# INTER-PROFESSIONAL COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS: GENERAL PRACTITIONERS' PERSPECTIVES

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**KEYWORDS**

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Collaboration

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## ABSTRACT

**INTER-PROFESSIONAL COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS: GENERAL PRACTITIONERS' PERSPECTIVES**

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The global movement towards enhancing inter-professional collaboration in patient care is in light of the increasing potency of drugs and complexity of drug regimens, particularly in the chronically ill where poly-pharmacy is rife, collaborative patient management by general practitioners and community pharmacists, in particular, has the potential to enhance patient therapeutic outcomes in primary healthcare.

Literature from other parts of the world has enumerated the advantages of collaboration. South Africa with its unusual quadruple burden of disease and human resource deficient public healthcare system would benefit from collaboration between general practitioners and community pharmacists through expanded roles for community pharmacists to enable them to make more meaningful contributions to primary healthcare regimens. Particularly with the introduction of the National Health Insurance (NHI) programme.

This dissertation aims to assess from general practitioners' perspectives: the current level and stage of collaboration (using the collaborative working relationship (CWR) model proposed by McDonough and Doucette, 2001) between general practitioners and community pharmacists in patient care, if general practitioners' perceptions of the professional roles of community pharmacists in patients' care can influence desired collaboration (prospects of enhanced future collaboration) and how do general practitioners envision enhanced future collaboration between them and community pharmacists in patient care, possible barriers to the envisioned collaboration between the two practitioners, and how general practitioners'

demographic characteristics influence inter-professional collaboration with community pharmacists.

Sixty randomly selected consenting general practitioners in private practice participated in a cross-sectional, face- to-face questionnaire study. The questionnaire contained a range of statements with Likert scale response options. Data was initially entered into Epi Info (version 3.5.1., 2008) and then exported to IBM SPSS Statistical software for analysis (version19, 2010). Medians were used to summarize descriptive data and Spearman's correlation coefficient, Mann-Whitney U Test and Kruskal-Wallis Test was used for bivariate analysis. Ethical approval was granted by the Senate Research and International Relations Committee, University of the Western Cape (Ethical Clearance Number: 10/4/29).

The results indicated low-levels of current collaboration at stage 0 of the CWR model between general practitioners and community pharmacists. A statistically significant correlation was observed between general practitioners' perceptions of the professional roles of community pharmacists and desired collaboration (prospects of enhanced future collaboration), [p=0.0005]. Good prospects of enhanced future collaboration between general practitioners and community pharmacists were observed. General practitioners identified barriers to collaboration to include: the lack of remuneration for collaboration, absence of a government mandate or policy supporting collaboration, inability of general practitioners to share patients' information with community pharmacists and questionable professional ethics exhibited by community pharmacists particularly over financial gains. Most general practitioners agreed that joint continuing professional education organized by pharmaceutical companies or other groups will increase interaction and enhance collaboration.

Enhanced Inter-professional collaboration between general practitioners and community pharmacists' can be possible in the future but hindrances need to be eliminated for this to be achieved. Future research can be aimed at exploring the perspectives' of community pharmacists to inter-professional collaboration in South Africa and interventions that will enhance collaboration.

May 2012.

## DECLARATION

I declare that *Inter-professional Collaboration between General Practitioners' and Community Pharmacists: General Practitioners' Perspectives* is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Elizabeth Oyebola Egieyeh

May 2012

Signed……..

## ACKNOWLEDGEMENTS

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| | |
|---|---|
| AIDS | Acquired immune deficiency syndrome |
| CPA | Collaborative Practice Agreements |
| CWR | Collaborative Working Relationship |
| DALY's | Disability-adjusted life-years |
| DoH | Department of Health |
| HIV | Human Immunodeficiency Virus |
| HPCSA | Health Professions Council of South Africa |
| IFP | International Pharmaceutical Federation |
| NHI | National Health Insurance |
| SAMA | South African Medical Association |
| UK | United Kingdom |
| WHO | World Health Organization |

# CHAPTER ONE

## INTRODUCTION

Globally, there is a growing trend towards enhancing collaborative practices between general practitioners and community pharmacists who are involved in patient management with the aim of improving therapeutic outcomes (Woodend, 2003; Bajcar *et al.*, 2005; Department of Health, England, 2006). Enhanced inter-professional collaboration in drug management is needed in light of the ever increasing potency of drugs and complexity of drug regimens, particularly in the chronically ill where poly-pharmacy is most often the standard rather than an exception (Chobanian *et al.*, 2003; Canadian Diabetes Association, 2003; Bajcar *et al.*, 2005). Moreover, medications can have side effects, can produce adverse reactions, and may interact with other medications, food, or over-the-counter medicines leading to adverse events in patients (Lee *et al.*, 2009).

Studies in England and South Africa have shown that the pharmacy is used as a 'first port of call' for minor ailments by most people (Gilbert, 1998; Hassell *et al.*, 2000; Hammond *et al.*, 2004). A ministerial statement from the Department of Health (DoH) in England states that most people (99%), irrespective of their location can access a pharmacy within 20 minutes by car, walking or public transport (DoH, England, 2006). Hence, community pharmacists are easily accessible sources of primary care (International Pharmaceutical Federation, 2007). They can also act as referral points for general practitioners (Hassell *et al.*, 2000).

A systematic review of studies addressing drug-related problems that resulted from visits to the emergency department showed that medications were responsible for approximately 28% of emergency visits to hospitals and such medication related problems are believed to be preventable in more than 50% of the cases (MacDonell & Jacobs, 2002; Howard *et al.*, 2003). Furthermore, a prospective study of fourteen United Kingdom (UK) community pharmacies also showed that the prescriber had to be informed to make clinical pharmacy interventions on 80 (0.89% of items dispensed) occasions out of 9000 items dispensed, and an independent clinical panel assessed that 15 (0.35% of items dispensed) could have resulted in hospital admission if unidentified and unchanged (Hawksworth & Chrystyne, 1994).

Another benefit that is obtainable from the collaboration between general practitioners and community pharmacists was highlighted in an asthma-management study conducted at the University of Tasmania, Australia. This study confirmed that patients' health outcomes can be improved if pharmacists are more completely involved in their care. Participants who had been actively involved in reviewing patients dispensing histories were used as study participants. They provided educational resources such as the Asthma Foundations' asthma fact brochure to educate patients who may not have thought their symptoms of asthma required review. The information provided by the pharmacists to their patients suggested that the patients need to visit their general practitioners to discuss their current asthma management. The interventions resulted in fewer patients being reliant solely on reliever medication and encouraged more appropriate use of preventers (Bereznicki *et al.,* 2008).

Also, a study conducted in Hong Kong showed that a pharmacist–physician co-managed programme for hyperlipidaemic patients effectively assisted patients in reaching target lipid levels. In this study, pharmacists interviewed patients in the intervention group for 15-30 minutes after their regular clinic visit to provide consultation on the drug regimen and lifestyle modifications. A telephone follow-up every 4 weeks and a follow-up interview on the date of the physician visit were scheduled while patients in the control group received routine conventional care (Lee *et al.,* 2009).



A joint statement by the International Pharmaceutical Federation (IFP) and World Medical Association at the 1998 Pharmacy World Congress, The Hague, Netherlands, reiterated the extent of dependency between the roles of the physicians and pharmacists in achieving optimal medicinal therapy. It also stated that practitioners need to recognize and respect each other's professional competence, communicate effectively and be trustworthy for this to be achieved (Pharmacy World Congress, 1998).

Moreover, given the extent of medicine management issues and the possibility of more efficient use of resources within the healthcare system, it is important that general practitioners and community pharmacists cooperate to combine their skills

in order to address and avert drug related problems, improve therapeutic outcome and promote judicious use of resources (DoH, England, 2006). However, conflict between general practitioners and community pharmacists over determination of professional task boundaries and domain greatly undermines the benefits obtainable from such collaboration (Gilbert, 1998).

There is a dearth of published studies addressing this important issue in South Africa and little is known about the perceptions of pharmacists or general practitioners towards collaboration in practice. Several factors have been suggested which might have inhibited collaboration within the healthcare team (Dobson *et al*., 2006; Bradley *et al*. 2008). This includes the difference in status, prestige and power accorded to different members of the healthcare team (Harding & Taylor, 1990). Additionally a lack of communication and misunderstanding of roles by general practitioners and other members of the primary healthcare team have been reported to undermine the potential of the primary healthcare team (Pringle *et al.*, 2000; Sicotte *et al*, 2002). Some studies conducted in Canada, Europe and the United States of America (USA) investigated the attitudes of general practitioners to inter-professional collaboration with community pharmacists (Howard *et al.*, 2003; Bryant *et al.*, 2009; Pojskic *et al.*, 2009) but none have thus far been done in South Africa, which has its own peculiar burden of disease, political, and historical backgrounds.



The primary objective of this thesis is to determine the extent of inter-professional collaboration between general practitioners and community pharmacists. To achieve this, the perspective of the general practitioners on the current level and stage of collaboration with community pharmacists in patient care on the one hand, and the perceptions of the professional roles of community pharmacists and how they can influence the desired collaboration between them, were assessed. Furthermore, how general practitioners envision enhanced future collaboration between them and community pharmacists in patient care as well as possible barriers to the envisioned collaboration between general practitioners and community pharmacists in patient care in South Africa were also assessed.

The second chapter summarizes a review of relevant literature that corroborates the positive influence of enhanced collaborative practices between general practitioners and community pharmacists on patients' health outcomes. These advantages are extracted from local and international government policies and legislative documents, statements from local and international pharmacy and medical professional bodies, published research study findings and reviews. The added advantage of enlisting and judiciously utilizing community pharmacists in the poorly resourced primary healthcare system in South Africa as is done in some other parts of the world was also emphasized.

In the third chapter, the research aim and objectives are outlined. Chapter four presents the research design and the methods used in executing the study, statistical and ethical issues. Results obtained in the thesis are presented in chapter five. Data was descriptively and inferentially analyzed, and a summary of the main findings concludes chapter five. The main findings observed in the thesis are discussed in chapter six with the main hypothesis and the research questions being central to the discussion. Chapter seven concludes the thesis and it contains conclusions and recommendations generated in the course of the study.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 INTRODUCTION

This chapter presents literature reviewed from published research study findings, reviews, government policies, legislative documents, statements from pharmaceutical and medical professional bodies, and the World Health Organization (WHO). The review explores collaboration as a global phenomenon in different organizations then focuses on the healthcare system. Conclusions are reached here that for safe delivery of effective healthcare, collaboration is essential. Historical interdependence of pharmacy and medicine is established with the subsequent separation and advancement, of the roles of pharmacists. Primary healthcare is reviewed; evidence and advantages of collaboration in hospitals and clinics are outlined. Global trends in inter-professional collaboration between general practitioners and community pharmacists, the need for it and the benefits thereof are reviewed. Lastly, the benefits of collaborative practices between general practitioners and community pharmacists to South Africa with its peculiar quadruple burden of disease are also highlighted.



## 2.2 COLLABORATION: A GLOBAL PHENOMENON

Organizations, consultants, practitioners, and academics worldwide are increasingly commending the importance of collaboration and the significant benefits it promises, inter alia, improved customer service, better inventory management, more efficient use of resources, and increased information sharing (Daugherty *et al*., 2006). With these in view, many organizations are now reliant on teamwork as it has been confirmed that the success or failure of an organization depends on the ability of its people to work together effectively in teams (Smith-Blancett, 1994; Margerison & McCann, 1995; Mohrman, Cohen & Mohrman, 1995; Edelman *et al.*, 2004). Examples of collaborative practices can be seen in the automobile industry between General Motors (GM) and Consolidated Freightways (CNF); suppliers and retailers like Wal-Mart and Procter & Gamble (P & G) are using the collaborative planning forecasting and replenishment (CPFR) profiles to meet the demands of consumers (Attaran, 2004).

## 2.3 COLLABORATION IN THE HEALTHCARE SYSTEM

Effective and safe delivery of healthcare is a major concern of the governments of most countries in the world. It is typical for countries to allocate a portion of health budgets towards ensuring the provision and delivery of this standard of healthcare. The delivery of healthcare services is committed to qualified health professionals such as doctors, nurses, pharmacists, physiotherapists, and several others. Each of these varied health practitioners is independently professional in their various areas of expertise (Knox & Simpson, 2004). For effective and safe delivery of healthcare, health professionals need to collaborate, communicate, and engage in teamwork (Kohn *et al.,* 2000).

Team work can be viewed by employers and staff as an asset, but it is a prerequisite for patients. Cohen and Bailey, (1997) defined a team as a group of individuals who see themselves as a unit in one or more social systems and are mutually-dependent in executing their tasks, share the liability for the outcomes, and are able to cordially relate across organizational borders. In a research report authored by Oandasan *et al.* (2006), it is stated that different kinds of teams are available in healthcare although not all health professionals operate as teams. In this regard, teamwork can then be defined as the connection between two or more health professional relying on each other to provide care for the patients. Teamwork requires that members of the team are interdependent, work collaboratively and benefit from doing so to provide patient centred care. Team members are required to communicate or share information and share decision making where necessary. The author's opinion is that teamwork can, therefore, be seen as a product of collaboration. Collaboration is also defined as the process of developing interactions and relationships between health professionals despite being part of a team or not (Oandasan *et al.* 2006). Therefore, collaboration can exist amongst health practitioners who are not a team, particularly amongst independent private practitioners in community settings.

Inter-professional collaboration within healthcare teams has been described as an efficient, effective and satisfying way to offer healthcare services (Alpert *et al.,* 1992; Baker *et al.,* 2006). It is a process through which independent professionals voluntarily and collectively work together to meet patients' healthcare needs after

necessary negotiations and the removal of all forms of competitiveness between different professionals and health institutions has been achieved (San Martin-Rodriguez *et al*., 2005). A recent national report on the direction of primary care delivery in Canada has advised that prescription drugs could be more effective if individual patients are monitored continuously by teams and networks of healthcare providers (Bajcar *et al.*, 2005).

Different kinds of collaboration occur depending on the type of care required by the patient. Interdependent and inter-professional practices are established when healthcare requires referral to another professional. Way *et al.* (2000) defined collaborative practice as the process of using inter-professional communication and decision making that promotes collaboration based on shared knowledge and a range of professional skills to affect patient care. This idea of collaborative practice is shared by McDonough and Doucette, (2001) in their collaborative working relationships (CWR) model which defines the processes (stages) that relationships, particularly between general practitioners and community pharmacists, need to go through before commitment to collaborative practices are achieved between health professionals.



### 2.3.1 ELEMENTS ESSENTIAL FOR COLLABORATION

Certain essential interdependent elements have been found to contribute to the process of collaboration (Poulton & West, 1999). Thompson JD, in his 1967 model of organizational theory described collaboration as "high-level cooperativeness and assertiveness to solve problems where there are common interests and the stakes are high" (Thompson, 1967). From this description co-operation and assertiveness are identified as essential elements for collaboration. Communication, trust, self-confidence, confidence in other healthcare partners, autonomy, mutual respect, and the feeling of shared responsibility are other elements required for effective collaboration (Oandasan *et al.*, 2006). Researchers have also described certain specific competencies related to the essential elements described above that have been found to influence effective collaboration. These competencies include: knowledge of healthcare professional roles, ability to communicate effectively with other health professionals, ability to appreciate the roles of other health

professionals, attitudes related to mutual trust, and willingness to collaborate (San Martin-Rodriguez *et al.*, 2005; D'Amour & Oandasan, 2005; D'Amour *et al.*, 2005). Oandasan *et al.* (2006) stated that these competencies prove that being an effective collaborator can be learned. The importance of effective communication between healthcare professionals was emphasized in the report of an observational study of communication in operating rooms carried out by Lingard *et al.* (2004). They found that one-third of the exchanges between staff failed and a third of these communication failures potentially jeopardized patients' safety. San Martin-Rodriguez *et al.* (2005) explained that for effective collaboration, clear structures that outline team objectives, roles and responsibilities of team members, mechanisms for exchanging information, and co-ordination mechanisms for team activities and staffing, all need to be put in place.

Globally, collaborative practices are being explored between different members of the healthcare team to develop, test and evaluate new models of service delivery that would improve patients' health outcomes (Sellors *et al.*, 2003; Bajcar *et al.*, 2005). Makowsky *et al.* (2009) in Canada carried out a qualitative research using key informant interviews and reflective journaling to gather information on the working relationships existing between pharmacists, physicians and nurse practitioners in an inpatient medical setting. It was designed as a multicentre, controlled clinical trial of team-based pharmacist care in hospitalized medical patients. Data analysis was done using a phenomenological approach. The primary tool used to categorize and identify emerging themes was content analysis. In the course of introducing pharmacists into the medical team, the researchers observed that they had moments of exhilaration when they developed trusting relationships and made positive contributions to patient care. They also had unpleasant moments when they had to struggle with documentation and workload. On the whole, all participants agreed that the integration of pharmacists into the teams improved team drug-therapy decision making; hence, it positively improved patient health outcomes. An increased awareness of the potential roles of all the team members was observed in this study. This would engender appreciation of the role each team member has to play and health professionals can benefit from working together as a team. The authors opined that 'focused attention on how practice is structured, team process

and on-going support would enable successful implementation of team-based care in a larger context' (Makowsky *et al.*, 2009).

The influence of the awareness of the professional roles and skills of each member of the healthcare team on collaborative practice is also emphasized in a study carried out in the United Kingdom. Dalley and Sim, (2001) studied nurses' perceptions of physiotherapists as members of the rehabilitation team, using semi-structured interviews. Experienced rehabilitation nurses were recruited in two rehabilitation wards within a National Health Service Trust (NHST). They observed that nurses' perceptions of the roles and skills of physiotherapists were limited to mobility and movement and as such they presumed physiotherapy to be specific and measureable compared to nursing which they believed was generalized and undefined. Nurses also perceived that physiotherapists lacked adequate knowledge of the nursing profession. They considered the two professions to have distinct and different roles in rehabilitation. These perceptions influenced collaboration between the nurses and physiotherapists and created barriers to rehabilitation of patients as nurses were underestimating the role and knowledge of physiotherapists based on their perceptions. Nurses and physiotherapists would need to imbibe the competencies outlined earlier to be effective collaborators so that their patients can benefit from their professional training through collaborative practices.



Collaboration between healthcare practitioners in the hospital or clinical setting with the typical institutionally based enclosed manner is enhanced by the proximity they enjoy (Harding & Taylor, 1999). Baggs and Schmitt, (1997) in their study of collaboration among residents and nurses identified that they had to be in close proximity. In private primary healthcare community settings, collaboration between independent health practitioners might be hindered by more factors than are obtainable in hospital settings. The practice of medicine and pharmacy in the community has existed since the separation of pharmacy from medicine in the 19$^{th}$ century.

## 2.4 HISTORICAL INTER-DEPENDENCE OF PHARMACY AND MEDICINE

Historically, pharmacy and medicine were practiced as a single profession. The increase in scientific, medical and pharmaceutical knowledge made this intertwining impossible as the task allotted to each began to increase and diverge (Angorn & Thomison, 1985; Cowen, 1992; Gilbert, 1998). Later it became increasingly necessary and reasonable to differentiate medicine from pharmacy as two independent professions (Angorn & Thomison, 1985; Flannery, 2001). With the role differentiation, physicians made diagnoses of health conditions and prescribed appropriate medications while pharmacists compounded and dispensed such medications (Matowe *et al.,* 2006). Since the 1990s however, the role of the pharmacist has evolved from being drug-based to being patient-oriented, incorporating roles in health promotion and medication management reviews and modelling the concept of pharmaceutical care, thereby earning pharmacists a role in primary healthcare (Anderson, 2007; Rigby, 2010). Sadly, the differentiation of the roles of the general practitioner and pharmacist has also led to the disintegration of relationships between the two professions (Turner, 1995). Moreover, recent literature has shown this to be a disadvantage to the patient and the healthcare system, particularly in community practice (Bajcar *et al.,* 2005).



## 2.5 COLLABORATION IN PRIMARY HEALTHCARE

Primary healthcare is defined as the first level of care or the entry point to the healthcare system for consumers. In 1978, the World Health Organization (WHO) defined primary healthcare as essential healthcare that has been scientifically proven and is practicable using methods and techniques that are socially acceptable. This form of healthcare should be accessible and affordable for all the members of a community and requires their full participation to maintain healthy lifestyles (WHO, 1978). Primary healthcare is intended to transform healthcare from being curative to being more preventive through the active participation of community members who recognize opportunities for change. It involves the education of community members on the identification, prevention and control of prevailing health challenges, provision of preventive and curative care for infectious, endemic and non-communicable diseases through the provision of immunizations and essential

drugs (WHO, 1978). It is holistic care close to the people at affordable cost within a community. By this definition, healthcare delivery is not restricted to hospitals, clinics and health centres but requires the input of all professional healthcare practitioners in the community settings.

Sicotte *et al.* (2002) observed that the objectives of primary healthcare have not been achieved 30 years after the WHO definition. They were of the opinion that inter-professional collaboration in hospitals and collaboration between all the stake holders is essential for these objectives to be actualized. Pringle *et al.* (2000) also agreed with this opinion. In addition to advocating for inter-professional collaboration amongst health professionals caring for patients in the hospitals and clinics which are mostly government funded, private sector primary healthcare providers including general practitioners and community pharmacists also need to collaborate for more efficient healthcare delivery. Prescriptions generated either in the hospital or from a family physician, if not filled on-site usually end up with the community pharmacist. Relationships between general practitioners and community pharmacists are not as formalized as those found in organized settings such as health centres and hospitals, but evidence abounds that collaboration between general practitioners and community pharmacists would result in improved patient therapeutic outcomes (Boudreau *et al.*, 2002; Rigby, 2010). In the United Kingdom, the Department of Health in collaboration with the National Health Service (NHS) and the Pharmaceutical Services Negotiating Committee (PSNC) published a community pharmacy contractual framework which listed the advantages of collaboration between general practitioners and community pharmacists to the patients, general practitioners and the Primary Care Trust (PCT). The advantages include: saving general practitioners time by undertaking repeat prescriptions, saving prescription costs, reducing the workload of general practitioners, wider availability of services, and better patient experience (PSNC, 2004).

### 2.5.1 GENERAL PRACTITIONER-PHARMACIST COLLABORATION IN HOSPITALS AND CLINICS

Studies have shown that successful integration of pharmacists into healthcare settings and drug therapy management has resulted in improved prescribing and therapeutic outcomes and more judicious use of human and material resources (Carter *et al.,* 2001; Bond *et al.,* 2002; Boudreau *et al.,* 2002; Borenstein *et al.,* 2003; Doucette *et al.,* 2005). Harding and Taylor, (1990) studied the professional relationships between general practitioners and pharmacists in 10 health centres with integral pharmacies from each of the ten regional authorities in England. A qualitative study design was used to characterize how general practitioners saw their relationship with community pharmacists, using semi-structured interview schedules to ensure that participants were asked the same questions. Thirteen general practitioners and ten pharmacists were enlisted for the study from health centres with pharmacies while nine general practitioners from health centres without pharmacies and ten managers of community pharmacies in the same vicinity were also interviewed for comparative studies. The interview schedules included questions on the nature of pharmacists' queries to general practitioners, the attitude of general practitioners to such queries and the impact of pharmacists on their selection of prescribed medication. Managers of the ten health centres with pharmacies were interviewed and their responses were used to characterize pharmacists' perceptions of their relationship with prescribers. Pharmacists were questioned on the opportunities they have had for informal interactions with other healthcare professionals and perceived relationship with other healthcare professional and the procedure for handling prescription queries. The results showed that general practitioners in health centres with integrated pharmacy units communicated and collaborated more with pharmacists than their colleagues who do not have on-site pharmacies. This relationship is believed to be enhanced by proximity since face to face interactions, telephone calls or third party interventions can be done quickly. General practitioners also saw on-site pharmacies as being a huge information resource, convenient for patients, and they appreciated the availability of emergency supplies during surgery hours. They were comfortable contacting pharmacists on drug queries and welcomed the same from them. Most general practitioners perceived their working relationship to be in terms of the

exchange of their respective expertise and did not attach any personal relationship to it. Health centre pharmacists were also observed to consult general practitioners on a wider range of drug queries compared to community pharmacists although they indicated that working relationships would be more satisfactory if general practitioners exploited pharmacists' professional expertise more in areas such as costs, interactions, availability and package sizes. Cost-effective prescribing, greater use of generics, awareness of drug availability and information on drug compatibility are some of the benefits that are observed when pharmacies are integrated into healthcare settings when effective collaborative practices occur (Howard *et al,* 2003). Some pharmacists were, however, reluctant to initiate interactions that would acquaint general practitioners with their professional knowledge.

Matowe *et al.* (2006) in a more recent study in Kuwait evaluated the perceptions, expectations and experience of physicians with hospital-based pharmacists, using a hand delivered, piloted self-administered questionnaire. Two hundred physicians practicing in 4 government hospitals in Kuwait were recruited to participate in the study. The content of the questionnaire was adapted from an existing and validated one used in California. Respondents were asked to indicate their level of agreement to statements. The significance of association between categorical variables was established using the Chi-squared test. The result showed that physicians were comfortable with pharmacists carrying out patient-centred roles, except prescribing and treating minor illnesses. High expectations existed for pharmacists as knowledgeable drug therapy experts to educate patients about the safe and appropriate use of medications but their experience showed that pharmacists were not sufficiently applying their knowledge in practice. The researchers opined that a lack of confidence due to inadequate clinical knowledge could be responsible for this underperformance. Also, most of the pharmacists at that time were not familiar with Kuwait's healthcare system. Similar explanations could also be proposed for pharmacists in the English study who were reluctant to initiate interactions to make general practitioners aware of their drug knowledge, thereby hindering the process of collaboration.

