

**COLLABORATIVE CAPACITY AND STRUCTURAL FEATURES THAT
ENABLE TEAM EFFECTIVENESS: PERCEPTIONS OF HEALTH CARE
WORKERS IN MALAWI**

**DOCTOR OF PHILOSOPHY IN INTERPROFESSIONAL HEALTH-CARE
LEADERSHIP THESIS**

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**UNIVERSITY OF MALAWI
KAMUZU COLLEGE OF NURSING**

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By

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A thesis submitted to the Faculty of Nursing at Kamuzu College of Nursing in partial
fulfilment for an award of A Doctor of Philosophy Degree in Interprofessional
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University of Malawi
Kamuzu College of Nursing

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DECLARATION

I, Tulipoka Nellie Soko hereby declare that this thesis entitled: Collaborative Capacity and Structural Features that enable Team Effectiveness: Perceptions of health care workers in Blantyre, Malawi, is my own work. This work has not been submitted before for any other degree or professional qualification at any institution for similar purposes. Where other peoples' work has been used, acknowledgements have been made accordingly.

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Full legal name

Signature

Date

CERTIFICATE OF APPROVAL

We the undersigned, hereby certify that the thesis is Tulipoka Soko's own work and has been submitted with our approval

Signature..... **Date**.....

Diana Jere, PhD (Associate Professor)

Main supervisor

Signature..... **Date**.....

Lynda Wilson, PhD (Professor)

Second supervisor

DEDICATION

I dedicate this work to my husband Griffin, my children Kolase, Esther, Joy, and Wezzie. Thank you very much for your love, understanding, encouragement and support during the study period. I also dedicate to my brothers and sisters including my in-laws. Thank you all for your support.

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ABSTRACT

Previous research in acute health care settings has shown that Collaborative Capacity can be improved by the way an organization supports its staff. Lack of Collaborative Capacity results in fragmented health services which do not meet the multiple, complex condition, and needs of the patients. This study, therefore, investigated the perceptions of health care workers on the relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership, and Patient-Centered Care in Blantyre, Malawi. The study employed a quantitative descriptive cross-sectional design. We adapted the Care Coordination survey and administered it to health care workers. Descriptive statistics, as well as univariate and multivariate analysis, were computed. The level of significance was set at $p=.05$. Analysis of Variance and the Kruskal-Wallis test were used to test differences in the mean ranks among variables. A total of 384 health care workers participated in the study by completing the Care Coordination Survey, resulting in a response rate of 100%. Collaboration Capacity differed significantly across Cadres/Roles. Health care workers had different Perceptions regarding Collaborative Capacity, Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care. Health care workers' Perceptions of Collaborative Capacity were positively associated with supportive organizational context and Patient-Centered Care. This study has established that Collaborative Capacity was positively associated with Communication and Information Technology, Staffing and Resources, Supervisory Support and Patient-Centered Care.

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ABBREVIATIONS AND ACRONYMS

AETC:	Adult Emergency and Trauma Centre
ANCC:	American Nurses Credentialing Centre
CC:	Collaborative Capacity
CHAM:	Christian Health Association of Malawi
COMREC:	College of Medicine Research and Ethics Committee
CP:	Collaborative Practice
CRNA;	Certified Registered Nurse Anaesthetists
HRH:	Human Resource for Health
HSSP:	Health Sector Strategic Plan
IOM:	Institute of Medicine
KCH:	Kamuzu Central Hospital
KCN:	Kamuzu College of Nursing
LPN:	Licensed Practical Nurses
MCHS;	Malawi College of Health Sciences
NEPI:	Nursing Education Practice Initiative
NGO:	Non-Governmental Organization
NMT:	Nurse Midwife Technician
PCC:	Patient-Centred Care
QECH:	Queen Elizabeth Central Hospital
RNM:	Registered Nurse Midwife
WHO:	World Health Organization

GLOSSARY OF TERMS

Attitude: is a tendency to respond positively or negatively towards a certain thing (idea, object, person or situation). Attitudes often represent an important link to care coordination and collaborative practice (Baker, Egan-Lee, Martimianakis & Reeves, 2011).

Care: means to look after attend to and take charge. Caring are actions concerned with the well-being of a patient such as listening, comforting, looking after, attending to. Caring behaviour might be affected by the perception of providers (Choi, 2017).

Collaboration: refers to a working relationship that respects and fully utilizes the contribution of all providers involved in the provision of care (World Health Organization, 2010).

Collaborative Capacity: refers to the likelihood that providers, no matter how brief their exchange or interdependent task, will collaborate as if they were members of the team even in the absence of a formal team structure (Weinberg, Cooney-Miner, Perloff, Babington & Avgar, 2011).

Health care worker: comprise a diverse group of practitioners who delivers quality care to patients in a variety of settings. These professionals include: doctors, clinical officers, nurses/midwives, pharmacists, physiotherapists, radiographers, and laboratory technologists/technicians (Iwu, 2014).

