		Body weight	
	Height		Lean body weight	
	Pregnancy		Breastfeeding	
	Occupation			
	Living or family arrangements			
	Healthcare insurance/ medical aid			
REASON FOR THE ENCOUNTER				
MEDICATION EXPERIENCE			Need for attention in care plan(Y/N)	
	What is the patient's general attitude towards medication?			
	What does the patient wants/ expect form the drug therapy?			
	What concerns does the patient have in relation to his /her medication?			
	What is the extent of patient's understanding on her/his medication?			
	Are there any influence cultural, religious or ethical affecting the patient's adherence on medication?			
	Description of the patient's medication takin behaviour			

	Healthcare practitioners notes	Medical practitioner				
		Pharmacist				
SOCIAL DRUG USE						
SOCIAL DRUG USE	Substance	History of use	Substance	History of use		
	Alcohol		Caffeine			
	Nicotine		Other substances Specify:			
	Healthcare practitioner's comments	Pharmacist				
Medical practitioner						
ALLERIGES AND ALERTS						
ALLERIGES AND ALERTS	Substance and or medication allergies					
	Any past adverse drug reaction					
	Other alerts, health aids or special needs					
	Healthcare practitioner's notes	Pharmacist				
Medical practitioner						
CURRENT MEDICAL CONDITIONS AND MEDICATIONS						
CURRENT MEDICAL CONDITIONS AND MEDICATIONS	Indication	Drug product	Dosage regimen (dosage, route, frequency, duration)	Start date	Response (effectiveness/safety)	
	Healthcare practitioner's notes	Pharmacist				
Medical practitioner						
P A S						
P	A	S	Indication	Drug therapy	Response	Date

	Healthcare practitioner's notes	Pharmacist			
Medical practitioner					
PAST MEDICAL HISTORY(RELEVANT ILLNESS, HOSPITALISATION, SURGICAL PROCEDURE, INJURIES OR PREGNANCIES)					
	Healthcare practitioner's notes	Pharmacist			
		Medical practitioner			
NUTRITIONAL STATUS					
Calcium	Fibers	Potassium	Vitamin K		
Calories	Sodium	Cholesterol	Others		
OTHER FOOD OR DIETARY RESTRICTION					
VITAL SIGNS					
	BP		HR(bpm)		
			Respiratory rate		
			Temperature		
MEDICAL CONDITION'S SIGNS AND SYMPTOMS ACCORDING TO THE ANATOMICAL SYSTEM					
REVIEW OF SYSTEMS	General system	Poor appetite	Reproductive	Dysmenorrhea	
		Weight change		Incontinence	
		Pain		Impotence	
		Headache		Low sexual drive	
		Dizziness		Vaginal discharge or itching	
				Hot flashes	
	ENT	Change in vision	Kidney/urinary	Urinary frequency	
		Loss of hearing		Bloody urine (hematuria)	
		Ringing in the ears		Renal dysfunction	

	Bloody nose			
	Allergic rhinitis			
	Glaucoma			
Cardiovascular	Chest pain	Haematopoietic	Excessive bruising	
	Hyperlipidaemia		Bleeding	
	Hypertension		Anemia	
	Myocardial Infarction			
	Orthostatic hypotension			
Pulmonary	Asthma	Musculoskeletal	Back pain	
	Shortness of breath		Arthritis pain (osteo/rheumatoid)	
	Wheezing		Tendonitis	
			Painful muscles	
Gastrointestinal(GIT)	Heartburn	Neuropsychiatric	Numb, tingling sensation in extremities (parasthesia)	
	Abdominal pain		Tremor	
	Nausea		Loss of balance	
	Vomiting		Depression	
	Diarrhoea		Suicidal	
	Constipation		Anxiety, nervousness	
			Inability to concentrate	
	Seizure			
	Stroke/TIA			
	Memory loss			
Skin	Eczema	Infectious disease	HIV/AIDS	
	Psoriasis		Malaria	
	Itching (pruritis)		Syphilis	
	Skin		Gonorrhoea	
	Rash		Herpes	
Endocrine system	Diabetes		Chlamydia	
	Hypothyroidism		Tuberculosis	

		Menopausal			
		Symptoms			
	Hepatic	Cirrhosis			
		Hepatitis			
	Nutrition/ fluid/electrolyte	Dehydration			
		Edema			
Potassium deficiency					