### 2.5.2 GLOBAL TRENDS IN INTER-PROFESSIONAL COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS

The benefits stated above inform the growing global trend towards collaboration between community pharmacists and general practitioners (Woodend, 2003; Bajcar *et al.*, 2005; DoH, England, 2008). An increasing number of initiatives are being designed to enhance collaboration between the two professions in the delivery of healthcare in the community. Bryant *et al*. (2009) stated that there is a global move towards expanding the roles of community pharmacists from the traditional supply and distribution to that of increased medicines management services which would enable greater involvement in primary healthcare. Inter-professional collaboration between general practitioners and community pharmacists is being promoted in Europe, North America and Australia (Ministry of Health, New Zealand, 2001; DoH, UK, 2003; DoH, England, 2008; Rigby, 2010; Scahill *et al.*, 2010). The National Health Service (NHS) in England intended to introduce a system of electronic transfer of prescription-related information between general practitioners and community pharmacies. Porteous *et al.* (2003) carried out a study to gather opinions of patients (n=800 members of the public), general practitioners (n=200), and community pharmacists (n=200), all living in Scotland on this development. The survey combined interviews, focus groups, and postal questionnaires. Corrected postal response rates were: 69% (patients); 74% (general practitioners); and 74% (community pharmacists). The three groups were supportive of electronic transfer of prescription-related information. General practitioners acknowledged that it improves repeat prescribing; patients expected improved convenience; and community pharmacists believed it would enhance their professional role. Concerns were however raised about confidentiality of patient records.



In New Zealand, the United Kingdom, Australia and Canada, the governments and professional bodies are initiating and supporting concepts such as patients medicines use reviews (MUR) and adherence support programs for patients (Blenkinsopp *et al*., 2007). Bissell *et al.* (2009) described the experiences of forty-nine patients with coronary heart disease in a medicines management service provided by community pharmacists in England. Semi structured, face-to-face interviews were employed in

the study. Patients carefully accepted consultations from pharmacist about their medicines but they were doubtful of the recommendations they made about treatment. These concepts are being introduced in a bid to expand the roles of community pharmacists so they can play a more active role in primary healthcare delivery in collaboration with general practitioners (Scahill *et al*., 2010; Rigby, 2010). During the Pharmacy World Congress in Netherlands, the International Pharmaceutical Federation and the World Medical Association in a joint statement concluded that a patient would be best served if pharmacists and medical practitioners collaborate together to ensure that such a patient gets the best possible healthcare (Pharmacy World Congress, Netherlands, 1998).

#### 2.5.2.1 **Need for collaboration between general practitioners and community pharmacists**

With increasing scientific, medical and pharmaceutical knowledge, medications have become more potent and their use more complex. This is underscored in the elderly and patients with chronic illnesses for which current best practices require the use of multiple medications (Chobanian *et al*., 2003; Canadian Diabetes Association, 2003; Bajcar *et al*., 2005). Poly-pharmacy with its associated risk of toxicity, which is responsible for side effects, increased health cost and time wastage can occur when patients visit independently practicing general practitioners and community pharmacists. Doucette *et al.* (2005) in a study of a comprehensive medicines therapy management (MTM) involving a community pharmacist and a local medical practitioner concluded that ambulatory patients taking multiple medications can have improved drug therapy and subsequently improved health outcomes if community pharmacists and general practitioners collaborate. This was achieved when community pharmacists monitored and assessed patients' medicine therapy and made recommendations to the medical practitioner, some of which he accepted and utilized (Doucette *et al.*, 2005).

Medicines meant for therapeutic purposes can have side effects, produce adverse reactions, and may interact with other medications, food, or over-the-counter medicines leading to adverse events in patients (Lee *et al.*, 2009). Studies have shown that the occurrence of medication-related problems in patients could be as a

result of inappropriate care from health practitioners such as inadequate monitoring of the patient's drug therapy (67%), and inappropriate dose (51%), however, poor compliance on the patients' part can result in poorly controlled health conditions and a subsequent surge in healthcare costs (Elliott *et al.*, 2005; Cantrell *et al.*, 2006).

Studies in the United States of America have shown that 6% - 28% of emergency visits and hospital admissions are associated with medicine-related problems with an associated cost of $177.4 billion and $10.9 billion in Canada (Howard *et al*., 2003). The National Prescribing Service in Australia also identified significant problems associated with medication use; approximately 6% of hospital admissions are associated with adverse drug events and high error rates during transfer of care (Rigby, 2010). Medication errors, most of which are prescription errors are responsible for the hospitalization of 1% - 2% of patients in the United States of America (Leape *et al*., 1999). Sanders and Esmail, (2003) affirmed that there is an 11% chance of errors in all prescriptions and these errors are mainly in the issuing of dose and medication selection. Sellors *et al.* (2003) had a similar observation in family practice with prescription errors being more common in areas like medication selection, patients not receiving the most appropriate medication and inadequate dose of medicines. Roughead *et al.* (2004) were also in agreement with the above observations and added that a third of all the patients in a community setting need additional monitoring.



WHO stated that medication non-adherence is a major problem worldwide that has become a priority in healthcare research and policy making (WHO, 2003). Monitoring of patients' adherence to therapy is a crucial role that can be undertaken in collaboration by general practitioners and community pharmacists with the inclusion of the patient (Macdonell & Jacobs, 2002; Bajcar *et al*., 2005; National Institute for Health and Clinical Excellence, 2009), since the administration of the medication is the final and most important step in delivery of healthcare to patients. In ambulatory care settings, this important role is the responsibility of the patient and the patient's care giver (Forster *et al*., 2004). Studies have shown that between 20% - 70% of patients do not take their medication as prescribed, or according to instructions of the healthcare provider (an approximate average of 50%) and this is

most common amongst the chronically ill with long-term medication use (Haynes *et al*., 2001; Horne *et al*., 2006; Haynes *et al*., 2008). In England, it is estimated that 30% - 50% of prescribed medicines are not taken as recommended and wasted medicines cost about £100million per year (DoH, UK, 2008). When medications are not taken according to the healthcare practitioners' instructions, the desired health gains cannot be observed. Sullivan *et al*. (1990) had earlier estimated that 5.3% of hospitalizations were due to medication non-compliance but Howard *et al*. (2003) observed a higher percentage (30%) of patients being admitted to medical units due to non-adherence to prescriptions. Medication non-adherence has also been shown to result in hospital admissions (30-35%) for preventable adverse drug reactions (MacDonell & Jacobs, 2002). Patients need to understand their medical illness and have adequate knowledge and understanding of their medication, particularly with respect to how it would improve their health so as to effectively self-regulate their medication taking practices according to the prescription of the healthcare giver (Dowell & Hudson, 1997; Bajcar *et al*., 2005). Gilbert *et al*. (2004) observed that lack of knowledge about the medications being used was related to 20% of the medicines related problems identified in the community setting. Kennie and Bajcar, (2002) had more disturbing observations in a medication check-up program where 92% of patients with medication related problems did not fully understand their medication and half of them had additional questions they wanted to ask about their medications. Medication reviews carried out by community pharmacists in residential aged care facilities have been useful in this area (Baran *et al*., 1999).



More than fifty per cent of medicine related problems and their consequences are believed to be preventable through collaborative patient management between community pharmacists and general practitioners. This would enhance patients' therapeutic outcomes and reduce the considerable medication-related morbidity and mortality reported (MacDonell & Jacobs, 2002; Howard *et al*., 2003).

With overburdened public healthcare systems that are still facing pressure to reduce cost while maintaining or improving quality of healthcare, an increasing ageing population due to longer life expectancy, and a greater burden of chronic diseases, collaborative patient care between community pharmacists and general practitioners offers a means of relief from these demands (Howard *et al*., 2003; Rigby, 2010).

#### 2.5.2.2 Benefits of inter-professional collaboration between general practitioners and community pharmacists

Collaboration between general practitioners and community pharmacists could improve patients' health outcomes (Blenkinsopp *et al.,* 2000; Raynor *et al.,* 2000; Clifford *et al.,* 2006; Dolovich *et al.,* 2007; Elliot *et al.,* 2008). Integration of pharmacists in direct patient-care has yielded benefits and resulted in better medication management in Australia and Europe (Clifford *et al.,* 2010). Professional cohesion and enhanced patient care have been achieved by reviews of patient medicine use carried out by community pharmacists in collaboration with general practitioners in the United Kingdom and New Zealand (Bradly *et al.,* 2008a; Lee *et al.,* 2009a). General practitioners in Canada have accepted collaborative practice as they have come to understand the advantages of working with pharmacists (Pottie *et al.,* 2008; Farrell *et al.,* 2008). Collaborative models have improved the treatment of hypertension (Carter *et al.,* 2009), diabetes (Wermeille *et al.,* 2004), and hyperlipidaemia (Lee *et al.,* 2009) through better medication management and improved pharmaceutical care. With improved collaborative practices between prescribers and community pharmacists, drug therapy can be optimized through the recommendation of solutions to identified medication- therapy problems (Sellors *et al.,* 2003; Dolovich *et al.,* 2007).



Another of such benefits can be seen in an asthma-management multidisciplinary intervention educational study conducted at the University of Tasmania, Australia. This study demonstrated that engaging pharmacists more completely in the care of patients' reaps large benefits in terms of health outcome. Bereznicki *et al.* (2008) used a multi-site controlled study design; forty-two pharmacies were recruited throughout Tasmania to run a software application that "data-mined" medication records and generated a list of patients who had received three or more canisters of inhaled short-acting beta (2)-agonists in the preceding 6 months. Identified patients were allocated to an intervention or control group. Pre-intervention and post-intervention data were collected. Patients considered to require intervention were contacted via mails, sent educational materials and encouraged to visit their general practitioner for an asthma management review. This intervention resulted in a three-

fold increase in the ratio of preventer-to-reliever users in the intervention group ($P < 0.01$) compared with the control group. Hence, fewer patients were reliant solely on reliever medication and patients were educated and encouraged on more appropriate use of preventers (Bereznicki *et al.*, 2008).

In Hong Kong, Lee *et al.* (2009) showed that a pharmacist–physician co-managed program for hyperlipidaemia effectively assisted patients in reaching target lipid levels. The study was a prospective randomized controlled trial. 118 adult patients were selected if (i): they were taking one or more lipid-lowering agents with a valid lipid panel before their next follow up; (ii) had a baseline lipid profile within the previous 6 months; (iii) their lipid panel did not reach the targeted low-density lipoprotein-cholesterol (LDL-C) goal based on the National Cholesterol Education Programme Adult Treatment Panel III. 58 patients were in the intervention group (mean age 63 +/- 10 years old) while the control group had 60. Patients in the intervention group were interviewed by pharmacists for 15 to30 minutes after their usual clinic visit and counselled on the drug regimen and possible life style changes. Also, follow-up telephone calls were made every 4 weeks and follow-up interviews on the date of the physician visit were scheduled. Patients in the control group received routine conventional care. A (statistically significant) higher, low-density lipoprotein-cholesterol (LDL-C) and total cholesterol levels were observed in the control group compared to the intervention group ($P < 0.0015$).



#### 2.5.2.3 Benefit of inter-professional collaboration between general practitioners and community pharmacists: the south African context

The burden of diseases in South Africa is almost double that of developing countries, and on average four times larger than that of developed countries (DALY's) [NHI notes 2, 2009]. South Africa, in particular, is said to have a 'quadruple' burden of disease based on the results of its mortality profile and disability-adjusted life-years (DALY's) [NHI notes 2, 2009]. This is the case because most developing countries experience a double burden of disease resulting from the concomitant presentation of communicable and non-communicable diseases in the population, while developed countries have graduated from communicable diseases to degenerative, chronic diseases. South Africa on the other

hand, in addition to the occurrence of communicable and non-communicable diseases, experiences the added burden of injuries, perinatal and maternal diseases and a high incidence of HIV/AIDS (Norman *et al.,* 2006). According to a WHO estimate, South Africa's burden of non-communicable diseases is two to three times higher than that in developed countries, and it includes chronic diseases such as cardiovascular disease, type 2 diabetes, certain cancers, chronic lung disease and depression (Househam, 2010). South Africa can be said to be in the middle of a deep health transition due to social, economic and behavioural factors (Mayosi *et al.,* 2009).

This situation exerts a larger burden on human resources particularly in the already deficient health sector. The economic implications are also immense compared to other countries. Some of the strategies being put in place to manage the burden of disease were emphasized in the National Burden of Disease Study. These are: to strengthen public health, build evidence base and improving surveillance data that are needed to promote health and prevent diseases, in addition to the need for the provision of a wide range of health services (DoH, South Africa. 2011).



The human resource shortages being experienced in the public health sector are being aggravated by the quadruple burden of disease experienced in the country, leaving the already strained and under-resourced nurses, doctors and pharmacists more despondent. Given the higher number of general practitioners (7.64/4.52 per 10,000 total population in the private/public sectors) and pharmacists (11.17/1.93 per 10,000 total population in the private/public sectors) in the private health sector than in the public health sector, pooling resources from the private sector health work force is also one of the strategies being proposed to manage the burden of disease and improving healthcare delivery (DoH, South Africa. 2011).

A majority of the patients do not visit public hospitals and clinics for preventive purposes, but rather for curative purposes. In South Africa and other parts of the world, private pharmacies are among the first ports of call for clients with minor ailments (Gilbert, 1998). With such patronage, the task of health promotion through public health education; one of the professional roles of the community pharmacists can be more effectively carried out in collaboration with general practitioners.

With increasing life expectancy, more people are living with chronic illnesses for longer periods of time. Chronic diseases are projected to account for equal numbers of deaths as communicable, maternal, perinatal, and nutritional diseases by 2020 (Mcleod, 2011; WHO, 2011). Community pharmacists are presently involved in filling repeat prescriptions for chronic illnesses for up to six months and referring the patient back to the doctor if a need arises. As interventions in other countries have shown, with improved inter-professional collaborative practices or relationships between general practitioners and community pharmacists, patients are assured of better health services and consequently improved therapeutic outcomes. Results of blood pressure readings, fasting blood glucose levels and other minor tests which are already being done in pharmacies can be sent directly to the general practitioner. Medication management is another area where community pharmacists have been found to be very useful in collaboration with general practitioners, since they review patients' medication histories for a more effective outcome. These services result in reduced medication costs (Bond *et al.*, 2000), quick identification of medication problems (Pharmacy Flyer. Issue 7, 2001) and increased monitoring of medication adherence (Hughes *et al.*, 2000).



Minor and self-limiting illnesses such as colds, flu, and head lice can also be managed by the community pharmacist and help can be sought from the general practitioner if the need arises with the existence of a good relationship between them (Hassell *et al.*, 2001; Blenkinsopp A, 2003; Hammond *et al*., 2004; DoH, England. 2006). This would reduce unnecessary strain on the general practitioner and enable him to focus on more serious health conditions (Dowell *et al.*, 1998; National Prescribing Centre, 2002; Cabinet Office Regulatory Impact & DoH, 2002). This would also save the patients cost for private consultations and waiting time especially in public health facilities. Up to 2.7 million hours of general practitioners' time and practice hours were saved in England through the minor ailment scheme and repeat prescriptions undertaken by community pharmacists (National Prescribing Centre, 2004; DoH, UK. 2003). Both patients and general practitioners were found to be in support of these services (New Pharmacy Contract in England, 2005; Porteous & Bond, 2005).

The National Health Insurance (NHI) being introduced in South Africa is a system of healthcare financing that is meant to ensure that everyone has access to appropriate, efficient and quality health services. A Green Paper outlining the policy on NHI from the Department of Health stated that reforms that would improve service provision are expected to accompany the NHI such that all South Africans can have access to affordable, quality healthcare services regardless of their socio-economic status similar to the WHO definition of primary healthcare (WHO, 1978). The present inequitable healthcare delivery system obtainable in South Africa would need to be overhauled for successful implementation of the NHI (DoH, South Africa. 2011a). With this in view, a comprehensive package of healthcare supported by a re-engineered primary healthcare is being planned (DoH, South Africa. 2011). The Department of Health's paper in section 4.2.1 under priority workforce implications for re-engineering primary healthcare, task shifting and defining new roles states that the scope of practice of all healthcare practitioners would need to be reviewed and revised to maximize available human resources. As stated earlier, the pooling of human resources from the private health sector is one of the strategies for the rejuvenation of the health system. The paper proposes re-establishing the role of the private general practitioner in primary healthcare as an important clinical care and teaching role. Role redefinitions and extensions are proposed for current enrolled nurses while the competencies of pharmacist assistants are going to be increased. Although no mention is made in this paper of community pharmacists or the roles they play in primary healthcare, the recent publication of the 'Authorized Pharmacists Prescriber' qualification and scope of practice in the Government Gazette no 34428 attest to the recognition of the roles pharmacists can play in primary healthcare (South African Pharmacy Council, 2011). Pharmacists who have been trained and have qualified to practice as 'Authorized Prescribers' can help to meet the healthcare needs of the country in line with the WHO recommendations for primary healthcare standard treatment guidelines (STG) and essential medicines list (EML). This role extension would integrate and enhance the role qualified community pharmacists play in primary healthcare as a precursor to their inclusion in the proposed NHI as is observed in some other countries with national health financing schemes (South African Pharmacy Council, 2011).

## 2.6 PROCESS OF COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS

Collaboration would not be automatically effected in any system without an external or internal force. There are more factors that hinder than support collaboration between general practitioners and community pharmacists. One of such factors is the nature of community pharmacy practice that is characterized as a business premises. Therefore, community pharmacists are often not regarded as a core part of the primary healthcare team. There is a general perception by other healthcare professionals, funders and consumers around community pharmacists being traders rather than healthcare providers (Hughes & McCann, 2003; Rigby, 2010). The introduction of private consulting areas in community pharmacies where patients can have privacy to discuss personal issues with pharmacists is one of the solutions to the image crisis of community pharmacy practice. Another factor militating against collaboration between general practitioners and community pharmacists is geographical separation and isolation of premises. Interactions with general practitioners are brief and most probably telephonically. Co-location of practices would help overcome this barrier. Lack of access to patients' medical records is also a barrier acknowledged by general practitioners but the introduction of electronic health records may potentially overcome this barrier as well as educate the patient to appreciate collaboration.



McDonough and Doucette, (2001) proposed a model for establishing collaborative working relationships (CWR) between general practitioners and community pharmacists, which describes the stages that relationships need to go through before commitments can be made between practitioners to have a collaborative practice agreement (CPA). They categorized the characteristics that influence collaboration as participant, context and exchange characteristics which describe the elements essential to collaboration mentioned earlier in this review. They emphasized that for collaboration to occur community pharmacists would have to initiate it. In the CWR model, the first two stages (0 and 1) are pharmacist-initiated and communication is unilateral; these are the professional awareness and professional recognition stages. Stage 2 is the professional exploitation and trial stage; here practitioners test their compatibility, trustworthiness and commitment to the relationship. Stage 3 is the

professional relationship expansion stage when communication becomes bilateral but is still unbalanced as pharmacists need to do most of the communication. The relationship is being fine-tuned, conflicts might arise and performance assessments characterize this stage. Stage 4 describes the commitment to the collaborative working relationship. Physicians would rely on the pharmacists' exhibited knowledge and skills while pharmacists rely on the exchange of patients' clinical information. An equitable relationship is established if exchanges and relative power between practitioners are balanced. This model was used in this thesis to determine the stage of collaboration between general practitioners and community pharmacists.

Pojskic *et al*. (2009) observed the infrequent collaboration that occurs between Ontario family physicians and community pharmacists on drug therapy management. They proceeded to assess the attitude and readiness of 848 randomly sampled Ontario community based general practitioners to collaborate in this area using a three-page questionnaire. Participants were selected from the 2006 electronic version of the Canadian Medical Directory. The study focused on findings relating to communication between general practitioners and community pharmacists, the extent of collaboration between the two, and perceptions of the advantages, disadvantages and barriers to collaboration. General practitioners' readiness to collaborate was evaluated on 3 specific behaviours that correspond to a continuum of collaboration: taking pharmacists' phone calls (low-level), seeking pharmacists' recommendations regarding patients' drug therapy (mid-level) and referring patients to pharmacists for medication reviews (high-level). Results confirm that low-level collaborations occur between general practitioners and community pharmacists because most general practitioners had 5 or fewer conversations a week with a community pharmacist about a patient's drug therapy management, very few used pharmacists as their primary source of medication information and few participated in higher-level collaborative behaviour (referring patients to pharmacists for medication reviews). Despite the result, general practitioners had a good attitude toward collaboration. An explanation that was offered for the low-collaboration observed in the study was that general practitioners were not aware that community pharmacists conducted medication reviews. It was concluded that community pharmacists need to make general practitioners aware of

their expanded roles through more frequent interactions which would need to be initiated by community pharmacists according to the CWR model proposed by McDonough and Doucette, (2001).

The influence of perception on collaboration was assessed in a study conducted in New Zealand where community pharmacists were expected to carry out clinical services such as medication management which would require collaboration with general practitioners. Bryant *et al*. (2009) opined that differing role perceptions between general practitioners and community pharmacists are likely to hinder the effective delivery of this service and consequently, collaboration. One thousand randomly selected general practitioners and 900 community pharmacists were sent a postal survey which contained questions regarding the pharmacist's roles in community healthcare and barriers to collaboration. Responses to the questions were scored using Likert scale ranking ranging from 1 for "definitely yes" to 5 for "definitely no". Factor analysis was used to categorize the questions pertaining to barriers to providing medicines management. A significant difference was observed in the perceptions of community pharmacists and general practitioners regarding the role of community pharmacists in healthcare delivery. Both groups acknowledged a more traditional role for community pharmacists, but general practitioners were not in agreement with the clinical roles of medicines management. Barriers that were observed to hinder medicines management included: lack of mandate to undertake the services, the role was not a legitimate community pharmacist role, possession of adequate knowledge or skills to perform the service, and doubts that the service would improve patients' health outcomes. Another factor that became obvious in this study is community pharmacists' lack of confidence in their clinical skills to carry out the service. Self-confidence is an element that is necessary for effective collaboration. For role expansion to be successful, community pharmacists need to exhibit more confidence and competence in clinical issues through continuous education. In the United States and the United Kingdom, post graduate residencies and training are organized by pharmacy schools and professional bodies to improve competency in clinical issues.

One of the competencies mentioned in this review is the willingness to collaborate (D'Amour & Oandasan, 2005; D'Amour *et al*., 2005). Community pharmacists need to exhibit this competence. It has been proven in the course of this review that effective collaboration with general practitioners is feasible only with role expansion. It has also been obvious from reviewed studies that community pharmacists are reluctant to enlighten general practitioners about their professional skills. From the history of the role expansion and evolution observed in the nursing profession in the United States of America (USA), UK, and most parts of the world where complementary and needs-led skill mix models have led to complementary nurse-doctor hybrid roles that we observe today in the nursing profession, this expansion was initiated from within the profession itself in the USA (Keyzer, 1997). Therefore, a similar trend might be required for expansion of roles to be achieved in community pharmacy practice.

## 2.7 OVERVIEW OF LITERATURE REVIEW

The need for and benefits of inter-professional collaboration between general practitioners and community pharmacists is supported by literature from a global angle. The immense advantage to the South African healthcare system with the prevalent unusual burden of communicable and non-communicable diseases, maternal and perinatal diseases, injuries and a very high incidence of HIV/AIDS, which create a strain on the already personnel deficient healthcare system, is undeniable. Inter-professional collaboration can be particularly beneficial to South Africa in the area of preventive healthcare or health promotion, and as co-management of chronically ill patients can reduce the mortality and disability caused by these chronic conditions. The introduction of the NHI is another reason why collaborative practices between general practitioners and community pharmacists need to be encouraged. The recent publication of the scope and qualification of the 'Authorized Prescriber Pharmacists' attest to the recognition of the role of pharmacists in primary healthcare. This role extension can be used as a platform to enhance collaboration between community pharmacists and general practitioners. The CWR model proposed by McDonough and Doucette, (2001) was used in determining the stage of collaboration. Other factors that influence collaboration such as general practitioners' perceptions of community pharmacist roles and

general practitioners attitudes towards collaboration with community pharmacist were assessed in this thesis.

# CHAPTER THREE

# RESEARCH AIM AND OBJECTIVES

## 3.1 INTRODUCTION

The aim and objectives of this thesis are expressed in this chapter. The research questions developed to achieve these aim and objectives are also presented.

## 3.2 RESEARCH AIM

The primary aim of this thesis is to determine from general practitioners' perspectives, the extent of inter-professional collaboration between general practitioners and community pharmacists in patients' care in the Cape Metropole of South Africa.

## 3.3 RESEARCH OBJECTIVES



The objectives of this thesis are to determine and describe the following from the perspectives of general practitioners in the Cape Metropole:

1. To determine and describe general practitioners' perceptions of the professional roles of community pharmacists in patients care (Cape Town, South Africa).
2. To determine and describe the attitudes of general practitioners toward collaboration with community pharmacists in patient care.
3. To determine and describe the level of current collaboration between general practitioners and the community pharmacists in Cape Town, South Africa.
4. To determine and describe the perceived barriers to collaboration between general practitioners and community pharmacists in patient care.
5. To determine and describe the areas of patients' care where general practitioners would like to collaborate with community pharmacists in the future.
6. To determine and describe how general practitioners' demographic characteristics influence inter-professional collaboration with community pharmacists.

### 3.3.1 RESEARCH QUESTIONS

The following research questions were formulated to achieve the research aims and objectives of this study:

1. What is the current level and stage of collaboration between general practitioners and community pharmacists in patient care from the general practitioners' perspectives?
2. Do general practitioners' perceptions of the professional roles of community pharmacists in patients' care influence the desired collaboration (prospects of enhanced future collaboration) between general practitioners and community pharmacists in patient care?
3. Do general practitioners envision enhanced future collaboration between them and community pharmacists in patient care and if so, what does this entail?
4. What are the barriers to the envisioned collaboration between general practitioners and community pharmacists in patient care?
5. Do general practitioners' demographic characteristics influence inter-professional collaboration with community pharmacists?

# CHAPTER 4

# RESEARCH DESIGN AND METHODOLOGY

## 4.1 INTRODUCTION

This chapter presents the research design and the methods by which the design was executed. The chapter consists of 12 sections beginning with introduction, study area, study population, study design, sampling strategy and selection criteria, recruitment strategy and data collection, measurements, research variables, statistical issues and ethical consideration. This chapter would also examine the limitations of the study and end with a brief summary.