Interprofessional team: refers to three or more individual health professionals from at least two or more health disciplines communicating and coordinating in delivering health outcomes (Reid, Jones & O'Brien, 2015)

Quality: Implies conforming to the highest level of standards and satisfying a client's needs (Government of Malawi, 2017b).

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

Collaboration among health workers is increasingly advocated as an important means of increasing access to care, improving patient outcomes in a variety of settings, and maintaining improved efficiencies among health care providers (Chan & Wood, 2010; Smith, 2015). In recent years, leading healthcare organizations, such as the Institute of Medicine and the World Health Organization, have also recognized that collaboration among health workers is essential to improve healthcare delivery in health facilities (Goldsberry, 2018). According to the World Health Organization (2010) collaboration refers to a working relationship that respects and fully utilizes the contribution of all providers involved in the provision of care to patients. This entails that the World Health Organisation (WHO) is focusing on collaboration and collaborative action in providing strategic directions for healthcare service provision.

Collaborative practice occurs when multiple health care workers from different professional backgrounds provide comprehensive services by working with patients, their families, carers and communities to deliver the highest quality of care across settings (World Health Organization, 2010). Such provision of care is concerned with the well-being of a patient such as listening, comforting, looking after, attending to. In addition, this behaviour can be affected by the perception of providers (Choi, 2017).

Collaboration as a partnership between a team of health care providers, a client and family members are fast becoming an important concept as it involves sharing

important information necessary for effective decision-making on health and social issues. Furthermore, collaboration also ensures that the provision of health care is efficient and achieves a common goal of providing quality patient care (Chodzaza, 2020; Schang, Waibel & Thomson, 2013). In addition, collaboration increases the likelihood that decisions made by health care workers are in line with the patients' needs and that such patients have the necessary support needed to make informed choices regarding their own care (Sullivan et al., 2019). As a result, central to patient's care is the variable collaboration, which results in an equally shared partnership among members of the health care team for the provision of improved quality of health care service delivery (Weinberg et al., 2011).

Collaborative Capacity is needed for coalition, coordination, and partnership among teams working in an organization in order to prioritize critical decisions and collaborative networks for Patient-Centered Care (Beier, 2014). The authors state that in collaborative networks, participants are committed to interdependence in such a way that they will not achieve their goals if they worked alone and do not share solutions to common problems.

Therefore, to successfully achieve the goals of the organization, participants should establish and maintain interactions among themselves, develop learning frameworks, and always strive to achieve synergies between themselves, their leaders, and the organization as a whole (Fahmi, Prawira, Hudalah & Firman, 2016). In addition, ensuring organizational support and effective leadership can improve the extent to which providers collaborate as equal members of the health care team (Sullivan et al., 2019).

Collaborative Capacity is defined as the likelihood that providers, no matter how brief their exchange or interdependent task, will collaborate as if they were members of the team even in the absence of a formal team structure (Sullivan et al., 2019). Weinberg et al. (2011) suggested that Collaborative Capacity is important as it promotes teamwork and the provision of patient-centred care. Collaborative Capacity includes the following: a team-based approach to care, interdependence, accountability, exchange of knowledge regarding patient information and use of individualized patient care plans to ensure continuity of care. During collaboration, health care workers support each other to develop skills and knowledge about working together and fostering positive attitudes among providers for effective provision of quality patient care.

Attitude is described as a tendency among providers to respond positively or negatively towards a certain thing (idea, object, person, or situation). Attitudes often represent an important link to effective care coordination and collaborative practice in the health care facility (Baker, Egan-Lee, Martimianakis & Reeves, 2011). Providing effective and efficient healthcare services to populations demands a well-trained and team of collaborative healthcare workforces who are able to respect and fully utilize the contribution of all providers involved in the provision of care in health facilities (WHO 2010). Health care workers comprise a diverse group of health care practitioners who are responsible for delivering quality care to patients in a variety of settings. They include: doctors, clinical officers, nurses/midwives, pharmacists, physiotherapists, dentists, radiographers, and laboratory technologists (Iwu, 2014). All members of the health care team have the opportunity to contribute their

knowledge, expertise, skills and positive attitudes necessary to achieve holistic management of patients' health needs (Rose, 2011).

Studies such as that conducted by Lankhof (2018) showed that interactions between the various professionals affect the care that the patient, who is at the center of the collaborative practice receives. Therefore, to effectively interact and work in collaboration as a team, members must be familiar with each other's roles, responsibilities, and professional affiliations or areas of expertise. Collaborative Capacity among health workers reduces costs by helping to reduce hospital readmissions and length of hospital stay, and also increases levels of satisfaction among both providers and patients (Adebayo & Ilesanmi, 2016; Stutsky & Spence Laschinger, 2014). World Health Organization (2010) produced some evidence that interprofessional collaboration improves patients' health outcomes and decreases healthcare costs as a result of decreased duplication of services, error rates, and staff turnover.