DRUG THERAPY PROBLEM TO RESOLVE

DRUG THERAPY PROBLEMS	Medical condition and drug therapy involved	Indications
		Unnecessary Drug Therapy <input type="checkbox"/> No medical indication <input type="checkbox"/> Duplicate therapy <input type="checkbox"/> Nondrug therapy indicated <input type="checkbox"/> Treating avoidable ADR <input type="checkbox"/> Addictive/recreational Needs Additional Drug Therapy <input type="checkbox"/> Untreated condition <input type="checkbox"/> Preventive/prophylactic <input type="checkbox"/> Synergistic/potentiating
	Medical condition and drug therapy involved	Effectiveness
		Needs Different Drug Product <input type="checkbox"/> More effective drug available <input type="checkbox"/> Condition refractory to drug <input type="checkbox"/> Dosage form inappropriate <input type="checkbox"/> Not effective for condition Dosage Too Low <input type="checkbox"/> Wrong dose <input type="checkbox"/> Frequency inappropriate <input type="checkbox"/> Drug interaction <input type="checkbox"/> Duration inappropriate
	Medical condition and drug therapy involved	Safety
		Adverse Drug Reaction <input type="checkbox"/> Undesirable effect <input type="checkbox"/> Unsafe drug for patient <input type="checkbox"/> Drug interaction <input type="checkbox"/> Dosage administered or changed too rapidly <input type="checkbox"/> Allergic reaction <input type="checkbox"/> Contraindications present Dosage Too High <input type="checkbox"/> Wrong Dose <input type="checkbox"/> Frequency inappropriate <input type="checkbox"/> Duration inappropriate <input type="checkbox"/> Drug interaction <input type="checkbox"/> Incorrect administration
	Medical condition and drug therapy involved	Compliance

				Noncompliance <input type="checkbox"/> Directions not understood <input type="checkbox"/> Patient prefers not to take <input type="checkbox"/> Patient forgets to take <input type="checkbox"/> Patient cannot afford <input type="checkbox"/> Cannot swallow/administer <input type="checkbox"/> Drug product not available
	Healthcare practitioner's notes	Pharmacist		
		Medical practitioner		
Total drug therapy problems identified				
CARE PLAN				
	Indication			
	Goal of therapy			
	Drug problem to be resolved			
	Therapeutic alternatives			
PHARMACOTHERAPY PLAN				
	Medication	Dosage instruction		Notes to change
	Non-pharmacological measure			
	HealthCare practitioner's notes	Pharmacist		
		Medical practitioner		
	Schedule for next appointment			
	Healthcare practitioners			
	Signature			
	Date			
EVALUATION				
	Medical condition			Date
	Outcome parameter	Pre-treatment baseline	First evaluation	Second evaluation
EFF ECT IVE	Signs/symptoms			

	Laboratory values			
SAFETY	Signs/symptoms			
	Laboratory values			
OUTCOMES	Initial: goals established, initiate new therapy			
	Resolved: goal achieved, therapy completed			
	Stable: goals achieved continue with the same therapy			
	Improved: adequate progress seen, continue with the therapy			
	Partial improved: progress visible, adjust therapy			
	Unimproved: no progress, continue with the same therapy			
	Worsen: decline in health, adjust therapy			
	Failure: therapy goal not achieved, stop and initiate a different therapy			
	Any new drug therapy problem presented?			
	Next follow-up schedule		Comments	
	Date			
	Signature	Pharmacist		
	Medical practitioner			
	Patient			

This could also be digitalised in the form of a application or software that could accommodate the process of pharmaceutical care into the normal dispensing pharmacy

system through an advanced technology (this process depend on the availability of resources in our public healthcare sector)

Requirements (environmental, legal, healthcare participants and remuneration).

Environmental needs include a selected or established area or facility for practice and the resources like communication resources, documentation resources which include paperwork, digital resources such as computers and furnished software.

1. The communication channels should be based on, more face-to-face interaction hence the one of requirements it's a practice facility.
2. Formally established documentation process of communication in the patient file or digital patient file where both pharmacists and medical practitioners put notes and recommendations according to the developed system. This means it's a filing system which like retail cooperative companies are able to share information e, g., UNISOLVE (Celario & Mistry, 2020).
3. The use of technology its important in the current era of pharmacy practice hence, collaborative pharmaceutical care as a speciality requires systems which is more sophisticated than the traditional dispensing functions. The requirements include a system that consist of data entry, drug utilisation review, prescription verification, and assist in judgments in relation to referral information, medication effects, adverse effects, and ensure the healthcare practitioners are capable of updating drug dosages, perform drug/disease and risk assessment and mitigation strategy counselling, capture responses to clinical assessments, and track outcomes (Celario & Mistry, 2020).
This will allow the practitioners to handle tactical and operational tasks demanding complex judgment, critical thinking and decision-making, and patient interaction. This could be done in the form of a collaborative pharmaceutical care apps and website mainly for both healthcare professionals with the standards incorporated to allow interaction and patient management (Raney, *et al.*, 2017).