## 4.2 STUDY DESIGN



The study was based on a quantitative and qualitative (mixed methods), descriptive and correlational, and cross-sectional survey. It was designed to measure possible associations between variables within a single sample of a population, from data collected on a single occasion. Though it employed a mixed method design, qualitative method was employed for the purpose of expansion or supporting collected quantitative data (Rossman & Wilson, 1985; Denzin & Lincoln, 2005). The qualitative method was limited in its scope as the instrument was used comprised only of two open ended questions (Appendix III). Quantitative methods are usually used in isolating and identifying correlations between variables; qualitative techniques are particularly good at gaining insight into the processes and events that might lead up to the observed variation and has the key advantage of providing unexpected insights (Hoff *et al*., 2000). The study combined the advantages of both methods especially as the qualitative data was not quantized but discussed. As such, the disadvantages that apply to transformative mixed method designs do not apply here.

## 4.3 STUDY AREA

The study was carried out in the Cape Metropole, a district in the Western Cape Province of South Africa. The Cape Metropole includes the city of Cape Town. Approximately 10% of South Africa's population resides in this province, of which nearly 80% find domicile in the urbanized Cape Metropolis (Baron *et al.,* 2006). The province is also home to the highest number of medical practitioners (5.67 per 10,000 total population) with a higher number of them working in the private sector (7.6 per 10,000 total population) [DoH, South Africa. 2011]. This makes it a most suitable choice for an accessible population in the study. It is geographically divided into 8 suburban areas, namely: Southern Suburbs, Northern Suburbs, South Peninsula, Cape Flats, West Coast, Atlantic Seaboard, Heldelberg and City Bowl. The suburban demarcation of the Cape Metropole was used to ensure proportionate selection of general practitioners from each suburb across the area.

## 4.4 STUDY POPULATION

The target population for this study was general medical practitioners in private practice in the Cape Metropole. This is because the study was designed to focus on the general practitioners' perspectives of inter-professional collaboration with community pharmacists, because of the numerous advantages that such collaboration might have on patients' health outcomes as enumerated in chapter two. Findings would be inferred to general practitioners in South Africa.



## 4.5 SAMPLING STRATEGY AND SELECTION CRITERIA

### 4.5.1 SAMPLING STRATEGY

The sampling strategy defines the basis used for the selection of participants from the population of interest such that the study results can be generalized back to the population.

#### 4.5.1.1 Stratified random sampling

A list of general practitioners in the Cape Metropole was obtained from the South African Medical Association (SAMA). The Health Professions Council of South Africa (HPCSA) could not provide the researcher with a list of private general practitioners based in the Cape Metropole from its database according to a mail received from its office in which it also advised that the information could be obtained from SAMA. The list contained 1214 names, of which only 888 could be included in the survey because they had both their physical or postal addresses and phone numbers that were included on the list or were in the Cape Town 2010 telephone directory. The names were stratified into the eight suburban classifications of the Cape Metropole using the postal codes of members obtained from the list. These strata had unequal populations [Southern peninsula (n= 42), Atlantic Seaboard (n=60), West Coast (n=60), Cape Flat (n=138), Southern Suburbs (n=270), and Northern suburbs (n=303)], as such, a sampling fraction, f (Trochim, 2006) was used to randomly sample from each of the strata (suburban area) at proportional ratios of the required sample size.

Sampling fraction, f = N/n



Where,

n= the number of cases in the sampling frame (888)

N= required sample size (52)

f = N/n =0.059

The stratified population in each suburban area was multiplied by the sampling fraction to obtain a proportional ratio of general practitioners from each area. Southern peninsula (n= 2), Atlantic Seaboard (n=4), West Coast (n=4), Cape Flat (n=8), Southern Suburbs (n=16), and Northern suburbs (n=18). The stratified sample was randomized using Excel Microsoft Word 2003 (MS2003) [Trochim, 2006]. Randomized sampling was used because it offers a scientific basis for making inferences about the results to the general population (Hulley *et al.*, 2007:117).

Stratified random sampling was also chosen because it has better statistical precision than simple random sampling (Trochim, 2006).

### 4.5.2 SELECTION CRITERIA

This selection criteria defines the conditions required for participation and non-participation in the study as: inclusion and exclusion criterion respectively.

#### 4.5.2.1 Inclusion criterion

Eligible participants were registered general practitioners within the Cape Town Metropolis of South Africa who had physical or postal addresses and phone numbers included on the SAMA membership list (refer to section 3.6.1.1) or listed in the Cape Town 2010 telephone directory.

#### 4.5.2.2 Exclusion criterion

Registered general practitioners whose physical or postal addresses and phone numbers were neither on the list obtained neither from SAMA nor in the Cape Town 2010 telephone directory.



## 4.6 RECRUITMENT STRATEGY AND DATA COLLECTION

The strategy used to select the participants for the study and the method of data collection is discussed in this section.

### 4.6.1 **RECRUITMENT STRATEGY**

An introductory letter (appendix I) was mailed to general practitioners informing them of the aims and procedures of the study. A follow-up telephone call was made a week after mainly to ascertain if the letters were received and to further discuss the study as well as answer any questions from the participants. Participants were again informed that consultation fees would be paid for time expended on the study as indicated in the introductory letters. Appointments were made with assenting general practitioners for the completion of questionnaires and consent forms.

Some challenges were encountered during the recruitment stage of the study. For example, some of the general practitioners did not receive the introductory letter initially mailed to them because the addresses obtained from SAMA wes wrong, as stated earlier. Hence, the study had to be introduced to them telephonically. As such, some of them required more time and more telephone calls to make up their minds about participation in the study thereby extending the study period. Some general practitioners were unreachable telephonically despite the availability of their phone numbers and addresses. Others, whose surgeries were contacted telephonically, were too busy to engage the researcher in a conversation. One had passed away, others had retired, migrated or were no longer practicing as general practitioners. These resulted in a need to over sample to be able to achieve the required sample size.

The introduction of consultation fees could positively or negatively bias the results of the survey. Studies have shown that item non- response, data quality and willingness to participate are biases associated with the introduction of incentives in surveys (Singer, 2006). The offer of a consultation fee was not enough to convince some general practitioners to participate in the present study.



### 4.6.2 DATA COLLECTION

A face-to-face self-administered method was employed for data collection. Consent forms (appendix II) were given to the participants to bet signed; questionnaires were then completed by participants over a 20 minute period and returned to the researcher. This method was employed firstly, to increase participation as most studies on collaboration between general practitioners and community pharmacists had used the mail or (and) fax survey method and focus groups which were associated with poor responses (Pojskic *et al*., 2009; Bryant *et al*., 2009; Hughes *et al.*, 2003). Secondly and most importantly, the face to face method allows the researcher to gather qualitative data from suggestions and comments made by participants which was thought to be important in improving the relationship between general practitioners and community pharmacists in South Africa.

## 4.7 MEASUREMENTS

The study measuring instrument, the criteria used for selecting the different components of the instrument and discussion on the contents of the measuring instrument are presented below.

### 4.7.1 MEASURING INSTRUMENT

A self-administered questionnaire was constructed with closed and open-ended statements (appendix III); responses were analysed as quantitative and qualitative data, respectively. The questionnaires addressed specific factors that influence inter-professional collaboration as observed from previous studies on inter-professional collaboration between general practitioners and community pharmacists. It consists of six sections containing items measuring the demographic characteristics of participants, general practitioners' perceptions of the professional roles of community pharmacists, general practitioners' attitudes to collaboration with community pharmacists, current collaboration in practice, barriers to collaboration and prospects of enhanced future collaboration. One open-ended question was each included under the sections for barriers to collaboration and prospects of enhanced future collaboration for qualitative data collection. The prospects of enhanced future collaboration section were designed by the researcher entirely while the other sections had inputs from instruments used in similar studies and literature on the same topic.



### 4.7.2 SELECTION AND CONTENT

Items in sections one, two and five of the instrument were constructed from existing instruments used in similar studies of inter-professional collaboration between general practitioners and community pharmacists as well as literature on the same topic (Hughes & McCann, 2003; Dobson *et al*., 2006; Wiedenmayer *et al.,* 2006; Bryant *et al*., 2009; Pojskic *et al.,* 2009; Rigby, 2010). In addition to some items in

sections three and four being constructed from similar existing instruments, items in these sections were structured to fit the different stages of the Collaborative Working Relationship (CWR) model proposed by McDonough and Doucette, (2001). These items were structured in such a way that the stage of collaboration could be determined. The process of selection of the items in each section is discussed below.

#### 4.7.2.1 Collaborative working relationship (CWR) model

The CWR model proposed by McDonough and Doucette, (2001) is a conceptual model of team building between physicians and pharmacists. It describes the different stages of relationships that a team undergoes before becoming highly functional. Given that one of the aims of the study is to determine if inter-professional collaboration occurs between general practitioners and community pharmacists and the extent to which this occurs, the model serves as a tool that can be used to measure the stage of collaboration between general practitioners and community pharmacists who are building successful working relationships. Bradley *et al.,* (2010) described the CWR model as the most developed with respect to general practitioners-community pharmacists' specific models in USA. The model has been used in several studies the world over to examine collaborative practices between general practitioners and community pharmacists and it has been stated to be an effective and practical model for establishing collaboration between the two professions (Doucette *et al*., 2005; Farris, 2005; Zillich *et al.*, 2006; Pojskic *et al*., 2009). The model consists of five stages of development from professional awareness to the stage where collaborative practice agreements (CPA) are established between the parties or formalized arrangements for care of patients are made. The stages are:

Stage 0--------- Professional Awareness

Stage 1---------- Professional Recognition

Stage 2---------- Exploration and Trial

Stage 3---------- Professional Relationship Awareness

Stage 4---------- Commitment to the Collaborative Working Relationship

4.7.2.1.1 **Stage O collaboration (Professional Awareness)**

This is the first stage of the CWR model which signifies the least level of interactions observed between community pharmacists and general practitioners. Interactions are of a discrete nature such as dispensing prescriptions that are faxed or telephoned to the pharmacy, identifying adverse drug interactions and answering drug information questions.

4.7.2.1.2 **Stage 1 collaboration (Professional Recognition)**

This is the second stage of the CWR model. Exchanges at this stage are usually initiated by the pharmacists and the frequency and direction of interactions tend to be unilateral. The resourcefulness of community pharmacists to provide services relevant to general practitioners' practices is exhibited here. Such services include the provision of patients' medication histories, adherence information or introducing a new service that would benefit patients and the targeted general practitioners.



4.7.2.1.3 **Stage 2 collaboration (Exploration and Trial)**

General practitioners assess and test the compatibility, expectations, trustworthiness and commitment of community pharmacists to the relationship (Dwyer *et al.,* 1987) especially where a new service is being introduced by the pharmacists. Patients might be referred to community pharmacist for the service to test these characteristics.

4.7.2.1.4 **Stage 3 collaboration (professional relationship expansion)**

If general practitioners benefit from the exploration and trial stage of the CWR, they can increase interdependency and expand professional relationships (Dwyer *et al.,* 1987). Key exchange characteristics of this stage include communication, norm development, performance assessment and conflict resolution. Exchange of patients' clinical information is a good sign of successful stage 3 collaboration.

4.7.2.1.5 **Stage 4 collaboration (commitment to the collaborative working relationship)**

At this stage, the input by both parties should be equitable, lengthy and consistent (Scanzoni, 1979). General practitioners rely on the knowledge and skill displayed by community pharmacists who in turn rely on the clinical information provided to manage patients' drug therapy. Same exchange characteristic as in stage 3 are required here. Plans should be put in place to optimize the joint care of patients (Weitz & Jap, 1995).

### 4.7.2.2 Personal information of general practitioners

The demographics of general practitioners such as age, gender, years in practice, nature of practice, and number of patients seen per day were collected. These participant's characteristics are components that affect the development of a collaborative working relationship (Brown, 2006:185).



4.7.2.2.1 Anticipated effects of predictors

The influence of general practitioners' age and the number of years in practice on their perceptions of professional roles of community pharmacists, attitudes towards collaboration, current collaboration, prospects of enhanced future collaboration, and barriers to collaboration might be due to increasing ability to appreciate the roles of the community pharmacists with more experience in practice (Adepu & Nagavi, 2006). Bryant *et al*. (2009) in a study on collaboration between general practitioners and community pharmacists found differences in the responses from participants based on gender. Ward *et al*. (2003) also came out with a similar conclusion from their study. The influence of the nature of practice, categorized into dispensing and non-dispensing doctors on collaboration would make an interesting study considering the backdrop of dispute between community pharmacists and general practitioners in South Africa and other parts of the world (Gilbert, 1998; Royal Pharmaceutical Society, 2007). The number of patients seen in a day determines how busy a general practitioner's schedule is and might also influence interest in

inter-professional collaboration (Adepu & Nagavi, 2006). Location of study participants' practice was exempted from analysis as the practice locations were not pre-selected but obtained by default from the list obtained from SAMA as earlier explained in section 3.4.

#### 4.7.2.3 General practitioners' perceptions of the professional roles of community pharmacists

Fifteen items were used to measure general practitioners' perceptions of the professional roles of community pharmacists (appendix III). Two of the roles; carrying out x-rays and ultra sound scans, and carrying out surgical procedures were only included to assess the level of concentration of the participants. In this regard, their roles can be termed as irrational roles which should explain why they are excluded from the analysis. The thirteen items (See table 1) that were left, were selected from a list of community pharmacists roles obtained from the literature on general practitioners and community pharmacists (Wiedenmayer *et al.,* 2006; Bryant *et al*., 2009; Rigby, 2010*).* The section consists of both traditional and advanced roles of community pharmacists. Four-point Likert scale response options ranging from 1-for "Strongly Disagree" to 4-for "Strongly Agree" were used to measure the levels of agreement to the items relating to pharmacist roles. The variable, "general practitioners' perceptions of professional roles of community pharmacists" was computed from the total sum of scores of the Likert scale and depicted in three ways as: 1) Good Perceptions, 2) Fair Perceptions, and 3) Poor Perceptions. Likert scale response options were assigned these additional labels to better qualify the variable as seen in Table 2. "Strongly Agree" Likert scale response option was equivalent to "Good Perceptions", "Agree" Likert scale response option was equivalent to "Fair Perceptions", "Disagree and Strongly Disagree" Likert scale response options were collapsed and summarized as "Poor Perceptions".

**Table 1:** Thirteen-item scale on professional roles of community pharmacists

| Roles | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|
| i. Dispensing prescribed medicines to the public | | | | |
| ii. Providing information to patients on prescribed medicines | | | | |
| iii. Checking patients' prescriptions for indications, safety and therapeutic duplications | | | | |
| iv. Reporting adverse reactions to drugs to prescribers and health authorities | | | | |
| v. Advising on the cost effectiveness of medicines for disease states | | | | |
| vi. Monitoring patients' adherence with therapy and ensuring their medicine related needs are met | | | | |
| vii. Monitoring blood pressure, blood glucose levels and cholesterol levels | | | | |
| viii. Be a source of clinical advice to general practitioners, such as selection of a medicine for a particular disease state | | | | |
| ix. Be a source of clinical medicines information to general practitioners such as adverse effects of medicines | | | | |
| x. Make dose adjustments to a patient's medicines using protocols | | | | |

| | | | | |
|---|---|---|---|---|
| established with prescribers (*e.g. inhaled steroids in asthma)* | | | | |
| xi. Supervising repeat prescriptions for a patient, according to agreed protocols, for up to 6 months, contacting the general practitioner if a problem arises (*continuation prescribing)* | | | | |
| xii. Prescribing a medicine for a patient after the general practitioner has made the diagnosis, decided on the category of medicine required and given the pharmacist relevant clinical details (*partnership prescribing)* | | | | |
| xii. Participating in health promotion programmes in the community (*diabetes screening, run stop smoking clinics, weight reduction programmes)* | | | | |

**Table 2**: Total sum of scores of 4-point Likert scale response options for thirteen-item scale on professional roles of community pharmacists

| **Likert scale response options** | **Scores of Likert scale response options** | **Maximum obtainable scores** | **Limits of scores** |
|---|---|---|---|
| Strongly Agree (good perceptions) | 4 | 52 | 40-52 |
| Agree (fair perceptions) | 3 | 39 | 27-39 |
| Disagree (poor perceptions) | 2 | 26 | 14-26 |
| Strongly Disagree (poor perceptions) | 1 | 13 | 0-13 |

#### 4.7.2.4 General practitioners' attitudes towards collaboration with community pharmacists

This section consisted of six items measuring general practitioners' attitudes towards collaboration with community pharmacists using 4-point Likert scale response options ranging from 1-for "Strongly Disagree" to 4-for "Strongly Agree", to measure the levels of agreement to these items (Table 3). Items in this section were constructed from existing similar instruments that measured the willingness of general practitioners to collaborate with community pharmacists (Zillich *et al.*, 2006; Pojskic *et al*., 2009). They were also structured to reflect the different stages of the CWR model as described by McDonough and Doucette, (2001). The variable, "general practitioners' attitudes towards collaboration with community pharmacists" was computed from the total sum of scores of the Likert scale and depicted as: 1) Positive Attitudes, and 2) Negative Attitudes, in accordance with the Likert scale response options. "Strongly Agree" and "Agree" were summarized as "Positive Attitudes" while "Strongly Disagree" and "Disagree" were summarized as "Negative Attitudes". To highlight the depth of positivity, positive attitudes were further described as "Highly Positive Attitudes" and "Slightly Positive Attitudes". Likert scale response options were assigned these additional labels to better qualify the variable as seen in Table 4. "Strongly Agree" Likert scale responses option corresponds to "Highly Positive Attitudes", "Agree" Likert scale responses option

corresponds to “Slightly Positive Attitudes”. “Strongly Disagree” and “Disagree” Likert scale response options correspond to “Negative Attitudes”.

To determine the stage of collaboration where general practitioners have the most positive attitudes, items in the scale were structured to fit the different stages of the CWR model (Section 4.7.2.1). Table 5 shows the grouping of the items in the scale into the different stages of collaboration. The total sum of scores for items in each stage of collaboration was computed and the median calculated. For stage 0, the total sum of scores was averaged to even out the scores in each stage of collaboration. The median was then calculated. The stage of collaboration with the highest median is taken as the stage where general practitioners have the most positive attitudes.

**Table 3:** Six-item scale on general practitioners’ attitudes toward collaboration with community pharmacists



| **Collaboration** | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|
| i. Community pharmacists should contact me for issues with my prescription during the dispensing process | | | | |
| ii. Community pharmacists should alert me of possible adverse drug reaction | | | | |
| iii. Community pharmacists can call me referrals for services they have specially trained for (e.g. anticoagulation service.) | | | | |
| iv. I would accept drug information (dosage, drug interaction) from community | | | | |

| | | | | |
|---|---|---|---|---|
| pharmacists | | | | |
| v. I would give patients' clinical information to community pharmacists to assist in making judgments | | | | |
| vi. formalized arrangements for exchange of information between community pharmacists and general practitioners is vital to patient care | | | | |

**Table 4:** Total sum of scores of 4-point Likert scale response options for six-item scale on general practitioners' attitudes towards collaboration with community pharmacists



| **Likert scale response options** | **Scores for Likert scale response options** | **Maximum obtainable scores** | **Limit of scores** |
|---|---|---|---|
| "StronglyAgree" (highly positive attitudes) | 4 | 24 | 19-24 |
| Agree (Slightly positive attitudes) | 3 | 18 | 13-18 |
| Disagree (negative attitudes) | 2 | 12 | 7-12 |
| Strongly Disagree (negative attitudes) | 1 | 6 | 0-6 |

**Table 5:** Grouping of items on general practitioners' attitudes toward collaboration with community pharmacists' scale into the different stages of collaboration of the CWR model

| **Stage of collaboration** | **Items** |
|---|---|
| Stage 0 collaboration | Questions i, ii, iv |
| Stage 1 collaboration | Question iii |
| Stage 3 collaboration | Question v |
| Stage 4 collaboration | Question vi |

#### 4.7.2.5 Current collaboration between general practitioners and community pharmacists



This section was used to determine current collaborative practices between general practitioners and community pharmacists in the Cape Metropolis. Eight items measured the frequency of interaction using a range of scores from 1- for "never" to 5-for "more than 5 times" in 6 months (table 6). Some items in this section were constructed from an existing similar instrument that measured the frequency of interactions between general practitioners and community pharmacists (Pojskic *et al.*, 2009). The items were also structured to reflect the different stages of the CWR model as described by McDonough and Doucette, (2001). The variable, "current collaboration between general practitioners and community pharmacists" was computed from the total sum of scores of the Likert scale and depicted in 4 ways to better describe the variable as: 1) High-level collaboration; 2) Mid-level collaboration; 3) Low-level collaboration; 4) No collaboration. Likert scale response options were assigned these additional labels as seen in Table 7. Frequency of collaborations greater than "5 times" was equivalent to "High-level collaboration"; Frequency of collaboration between "4-5 times" was equivalent to "Mid-level collaboration"; Frequency of collaboration between "1-3 times" was equivalent to "Low-level collaboration"; "No collaboration" was equivalent to response option "Never".

To determine the stage of collaboration where most of the current collaboration between general practitioners and community pharmacists occur, items in the scale were structured to fit the different stages of the CWR model (section 4.7.2.1). Table 8 shows the grouping of items into the different stages of collaboration. The total sum of scores for items in each stage of collaboration was computed and the median calculated. For stage 0 and stage 4, the total sums of scores were averaged to even out the scores in each stage of collaboration. The medians were then calculated. The stage of collaboration with the highest median is taken as the stage where most of the current collaboration between general practitioners and community pharmacists occurs.

**Table 6:** Eight-item scale on current collaboration between general practitioners and community pharmacists within the past 6 months

| **Collaboration** | **More than 5 times** | **4-5 times** | **2-3 times** | **Once** | **Never** | **Median Likert** |
|---|---|---|---|---|---|---|
| i. A community pharmacist contacted me because of issues with my prescription during the dispensing process (dosage errors, contra-indications) | | | | | | |
| ii. A community pharmacist alerted me of possible adverse drug reactions to prescribed medication | | | | | | |
| iii. A community pharmacist visited/called me to request for patient referral for services | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| beside dispensing for which he has specially trained (anticoagulation service) | | | | | | |
| iv. I referred my patient to a community pharmacist for the above | | | | | | |
| v. A community pharmacist provided me with drug information on asking (dosage, drug interaction) | | | | | | |
| vi. I provided my patients' clinical information to a community pharmacist for him to make better therapeutic judgments | | | | | | |
| vii. A community pharmacist and I have developed a formalized arrangement for exchange of information and provision of services | | | | | | |
| viii. How many times has such collaboration improved patients' health outcomes? | | | | | | |

**Table 7**: Total sum of scores of 5-point Likert scale response options for eight-item scale on current collaboration between general practitioners and community pharmacists within the past 6 months

| **Likert scale response options and variable qualifiers** | **Scores for Likert scale response options** | **Maximum obtainable scores** | **Limits of scores** |
|---|---|---|---|
| > 5 times (high-level collaboration) | 5 | 40 | 33-40 |
| 4-5 times (mid-level collaboration) | 4 | 32 | 25-32 |
| 1-3 times (Low-level collaboration) | 2 and 3 | 16 and 24 | 9-24 |
| Never (no collaboration) | 1 | 8 | 0-8 |

**Table 8**: Grouping of items on the current collaboration between general practitioners and community pharmacists' scale into the different stages of collaboration of the CWR model

| Stages of collaboration | Items |
|---|---|
| Stage 0 collaboration | Questions i, ii, v |
| Stage 1 collaboration | Question iii |
| Stage 2 collaboration | Question iv |
| Stage 3 collaboration | Question vi |
| Stage 4 collaboration | Question vii, viii |

#### 4.7.2.6 Barriers to collaboration between general practitioners and community pharmacists

This section consists of a 15 items scale which used 4-point Likert scale response options ranging from 1-for "Strongly Disagree" to 4-for "Strongly Agree" to measure barriers to general practitioners' inter-professional collaboration with community pharmacists. Items in this section were selected from studies on barriers to collaboration between general practitioners and community pharmacists and literature on the same topic (Hughes & McCann, 2003; Dobson *et al*., 2006; Bryant *et al*., 2009; Pojskic *et al.,* 2009). Descriptive item-analysis was done using frequencies and percentages and only statements confirmed as barriers would be considered for discussion.

#### 4.7.2.7 Prospects of enhanced future collaboration between general practitioners and community pharmacists

This section also served as the desired collaboration model to establish the kind of collaboration desired between general practitioners and community pharmacists. It consisted of 6 items which used 4-point Likert scale response options ranging from 1-for "Strongly Disagree" to 4-for "Strongly Agree" to measure the levels of agreement to these items (table 9). The items in this section were structured to

reflect the different stages of the CWR model as described by McDonough and Doucette, (2001) and were used to measure the willingness of general practitioners to have enhanced future collaboration with community pharmacists at the different stages. The variable "prospects of enhanced future collaboration between general practitioners and community pharmacists" was computed from the total sum of scores of the Likert scale and depicted in two ways to better describe the variable as shown in table 10 as:

1) Good prospects of enhanced future collaboration,

2) Poor prospects of enhanced future collaboration.

Likert scale response options were collapsed and assigned these additional labels. "Strongly agree" and "Agree" Likert scale response options were collapsed and summarised as "Good prospects of enhanced future collaboration". "Disagree" and "Strongly Disagree" Likert scale response options were collapsed and summarised as "Poor prospects of enhanced future collaboration".

To determine the stage of collaboration where general practitioners have the highest prospects of enhanced future collaboration, items in the scale were structured to fit the different stages of the CWR model (section 4.7.2.1). Table 11 shows the grouping of items into the different stages of collaboration. The total sum of scores for items in each stage of collaboration was computed and the median calculated. For stage 0, the total sum of scores was averaged to even out the scores in each stage of collaboration. The median was then calculated. The stage of collaboration with the highest median is taken as the stage where general practitioners have the best prospects of enhanced future collaboration.