This suggests development of a digital system or software with pharmaceutical care application that allow pharmaceutical care planning, information sharing and patient care assessment. (This in line with furthering this study)

4. This can be followed by the digital means of which, if possible, should be individualised to each participating member for example individualised call extension including but not limited to pharmacists and medical practitioners.
5. The participation of in the care process should be selected pharmacists and medical practitioners with enough clinical pharmaceutical and collaborative care knowledge and other healthcare professionals whose duties are based on assisting such nursing practitioners and other referral healthcare practitioners.
6. Remuneration structures are always raised as a prominent issue that needed to be considered by stakeholders in the context of the viability and sustainability of services (Hattingh, *et al.*, 2020). However as this is about developing that will be directed to the governing bodies.

This will promote aspects such proactive interaction, improved pharmacists, and medical practitioner relationship, a more horizontal than vertical integration among healthcare professionals and lastly high-quality provision of collaborative pharmaceutical care process.

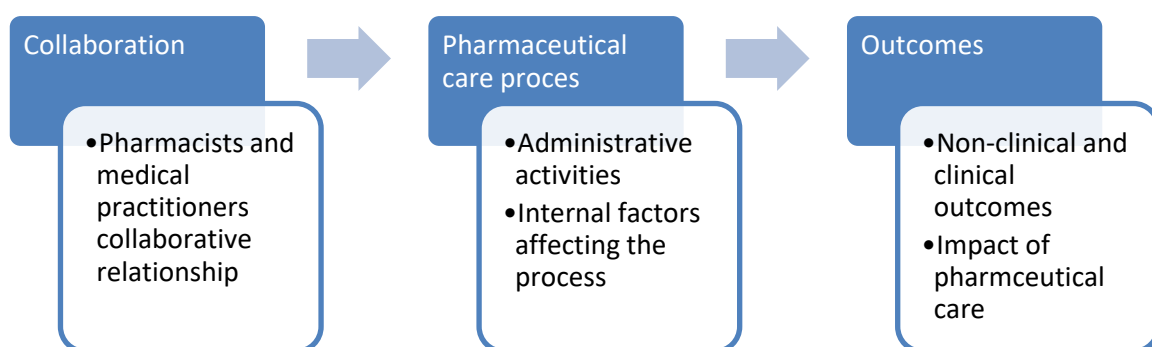


Figure 5.3: Pharmacist-medical practitioner collaboration for pharmaceutical care

Collaboration process

The collaboration process is based on the previous established process which were discussion of the external and relationship factors as per conceptual framework.

Pharmaceutical care process.

This includes administrative factors such as documentation, availability of resources and stock and human resources. And internal factors that includes the clinical factors which include the severity of the patient's conditions, the length of treatment and the type of condition being treated.

Outcomes

This includes the non-clinical and clinical outcomes of the patient's condition and the impact on the patient life, care process in general and the hospital.

5.2.4.5. Action plan.

This section outline activities that are going to actioned by the researcher in promoting awareness on the researched topic and also assist in bring vision of the researcher into reality and implementation of some strategies to help improve patient care.

This section also explains future directions or decision that will be taken to implement the suggested strategies and how the results are going to be shared within the academic sector and public health sector. The targeted population in this study is the hospital management, healthcare practitioners, clinical management, head of sections in internal medicine and pharmacy manager, the academic institutions such University of Limpopo and the department of health.

The study aimed at exploring the pharmacist-medical practitioner collaboration and also developing strategies that will nature the development of the relationship and collaborative practice for pharmaceutical care.

From the strategies developed, the researcher will do the following

- Prepare presentation.
- Setup dates for presentation with the relevant personnel and departments.
- Share the information with the targeted personnel and relevant departments through a presentation.
- Share the information with the relevant regulatory bodies, the SAPC, HPCSA and other regulatory bodies within the department of health.
- Further explore the development of a digital version of the pharmacist-physician collaboration for pharmaceutical care model.
- Publish the research findings.

5.3. SUMMARY

This chapter included strategies and a model that could be used to improve the relationship and collaborative practice for pharmaceutical care between pharmacist and medical practitioners.

CHAPTER 6

6.1. INTRODUCTION

This chapter consist of the summary of the results obtained and discussion, conclusion, the strength and limitation of the study and also recommendations based on the results of the study and the researcher vision and the literature for pharmacist-medical practitioner collaboration.