**Table 9:** Six-item scale on prospects of enhanced future collaboration between general practitioners and community pharmacists

| **Collaboration** | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|
| i. Collaborative care or co-management of patients (especially chronically ill Patients). | | | | |
| ii. Exchange of patient information for better clinical and therapeutic judgments | | | | |
| iii. Referral of patients to community pharmacists for other specialized services (e.g. anticoagulation service) | | | | |
| iv. Health promotion programmes (e.g. smoking cessation, weight loss etc) | | | | |
| v. Exchange of information as a result of patients' negative reaction to prescribed medication | | | | |
| vi. Exchange of information on prescription issues such as safety and therapeutic duplications | | | | |

**Table 10:** Total sum of scores of 5-point Likert scale response options for six-item scale on prospects of enhanced future collaboration between general practitioners and community pharmacists

| **Likert scale response options** | **Scores for Likert scale response options** | **Maximum obtainable scores** | **Limit of scores** |
|---|---|---|---|
| Strongly Agree and Agree (Good prospects of collaboration) | 4 and 3 | 24 | 13-24 |
| Disagree and Strongly Disagree (Poor prospects of collaboration) | 2 and 1 | 12 | 0-12 |



**Table 11:** Grouping of items on the prospects of enhanced future collaboration between general practitioners and community pharmacists' scale into the different stages of collaboration of the CWR model

| **Stage of collaboration** | **Items** |
|---|---|
| Stage 0 collaboration | Questions v, vi |
| Stage 1 collaboration | Question iv |
| Stage 2 collaboration | Question iii |
| Stage 3 collaboration | Question ii |
| Stage 4 collaboration | Question i |

4.7.3 PRETESTING AND RELIABILITY OF THE INSTRUMENT

**4.7.3.1 Pre-testing**

The questionnaires were pre-tested among a convenient sample group of five general practitioners representative of the target population who did not form part of the main survey. The following information was obtained:

a) Clarity of questions
b) Length of the questionnaire
c) Time required to complete the questionnaire
d) Method of administering the questionnaire
e) Comments or suggestions regarding general practitioners' incentives

During the pilot phase, the time that was required to complete the questionnaire was established to be between 10 and 15 minutes. One of the recommendations that emerged from the pre-test was that the researcher should note any contributions or comments made by the study participants outside the options provided and as such open-ended questions were included in the barriers to collaboration and prospects of enhanced future collaboration sections. The participants were also encouraged to write any other comments that they could beside each question. It was also obvious that to be able to book appointments with the general practitioners in order to have their full attention and collect the completed questionnaire in one visit, a consultation fee needed to be paid. The frequency of occurrence of collaboration between general practitioners and community pharmacists was measured within 6 months time limit in this study. A similar study measured occurrence of collaboration in one week but data gathered from the pilot phase indicated that measuring the frequency of collaboration between general practitioners and community pharmacists for less than 6 months would not yield useable data.

#### 4.7.3.2 Reliability

The reliability of the scales in the instrument used in the study was measured by assessing the internal consistency of the items that made up each scale. Because the items in each scale of the instrument were selected or structured from different sources, making it a somewhat new instrument, there were no pre-existing measures of reliability with which to compare. This also made the need for a reliability test more important. However, due to funding and time constraints, the pilot study did not include enough participants to be used for a reliability test. Therefore, reliability was calculated using data from the main study. Internal consistency describes the degree to which the items included in a scale can measure the intended construct consistently over time. This indicator of a scale's reliability was used instead of the test-retest indicator because it is not subjective to the moods and emotions of participants. The internal consistency of the items making up the scales in the study was assessed using Cronbach's alpha coefficient which is one of the most commonly used methods of assessing internal consistency in medical and behavioural sciences. Also, it provides an indication of the average correlation among all of the items that make up the scale (Pallant, 2005:6).The minimum Cronbach's alpha coefficient recommended for a reliable scale is 0.70 (Negahban *et al*., 2011). A negatively worded item in the barriers to collaboration between general practitioners and community pharmacists' scale was reversed prior to the determination of the Cronbach's alpha coefficient. This scale was also only intended for descriptive item analysis; therefore it was excluded from further statistical analyses. The relationship of individual items to the overall reliability of the scale was measured using the alpha if item is deleted measurement. The Cronbach's alpha reliability coefficients for internal consistency of each scale are presented as tables in the next chapter.



#### 4.7.3.3 Strategies to minimize random and systematic errors

Data was initially entered into Epi Info (version 3.5.1., 2008) because it has the features that can avoid data entry errors and then exported to IBM SPSS Statistical software for analysis (version19, 2010). The questionnaires were kept as short as possible to reduce incomplete responses. Though it was self-administered, the researcher was present to answer any questions from the study participants and also

to note any other suggestions or comments for qualitative analysis. The survey was conducted by one researcher.

## 4.8 RESEARCH VARIABLES

There were a total of ten variables from the questionnaire. They included five of the demographic characteristics of the participants with the exception of the location of practice of study participants and the other five constructs measured by scales in the questionnaire. The other five variables which were not in the questionnaire were represented in the different stages of collaboration as described by McDonough and Doucette, (2001).

### 4.8.1 VARIABLES IN THE QUESTIONNAIRE

They include five demographic characteristics of participants and five constructs measured by scales in the questionnaire

1. Age of general practitioners
2. Gender of general practitioners
3. Years in practice
4. Nature of practice
5. Number of patients seen per day
6. General practitioners' perceptions of the professional roles of community pharmacists
7. General practitioners' attitudes to collaboration with community pharmacists
8. Current collaboration between general practitioners and community pharmacists
9. Barriers to collaboration between general practitioners and community pharmacists
10. Prospects of enhanced future collaboration between General practitioners and community pharmacists

4.8.2 VARIABLES NOT IN THE QUESTIONNAIRE

These variables represent the different stages of collaboration according to the CWR model used for structuring questions on collaboration.

1. Stage 0 collaboration
2. Stage 1 collaboration
3. Stage 2 collaboration
4. Stage 3 collaboration
5. Stage 4 collaboration

4.8.3 CLASSIFICATION OF VARIABLES

This section presents variables that fall into the two classifications of variables usually used in research. The two classes are:

a) Predictor or independent variables
b) Outcome or dependent variables



**4.8.3.1 Predictor or independent variables**

These are variables that are being manipulated in a research study in order to observe the effect on a dependent or outcome variable

4.8.3.1.1 Main predictor variable

General practitioners' perceptions of the professional roles of community pharmacists in patient care

4.8.3.1.2 Other predictor variables from the questionnaire

1. Age of general practitioners
2. Gender of general practitioners
3. Years in practice
4. Nature of practice
5. Number of patients seen per day
6. General practitioners' attitudes to collaboration with community pharmacists

#### 4.8.3.2 Outcome or dependent variables

The outcome or dependent variable is dependent on the independent variable or is the outcome of the manipulations on the independent or predictor variable.

4.8.3.2.1 Main outcome variable

The main outcome variable is the desired collaboration between general practitioners and community pharmacists (prospects of enhanced future collaboration).

4.8.3.2.2 Other outcome variable

The other outcome variable being looked at is the current collaboration between general practitioners and community pharmacists.

The various possible associations between these variables are expressed in the null and alternative hypotheses.

## 4.9 STATISTICAL ISSUES



This section presents statistical issues such as hypotheses, sample size and power, and data analysis.

4.9.1 HYPOTHESES

Null and alternative hypotheses generated from the research questions are presented below.

#### 4.9.1.1 Null hypothesis

There is no correlation between general practitioners' perceptions of the professional roles of community pharmacists in patient care and the desired collaboration (prospects of enhanced future collaboration) between general practitioners and community pharmacists.

#### 4.9.1.2 Alternative hypothesis (2-tailed)

There is a direct correlation between general practitioners' perceptions of the professional roles of community pharmacists in patient care and the desired collaboration (prospects of enhanced future collaboration) between general practitioners and community pharmacists. The alternative hypothesis is two-tailed because the prediction between the predictor and outcome variables does not specify a direction of increase or decrease (Trochim, 2006).

### 4.9.2 SAMPLE SIZE AND POWER

The sample size calculation was based on the alternative hypothesis. The correlation coefficient (r) was used to calculate the sample size using the main predictor and outcome variables since they are continuous, also because the linear association between the two variables can be measured (Hulley *et al*., 2007).

Sample size, N was calculated using the following procedure

a) The null hypothesis was stated and it was decided that the alternative hypothesis was two-tailed as stated earlier



b) The effect size (r) which is the absolute value of the smallest correlation coefficient (r) that would possibly be detected is 0.5

c) Alpha (α, 2- tailed) was set at 0.05

d) Beta (β) at 0.1(90% power)

$C = 0.5 * \ln [(1+r) / (1-r)]$

$z_\alpha$= the standard normal deviate for α

$z_\beta$= the standard normal deviate for β

N = Total number of subjects required (Sample size)

$N = [(z_\alpha + z_\beta) \div C]^2 + 3$

Therefore, Sample size, N = 52 (Hulley *et al*., 1988: 218).

This would afford a 90% power to detect an association between the main predictor and outcome variables. To achieve the calculated sample size, 150 general practitioners were randomly selected because of non-responses, inaccurate addresses, and unreachable participants.

### 4.9.3 DATA ANALYSIS

Data was entered into a database created on Epi Info (version 3.5.1., 2008) and analyzed using IBM SPSS statistical software (version 19, 2010).The pattern of association between continuous variables was first established using a scatter plot and linearity was confirmed. Shapiro-Wilks test was used to confirm the normality hypothesis. Some data was found not to be normally distributed and as such non-parametric tests were used for analysis as parametric tests require all data to be normally distributed. Also, Likert responses can be analyzed using non-parametric tests when treated as ordinal data as is done in the study. This also informs the use of medians as measures of central tendency. In addition, medians are less influenced by extreme values than means.



#### 4.9.3.1 Univariate descriptive analysis

Frequencies and percentages were used for describing categorical variables while continuous variables were analyzed with medians and ranges. For convenience, each section was summarized into a single table. Thematic diagrams of the open-ended questions are presented with the comments made by general practitioners. Comments were found to fit the three characteristics that affect the development of a CWR as proposed by McDonough and Doucette, (2001) and analyzed accordingly as participant, context and exchange characteristics.

#### 4.9.3.2 Inferential analyses

This section presents the statistical tests that would be used for analysis. Inferential analyses are used to infer relationships between or among variables and also from a study sample to the population. Only bivariate analyses were carried out in this study.

4.9.3.2.1 Bivariate analysis

The relationship between variables is determined using bivariate analysis. First, Spearman's Rank Order correlation was used to explore associations between continuous variables. The value [rho (r) value] of the strength of the correlation (strength of the relationship) between variables would be interpreted using the guidelines suggested by Cohen (1988), as presented in table 12 below. Secondly, other bivariate analysis were carried out using graphical explorations of associations between participants' demographic characteristics and continuous variables were carried out, then additional non-parametric techniques used to compare categorical and continuous variables such as Mann-Whitney U Test and Kruskal-Wallis Test which were carried out to confirm the statistical significance of the results of the graphical explorations.



**Table 12:** Cohen' guideline for interpreting the strength of correlation between variables

| **rho (r) value** | **Size of correlation** |
|---|---|
| ±0.10- 0.29 | small correlation |
| ±0.30- 0.49 | medium correlation |
| ±0.50- 1.0 | large correlation |

## 4.10 ETHICAL CONSIDERATION

Ethical approval for this project was obtained from the University of the Western Cape, Senate Ethics Committee (Ethical Clearance Number: 10/4/29). Confidentiality and anonymity was maintained at all times since the names of the participants were never linked with the questionnaires. The participants were assigned a unique study number that was used on the questionnaires. Personally identifying information was retained separately from other study data. Dissemination of findings would also not contain any personally identifying information. All participants were issued with consent forms to sign before

completing the questionnaires. Data was entered into a research database and was identified only using the study number. Participants were free to leave any questions unanswered and could withdraw from the study at any stage.

### 4.11 LIMITATIONS OF THE STUDY

A major limitation experienced in the course of carrying out the study was the inaccurate addresses and phone numbers of some general practitioners contained on the list obtained from the South African Medical Association which was used for stratifying participants into the 8 suburban areas of the Cape Metropole. This led to a third of the randomly selected sample being inaccessible despite them fulfilling the eligibility criteria (50 out of 150). Of the 100 accessible participants, 25 rejected the invitation to participate in the survey for reasons such as time constraints and disinterest in the study topic. This group of general practitioners may have introduced a contrasting perspective to the study. Irrespective of this problem, the sample was still very well distributed within the Cape Town Metropolis, covering 41 areas, spread within 7 of the 8 suburban areas.

A larger number of general practitioners could have also been recruited if more funds and researchers were included in the study since the study design required a lot of travelling which was tiring for one researcher. This would have increased the generalisability of the study.

Generalizing the study findings could be compromised as only general practitioners who were members of SAMA were included in the study. SAMA membership is voluntary and might not be a true reflection of the population of general practitioners in the Cape Metropole unlike membership of the HPCSA. Also generalizing the study findings could be compromised since the study was limited to the Cape Metropole area alone which can be described as an urban area and the experiences of general practitioners in rural areas were not considered.

Another limitation is that the study measured cross-sectional data because data was collected once from a single sample. Therefore, there is limited information on changes that might take place over time. A longitudinal study would be needed to

track changes that occur in inter-professional collaboration between general practitioners and community pharmacists.

The introduction of consultation fees could have introduced positive or negative biases into the study which would affect the generalisability of the study.

# CHAPTER FIVE

# RESULTS

## 5.1 INTRODUCTION

This chapter presents the results of statistical analysis comprising descriptive and inferential analyses as described in chapter four. Firstly, all univariate descriptive statistics results are presented as quantitative data which are summarized in texts, tables and figures as percentages, frequencies, and medians and the qualitative data are presented as thematic diagrams being supported by direct quotes from the study participants. Secondly, inferential statistical results are presented according to the sequence of analysis. Results of associations between continuous variables, obtained using Spearman's Rank Order Correlation, are presented. Graphical explorations of association between categorical and continuous variables and the results of Mann-Whitney U Test and Kruskal-Wallis Test are used to confirm the statistical significance of the graphs. Thirdly, the results of reliability of scales used in the instrument and data normality are presented. This chapter ends with a brief summary of the main findings.



## 5.2 UNIVARIATE DESCRIPTIVE ANALYSIS

Results of the univariate analyses carried out using frequencies, percentages, and medians are presented in this section.

### 5.2.1 RESPONSE RATE

150 general practitioners were randomly selected to participate in the study. 65 of them were inaccessible for various reasons despite fulfilling the eligibility criteria (50 were unreachable on phone, one of them passed away, three retired, another three migrated, while eight were no longer practicing as general practitioners). Of the 85 remaining, 25 declined to participate for reasons such as time constraints and disinterest, therefore, leaving only a total of 60 participants. The sixty general practitioners consented to participate and completed the study resulting in a final usable response rate of 70.6%.

### 5.2.2 QUANTITATIVE DATA

Demographic data of the study participants and the results of fives scales of the instrument constructed with closed and open ended items using Likert scale response options are presented here.

#### 5.2.2.1 Demographics of study participants

The result of the demographics of study participants is presented in Table 13. The result shows that 70% of the participants were males. Most of the participants were between the age range of 31 to 40 years and 41 to 50 years, represented at 28.3% each; only 3.3% were between 25 to 30 years while older general practitioners (above 60 years) were well represented at 23.3%. Twenty-eight ( 46.7%) of the 60 general practitioners had spent over 20 years in practice, 38.3% spent between 10 to 20 years in practice and the remaining 15% were in practice for less than 10 years. The ratio of dispensing to non- dispensing general practitioners was close at 46.7% to 53.3%, respectively, while only 21.7% of the participants saw more than 30 patients a day.



#### 5.2.2.2 General practitioners' perceptions of professional roles of community pharmacists

The results of a 13-item scale measuring general practitioners' perceptions of professional roles of community pharmacists in healthcare delivery using 4-point Likert scale response options scored from 1-for "Strongly Disagree" to 4-for "Strongly Agree'' are presented here. The results are presented in table 14.

The results show that high percentages of general practitioners strongly agreed to community pharmacists carrying out the following roles: dispensing prescribed medicines (68.3%), providing information to patients on prescribed medicines (73.3%), checking prescriptions for indication, safety, and therapeutic indications (68.3%), and reporting adverse reactions to drugs to prescribers and health authorities (60%). General practitioners expressed less agreement to roles such as: monitoring blood pressure and glucose level (46.7%), offering clinical advice to general practitioners (42.4%), and offering clinical medicines information to general

practitioners (56.7%). Similarly, only 38.3% of general practitioners agreed to community pharmacists making dose adjustments according to agreed protocols. On the disagreement scale, 55.9% of general practitioners disagreed with community pharmacists undertaking a clinically advanced role like partnership prescribing, outweighing those who had agreed (43.9%). General practitioners (51.7%) strongly agreed at the same percentage to community pharmacists carrying out advanced professional roles such as supervising repeat prescriptions for up to 6 months and participating in health promotion programmes.

The median of the total sum of scores for general practitioners' perceptions of professional roles of community pharmacists was computed to be 42 with the median of the Likert scale scores being 4. From table 15, these medians can be observed to fall within "good perceptions" range. It can be concluded that ***general practitioners in this study have good perceptions of the professional roles of community pharmacists.***

#### 5.2.2.3 General practitioners' attitudes towards collaboration with community pharmacists



The results of a 6-item scale measuring general practitioners' attitudes towards inter-professional collaboration with community pharmacists in healthcare delivery to enhance patients' health outcomes using a 4-point Likert scale scored from 1-for Strongly Disagree to 4-for "Strongly Agree" are presented here. The variable "general practitioners' attitudes towards inter-professional collaboration with community pharmacists" is depicted in two ways to better describe the variable as:
1) Positive attitudes, and

2) Negative attitudes.

The positive attitudes are further described as either:

1) Highly positive attitudes or

2) Slightly positive attitudes.

**Table 13:** Demographics of study participants (N=60)

| **Participants** | **Frequency (n)** | **Percentage (%)** |
|---|---|---|
| **Gender** | | |
| Male | 42 | 70.0 |
| Female | 18 | 30.0 |
| | | |
| **Age (years)** | | |
| 25-30 | 2 | 3.3 |
| 31-40 | 17 | 28.3 |
| 41-50 | 17 | 28.3 |
| 51-60 | 10 | 16.7 |
| More than 60 | 14 | 23.3 |
| | | |
| **Years in practice** | | |
| Less than 10 years | 9 | 15.0 |
| 10-20 years | 23 | 38.3 |
| More than 20 years | 28 | 46.7 |
| | | |
| **Nature of practice** | | |
| Dispensing doctor | 28 | 46.7 |
| Non-dispensing doctor | 32 | 53.3 |
| | | |
| **Number of patients seen per day** | | |
| Less than 10 | 4 | 6.7 |
| 10-20 | 21 | 35.0 |
| 21-30 | 22 | 36.7 |
| More than 30 | 13 | 21.7 |



NB: *Percentages do not always total 100% because of rounding to 1 decimal point*

**Table 14:** General practitioners' perceptions of the professional roles of community pharmacists.

| **Professional roles of community pharmacists** | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** | **Median Likert** |
|---|---|---|---|---|---|
| | N (%) | N (%) | N (%) | N (%) | |
| 1.Dispensing prescribed medicines to the public | 41(68.3) | 16(26.7) | 1(1.7) | 2(3.3) | 4 |
| 2.Providing information on prescribed drugs | 44(73.3) | 16(26.7) | 0(0.0) | 0(0.0) | 4 |
| 3.Checking prescriptions for safety | 41(68.3) | 17(28.3) | 1(1.7) | 1(1.7) | 4 |
| 4.Reporting adverse reactions | 36(60.0) | 23(38.3) | 1(1.7) | 0(0.0) | 4 |
| 5.Advising on cost effectiveness | 28(46.7 ) | 28(46.7) | 3(5.0) | 1(1.7) | 3 |
| 6.Monitoring patients adherence with therapy | 27(45.0) | 28(46.7) | 4(6.7 ) | 1(1.7) | 3 |
| 7.Monitoring Blood Pressure, blood glucose level, and cholesterol level | 7(11.7) | 32(53.3) | 14(23.3) | 7(11.7) | 3 |
| 8.Source of clinical advice to general practitioners | 17(28.8) | 25(42.4) | 16(27.1) | 1(1.7) | 3 |

| | | | | | |
|---|---|---|---|---|---|
| 9.Source of clinical medicines information to general practitioners | 20(33.3) | 34(56.7) | 5(8.3) | 1(1.7) | 3 |
| 10.Make dose adjustments using protocols established with prescriber | 11(18.3) | 23(38.3) | 15(25.0) | 11(18.3) | 3 |
| 11.Supervise repeat prescriptions | 31(51.7) | 23(38.3) | 4(6.7) | 2(3.3) | 4 |
| 12.Partnership prescribing [a] | 6(10.0) | 20(33.9) | 19(32.2) | 14(23.7) | 2 |
| 13.Participate in health promotion programs | 31(51.7) | 24(40.0) | 2(3.3) | 3(5.0) | 4 |



*N=60 except otherwise stated; [a,] means, N<60. Scores of 4-point Likert scale response options: 4= "strongly agree" (good perception), 3= Agree (moderate perception), 2 = Disagree (poor perceptions), 1= Strongly Disagree (poor perceptions)*

NB: *Percentages do not always total 100.0% because of rounding to 1 decimal point.*

**Table 15**: Total sum of scores of 4-point Likert scale response options on general practitioners' perceptions of the professional roles of community pharmacists' scale

| **Likert scale response options** | **Scores for Likert scale response options** | **Maximum obtainable scores** | **Limits of scores** |
|---|---|---|---|
| Strongly Agree(good perceptions) | 4 | 52 | 40-52 |
| Agree (fair perceptions) | 3 | 39 | 27-39 |
| Disagree (poor perceptions) | 2 | 26 | 14-26 |
| Strongly Disagree (poor perceptions) | 1 | 13 | 0-13 |



The Likert scale response options were assigned these additional labels. The results for this section are shown in table 16.

The results show that all general practitioners in the study (100%) had positive attitudes to community pharmacists contacting them when there was an issue with their prescription, with 80% of them having highly positive attitudes. Similarly, among 98.3% of general practitioners with a positive attitude, 70% had highly positive attitudes to community pharmacists contacting them when there was a possible adverse drug reaction to prescribed medication. Most general practitioners (96.7%) would accept drug information from community pharmacists with a higher proportion (51.7%) displaying slightly positive attitudes. Of the 83.3% of general practitioners who were positive that a formalised arrangement with community pharmacists was vital to patient care, 50% had slightly positive attitudes about it, while 16.7% did not see the need for formalizing arrangements with community pharmacists. More general practitioners (41.7%) had slightly positive attitudes to referring patients to community pharmacists for services that they were specially trained for besides dispensing (31.7% were highly positive). Out of 61.7% of general practitioners who consented to sharing patients' clinical information with community pharmacists only 16.7% were highly positive about it.

The median of the total sum of scores for the variable, "general practitioners' attitudes toward inter-professional collaboration with community pharmacists", was computed to be 20 with the median of the Likert scale scores being 4. From table 17, these medians can be observed to fall within the "positive attitudes" range. Table 18 shows that the highest median of the stages of collaboration on general practitioners' attitudes toward collaboration with community pharmacists' scale is observed in stage 0. It can be concluded that ***general practitioners in this study have positive attitudes to inter-professional collaboration with community pharmacists especially at stage 0 collaboration.***

**Table 16:** General practitioners' attitudes toward collaboration with community pharmacists.



| **Collaboration** | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** | **Median Likert** |
|---|---|---|---|---|---|
| | N (%) | N (%) | N (%) | N (%) | |
| i. Community pharmacists should contact me for issues with my prescription during the dispensing process | 48(80.0) | 12(20.0) | 0(0.00) | 0(0.00) | 4 |
| ii. Community pharmacists should alert me of possible adverse drug reaction | 42(70.0) | 17(28.3) | 1(1.7) | 0(0.00) | 4 |
| ii. Community pharmacists can call me referrals for services they have specially trained for (e.g. anticoagulation service.) | 19(31.7) | 25(41.7) | 12(20.0) | 4(6.7) | 3 |
| iv. I would accept drug information (dosage, drug interaction) from the community pharmacists | 27(45.0) | 31(51.7) | 2(3.3) | 0(0.0) | 3 |

| | | | | | |
|---|---|---|---|---|---|
| v. I would give patients' clinical information to community pharmacists to assist in making judgments | 10(16.7) | 27(45.0) | 12(20.0) | 11(18.3) | 3 |
| vi. Formalized arrangements for exchange of information between community pharmacists and general practitioners is vital to patient care | 20(33.3) | 30(50.0) | 6(10.0) | 4(6.7) | 3 |

*N=60; Scores of the 4-point Likert scale response options: 4 = strongly agree (highly positive attitudes); 3= Agree (less positive attitudes); 2= Disagree (negative attitudes); 1= Strongly Disagree (negative attitudes)*

*NB: Percentages do not always total 100.0% because of rounding to 1 decimal point.*

**Table 17:** Total sum of scores of 4-point Likert scale response options on general practitioners' attitudes toward collaboration with community pharmacists' scale

| **Likert scale response options** | **Scores for Likert scale response options** | **Maximum obtainable scores** | **Limit of scores** |
|---|---|---|---|
| strongly agree (highly positive attitudes) | 4 | 24 | 19-24 |
| Agree (slightly positive attitudes) | 3 | 18 | 13-18 |
| Disagree (negative attitudes) | 2 | 12 | 7-12 |
| Strongly Disagree (negative attitudes) | 1 | 6 | 0-6 |

**Table 18**: Medians of the stages of collaboration on general practitioners' attitudes toward collaboration with community pharmacists' scale

| Stage of collaboration | Items | Median |
|---|---|---|
| Stage 0 collaboration | Questions i, ii, iv | 3.7 |
| Stage 1 collaboration | Question iii | 3.0 |
| Stage 3 collaboration | Question v | 3.0 |
| Stage 4 collaboration | Question vi | 3.0 |



#### 5.2.2.4 Current collaboration between general practitioners and community pharmacists

This section presents the results of an 8-item scale measuring current collaboration between general practitioners and community pharmacists using a 5-point Likert scale scored from 1-for "never" to 5-for "less than 5 times". The frequency of interactions between general practitioners and community pharmacists within 6 months prior to the study is used to determine current collaboration. The results for this section are shown in table 19.