6.2. CONCLUSION

Collaborative pharmaceutical care practice among pharmacist and medical is a concept that still needs to be improved as most demonstrated no relationship and lack of knowledge about collaborative relationship. Pharmaceutical care concept is more of a theoretical process to both healthcare professions that needs a lot of guidance to be put into practice, especially for the pharmacists who are the main profession bearing the responsibility of collaborating with other healthcare practitioners. This suggest the urgency of increased pharmacist manpower and participation a patient cantered care as advanced as the current advanced patient care practice's needs. The strategies and a model of pharmacist medical practitioner collaboration for pharmaceutical care were developed to enable quality, cost effective, collaborative, and advanced care practice in our hospitals. The strategies range from improved interaction and communication processes, resource availability, and support from management, regulatory bodies, academic institutions, and the department of health in Limpopo province. These recommended strategies also include the use of advanced technology in our public sector.

6.3. RECOMMENDATIONS

The following recommendation were made based on the study's results:

- General procedure for development of proactive collaborative pharmaceutical care.

- Established proactive way of communication and interaction such as platforms for interaction, education and training among the healthcare professionals with regulated and continuous interactions among both parties.
- Improvement of infrastructure and availability of stock and resources needed to collaborate.
- An enhanced transparency, competency, understanding and appreciation in the roles and responsibility of the healthcare professionals including in collaboration.
- Established proactive system for collaboration process facilitated and strengthened from or up until management
- Increased number of pharmacists or workforce.
- Regulatory bodies should show support on the process collaboration and specialisation by pharmacists.
- Encourage establishment of academic training, practice and collaboration with the healthcare sector on provision of collaborative pharmaceutical care curricular.
- Encourage change in attitude and behaviour change by healthcare professional toward provision of collaborative pharmaceutical care.
- Pharmacist-medical practitioner collaboration pharmaceutical care model.
- Addition of a formal section of pharmacotherapy progress notes documentation in the patient's file.
- Establish a supplementary prescribing practice under pharmacist-initiated therapy.

6.4. LIMITATION AND THE STRENGTH OF THE STUDY.

The study was conducted at only one tertiary hospital, at Mankweng Tertiary Hospital which does not give a full view of what other hospitals in South Africa. The other limitation might be that the study population only included pharmacist and medical practitioner of which might come as a narrow point of view in terms of collaborative practice. It was not always easy to access medical practitioners and pharmacist due the busy schedule which reduced the data collection capacity for example pharmacist and medical practitioners who provide service to the local clinics and those on the night shift. And also the number of pharmacists and medical

practitioners in this study compared to the total number of pharmacists and medical practitioners at the hospital is small therefore might affect the process of transferability into a larger scale.

The strength of this study is on the fact that the study was conducted in tertiary hospital in the province that have broad range of specialities, thus healthcare professional with a diverse knowledge. And also the medical practitioners that work at Mankweng hospital especially the specialists also rotate to Polokwane hospital which offer advantage in the level of knowledge acquired.

6.5. CLOSURE

In this chapter, concluding summaries and recommendations were made. The aim of this study was to explore the pharmacists-medical practitioner collaborative practice in the provision of pharmaceutical care in the Mankweng hospital outpatient department. The objectives of this study which include to explore the current collaborative relationship between pharmacists and medical practitioners in a hospital outpatient pharmaceutical care service setting; to assess the perspective of both the pharmacists and medical practitioners on the collaborative care practice; and to determine the barriers affecting pharmacists-medical practitioner collaboration in outpatient hospitals setting for pharmaceutical care, were met. the limitation and strength of this study were also presented which include generalising the results, the availability and accessibility of the participant and the study location and range of specialities available. The recommendations were made which highlighted the need for pharmacist-medical practitioner collaboration.

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7. APPENDICES

7.1. APPENDIX A: INTERVIEW GUIDE

EXPLORING THE PHARMACIST-MEDICAL PRACTITIONER COLLABORATION ON OUTPATIENT PHARMACEUTICAL CARE AT MANKWENG HOSPITAL IN LIMPOPO PROVINCE, SOUTH AFRICA									
Section A	Demographics								
Categories									
Gender	Male								
	Female								
Age	20-29		30-39		40-49		≥50		
Profession	Pharmacist								
	Medical practitioner								
Years of work experience	1 to 2		3 to 4		5 to 6		7 to 8		≥10
Area of practice									
Section B : Centralised questions									
How would you describe the current relationship and collaborative practices between pharmacists and medical practitioners in the provision of outpatient pharmaceutical care services?									
What is your perspective/view on pharmacists-medical practitioners collaboration in the provision of outpatient pharmaceutical care services?									

What do you think could be the barriers affecting the pharmacist-medical practitioner collaboration in the provision of outpatient pharmaceutical care services?

What would you recommend to improve of pharmacist-medical practitioner collaboration in the provision outpatient pharmaceutical care service?

7.2. APPENDIX B: TREC ETHICAL CLEARANCE



University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE
ETHICS CLEARANCE CERTIFICATE

MEETING: 21 October 2020

PROJECT NUMBER: TREC/314/2020: PG

PROJECT:

Title: Exploring Pharmacist-Medical Practitioner Collaboration On Outpatient Pharmaceutical Care at Mankweng Hospital in Limpopo Province, South Africa
Researcher: MS Bopape
Supervisor: Mr TL Manyama
Co-Supervisor/s: Mr RM Tshitake
School: Health Care Sciences
Degree: Master of Pharmacy in Pharmacy Practice

PROF P MASOKO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE


The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:

- i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
- ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
- iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

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7.3. APPEDIX C: PROVINCIAL DEPARTMENT OF HEALTH APPROVAL LETTER

**LIMPOPO**
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref : LP_2020_11_031
Enquires : Ms PN Motimele
Tel : 015-293 6028
Email : Phoebe.Mahlokwane@dhsd.limpopo.gov.za

Mack Bopape

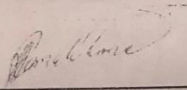
PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Exploring Pharmacist-Medical Practitioner Collaboration on Outpatient Pharmaceutical Care at Mankweng Hospital in Limpopo Province, South Africa.

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
 - a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
 - b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
 - c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
 - d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
 - e. The approval is only valid for a 1-year period.
 - f. If the proposal has been amended, a new approval should be sought from the Department of Health
 - g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated



AJ Director Research
Dr. Ramalivhana NJ

08/02/2021


Date

Private Bag X9302 Polokwane
Fidel Castro Ruz House, 18 College Street, Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.
Website: <http://www.limpopo.gov.za>

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7.4. APPENDIX D: DEPARTMENT OF MANKWENG HOSPITAL

Restricted

 **LIMPOPO**
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

**DEPARTMENT OF HEALTH
MANKWENG HOSPITAL**

Ref: S5/3/1/2

Enq: Modula MC

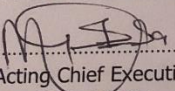
From: HR Utilization and Capacity Development

Date: 12 MARCH 2021
TO : BOPAPE M.S

**REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT MANKWENG HOSPITAL:
Exploring the pharmacist medical practitioner collaboration on outpatient
pharmaceutical care.**

1. The above matter has reference.
2. This is to confirm that the CEO has granted permission to conduct research on **"exploring the pharmacist medical practitioner on outpatient pharmaceutical care"**.
3. Attached please find his application letter, approval from Provincial Office, Research Proposal, and Ethic Committee Clearance Certificate.

Yours in service delivery


.....
Acting Chief Executive Officer
Mrs. Kobela ME

17/03/2021
.....
Date

Private Bag X1117, SOVENGA, 0727 Tel: 015 286 1000 Fax: 015 267 0206
Houtbos Road, Sovenga
Restricted
The heartland of Southern Africa – development is about people!

7.5. APPENDIX E: CONSENT FORM

Research title: Exploring the pharmacist-medical practitioner collaboration for outpatient pharmaceutical patient care in a hospital setting at Mankweng hospital in Limpopo province, South Africa.

RESEARCHER: BOPAPE M.S.

SUPERVISOR: Mr MANYAMA T.L.

I..... hereby voluntarily consent to participate in the above-mentioned project. I have been invited to participate in the study. I have had the opportunity to ask additional questions and have been answered satisfactorily. I have been given enough time to decide about participation. I understand that:

1. The study is about exploring the relationship between pharmacists and medical practitioners at a public hospital for the development pharmacist-medical practitioner collaboration model to improve outpatient pharmaceutical patient care in a hospital setting.
2. The Turfloop Research Ethics Committee and the Mankweng hospital has approved that individuals may be approached to participate in the study.
3. The research project, i.e. the extent, aims and methods of the research, have been explained to me. Any questions that I may have regarding the research, or related matters, will be answered by the researcher/s.
4. Participation in this research is voluntary and I can withdraw my participation at any stage. I have been assured that the information obtained from me will remain anonymous and confidential and to be solely used for the purpose of this research.

Signature of participant.....

Signature of witness

Signature of investigator