In the 6 months preceding the study, only 15% of general practitioners were contacted more than 5 times by community pharmacists because of prescribing errors and 3.3% had 4 to 5 alerts of possible adverse reactions to their prescribed medications. In the preceding 6 months, 5% were approached once by community pharmacists for referrals for a new service being provided, while the vast majority of general practitioners (95%) had never been contacted for such. Patients were referred more than five times to community pharmacists for new services they have trained for by 8.3% of general practitioners. Some of the general practitioners

(36.7%) had never asked a community pharmacist for drug information while only 11.7% have asked more than 5 times in 6 months. Patients' clinical information has never been provided by 75% of general practitioners to a community pharmacist. One general practitioner (1.7%) indicated he has done it more than 5 times in 6 months, two (3.3%) 4 to 5 times while 10% have done it once and another 10%, 2 to 3 times. Formalized arrangements with community pharmacists for exchange of information and provision of services does not exist with 68.3% of general practitioners, while 31.7% indicated some form of arrangement. A few general practitioners (14.5%) agreed that collaborations with community pharmacists have improved patients health outcomes more than 5 times, 31.8% also agreed to this at lesser frequencies. Some general practitioners (43.6%) did not agree that collaboration makes any difference or they have never collaborated with the community pharmacists at all.

The median of the total sum of scores for the variable, 'general practitioners' current collaboration with community pharmacists was computed to be 13 with the median of the Likert scale scores being 2. As shown in table 20, these medians can be observed to fall within the "Low-level collaborations" range. Table 21 also shows that the highest median score of the stages of collaboration of current collaboration between general practitioners and community pharmacists within 6 months' is observed at stage 0 collaboration. Hence, it can be concluded that ***general practitioners in this study have low-levels of stage 0 collaboration with community pharmacists.***

**Table 19:** Frequencies and percentages of occurrence of collaboration between general practitioners and community pharmacists within 6 months

| **Collaboration** | **More than 5 times** | **4-5 times** | **2-3 times** | **Once** | **Never** | **Median Likert** |
|---|---|---|---|---|---|---|
| | N (%) | N (%) | N (%) | N (%) | N (%) | |
| i. A community pharmacist contacted me because of issues with my prescription during the dispensing process (e.g. dosage errors, contra-indications etc.) | 9(15.0) | 6(10.0) | 16(26.7) | 13(21.7) | 16(26.7) | 3 |
| ii. A community pharmacist alerted me of possible adverse drug reactions to prescribed medication | 0(0.0) | 2(3.3) | 7(11.7) | 13(21.7) | 38(63.3) | 1 |
| iii. A community pharmacist visited/called me to request for patient referral for services beside dispensing for which he has specially trained (e.g. anticoagulation service) | 0(0.0) | 0(0.0) | 0(0.0) | 3(5.0) | 57(95.0) | 1 |
| iv. I referred my patient to a community pharmacist for the above | 5(8.3) | 1(1.7) | 5(8.3) | 4(6.7) | 45(75.0) | 1 |
| v. A community pharmacist provided me with drug information on asking (dosage, drug interaction) | 7(11.7) | 2(3.3) | 20(33.3) | 9(15.0) | 22(36.7) | 2 |
| vi. I provided my patients' clinical Information to a community pharmacist for | 1(1.7) | 2(3.3) | 6(10.0) | 6(10.0) | 45(75.0) | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| him to make better therapeutic judgments | | | | | | |
| vii. A community pharmacist and I have developed a formalized arrangement for exchange of information and provision of services | 4(6.7) | 3(5.0) | 4(6.7) | 8(13.3 ) | 41(68.3) | 1 |
| viii. How many times has such collaboration improved patients' health outcomes? [a] | 8(14.5 ) | 6(10.9) | 4(7.3 ) | 13(23.6) | 24(43.6) | 2 |

*N=60; [a] means N=55; Scores of the 5-point Likert scale: Never = 1, Once = 2, 2-3 times = 3, 4-5 times = 4 and Greater than 5 times = 5.*

NB: *Percentages do not always total 100.0% because of rounding to 1 decimal point.*

**Table 20**: Total sum of scores of 5-point Likert scale response options on frequencies and percentages of occurrence of collaboration between general practitioners and community pharmacists within 6 months' scale

| **Likert scale response options and variable qualifiers** | **Scores for Likert scale response options** | **Maximum obtainable scores** | **Limits of scores** |
|---|---|---|---|
| > 5 times (high-level collaboration) | 5 | 40 | 33-40 |
| 4-5 times (mid-level collaboration) | 4 | 32 | 25-32 |
| 1-3 times (Low-level collaboration) | 2 and 3 | 16 and 24 | 9-24 |

| | | | |
|---|---|---|---|
| Never (no collaboration) | 1 | 8 | 0-8 |

**Table 21**: Medians of the stages of collaboration on frequencies and percentages of occurrence of collaboration between general practitioners and community pharmacists within 6 months' scale

| Stage of collaboration | Items | Median |
|---|---|---|
| Stage 0 collaboration | Questions i, ii, v | 2.0 |
| Stage 1 collaboration | Question iii | 1.0 |
| Stage 2 collaboration | Question iv | 1.0 |
| Stage 3 collaboration | Question vi | 1.0 |
| Stage 4 collaboration | Question vii, viii | 1.5 |



### 5.2.2.5 Barriers to collaboration between general practitioners and community pharmacists

This section presents the results of a 15-item scale containing statements with 4-point Likert scale scored from 1-for "Strongly Disagree" to 4-for "Strongly Agree" to measure barriers to general practitioners' inter-professional collaboration with community pharmacists. Descriptive item-analysis was done using frequencies and percentages and only statements confirmed as barriers would be considered for discussion. The results are presented on table 22.

The results show that 75.0% of general practitioners agreed that the lack of funding for collaboration is a barrier. The absence of a government policy giving sufficient recognition to such collaboration was stated by 57.9% of general practitioners to be a barrier. Different levels of agreement were exhibited by 73.4% of general

practitioners to the statement that patients might find it unacceptable for their medical information to be shared with community pharmacists (26.7% strongly agreed and 46.7% agreed). Having sufficient confidence in their clinical knowledge was stated by 72.8% of general practitioners to be the reason for not collaborating with community pharmacists. The possibility of community pharmacists giving biased advice for financial gain was stated by 62.1% to be a barrier.

#### 5.2.2.6 Prospects of enhanced future collaboration between general practitioners and community pharmacists

This section presents the results of a 6-item scale measuring the prospects of enhanced future collaboration between general practitioners and community pharmacists using a 4-point Likert scale scored from 1-for "Strongly Disagree" to 4-for "Strongly Agree". The variable, "prospects of enhanced future collaboration between general practitioners and community pharmacists" is depicted in two ways to better describe the variable as:

1) Good prospects of enhanced future collaboration,

2) Poor prospects of enhanced future collaboration.



**Table 22:** Barriers to collaboration between general practitioners and community pharmacists

| **Barriers to collaboration** | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|
| | N (%) | N (%) | N (%) | N (%) |
| The funding stream currently does not support community pharmacists and general practitioners collaborating on medication management | 8(13.3) | 37(61.7) | 12(20.0) | 3(5.0) |
| Government policy now gives sufficient recognition to this | 3(5.0) | 21(36.8) | 28(49.1) | 5(8.8) |

| | | | | |
|---|---|---|---|---|
| approach of patient care | | | | |
| Patients may find it unacceptable for their medical information to be shared with community pharmacists | 16(26.7) | 28(46.7) | 15(25.0) | 1(1.7) |
| Other than to dispense prescriptions, community pharmacists are on the periphery of the core healthcare team | 3(5.0) | 15(25.0) | 36(60.0) | 6(10.0) |
| A community pharmacists' knowledge of pharmacology and clinical use of medicines is inadequate to intervene on the patient's behalf | 2(3.3) | 9(15.0) | 35(58.3) | 14(23.3) |
| I have sufficient confidence my clinical knowledge to provide this service [a] | 12(20.3) | 31(52.5) | 15(25.4) | 1(1.7) |
| The patient may get conflicting information regarding medicines use | 4(6.7) | 28(46.7) | 26(43.3) | 2(3.3) |
| This collaboration would not improve patients' medicine-related health outcomes. | 2(3.3) | 3(5.0) | 39(65.0) | 16(26.7) |
| I don't have the time to discuss patient-related medicine issues with community pharmacists [a] | 1(1.7) | 10(16.9) | 32(54.2) | 16(27.1) |
| There is no CP practice in close proximity to my surgery. | 4(6.8) | 6(10.2) | 22(37.3) | 27(45.8) |
| I have never been contacted by any community pharmacist [a] | 3(5.0) | 2(3.3) | 29(48.3) | 26(43.3) |

| | | | | |
|---|---|---|---|---|
| The relationship between community pharmacists and general practitioners is too financially competitive to encompass this service [a]. | 2(3.4) | 10(16.9) | 32(54.2) | 15(25.4) |
| Community pharmacists can give biased advice on the use of medicines due to commercial pressure [a] | 3(5.2) | 33(56.9) | 18(31.0) | 4(6.9) |

N=60;[a] means N < 60. *Percentages do not always total 100.0% because of rounding to 1 decimal point.*



The Likert scale response options were collapsed and assigned these additional labels. The results for this section are shown in table 23.

The results show that there are good prospects of enhanced future collaboration with more than 50% of participants indicating agreements to: collaborative care or co-managed care of patients especially the chronically ill, exchange of patient information for better clinical and therapeutic judgments, referral of patients for services that community pharmacists are specially trained for and health promotion programmes. All participants agreed to exchange information as a result of patients' negative reactions to prescribed medication and prescription issues such as safety and therapeutic duplications. The median of the total sum of scores for the variable, "general practitioners prospects of enhanced future collaboration with community pharmacists" was computed to be 19 with the median of the Likert scale scores being 4. As shown in Table 24, these medians can be observed to fall within the "good prospects of collaboration" range. Table 25 also shows that the highest median score of the stages of collaboration on prospects of enhanced future collaboration between general practitioners and community pharmacists' scale is observed at stage 0 collaboration. Hence, it can be concluded ***there are good***

***prospects of enhanced future collaborations especially at stage 0 between general practitioners and community pharmacists.***

**Table 23: Prospects of enhanced future collaboration between general practitioners and community pharmacists**

| **Collaboration** | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** | **Median Likert** |
|---|---|---|---|---|---|
| | N (%) | N (%) | N (%) | N (%) | |
| i. Collaborative care or co-management of patients (especially chronically ill patients). | 20(33.9) | 34(57.6) | 3( 5.1) | 2(3.4) | 3 |
| ii. Exchange of patient information for better clinical and therapeutic judgments | 10(16.9) | 37( 62.7) | 8(13.6) | 4(6.8) | 3 |
| iii. Referral of patients to community pharmacists for other specialized services (e.g. anticoagulation service) | 8(13.3) | 33(55.0) | 15( 25.0) | 4(6.7) | 3 |
| iv. Health promotion programmes (e.g. smoking cessation, weight loss etc ) | 29(48.3) | 29(48.3) | 1(1.7) | 1(1.7) | 3 |
| v. Exchange of information as a result of patients' negative reaction to prescribed medication | 29(48.3) | 31(51.7) | 0.0 | 0.0 | 3 |
| vi. Exchange of information on prescription issues such as safety and therapeutic duplications | 32(53.3) | 28(46.7) | 0.0 | 0.0 | 4 |

*N= 58; Scores of the 4-point Likert scale: 4= "strongly agree" (good prospects of collaboration), 3= Agree (good prospects of collaboration), 2= Disagree (poor prospects of collaboration), 1= Strongly Disagree (poor prospects of collaboration).*

NB: *Percentages do not always total 100.0% because of rounding to 1 decimal point.*

**Table 24**: Total sum of scores of 5-point Likert scale response options on prospects of enhanced future collaboration between general practitioners and community pharmacists' scale

| **Likert scale response options** | **Scores for Likert scale response options** | **Maximum obtainable scores** | **Limit of scores** |
|---|---|---|---|
| Strongly Agree and Agree (good prospects of collaboration) | 4 and 3 | 24 | 13-24 |
| Disagree and Strongly Disagree (poor prospects of collaboration) | 2 and 1 | 12 | 0-12 |

**Table 25**: Medians of the stages of collaboration on prospects of enhanced future collaboration between general practitioners and community pharmacists' scale

| Stages of collaboration | Items | Median |
|---|---|---|
| Stage 0 collaboration | Questions v, vi | 3.5 |
| Stage 1 collaboration | Question iv | 3.0 |
| Stage 2 collaboration | Question iii | 3.0 |
| Stage 3 collaboration | Question ii | 3.0 |
| Stage 4 collaboration | Question i | 3.0 |

5.2.3 QUALITATIVE DATA

This section presents the results of the analysis of responses to the open-ended questions asked in the questionnaire (appendix III) in quotes. Thematic diagrams emerged from each open ended question and are presented as figure 1 and figure 2. Figure1 articulates responses to the question on ways of enhancing collaboration, while figure 2 summarises responses to the question on other barriers to collaboration.



Hence, this section is divided into these two sub-sections. Comments made by participants on ways of enhancing collaboration are further divided into supportive comments and suggestive comments. The suggestive comments were classified as pharmacists' characteristics, exchange characteristics and context characteristics. Comments suggesting other barriers to collaboration were classified according to those that bordered on professional practice or health systems.

#### 5.2.3.1 Ways of enhancing collaboration

General practitioners made several supportive comments about inter-professional collaboration and suggestions on how to enhance collaboration with community pharmacists. The thematic diagram contains the supportive comments and suggestions.

**5.2.3.1.1** Supportive comments

- ‘We have a good relationship with our local pharmacist’
- ‘Collaboration would take unnecessary burden off general practitioners’
- ‘Collaboration would help check patients who shop for prescriptions for DDAs (Dangerous Drugs of Addiction)

**5.2.3.1.2** Suggestions

Suggestive responses obtained from study participants were found to fit the three classes of characteristics that affect the development of a collaborative working relationship (CWR) by McDonough and Doucette, (2001) and they were classified as such.



***5.2.3.1.2.1 Pharmacists’ characteristics***

This section comprises responses describing the professional knowledge base and skills of community pharmacists.

- “Community pharmacists need lots of education and a change of attitude’
- ‘Knowledge of the clinical depth of community pharmacists would make combined decisions easier’
- “Community pharmacists need to have more knowledge of the use and relevance of blood pressure, glucose and cholesterol tests.

**Figure 1:** Thematic diagram of responses to the open-ended question 'ways of enhancing collaboration'

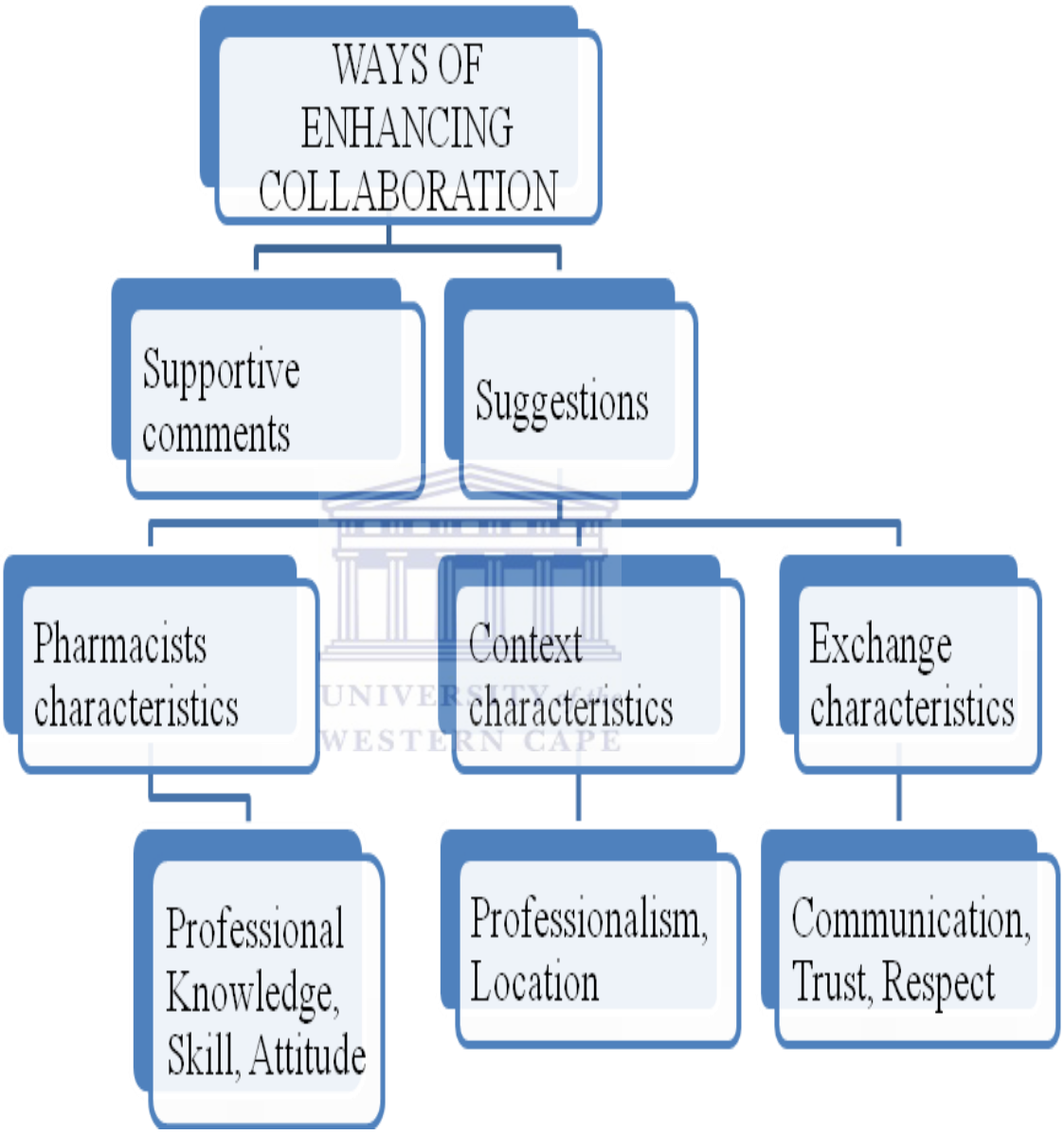


**Figure 2:** Thematic diagram of responses to the open-ended question 'barriers to collaboration'

#### *5.2.3.1.2.2 Context Characteristics*

This section comprises responses describing professionalism in community pharmacy practice and pharmaceutical care.

- 'If community pharmacists are not concentrating on being pharmacists but shop keepers, they can't be given more professional responsibilities'

- 'Community pharmacists should improve on their advisory roles, especially in the use of medical devices like asthma pumps, insulin pens and glucose monitoring'

- 'The closest pharmacy to me is miles away'(Khayelitsha)

#### *5.2.3.1.2.3 Exchange Characteristics*

These responses describe the nature and extent of exchanges (communication, trust, respect) expected between general practitioners and community pharmacists.

- 'There should be 2-way communication; patients should be referred back to general practitioners if they need reassessment'



- 'Monthly electronic feedback between general practitioners and community pharmacists'

- 'After blood pressure readings are taken and there is a concern, patients should be sent to the GP'

- 'General practitioners should stop dispensing'

- 'Mutual respect for professional boundaries and knowledge, patient interest should be first'

- 'Community pharmacists should stop dispensing antibiotics without prescriptions and medications to chronically ill patients long after their prescriptions have expired, this reinforces the fact that commercial interest outweighs clinical knowledge and ethics'

- ‘Group discussions amongst community pharmacists, general practitioners, dieticians, physiotherapists, would help facilitate health promotion programs in the community’

- ‘General practitioners and community pharmacists should jointly attend continuing medical education (CME) lectures’

#### 5.2.3.2 Other barriers to collaboration

General practitioners highlighted other barriers to collaboration that were not included in the questionnaire. These were summarised into two groups:

a) Professional practice

b) Health systems

##### 5.2.3.2.1 Professional practice

This comprises responses that described barriers related to ethical issues and professional boundaries.

- ‘Some patients especially in sub-economic areas cannot afford pharmacy prices due to excessive profiteering’



- ‘Community pharmacists pass opinions on general practitioners prescriptions without knowing the reasons behind such decisions’

- ‘Community pharmacists use general practitioners practice numbers’

- ‘Community pharmacists might feel general practitioners would not listen to them’

- ‘Community pharmacists are taking away patients from general practitioners with their increased clinical services’

- ‘Community pharmacists do not have patients medical histories to help them in decision making’

- ‘Community pharmacists make drug substitutions without consulting with general practitioners’.

- ‘Community pharmacists are not trained to make clinical diagnoses and give appropriate treatments’

- ‘Big chain pharmacies have a high turnover of community pharmacists which impedes collaboration’

- ‘Locum general practitioners and community pharmacists make collaboration difficult’

5.2.3.2.2 Health Systems

This comprises responses that describe barriers related to health policy issues and insurance.

- ‘Health Professionals Council of South Africa’s ethical rules’

- ‘Policy on dispensing’

- ‘Pharmacists lack access to malpractice insurance cover’

- ‘Community pharmacists should be held responsible for adverse reactions caused to the patients from POMs (Prescription only medicines) dispensed without prescriptions.



## 5.3 INFERENTIAL ANALYSES

This section presents the results of statistical analyses carried out to infer relationship between variables. The variables are: general practitioners’ perception of the professional roles of community pharmacist, general practitioners’ attitudes towards collaboration with community pharmacists, current collaboration between general practitioners and community pharmacists and prospects of enhanced future collaboration between general practitioners and community pharmacists. Non-parametric tests were used for analysis and only bivariate analyses were carried out. This section is divided into 3 subsections. Firstly, test of hypotheses and other

correlations using Spearman’s Rank Order Correlation. Secondly, graphical explorations of associations between participants’ demographic characteristics and

continuous variables in the questionnaire were carried out. Thirdly, Mann-Whitney U Test and Kruskal-Wallis Test were used to confirm the statistical significance of the graphical explorations.

### 5.3.1 BIVARIATE ANALYSIS

#### 5.3.1.1 Test of hypotheses

The null and alternative hypotheses were tested using Spearman's Rank Order Correlation (r). The results are presented in table 32.

5.3.1.1.1Null hypothesis

There is no correlation between general practitioners' perceptions of professional roles of community pharmacists in patient care and the desired collaboration (prospects of enhanced future collaboration).

5.3.1.1.2 Alternative hypothesis (2-tailed)

There is a direct correlation between general practitioners' perceptions of the professional roles of community pharmacists in patient care and the desired collaboration (prospects of enhanced future collaboration).

**Table 26:** Spearman's Rank Order Correlation (r) for calculating the strength of relationship between general practitioners' perceptions of the professional roles of community pharmacists and desired collaboration (prospects of enhanced future collaboration).

| **Variables** | **Rho (r) value** | **Two-tailed significance** |
|---|---|---|
| General practitioners' perceptions of professional roles of community pharmacists | 1.000 | - |
| Prospects of enhanced future collaboration with community pharmacists | 0.630 | 0.0005 |

*Correlation is significant at the 0.05 level (2-tailed).*



5.3.1.1.3 Calculating the strength of the associations between two continuous variables using Spearman's Rank Order Correlation

*The result in table 32 suggests that there is a statistically significant, strong, positive correlation between general practitioners' perceptions of the professional roles of community pharmacists that desires collaboration (prospects of enhanced future collaboration). [r=0.630, p=0.0005]. The null hypothesis is therefore rejected (Cohen, 1988).*

### 5.3.1.2 Strength of associations amongst other continuous variables using Spearman's Rank Order Correlation

This section presents the results of the Spearman's Rank Order Correlation [rho (r) values] indicating the strength of the relationship amongst other continuous variables. The results are presented in table 33.

**Table 27:** Spearman's rho (r) correlation amongst other continuous variables.

| VARIABLES | Rho (r) value | Two-tailed significance |
|---|---|---|
| General practitioners perceptions' of professional roles of community pharmacists | 1.000 | - |
| General practitioners' attitudes toward collaboration with community pharmacists | 0.691 | 0.0005 |
| Current collaboration between general practitioners and community pharmacists | 0.358 | 0.008 |
| General practitioners' attitudes toward collaboration with community pharmacists | 1.000 | - |
| Current collaboration between general practitioners and community pharmacists | 0.361 | 0.007 |
| Prospects of enhanced future collaboration between general practitioners and community pharmacists | 0.728 | 0.0005 |
| Current collaboration between general practitioners and community pharmacists | 1.000 | - |
| Prospects of enhanced future collaboration between general practitioners and community pharmacists | 0.463 | 0.0005 |

*Correlation is significant at the 0.05 level (2-tailed).*

5.3.1.2.1 Correlation between general practitioners' perceptions of professional roles of community pharmacists and general practitioners' attitudes toward collaboration

*The results suggest a statistically significant, strong, positive correlation between general practitioners' perceptions of professional roles of community pharmacists*

*and general practitioner' attitudes toward collaboration, [r= 0.691, p = 0.0005],* (Cohen, 1988).

5.3.1.2.2 Correlation between general practitioners' perceptions of professional roles of community pharmacists and current collaboration between general practitioners and community pharmacists

*The results suggest a statistically significant, medium, positive correlation between general practitioners' perceptions of professional roles of community pharmacists and current collaboration between general practitioners and community pharmacists, [r= 0.358, p = 0.008],* (Cohen, 1988).

5.5.1.2.3 Correlation between general practitioners' attitudes toward collaboration and current collaboration between general practitioners and community pharmacists

*The results suggest a statistically significant, medium, positive correlation between general practitioners' attitudes toward collaboration and current collaboration between general practitioners and community pharmacists [r= 0.361, p = 0.007],* (Cohen, 1988).



5.3.1.2.4 Correlation between general practitioners' attitudes toward collaboration and prospects of enhanced future collaboration between general practitioners and community pharmacists

*The results suggest a statistically significant, strong, positive correlation between general practitioners' attitudes toward collaboration and prospects of enhanced future collaboration between general practitioners and community pharmacists [r= 0.728, p =0.0005],* (Cohen, 1988).

5.3.1.2.5 Correlation between current collaboration between general practitioners and community pharmacists and prospects of enhanced future collaboration between general practitioners and community pharmacists

*The result suggests a statistically significant, medium, positive correlation between current collaboration between general practitioners and community pharmacists*

*and prospects of enhanced future collaboration between general practitioners and community pharmacists [r= 0.463, p = 0.0005]*, (Cohen, 1988).

### 5.3.1.3. Additional bivariate analysis

5.3.1.3.1 Graphical exploration of associations between participants' demographic characteristics and continuous variables.

Graphical representations of possible associations between participants' demographic characteristics and continuous variables are presented here. Participants' demographic characteristics are: age, gender, years in practice, nature of practice, and number of patients seen per day. Continuous variables are: general practitioners' perceptions of professional roles of community pharmacists, general practitioners' attitudes toward collaboration with community pharmacists, general practitioners current collaboration with community pharmacists and future prospects of enhanced collaboration between general practitioners and community pharmacists.

NB: The statistical significance of all graphically observed associations would be confirmed using Mann-Whitney U Test and Kruskal-Wallis Test.



5.3.1.3.1.1 Graphical exploration of associations between participants' demographic characteristic (age) and continuous variables.

The influence of age on the independent continuous variables is slight across the different age groups. General practitioners who are 51 to 60 years old have the highest median of total scores for: perceptions of the professional roles of community pharmacists, attitude towards collaboration and prospects of enhanced future collaboration with community pharmacists. However, this is without a corresponding current collaboration. General practitioners within the age range 31 to 40years have the highest median of total scores for current collaboration. Those within the age range of 25 to 30 years had the lowest median of total scores for: current collaboration, perceptions of the professional roles of community pharmacists and attitude towards collaboration with community pharmacists.

General practitioners older than 60 years had the lowest median of total scores for prospects of enhanced future collaboration.

**Figure 3:** Exploring associations between the age of participants and continuous variables

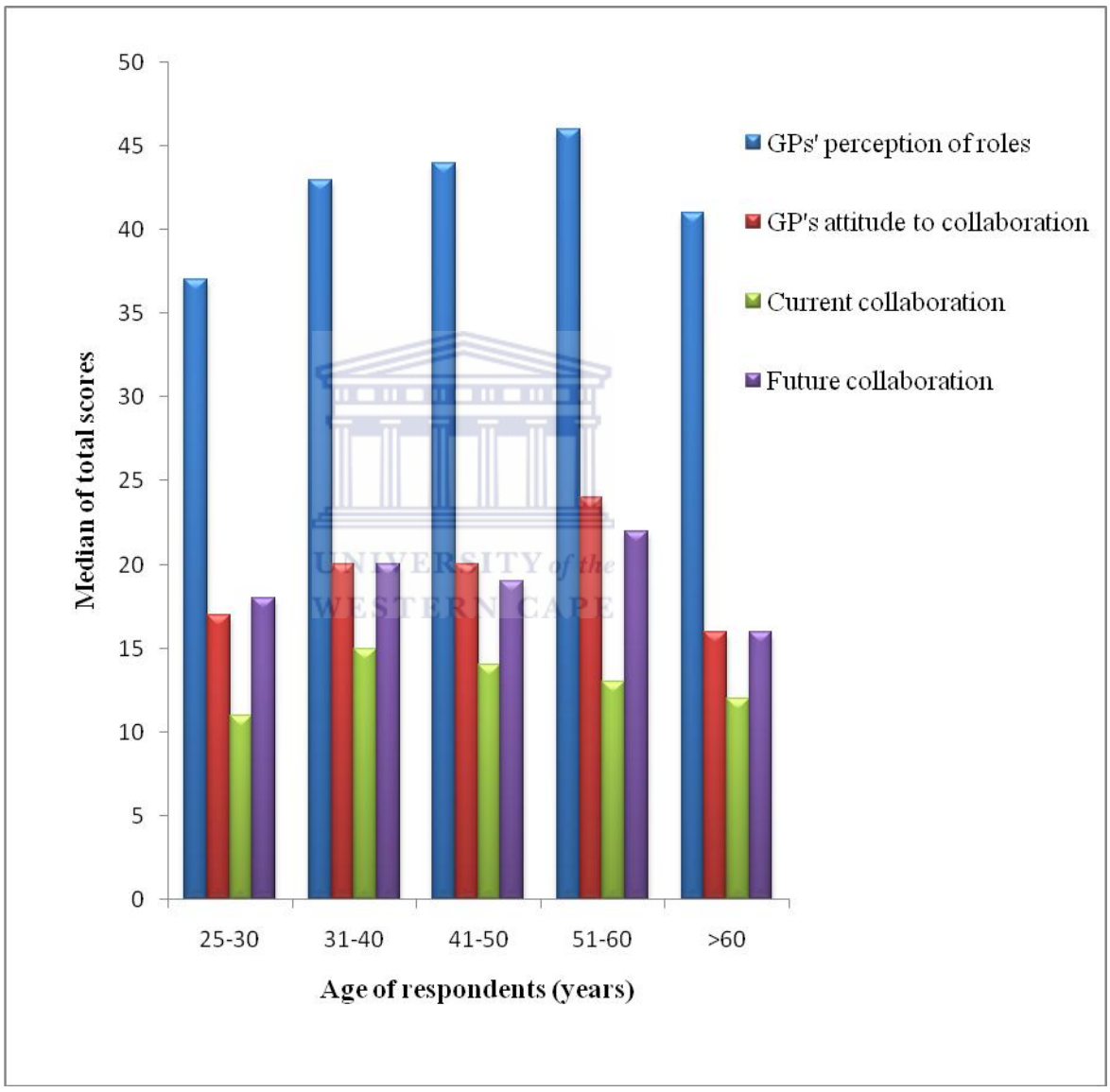
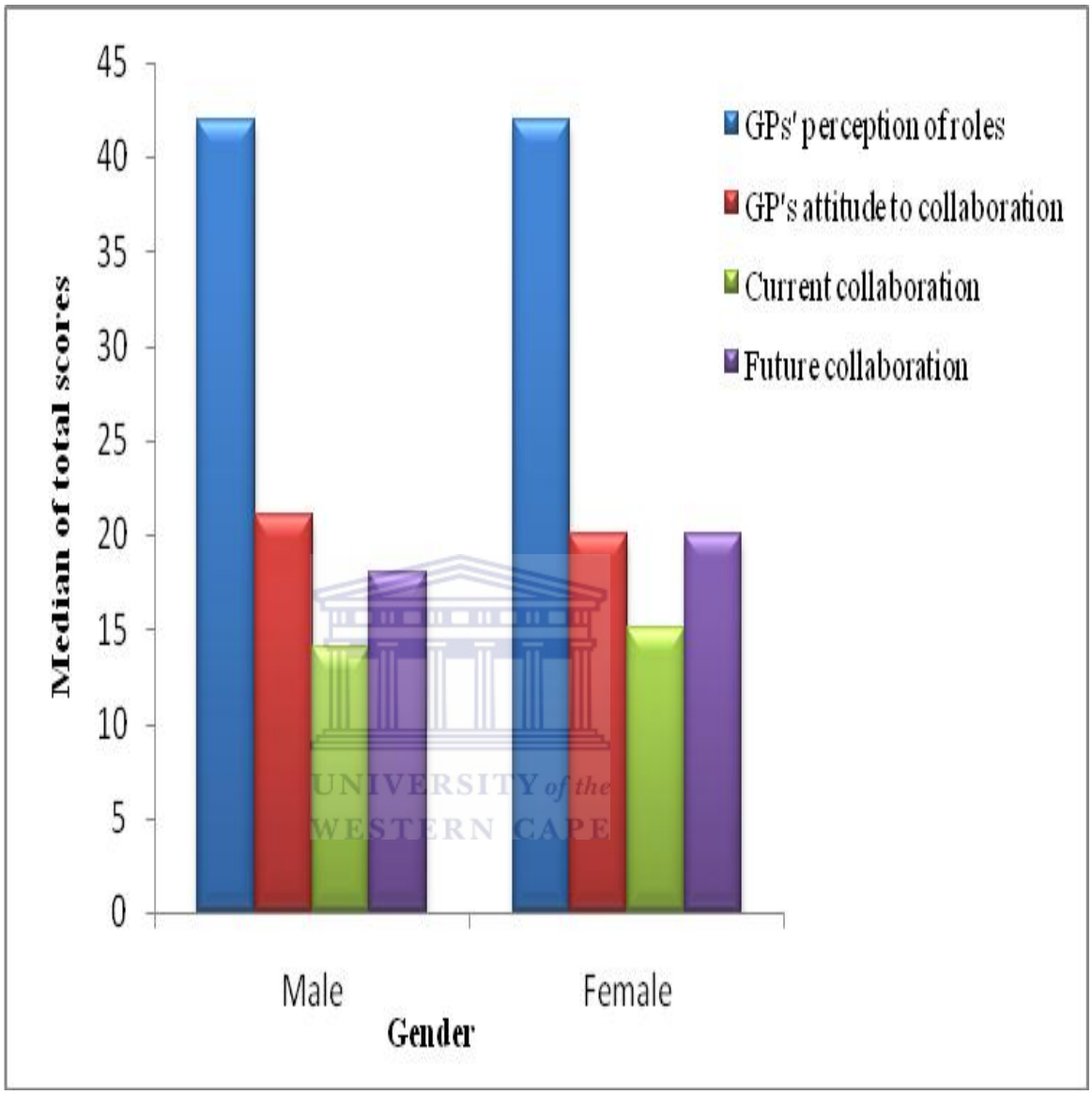


**Figure 4:** Exploring associations between participants' gender and continuous variables



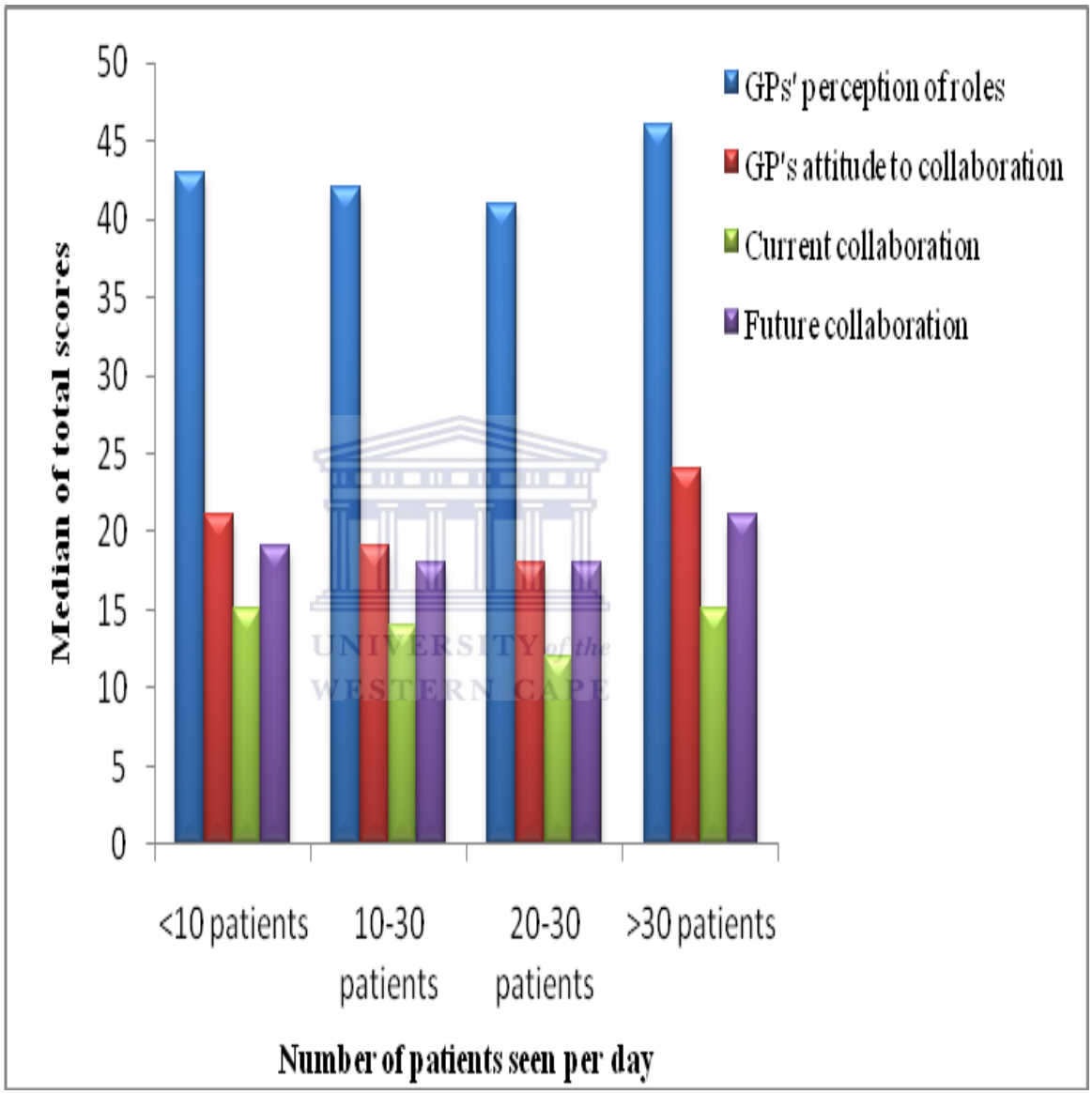



5.3.1.3.1.2 Graphical exploration of associations between participants' demographic characteristic (gender) and continuous variables.

The female general practitioners have slightly higher median of total scores than males for current collaboration and prospects of enhanced future collaboration. Males have slightly higher scores than females for attitudes towards collaboration.

No difference was observed in the median of total scores for males and females for perceptions of the professional roles of community pharmacists.

**Figure 5:** Exploring associations between number of patients seen by participants per day and continuous variables



5.3.1.3.1.3 ***Graphical exploration of possible associations between participants' demographic characteristic (number of patients seen per day) and continuous variables***

General practitioners who saw more than 30 patients a day had: the highest median of total scores for perceptions of the professional roles of community pharmacists, attitudes towards collaboration, prospects of enhanced future collaboration and current collaboration with community pharmacists. General practitioners who saw less than 10 patients a day had similarly high median of total scores for current collaboration with community pharmacists. The least median of total scores for perceptions of the professional roles of community pharmacists' attitudes towards collaboration, prospects of enhanced future collaboration and current collaboration with community pharmacists was observed for general practitioners who saw 20 to 30 patients a day. General practitioners who saw 10 to 20 patients a day had the least prospects of enhanced future collaboration.

5.3.1.3.1.4 ***Graphical exploration of possible associations between participants' demographic characteristic (nature of practice) and continuous variables.***



The graph below shows that non-dispensing general practitioners had higher median of total scores than dispensing general practitioners for current collaboration with community pharmacists. The perception of professional roles, attitude to collaboration and prospects of enhanced future collaboration with community pharmacists are not influenced by the nature of practice.

**Figure 6:** Exploring associations between participants' nature of practice and continuous variables

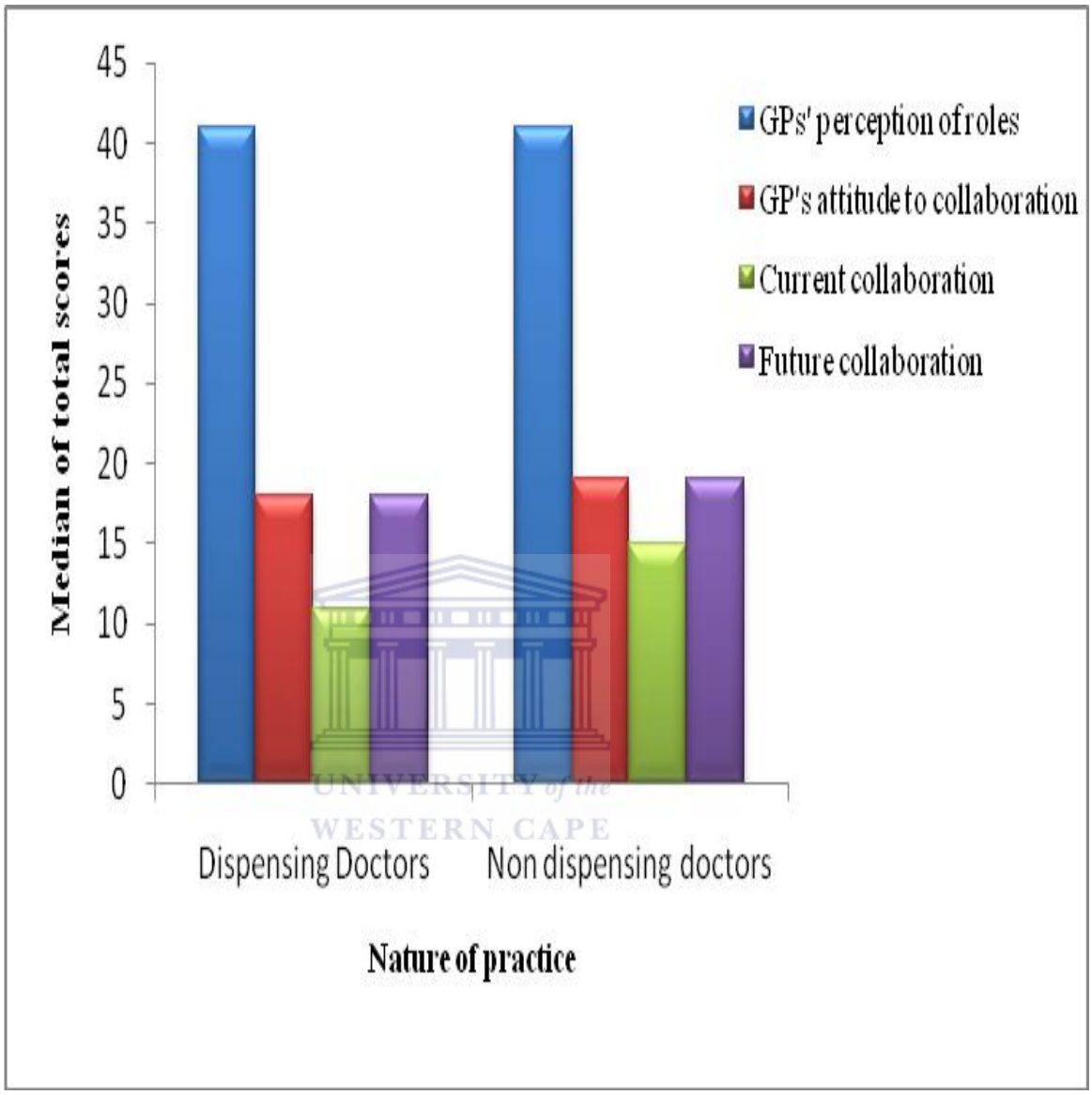
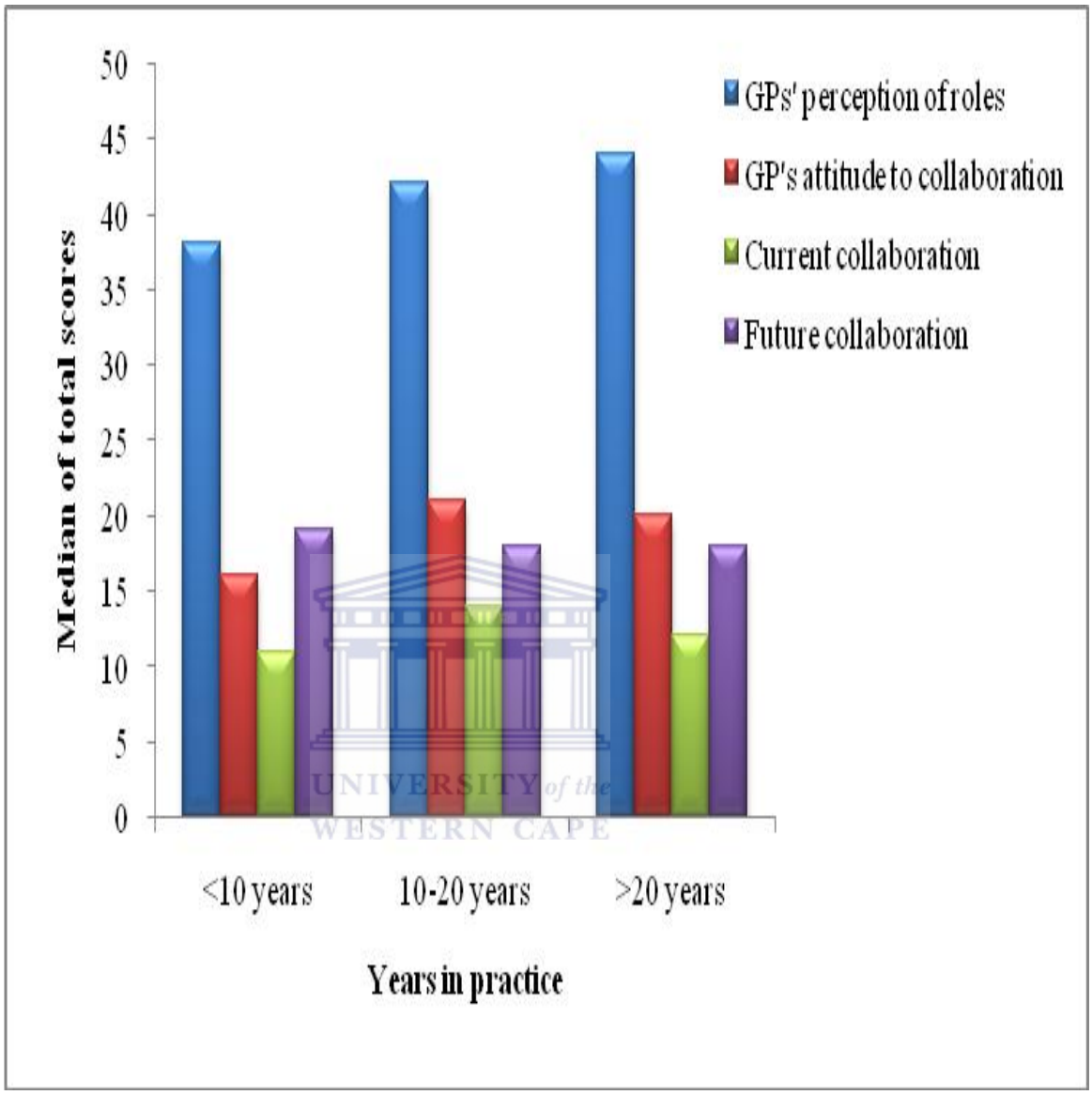


**Figure 7:** Exploring associations between participants' years in practice and continuous variables.



5.3.1.3.1.5 Graphical exploration of possible associations between participants' demographic characteristic (years in practice) and continuous variables.

General practitioners with more than 10 years of practice had the highest median of total scores for perceptions of the professional roles of community pharmacists, attitude towards collaboration with community pharmacist, current collaboration but low median of total scores for prospects of enhanced future collaboration. General practitioners with less than 10 years in practice had the highest median of total scores for prospects of enhanced future collaboration and low scores for the other constructs.

5.3.1.3.2 Mann-Whitney U Test

This section presents the results (table 34) that confirm statistically significant associations between participants' demographic characteristic, their nature of practice (with two groups), and the continuous variable, current collaboration.

**Table 28:** Mann-Whitney U Test for difference between current collaboration and nature of practice



| | **Difference between current collaboration and nature of practice** |
|---|---|
| Z | -3.932 |
| Two-tailed significance | 0.0005 |

*The results suggest a statistically significant difference (p=0.0005) in the median of total scores of dispensing and non-dispensing general practitioners (nature of practice) in their current collaboration with community pharmacists*

5.3.1.3.3 Kruskal-Wallis Test

This section presents the results (table 35) that confirm statistically significant associations between participants' demographic characteristic, years in practice (with three groups), and the continuous variable, attitude to collaboration.

**Table 29:** Kruskal-Wallis Test for difference between general practitioners' attitudes toward collaboration with community pharmacists and years in practice

| | **Differences between general practitioners attitude to collaboration and years in practice** |
|---|---|
| Z | 6.996 |
| Two-tailed significance | 0.030 |

*The results suggest a statistically significant difference (p=0.03) in mean scores of general practitioners attitude towards collaboration with community pharmacists relative to years in practice.*

## 5.4 RELIABILITY OF SCALES

The results of the reliability test carried out by using Cronbach's alpha coefficient test to measure the internal consistency of the items making up the scales in the instrument are presented in table 13.



Table 13 shows that four of the five scales in the instrument had the alpha coefficients above 0.70 which is recommended as the minimum acceptable value. The scales used in the study can be said to have satisfactory internal consistency and are able to measure the intended constructs consistently. The "barriers to collaboration between general practitioners and community pharmacists" scale, which had an alpha coefficient of 0.69, was intended for the individual item descriptive analysis only, in this regard, the scale was exempted from other statistical analysis. The Cronbach's alpha coefficient of scales used in the study cannot be compared with those reported in similar studies because the items on the scales were a composite of newly constructed items as well as items selected from various tools in the literature. The Cronbach's alpha reliability coefficient for internal consistency of individual items relative to the scales in the instrument if the item is deleted appear from tables 14 - 17 below.

**Table 30:** Cronbach's alpha reliability coefficient for the internal consistency of scales in the instrument

| Constructs to be measured | Cronbach's alpha coefficient |
|---|---|
| 1. General practitioners' perceptions of the professional roles of community pharmacists | 0.82 |
| 2. General practitioners attitude towards collaboration with community pharmacists | 0.77 |
| 3. Current collaboration between general practitioners and community pharmacists | 0.76 |
| 4. Barriers to collaboration between general practitioners and community pharmacists | 0.69 |
| 5. Prospects of enhanced future collaboration between general practitioners and community pharmacists | 0.74 |



**Table 31:** Cronbach's alpha reliability coefficient for internal consistency of individual items relative to the scale for general practitioners' perceptions of the professional roles of community pharmacists

| Professional roles of community pharmacists | Cronbach's Alpha if Item Deleted |
|---|---|
| i. Dispensing prescribed medicines to the public | 0.83 |
| ii. Providing information to patients on prescribed medicines | 0.82 |
| iii. Checking patients' prescriptions for indications, safety and therapeutic duplications | 0.80 |
| iv. Reporting adverse reactions to drugs to prescribers and health authorities | 0.81 |

| | |
|---|---|
| v. Advising on the cost- effectiveness of medicines for disease states | 0.81 |
| vi. Monitoring patients' adherence therapy and ensuring their medicine related needs are met | 0.80 |
| vii. Monitoring blood pressure, blood glucose levels and cholesterol levels | 0.81 |
| viii. Be a source of clinical advice to general practitioners such as in the selection of a medicine for a particular disease state | 0.80 |
| ix. Be a source of clinical medicines information to general practitioners | 0.80 |
| x. Make dose adjustments to a patients' medicine using protocols established with the prescriber | 0.81 |
| xi. Supervise repeat prescriptions for a patient according to agreed protocols, for up to 6 months, contacting the general practitioner if a problem arises | 0.81 |
| xii. Prescribing a medicine for a patient after the general practitioner has made the diagnosis, decided on the category of medicine required and given the pharmacist relevant clinical details (Partnership prescribing) | 0.81 |
| xiii. Participate in health promotion programs in the community | 0.81 |

**Table 32:** Cronbach's alpha reliability coefficient for internal consistency of individual items relative to the scale for general practitioners' attitudes toward collaboration with community pharmacists

| **Items** | **Cronbach's Alpha if Item Deleted** |
|---|---|
| i. Community pharmacists should contact me for issues with my prescription during the dispensing process | 0.76 |
| ii. Community pharmacists should alert me of possible adverse drug reactions | 0.75 |
| iii. Community pharmacists can call me for referrals for services they have specially trained for (for example, anticoagulation service) | 0.72 |
| iv. I would accept drug information (dosage and drug interactions) from community pharmacists | 0.71 |
| v. I would give patients' clinical information to community pharmacists to assist in making judgments' | 0.72 |
| vi. A formalized arrangements for exchange of information between the community pharmacists and general practitioners is vital to patient care | 0.73 |

**Table 33:** Cronbach's alpha reliability coefficient for internal consistency of individual items relative to the scale for current collaboration between general practitioners and community pharmacists

| **Items** | **Cronbach's Alpha if Item Deleted** |
|---|---|
| i. A community pharmacists contacted me because of issues with my prescription during the dispensing process (e.g. dosage errors, contra-indications etc.) | 0.74 |
| ii. A community pharmacists alerted me of possible adverse drug reactions to prescribed medication | 0.71 |
| iii. A community pharmacists visited/called me to request for patient referral for services beside dispensing for which he has specially trained (e.g. anticoagulation service) | 0.76 |
| iv. I referred my patient to a community pharmacists for the above | 0.73 |
| v. A community pharmacist provided me with drug information on asking (dosage, drug interaction) | 0.71 |
| vi. I provided my patients' clinical Information to a community pharmacists for him to make better therapeutic judgments | 0.76 |
| vii. A community pharmacists and I have developed a formalized arrangement for exchange of information and provision of services | 0.72 |
| viii. How many times has such collaboration improved patients' health outcomes? | 0.69 |

**Table 34:** Cronbach's alpha reliability coefficient for internal consistency of individual items relative to the scale for prospects of enhanced future collaboration between general practitioners and community pharmacists

| **Items** | **Cronbach's Alpha if Item Deleted** |
|---|---|
| i. Collaborative care or co-management of patients (especially chronically ill patients). | 0.73 |
| ii. Exchange of patient information for better clinical and therapeutic judgments | 0.69 |
| iii. Referral of patients to community pharmacists for other specialized services (for example, anticoagulation service) | 0.71 |
| iv. Health promotion programmes (for example, smoking cessation, weight loss) | 0.68 |
| v. Exchange of information as a result of patients' negative reaction to prescribed medication | 0.70 |
| vi. Exchange of information on prescription issues such as safety and therapeutic duplications | 0.69 |



## 5.5 TEST OF DATA NORMALITY

Shapiro-Wilks test was used to confirm the normality of the data because of the small sample size used in the study. Table 18 presents the results of the normality tests for the four scales that have been used for all statistical analysis. The results show that data obtained from the scales that measured attitude to collaboration and current collaboration between general practitioners and community pharmacists were not normally distributed but the data obtained from the scales that measured general practitioners' perceptions of the professional roles of community pharmacists and prospects of enhanced future collaboration between general practitioners and community pharmacists were normally distributed. Non-parametric tests were used for analysis as parametric tests require all data to be normally distributed. This also

informs the use of medians and ranges as measures of central tendency and dispersion respectively.

**Table 35**: Test of data normality using Shapiro-Wilks Test

| **Scales** | **Shapiro-Wilks Significance value** |
|---|---|
| 1.General practitioners' perceptions of the professional roles of community pharmacists | 0.087 |
| 2.General practitioners' attitudes towards collaboration with community pharmacists | 0.000 |
| 3.Current collaboration between general practitioners and community pharmacists | 0.009 |
| 4.Prospects of enhanced future collaboration between general practitioners and community pharmacists | 0.067 |



## 5.6 SUMMARY OF MAIN FINDINGS

The salient findings in this study are summarised in bullet point form below:

- A relatively high response rate of 70.6 % was achieved in the study which might be attributed to the study design and probably the payment of consultation fees to buy participants over.

- General practitioners have good perceptions of the professional roles of community pharmacists but favour traditional roles over advanced roles

- General practitioners have positive attitudes towards inter-professional collaboration with community pharmacists especially at stage 0.

- General practitioners have low-levels of collaboration with community pharmacists mostly at stage 0.

- Prospects of enhanced future collaboration are good especially at stage 0.

- General practitioners' perceptions of the professional roles of community pharmacists have a direct influence on their attitude towards collaboration (r=0.691, p=0.0005) as well as desired collaboration (prospects of enhanced future collaboration, r=0.630, p=0.0005).

- General practitioners' current collaboration with community pharmacists is not commensurate with the good perceptions of their professional roles (r=0.358, p=0.008), positive attitudes towards collaboration (p=0.007) and good prospects of enhanced future collaboration observed in the study (r=0.463, p=0.0005).



- Non-dispensing general practitioners have more frequent collaboration with community pharmacists than dispensing general practitioners (p=0.0005).

- General practitioners' who had spent more than 10 years in practice had more positive attitudes towards collaboration compared with those less than 10 years in practice (p=0.03).

- All other demographic characteristics did not have any statistically significance on collaboration.

- General practitioners identified the lack of remuneration for collaboration as a barrier.

- The absence of a government mandate or policy supporting collaboration was stated as a barrier.

- Inability of general practitioners to share patients' information with community pharmacists was also stated as a barrier.

- Some general practitioners stated that they did not need to collaborate with community pharmacists.

- General practitioners stated as a barrier the community pharmacists' questionable professional ethics particularly over financial gains.

# CHAPTER SIX

# DISCUSSION

## 6.1 INTRODUCTION

The main findings from the results obtained in this thesis would be discussed in this chapter. The discussion would be divided into two sections; firstly the results in the quantitative data would be discussed followed by discussion of the responses in the qualitative data. For the quantitative data, the main hypothesis would be central to the discussion while other findings of statistical importance would be briefly mentioned; the current level and stage of collaboration between general practitioners and community pharmacists in patient care would be discussed in the light of the results obtained for this thesis. The influence of general practitioners' perceptions of the professional roles of community pharmacists on desired collaboration, which is measured as the prospects of enhanced future collaboration between general practitioners and community pharmacists in this thesis, would be explored. The likelihood of enhanced future collaborations between general practitioners and community pharmacists and the requirements to achieve this would be discussed. Possible barriers to the envisioned collaboration would also be explored. In addition, the reliability of the scale and the response rate observed in the study are also discussed. For the qualitative data, responses to the open-ended questions would be discussed under the headings described in the thematic diagram firstly as ways of enhancing collaboration and secondly as other barriers to collaboration.



## 6.2 QUANTITATIVE DATA

Discussion of the results of the analysis of quantitative data collected in this thesis is presented below in response to the research questions.

### 6.2.1 CURRENT LEVEL AND STAGE OF COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS IN PATIENT CARE

Determination of the current level of collaboration between general practitioners and community pharmacists is informed by the past disputes which occurred between

dispensing general practitioners in particular and community pharmacists. Knowledge of the current level and stage of collaboration would determine measures that could be necessary to enhance inter-professional collaboration in the future. Results obtained in this study showed that the general practitioners and community pharmacists are collaborating at low-levels which means, any interactions between the two groups only occurred like three times in six months. Most of the interactions that occur are at stage 0 of the CWR model indicating interactions of a discrete nature such as dispensing prescriptions that are faxed or telephoned to the pharmacy, identifying adverse drug interactions and answering drug information questions, all of which are typical of the drug-oriented traditional roles of community pharmacists.

The time interval used to determine the frequency of interactions is particularly peculiar to this study as explained in chapter 4 (Section 4.8.3.1). Pojskic *et al.* (2009) measured the frequency of collaboration within one week but the pre-test informed the use of 6 months in this study. This result reveals the poor state of inter-professional collaboration between general practitioners and community pharmacists. Invariably, interactions rarely occur. It can be assumed that the infrequent interactions between them are because neither of the two professionals are ready to invest extra efforts to develop an inter-professional relationship, probably due to the unresolved dispute that have always occurred between them. The patient is caught in the middle of this controversy and denied the potential benefits of collaborative practices. Another reason could be the issue of professional hierarchy or dominance. General practitioners might feel that they are at the top of the hierarchy of the medical profession and as such they do not need to collaborate with community pharmacists. This reason was indicated as one of the barriers to inter-professional collaboration by 73% of general practitioners in this study. Some general practitioners explained further that their response to the statement was a way of defending their professional competence although their appreciation for the role of the community pharmacists revealed the ambiguity from the question.

Collaborations at higher stages of the CWR model could have been hindered because general practitioners are not aware of the professional roles and skills of community pharmacists. The general practitioners' perceptions of the professional

roles of community pharmacists and their attitudes towards inter-professional collaboration with community pharmacists carried out in this study revealed that general practitioners have good impressions of the professional roles of community pharmacists but they still favour traditional professional roles above the advanced or extended roles. Results from the study also show that general practitioners have positive attitudes towards inter-professional collaboration with community pharmacists but with preference for collaborative activities at stage 0 of the CWR model. Higher perception scores for traditional roles and highly positive attitudes for stage 0 activities are reasons for the observed stage of current collaboration.

This is an indication that general practitioners are more comfortable with community pharmacists carrying out their traditionally technical roles which emphasizes the drug product more than the more clinically, disease and patient-oriented roles. The issue of community pharmacists encroaching on the professional boundaries of general practitioners might be behind this thinking in view of the battle for professional turfs which occurred between the two professions earlier in South Africa (Gilbert, 1998).



General practitioners might also think that community pharmacists lack the government's mandate to carry out the extended and advanced roles as these are evolving roles for community pharmacists. They assume that community pharmacists might not be adequately skill to carry out such services as stated in the qualitative data that '*community pharmacists need lots of education'*. General practitioners also seem to question the effectiveness of such services in improving patients' health outcomes. These assumptions might have been responsible for the preference for the simpler, less patient-oriented traditional roles.

Similar observations were made from the findings in this study in studies carried out in New Zealand, USA, Netherlands and India where general practitioners favoured the traditional roles carried out by community pharmacists above the extended or advanced roles (Bleiker & Lewis, 1998; Bradshaw & Doucette, 1998; Smith *et al.*, 2002; Muijrers *et al.*, 2003; Adepu & Nagavi., 2006; Bryant *et al.*, 2009). Preservation of professional boundaries, mandate to practice, legitimacy, adequate skills and effectiveness of extended and enhanced roles to improve the health outcomes of patients were the reasons proffered for the observations made in these studies. In India, Adepu and Nagavi also noted that although the law states that a qualified person is essential to open and run a community pharmacy (Malik, 1984), 35% of pharmacies are run by non-pharmacists who rent the certificates of qualified pharmacists. This influences the contributions such persons acting in the capacity of pharmacists can make towards better patient care and giving educated and unbiased information to general practitioners. General practitioners' perceptions of the ability of community pharmacists to carry out clinically inclined roles would be hampered in this situation. He was also of the opinion that the academic qualifications required to practice as a pharmacists should be upgraded to a minimum of five-year B.Pharm program as in other parts of the world (Foppe *et al.*, 2001) instead of the two-years diploma training presently required for registration to practice. Fortunately, South Africa has a well regulated pharmacy educational system as well as in the practice of the profession, preference for traditional roles of community pharmacists could not have been influenced by academic qualifications or irregular practices. More than half of general practitioners in the study (55.6%) disagreed with community pharmacists carrying out partnership prescribing (supplementary prescribing) with them. Partnership prescribing or supplementary prescribing is an example of inter-professional collaboration being practiced in NHS in England, Wales, Scotland and Northern Ireland. Following diagnosis by a doctor or dentist, who is referred to as the independent prescriber, a supplementary prescriber or a dependent prescriber can prescribe 'prescription only medicines' (POMs) and other classes of medicines as agreed with the independent prescriber for the clinical management of individual patients. This is different from the role extension being advocated for community pharmacists in South Africa (Gilbert, 1998) but it can be a starting point for partnership. Community pharmacists in South Africa are requesting that the scope of

scheduled drugs that they can prescribe independently be expanded from schedules 1 and 2, to include specific drugs in schedules 3, 4, and 5 under defined conditions. This has been a source of discord between medical and pharmaceutical professions over the years. With the response of over half of general practitioners in the study to dependent or supplementary prescribing which requires collaboration between the general practitioner and community pharmacists, the quest for independent prescribing role extension would not be easily won. Gilbert (1998) suggested that another reasonable way of resolving the problem would be for a committee to be selected which would schedule some prescription drugs as non-prescription drugs so that community pharmacists could have access to them during consultations with clients. This is reasonable because it is not within the academic training of a pharmacist to diagnose and prescribe beyond certain acceptable limits (Feinstein, 1985, p. 1027). However, assessment of the survey carried out on the activities of the community pharmacists who were given permits to prescribe with access to all the drug schedules in the rural areas suggested that they had more clinical and patient-oriented practices, more interaction with other health professionals, a higher client patronage, attended to a wider range of cases, and were more effective members of the primary healthcare team. A reason for these successes might be because the community pharmacists were practicing in rural areas where fewer general practitioners might be available. Cheaper medical cost would be an attraction in any location if the practitioner has received the relevant training required to act in such capacity. In urban areas, the work load of the general practitioners would be greatly relieved if community pharmacists are allowed to practice in a similar capacity. A recent government policy has empowered pharmacists to become 'authorized prescribers' in South Africa (South Africa Pharmacy Council, 2011).

Other advanced roles of community pharmacists were acceptable to general practitioners in the present study at varying levels of agreement. More than half (51.7%) of general practitioners in this study were highly in favour of community pharmacists supervising repeat prescriptions for up to 6 months and participation in health promotion programs. The high level of agreement to these services can be attributed to the fact they are already being offered by community pharmacists in South Africa. Both services are crucial in the treatment, management and prevention of chronic diseases especially those associated with lifestyle. Considering the burden

of these diseases in South Africa where both rural and urban dwelling citizens are at risk (Groenewald *et al.,* 2008), it is imperative that necessary action be taken to educate people on preventive measures that can be taken to reduce or eliminate the risk of developing these illnesses and wholesome management of those already living with these conditions. With enhanced collaborative practices between general practitioners and community pharmacists, more general practitioners and patients would come to appreciate the impact of these services as information on patients' adherence to therapy, and their response to therapy can be easily exchanged. General practitioners in America, Europe, Canada, India and many more countries support community pharmacists' involvement in health promotion programs (Bond *et al.,* 1995; Martin *et al.,* 1998; Plunger *et al.,* 2000). Bryant *et al*. (2009) observed that general practitioners in New Zealand were not in agreement with community pharmacists supervising repeat prescriptions for 12 months probably because it is a long time to keep a chronically ill patient away from medical check-up and this might also deprive general practitioners of financial income.

A way of ensuring that collaboration is not limited to stage 0 is by intimating general practitioners of the professional competence of community pharmacists as indicated in models of team building like those proposed by McDonough and Doucette (2001), Drinka (1994), or Sullivan (1998). They outline the different stages that teams have to go through before reaching maturation. The CWR model proposed by McDonough and Doucette being used in this study outlines the first stage of collaboration to be stage 0 which is the professional awareness stage where interactions of a discrete nature occur. These are the kinds of interactions that have been observed in this study. For more meaningful collaborations to occur and also to improve patients' health outcomes, the other stages of the CWR model, from stage 1 need to be initiated. Initiation of this stage of collaboration rests with community pharmacists (Doucette *et al.,* 2005). The frequency and direction of interactions are unilateral but as exchanges intimating the general practitioner of the services offered by the community pharmacists continue, and useful recommendations are made consistently over time (Swan & Trawick, 1987), then the general practitioner comes to trust the pharmacist's expertise. The professional competence and ability of the community pharmacist is recognized. Communication, trust, and dependence grow leading to more collaborative practices at higher stages of the CWR model. The desired collaboration

envisioned between general practitioners and community pharmacists in this study is described as the prospects of enhanced future collaboration.

Pojskic *et al.* (2009) in their study observed that collaborative working relationship between general practitioners and community pharmacists in Ontario was low to mid level. They concluded that it was underdeveloped because general practitioners had five or fewer interactions a week with community pharmacists about patients' drug therapy management. The frequency and stage of collaboration observed here are much higher than what has been observed in the South African scenario.

They also noted that very few general practitioners used pharmacists as their primary source of medication information. In the six months period covered in the present study, 51% of general practitioners have asked community pharmacists for information three or fewer times, only 12% of them have asked over five times. Most general practitioners explained that they used their official medical references often or they called up the Medicines Information Centre (MIC) of the pharmacology department in the University of Cape Town for medical information as well as other available sources.



Despite general practitioners' good perceptions of the professional roles of community pharmacists and positive attitudes towards inter-professional collaboration with community pharmacists, why are the low-levels of current collaboration still being observed? Statistical evidence shows that current collaboration between general practitioners and community pharmacists is moderately, positively, correlated to general practitioners' perceptions of the professional roles of community pharmacists ($p=0.008$). This implies that general practitioners' good perceptions of the professional roles of community pharmacists may not yield the same level of current collaboration between them. Current collaboration between general practitioners and community pharmacists is also positively correlated with general practitioners attitudes toward inter-professional collaboration ($p=0.007$). The implication of this is that other factors influence inter-professional collaboration between general practitioners and community pharmacists besides good perceptions of the professional roles of community pharmacists and positive attitudes towards inter-professional

collaboration. Other factors such as trust, communication, dependence, role initiation, and role specification, are required to establish collaboration (Oandasan *et al.*, 2006).

Non-dispensing general practitioners were observed to have more frequent collaborations with community pharmacists compared with dispensing general practitioners (p=0.0005). The probable explanation for this is that patients who visit non-dispensing general practitioners always have their prescriptions filled at the pharmacy while patients who visit dispensing general practitioners would only visit the pharmacy for medications they could not obtain from the prescriber. Collaboration between community pharmacists and non-dispensing general practitioners is envisaged.

General practitioners who had spent more than 10 years in practice had more positive attitudes towards inter-professional collaboration with community pharmacists compared to those with less than 10 years in practice (p=0.030). This may be due to the fact that younger general practitioners (25 to 30 years) are poorly represented in the study at 3.3%; this is likely because most of them undergo community service at this stage and have not yet found a footing in private practice. Furthermore, they are recent graduates, possibly filled with self confidence and having a need to prove their professional competence as explained earlier. Older general practitioners on the other hand, have over the years come to appreciate the complementary role of the community pharmacists and are more appreciative of collaboration. Adepu and Nagavi, (2006) had a similar view in a study of general practitioners carried out in India.

### 6.2.2 INFLUENCE OF GENERAL PRACTITIONERS' PERCEPTIONS OF THE PROFESSIONAL ROLES OF COMMUNITY PHARMACISTS ON DESIRED COLLABORATION

Desired collaboration (prospects of enhanced future collaboration between general practitioners and community pharmacists) is positively correlated with general practitioners' perceptions of the professional roles of community pharmacists (p=0.0005). This means that a good perception of the professional roles of community pharmacists would yield the kind of collaboration desired in the future. Consequently, it is expected that participants in the present study have good prospects of enhanced

future collaboration based on the good perceptions of the professional roles of community pharmacists which they have exhibited. Stage 0 collaborative practices are favoured above other stages of collaboration. The explanation for this could be that these are the traditional roles that general practitioners are used to community pharmacists carrying out. As stated earlier, community pharmacists need to make general practitioners aware that they perform these other roles. Pharmacy professional bodies are required to organize regular training programs and courses for community pharmacists to keep them abreast of latest developments in medicine and pharmacy. Joint continuing professional education can be organized for both professionals to meet and exchange ideas.

General practitioners' attitudes towards inter-professional collaboration is also positively correlated to prospects of enhanced future collaboration ($p=0.0005$). General practitioners in the present study exhibited positive attitudes towards inter-professional collaboration with community pharmacists. A positive attitude signifies a positive mind-set for collaboration. Their perception of the professional roles of community pharmacists was also positively correlated with their attitude toward inter-professional collaboration ($p=0.0005$). Good perceptions of the professional roles of community pharmacists and positive attitudes towards inter-professional collaboration should yield good prospects of enhanced future collaboration.



### 6.2.3 WHAT ARE THE PROSPECTS OF ENHANCED FUTURE COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS, WHAT DOES THIS ENTAIL?

The response of general practitioners in the present study to the prospects of enhanced future collaboration with community pharmacists was generally positive but still favoured collaborative practices at stage 0 of the CWR model. All the general practitioners in the study consented to exchanging information on prescription issues that may arise during the dispensing process. This is supportive of the positive attitudes that they all expressed to community pharmacists contacting them if there were issues with their prescriptions during the dispensing process. Full consent was also given to exchanging information with community pharmacists in situations where patients had negative reactions to prescribed medication. This also

complements the 98.3% score on the positive attitude scale observed in their response to community pharmacists alerting them of possible adverse reactions in patients. These practices make up stage O collaboration which reflects the drug-oriented traditional roles of community pharmacists. General practitioners favour these roles because they are complementary to their own roles, and as such do not breach professional boundaries. There are good prospects of general practitioners and community pharmacists collaborating or co-managing patients especially chronically ill patients with only an 8.5% disagreement. This is stage 4 of the CWR model where formalized agreements are put in place for the joint care of patients. General practitioners rely on the knowledge and skill displayed by community pharmacists who in turn rely on the clinical information provided to manage patients' drug therapy. Exchange of patients' clinical information to help the community pharmacists make better clinical and therapeutic judgments is an essential ingredient in this process. Almost 80% of the general practitioners in this study agreed to provide such information. In the USA, postgraduate community pharmacy residency programs are organized by universities, pharmacy statutory bodies and community pharmacy organizations to develop advanced knowledge and skills in the delivery of pharmaceutical services in a community pharmacy setting.

The NHS in UK required that certain trainings should be undertaken for pharmacists to carry out advanced roles such as supplementary prescribing. Universities in the UK also organize post-graduate trainings for community pharmacists. In Australia, professional programmes funded under the community pharmacy agreement (CPA) provide trainings for community pharmacists that explored expanded roles in chronic disease management such as the Pharmacy Asthma Management Service (PAMS) which is carried out in collaboration with general practitioners. Therefore, community pharmacists who intend to collaborate at this stage would need to improve their clinical and pharmacological knowledge. Future collaboration in health promotion programmes such as smoking cessation, weight loss, and lipid management with community pharmacists was supported by 97% of general practitioners. Over 90% of them had shown good perception of this role of the community pharmacists. A response to the-open ended question (qualitative data) on ways of improving inter-professional collaboration commented on joint community health promotion programs comprising of general practitioners, community pharmacists, community primary health centres and other health professionals as a way of encouraging collaboration and also educating the community. Considering the burden of chronic diseases in South Africa where both rural and urban dwelling citizens are at risk (Groenewald *et al.*, 2008), it is imperative that necessary action be taken to educate people on preventive measures that can be taken to reduce or eliminate the risk of developing these illnesses and holistic management of those already living with these conditions.

Referral of patients to community pharmacists for other specialized services for which they are trained (for example, anticoagulation services) received the least positive response from general practitioners. The example used in the questionnaire could have influenced the response observed as most general practitioners said they were comfortable with the pathologists presently carrying out anticoagulation services. On explanation that specialized services are not restricted to anticoagulation alone, most general practitioners agreed that if evidenced training is undertaken, they would refer patients to community pharmacists. Prospects of enhanced future collaboration between general practitioners and community pharmacists entail communication in the form of information exchange between the two professionals. On the negative

attitude scale, the highest percentage of general practitioners did not want to give patients clinical information to community pharmacists. Current practice showed that 75% of general practitioners have never given patient' clinical information and 20% of those who have done it did so 3 or fewer times in 6 months. Most general practitioners stated that giving out patients' clinical information would be a breach of 'patient-doctor confidentiality'. However, some of them expressed willingness to give information with the patients' consent. In a study carried out by Pojskic *et al.* (2009), general practitioners considered community pharmacists' lack of access to patient information as a disadvantage and a barrier to collaboration. This observation was also made in the barriers to collaboration section of this study. Fortunately, despite poor information exchange observed in current collaboration, future prospects of information exchange are quite positive.

Trustworthiness and dependence are other necessary exchange characteristics required in building relationships. Other components required to ensure good prospects of future collaboration as indicated by general practitioners are relationship initiation which is most often dependent on community pharmacists, professional interactions are also usually pharmacists initiated and unilateral but becomes bilateral as professional recognition grows, competence and interdependency is established and role specification is understood (Zillich *et al.*, 2004). Role specification is a major component of collaboration so as to prevent conflicts over trespassing of professional turfs as observed by Howard et al. (2003), in a study of collaboration between community-based expanded role pharmacists (ERPs) and family physicians in a seniors' medication assessment research trial (SMART) program carried out in Canada. She postulated that expected roles of general practitioners and community pharmacist in collaborative practices should be clarified. This is a major reason for the establishment of collaborative practice agreements (CPA).



### 6.2.4 BARRIERS TO ENVISIONED COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS IN PATIENT CARE

General practitioners indicated that collaboration with community pharmacists would be more attractive if it is remunerated. One of the reasons for this is the extra time and efforts that would be required to establish collaborative partnerships with community pharmacists. In stage 4 collaboration of the CWR model, the point where there is

commitment from both parties to the collaboration, meetings are required to formalize arrangement for exchange of information and collaborative patient management (McDonough & Doucette, 2001) which are known as collaborative practice agreements (CPA). Howard *et al.* (2003), in a SMART intervention program concluded that compensation mechanisms for general practitioners and community pharmacists involved in the collaboration should be worked out. In Australia, government has been remunerating pharmacists involved in medication reviews in residential aged care facilities since 1997 and in 2001 for community patients (Rigdy, 2010).

Another observed barrier is the absence of a government policy or mandate supporting collaboration with community pharmacists. This statement suggests that if a mandate for collaboration is issued, the practice may be established. The issue of mandate and remuneration are factors that are intertwined and dependent on the government, and professional bodies. The human resource shortages being experienced in the public health sector in South Africa can be eased by recognizing the potentials of community pharmacists like other practitioners in primary healthcare and positively annexing it through collaborative practices with general practitioners and the expansion of the roles of the community pharmacists which is the main thrust for greater relevance in primary healthcare. The absence of official mandates leaves collaborative practices to the choice of individual practitioners resulting in a lack of uniformity in patient care. Several studies have reported that general practitioners saw the absence of government mandate or policy supporting collaboration with community pharmacists as a barrier (Dunlop & Shaw, 2002; Bryant *et al*., 2009). This means that individual practitioners can decide for or against collaboration. Governments in the United Kingdom, Canada, New Zealand, Australia and USA through the Departments of Health and professional bodies have policies that support collaboration. Sharing of patients' medical information with community pharmacists is seen as a breach of patient-doctor confidentiality as previously stated (Section 5.4.2.3). This hurdle can be overcome by involving patients in decision making process considering that the patients' wellbeing is the reason for the collaboration. Farris, (2005) suggested that educating patients on the benefits of inter-professional collaboration to their health would result in less resistance to information sharing between general practitioners and community pharmacists. An example of

government support was the introduction of electronic transfer of prescription-related information between general practitioners and community pharmacies in the NHS in England (Porteous *et al*., 2003). Some general practitioners indicated that they do not need to collaborate with community pharmacists but the consequences and extent of prescription errors are well documented; increased inter-professional collaboration between general practitioners and community pharmacists could be believed to be able to reduce such consequences (Easton *et al*, 2009; Rigby, 2010). General practitioners stated that community pharmacists would favour financial gain over professional ethics and give biased advice to patients. Multipurpose pharmacies were considered to be unprofessional and distracting for healthcare practice. This view was also expressed in a study by Hughes and McCann, (2003). In their qualitative assessment of inter-professional barriers between general practitioners and community pharmacists, the shopkeeper image of the community pharmacist overshadowed his professional abilities. General practitioners suggested a "practice pharmacist's model" where community pharmacists were located within the general practitioners' practice and worked directly with them was a professional and preferred option.



### 6.2.5 RELIABILITY OF THE INSTRUMENT

The Cronbach's alpha reliability coefficient for internal consistency of scales in the instrument was computed to be above 0.70 which is recommended as the minimum acceptable value for rho (r). The scales used in the instrument for this study can be said to have a satisfactory internal consistency and are able to measure the intended constructs consistently over time. The Cronbach's alpha reliability coefficients for internal consistency of items in each scale were also calculated using the item-total statistics. Emphasis was focused on the "Cronbach's alpha if item is deleted measurement" as these values show the influence of individual items on the ability of the scale to consistently measure the construct it is intended to measure. If deleting an item increases the Cronbach's alpha reliability coefficient of the scale, that item was not adding value to the scale, and would not yield the same data for the construct being measured over time. It should be removed from the scale. If deleting an item from the scale causes a reduction in the Cronbach's alpha reliability coefficient of the scale, then the item would produce data that would consistently measure the intended

construct. For general practitioners' perceptions of the professional roles of community pharmacists' scale, With the exception of the item "Dispensing prescribed medicines to the public" which had a higher Cronbach's alpha if item is deleted value (0.83) compared to the scales Cronbach's alpha reliability coefficient, all other alpha if item is deleted coefficients were below (0.82). This can be attributed to a grammatical or typographical error observed during the study where the statement read as "dispensing prescription medicines to the public" thus creating ambiguity, misrepresenting the community pharmacists' role and the intention of including the statement in the scale. The item was not deleted because of the fundamental role it plays in the thesis. All the items in the general practitioners' attitudes towards collaboration scale had Cronbach's alpha if item is deleted values lower than the scale's Cronbach's alpha reliability coefficient of 0.77. Deleting any item from this scale would result in lower Cronbach's alpha reliability coefficient for the scale. Similar observations were made for items in the current collaboration between general practitioners and community pharmacists' scale, and prospects of enhanced future collaboration between general practitioners and community pharmacists' scales. All the items in these scales had lower Cronbach's alpha if item is deleted values relative to the scale.



### 6.2.6 RESPONSE RATE

A relatively high response rate of 70.6% was observed in this study. This could be an indication that general practitioners in this study are already aware of the advantages of inter-professional collaboration with community pharmacists, and they are interested in enhancing the collaboration to improve patients' health outcomes or though they are ignorant of the advantages of enhanced collaborative practices they are willing to learn about them. Another possible source of positive influence on the response rate could be the study design and data collection method which was a mixed method, cross sectional, face-to-face, self-administered questionnaire survey which gave participants an opportunity to interact with the researcher and express their views for qualitative data. Most participants ensured it was a once-off survey before consenting to participate in the survey. The introduction of a cash incentive in the form of consultation fee payment also could have boosted the response rate. Similar studies on inter-professional collaboration between general practitioners and

community pharmacists carried out in Britain, Canada and New Zealand yielded lower response rates of 16%, 36%, and 59% respectively (Hughes *et al.*, 2003; Pojskic *et al*., 2009; Bryant *et al*., 2009). The above mentioned studies used faxes, postal mails and focus groups in their study. Hughes *et al.* (2003) also offered cash incentives to participants for focus group discussions involving general practitioners and community pharmacists and he observed a response rate of 16%.

## 6.3 QUALITATIVE DATA

The responses to the open-ended questions in the questionnaire are discussed under the two headings; ways of enhancing collaboration and other barriers to collaboration.

### 6.3.1 WAYS OF ENHANCING COLLABORATION

Some general practitioners in the study were supportive of inter-professional collaboration with community pharmacists stating that they have a good relationship with their local pharmacists and are already reaping the benefits of such collaboration. Pojskic *et al.* (2009) observed similar responses were obtained from general practitioners in Ontario, Canada to open-ended questions on interaction with community pharmacists. They noted that the personal attributes of pharmacists such as their being helpful, knowledgeable, approachable influenced collaboration. This observation supports the three classes of characteristics that affect the development of collaborative working relationships (CWR) as stated by McDonough and Doucette, (2001) which were also used to categorise responses obtained from study participants as pharmacists' characteristics (knowledgeable), context characteristics (approachable) and exchange characteristics (helpful). Pharmacists' characteristics describe the professional knowledge base and skill of community pharmacists. General practitioners commented that an insight of the clinical knowledge base of community pharmacists would make collaboration easier, while others advised that community pharmacists should improve their clinical knowledge as well as pharmacology. Professionalism was a barrier to general practitioners approaching community pharmacists for collaboration. The shop keeper image which has overshadowed the professional integrity of the pharmacists is of concern (Hughes & McCann, 2003). Exchange characteristics define communication which should be two ways, mutual respect for professional boundaries and ethics of the professions

(Oandasan *et al*, 2006). Further support for collaboration and its consequent advantages was expressed in the statement that "collaboration would take unnecessary burden off general practitioners". This view is reinforced by the minor ailment scheme and repeat prescriptions undertaken by community pharmacists in England which saved up to 2.7 million hours of general practitioners' time and practice hours (National Prescribing Centre, 2004; DoH, UK. 2003). Both patients and general practitioners were found to be in support of these services (New Pharmacy Contract in England, 2005; Porteous & Bond, 2005). Patients who shop for dangerous drugs of addiction (DDAs) from different general practitioners can be monitored through collaborative practices with community pharmacists.

### 6.3.2 OTHER BARRIERS TO COLLABORATION

Barriers to inter-professional collaboration between general practitioners and community pharmacists not mentioned in the questionnaire used in the thesis were mentioned by general practitioners. These barriers were found to describe professional practice and health systems. Related to professional practice, some general practitioners were concerned that high pharmacy prices prevent indigent patients from visiting pharmacies eroding the need for collaboration. Others were uncomfortable with community pharmacists criticizing their prescriptions without knowing the reasons for their actions. This can be attributed in part to the inability of community pharmacists to access patients' medical records. Pojskic *et al* (2009), in a study found that general practitioners considered community pharmacists' lack of access to patient information as a disadvantage and a barrier to collaboration which can only be addressed through government intervention as was done in a study carried out by Porteous *et al.* (2003) to gather information on the opinions of patients, general practitioners and community pharmacists on the intended introduction of a system of electronic transfer of prescription-related information between general practitioners and community pharmacies in the NHS in England. The three groups were supportive of electronic transfer of prescription-related information. The general practitioners acknowledged that it improves repeat prescribing; patients expected improved convenience; and community pharmacists believed it would enhanced their professional role. Concerns were however raised about confidentiality of patient records (Porteous *et al.,* 2003). The high turnover of community pharmacists in big

chain pharmacies and the presence of locum general practitioners and community pharmacists make collaboration difficult.

Barriers related to the health system such as health policies issues and insurance policies were also stated. Health Professionals Council of South Africa (HPCSA) ethical rules and policy on dispensing were stated to be barriers to collaboration. Community pharmacists' lack of access to malpractice insurance cover was stated to make collaboration with them a risk. Some general practitioners stated as a barrier the fact that some community pharmacists dispense POMs (Prescription only medicines) dispensed without prescriptions.

# CHAPTER SEVEN

# CONCLUSIONS AND RECOMMENDATIONS

## 7.1 INTRODUCTION

This chapter presents the conclusions on the findings of the study carried out in this thesis, how it answers the research questions set at the beginning and how it links with the literature that was reviewed. A list of recommendations that could help to enhance inter-professional collaboration between general practitioners and community pharmacists to improve patient health outcomes is also presented. Concluding remarks end the chapter.

## 7.2 SUMMARY OF FINDINGS

The results of this study indicate that using a face-to- face design method ensures greater participation and the introduction of consultation fees might also encourage participation as much as it might introduce certain biases. It is also evident that general practitioners have a good awareness of the professional roles of community pharmacists with greater acceptance of the traditional dispensing roles compared to the extended and advanced roles. General practitioners exhibited positive attitudes towards inter-professional collaboration with community pharmacists although currently, occurrence of inter-professional collaboration between both professions is low and usually at the basic level (stage 0) of interaction according to the collaborative working relationship model proposed by McDonough and Doucette (2001). General practitioners have however expressed willingness for enhanced inter-professional collaboration in the future.

Absence of a government policy or mandate supporting collaborative patient management by community pharmacists and general practitioners, lack of remuneration for such services, ethical constraints on general practitioners preventing them from sharing patients' medical information with community pharmacists and questionable ethical practices carried out by community pharmacists were stated as barriers capable of hindering inter-professional collaboration.

The Literature on inter-professional collaboration has shown that with the government support, collaboration is achievable. A policy and the introduction of remuneration for general practitioners and community pharmacists in collaborative practice would be a great encouragement for the enhancement of collaborative patient management especially for the chronically ill who constitute a major health burden in South Africa.

## 7.3 RECOMMENDATIONS FOR ENHANCING INTER-PROFESSIONAL COLLABORATION BETWEEN GENERAL PRACTITIONERS AND COMMUNITY PHARMACISTS

Some of the recommendations made here are obtained from the comments made by general practitioners in the course of collecting qualitative data for the research on ways of enhancing inter-professional collaboration with community pharmacists and other barriers to collaboration that were not mentioned on the questionnaire. Other recommendations were obtained from the reviewed literature.

1. Community pharmacists need to make general practitioners more aware of their professional roles especially the extended and advanced roles. Inter-professional training at university level should be encouraged.
2. Community pharmacists should communicate to general practitioners how these roles could benefit their practice and consequently their patients.
3. Community pharmacists should be prepared to initiate interactions with general practitioners for the patients' benefit.
4. Community pharmacists should update their pharmacological and clinical knowledge regularly through a continuous professional development programmes.
5. Pharmacists' professional bodies should make it mandatory for community pharmacists to obtain credits necessary for registration by attending continuing professional education lectures or doing on-line courses.
6. Pharmacists' professional bodies should liaise with medical professional bodies to jointly organize continuing medical education programs as well as joint social events

7. Pharmacy professional bodies should initiate procedures to enlighten government and health policy making bodies of the roles of community pharmacists in healthcare
8. Government policy recognizing collaborative patient management by general practitioners and community pharmacists.
9. Remuneration of collaborative or co-managed patient practices.
10. Government policy supporting a system by which community pharmacists can access necessary patient records.
11. University education should emphasize an inter-professional collaboration amongst healthcare workers and academic interactions between medical and pharmacy students to help improve relationships in the future.

## 6.4 CONCLUDING REMARKS

The major concern of general practitioners and community pharmacists is the improved health outcome of the patient. Necessary actions that are needed to secure this cannot be overemphasized. To this end, identified barriers to collaboration should be worked on with actions that would improve inter-professional collaboration so as to enhance patients' health outcomes. This can only be achieved through continuous support from health practitioners, professional bodies and the government.

Future research should aim at exploring the perceptions of community pharmacists on inter-professional collaboration in South Africa and implementing interventions to enhance such collaboration.

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**APPENDIX I**

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**Fax +27 21 9593407/1276**
**University of Western Cape**
**13th September, 2010**

Dear Sir or Madam,

**Introductory letter to general practitioners**

I am writing to you to discuss your possible participation in a research study of general practitioners in the Western Cape. Your name was randomly selected from a list of general practitioners registered with the South African Medical Association (SAMA).

We are conducting a survey to find out

- your perception of the roles of community pharmacists in health care
- your present level of collaboration with community pharmacists and its relevance to patients therapeutic outcome
- perceived barriers to collaboration
- possible areas of collaboration in the future to further improve the quality of care received by patients.

One of the investigators will contact you by phone towards the end of September (from the 20th) to discuss your participation in the study. You will be paid a general consultation fee for the time offered to participate in this survey which should be about 20 minutes. Participation in research is voluntary and you are not obligated to participate. If you choose to participate, you may withdraw at any time during the study.

If you want to discuss this study before the investigator calls you, you may call Dr Kim Ward at the University of Western Cape, School of Pharmacy (telephone: 021-9593440 ).

Thanking you in anticipation.

Sincerely,

Kim Ward (PhD)
Research Supervisor.

Elizabeth Egieyeh (B Pharm)
Student Researcher.

**APPENDIX II**

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# CONSENT TO PARTICIPATE IN RESEARCH

## Purpose and Background

Elizabeth Egieyeh (B.pharm) and Kim Ward (Ph.D), from the University of Western Cape, School of Pharmacy, are conducting a research survey to determine the attitude of general practitioners (GPs) to inter-professional collaboration with community pharmacists (CPs).

Given the extent of medication management issues and a possibility of more efficient use of resources within the health care system it is therefore important that GPs and community pharmacists cooperate to combine their skills in order to address and avert such problems and promote judicious use of resources so as to improve patients therapeutic outcome.



You are being asked to participate in this study because you are a registered medical practitioner in the Western Cape.

## Procedures

If you agree to participate in this study,

- You will be asked to complete a questionnaire on determining the attitude of general practitioners to inter-professional collaboration with community pharmacists.
- The questionnaire will be returned to the investigator for analysis.

## Risks/discomforts

1. The questions might be discomforting.
2. You are free to discontinue your participation in the study at any time.
3. You may discuss your discomfort with the investigator.
4. Participation in research may involve a loss of privacy; however, your record will be handled as confidentially as possible. Your name will not be used on the questionnaire or other printed materials associated with the study. You name will be linked to your study number and only research staff will have access to this linking file. Any publications or presentations of the findings from this study will not include personally identifying information.

**Benefits**

You will be providing important information on the roles community pharmacists play and can play in the future and how collaborating with them can actually help increase patient satisfaction i.e. patient therapeutic outcome. This may assist you in the service you provide to patients when they know that you and the community pharmacist they visit are jointly concerned about them. There may be a societal benefit of improved patient well-being, judicious use of resources such as drugs, money, time, hospital admission incidences.

**Costs**

Your time, energy, patience and experience will be required in filling the questionnaire. We will, however, pay your regular consultation fee for this time occupied.

**Questions**

Dr Kim Ward is the researcher supervising this project. You have talked to Mrs Elizabeth Egieyeh (0780464471) about this study. If you have additional questions you may call her or Dr Kim Ward at the University of Western Cape, School of Pharmacy (telephone: 021-9593440)

If you have any comments or concerns about participation in this study, you should first talk with the researchers. If for some reason you do not wish to do this, you may contact the University of Western Cape Ethics Review Board, which is concerned with the protection of volunteers in research projects.



**Consent**

You will be given a copy of this consent form to keep. Participation in research is voluntary. You are free to decline to be in this study, or to withdraw from it at any point without penalty of loss of benefits to which you are otherwise entitled. If you agree to participate, you should sign below.

| | |
|---|---|
| _____ | _____ |
| Date | Signature of study participant |
| _____ | _____ |
| Date | Signature of researcher |

**APPENDIX III**

# QUESTIONNAIRE

**PERSONAL INFORMATION (*check as appropriate*) :**

1. AGE :

☐ 25 – 30 years

☐ 31 – 40 years

☐ 41-50 years

☐ 51-60 years

☐ More than 60 years

vi. GENDER:

☐ Male

☐ Female

3. YEARS IN PRACTICE :

☐ Less than 10 years

☐ 10-20 years

☐ More than 20 years



4. NATURE OF PRACTICE :

☐ Dispensing doctor

☐ Non-dispensing doctor

5. LOCATION OF PRACTICE : ……

6. NUMBER OF PATIENTS SEEN PER DAY :

☐ Less than 10

☐ 10-20

☐ 20-30

☐ More than 30

## B. PERCEPTIONS OF THE ROLE OF COMMUNITY PHARMACISTS

*This section of the questionnaire seeks to ascertain your perception of the role of community pharmacists in the improvement of the health status of the community*

**The roles of community pharmacists in the improvement of the health status of the community should include the following *(tick the box that best represents your opinion):***

| | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|
| i.Dispensing prescribed medicines to the public | | | | |
| ii.Carrying out X-rays and ultra-sound scans. | | | | |
| Iii.Providing information to patients on prescribed medicines. | | | | |
| iv.Checking patients' prescriptions for indications, safety and therapeutic duplications. | | | | |
| v.Reporting adverse reaction to drugs to prescribers and health authorities. | | | | |
| vi.Advising on the cost-effectiveness of medicines for disease states | | | | |

| | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|
| vii.Monitoring patients' adherence with therapy and ensuring their medicine related needs are met. | | | | |
| viii.Monitoring blood pressure, blood glucose levels and cholesterol levels | | | | |
| ix.Be a source of clinical advice to general practitioners, such as selection of a medicine for a particular disease state | | | | |
| x.Be a source of clinical medicines information to general practitioners such as adverse effects of medicines | | | | |
| xi.Make dose adjustments to a patient's medicine using protocols established with prescribers (e.g. inhaled steroids in asthma) | | | | |
| xii.Supervising repeat prescriptions for a patient, according to agreed protocols, for up to 6 months, contacting the general practitioner if a problem arises ***(continuation prescribing)*** | | | | |
| xiii.Prescribing a medicine for a patient after the general practitioner has made the diagnosis, decided on the category of medicine required and given the pharmacist relevant clinical details (partnership prescribing) | | | | |
| xiv.Carrying out surgical procedures | | | | |
| xv.Participating in health promotion programmes in the community (*diabetes screening, run stop smoking clinics, weight reduction programmes)* | | | | |

## C. ATTITUTUDES TOWARD COLLABORATION WITH COMMUNITY PHARMACISTS

***This section seeks to determine your opinion on collaboration with community pharmacists in patient care (tick the box that best represents your opinion)***

| | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|
| vi. Community pharmacists should contact me in cases of issues with my prescription during the dispensing process (e.g. dosage errors, contra-indications etc.) | | | | |
| ii. Community pharmacists should alert me of possible adverse drug reaction to the prescribed medication. | | | | |
| iii. Community pharmacists can call me to refer patients to them for services they have specially trained for besides dispensing (e.g. anticoagulation service.) | | | | |
| iv. I will accept drug information( dosage, drug interaction,…) from the community pharmacist | | | | |
| v. I will give patients' clinical information to community pharmacist to assist in making judgments | | | | |
| vi. A formalized arrangement for exchange of information between the community pharmacists and the General practitioners is vital to patient care | | | | |

## D. CURRENT COLLABORATION

**How many times have the following activities occurred between you and any community pharmacist during the past 6 months? *(tick the box that best represents recent collaboration)***

| | More than 5 times | 4-5 times | 2-3 times | Once | Never |
|---|---|---|---|---|---|
| i. A community pharmacist contacted me because of issues with my prescription during the dispensing process (e.g. dosage errors, contra-indications etc.) | | | | | |
| ii. A community pharmacist alerted me of possible adverse drug reaction to the prescribed medication. | | | | | |
| iii. A community pharmacist visited/called me to request for patient referral for services beside dispensing for which he has specially trained (e.g. anticoagulation service) | | | | | |
| vi. I referred my patient to a community pharmacist for (iii.) above | | | | | |
| v. A community pharmacist provided me with drug information on asking (dosage, drug interaction…) | | | | | |

| | More than 5 times | 4-5 times | 2-3 times | Once | Never |
|---|---|---|---|---|---|
| vi. I provided my patients' clinical information to the community pharmacist for him to make better therapeutic judgments. | | | | | |
| vii. A community pharmacist and I have developed a formalized arrangement for exchange of information and provision of services. | | | | | |
| viii. How many times has such collaboration improved patients' health outcomes? | | | | | |



**D. BARRIERS TO COLLABORATION WITH COMMUN ITY PHARMACISTS**

**The following issues may hinder my collaboration with community pharmacists in patients' care *(tick the box that best represents your opinion)***

| | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|
| i. The funding stream currently does not support pharmacists and general practitioners collaborating on medication management | | | | |
| ii. Government policy now gives sufficient recognition to this approach to patient care | | | | |
| iii. Patients may find it unacceptable for their medical information to be shared with community pharmacists | | | | |
| iv. Other than to dispense prescriptions, pharmacists are on the periphery of the core health care team | | | | |
| v. A community pharmacist's knowledge of pharmacology and clinical use of medicines is | | | | |

| | | | | |
|---|---|---|---|---|
| inadequate to intervene on the patient's behalf | | | | |
| vi. I have sufficient confidence in my clinical knowledge to provide this service. | | | | |
| vii. The patient may get conflicting information regarding medicines use | | | | |
| viii. This collaboration would not improve patients' medicine-related health outcomes | | | | |
| ix. I don't feel comfortable with the autonomy pharmacists have when dealing with patients | | | | |
| x. I don't have the time to discuss patient-related medicine issues with community pharmacists | | | | |
| xi. I have never been contacted by any community pharmacies | | | | |
| xii. There is no community pharmacy practice in close proximity to my surgery | | | | |
| xiii. The relationship between community pharmacists and general practitioners is too financially competitive to encompass this service | | | | |
| xiv.Pharmacists can give biased advice on the use of medicines due to commercial pressure | | | | |



Other barriers (please state)

| |
|---|
| |

## E. FUTURE EXPECTATIONS

This session seeks to know in which area you will like to collaborate with a community pharmacist in the future.

**Prospects of enhanced future collaboration with community pharmacists**

**As a general practitioner I would like to collaborate with a community pharmacist in the following areas in the future:**

| | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|
| i. Collaborative care or co-management of patients (especially chronically ill patients). | | | | |
| ii. Exchange of patient information for better clinical and therapeutic judgments | | | | |
| iii. Referral of patients to community pharmacists for other specialized services (e.g. anticoagulation service) | | | | |
| v. Exchange of information resulting from patients' negative reaction to prescribed medication | | | | |
| vi. Exchange of information on prescription issues such as safety and therapeutic duplications | | | | |



**In what other ways do you think the collaboration between community pharmacists and general practitioners can be enhanced to improve the patients' therapeutic outcome?**

## APPENDIX IV

**OFFICE OF THE DEAN**
**DEPARTMENT OF RESEARCH DEVELOPMENT**

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22 June 2010

**To Whom It May Concern**

I hereby certify that the Senate Research Committee of the University of the Western Cape has approved the methodology and the ethics of the following research project by: Dr K Ward (School of Pharmacy)

| | |
|---|---|
| Research Project: | Inter-professional collaboration between general practitioners and community pharmacists: general practitioners' perspectives |
| Registration no: | 10/4/29 |

*Peter Slyter*
*Manager: Research Development Office*
*University of the Western Cape*