High staff turnover in health facilities may affect productivity and quality of patient care and may also have financial implications (Khan, Jackson, Stayt & Walthall, 2019). Turnover is defined as provider leaving their organizations as a result of varying reasons. A work environment in which providers are enabled to share and discuss their opinions and concerns openly regarding patient care, workforce issues and feelings are more empowered and are less likely to leave their job. Ellapen, Swanepoel, Qumbu, Strydom and Paul (2018) conducted a systematic review on interprofessional knowledge and perceptions of selected South African healthcare practitioners towards each other. The authors suggest that an increase in multi-disciplinary care led to shorter inpatient hospital stays and consequently decreased

medical costs, while improving overall healthcare, in contrast, Lack of interprofessional knowledge regarding healthcare leads to incorrect and negative perceptions among service providers and professional individualism, which also result in delays in the provision of patient care as well as patient referrals to the next level of healthcare practitioners (Ellapen et al., 2018).

However, globally, Collaborative Capacity among health professionals in health care settings is limited. The limited Collaborative Capacity is associated with treatment errors, missed opportunities for patient consultation and delayed referral to specialist care (Havens, Vasey, Gittell & Lin, 2010). In addition, many health care systems in developing countries are fragmented and struggling to provide Patient-Centered Care. This is due to increasingly complex conditions affecting patients as well as a lack of defined processes and tools for the delivery of care (Otero et al., 2015).

Furthermore, the detection, treatment, and prevention of global diseases and conditions, such as HIV/AIDS, tuberculosis, and malaria, require the collaboration of every type of worker within the health system. Interprofessional teams comprising of three or more individual health professionals from at least two or more health disciplines that have the expertise and resources to communicate and adapt their response to the local environment will be critical to the success of disease management programmes through education and awareness among health care workers (World Health Organization, 2010).

Price, Doucet and Hall (2014) States that in some hospitals ward rounds are still profession specific and often health professionals are predominantly corresponding

indirectly with one another. Looking at the gaps of not involving other healthcare workers such as Pharmacists inpatient management, Kelly et al. (2013) highlights that the primary role of the pharmacist is evolving from a focus on dispensing medications to taking increased responsibility for and facilitating optimal medication use. The author further suggests that through collaboration patient health improves significantly when pharmacists work with doctors and other providers to manage patient care thereby decreasing mortality and morbidity, reducing adverse drug events, and reducing health care costs.

In addition the author states that effective collaboration among all health care workers in health facilities will increase the likelihood that decisions made by the health professionals are in line with the patients' needs (Sullivan et al., 2019). There is a need to strengthen relationships and build Collaborative Capacity among health professionals in order to promote positive health outcomes (Beier, 2014). Challenges in collaboration may be due to the fact that health workers are socialized in their own professions, philosophies, values and theoretical perspectives inherent to their unique professions. As a result, communication between health professions is not emphasized and is limited (Baker, 2010; Needleman et al., 2011). An example would be that of a surgeon conducting a successful surgery on a trauma patient with chest drainage left *in situ*. This successful surgery may result in negative outcomes for the patient if the nurse/midwife, physiotherapist, laboratory technician and the pharmacist do not collaborate effectively as they each provide care within their specific areas of expertise (e.g., nursing/midwifery, rehabilitation, laboratory investigations and pharmacological care respectively).

A study conducted by Behruzi, Klam, Dehertog, Jimenez and Hatem (2017) on understanding factors affecting collaboration between Midwives and other professionals in birth centres in Quebec hospital in Canada showed a conflict in the scope of midwifery practice and lack of communication skills between health care providers in the hospital. Furthermore, although midwives had complete access to the hospital, they were not integrated because of lack of interest of midwives and differences in scope of practice among health care professionals.

Several studies related to collaborative practice have been conducted in Africa. Sello and Dambisya (2014) conducted a descriptive, cross-sectional study on the views of pharmacists regarding their involvement in collaborative ward rounds in selected public hospitals in Limpopo province in South Africa. A total of 59 pharmacists responded to a self-administered questionnaire and findings showed that 95% of the pharmacists in the study were not engaged in meetings or ward rounds.

Another study conducted by Adebayo and Ilesanmi (2016) on collaboration between doctors and nurses in a tertiary health facility in South West Nigeria, showed that 84% of the nurses had a good attitude towards doctor-nurse collaboration. However, 80 % of the doctors showed poor attitudes to doctor-nurse collaboration. More studies conducted by Booysen, Lake, Webb, Van Niekerk, and Schübl (2012) conducted a study on the knowledge, attitudes and perceptions of healthcare students and professionals regarding interdisciplinary health worker team at Stellenbosch University in South Africa and Tygerberg academic hospital in Ethiopia, suggested that participants believed that the doctor was the most valuable member of the interdisciplinary team, whereas members of the allied health professions were not

rated as highly. In addition, in this study, the doctor was often viewed as the leader of the team. This may contribute to a tendency to ascribe a higher value to the medical profession (Booyesen et al., 2012). It is therefore important to advocate for interprofessional education and collaborative practice where two or more professional learners learn with, from, and about each other both in the classroom and clinical setting by sharing ideas, information and experiences in order to increase understanding, collaboration, as well as mutual respect between professionals (Morgan, Carson, Gagnon & Blake, 2014; World Health Organization, 2010). Since health care workers who feel respected are more likely to remain dependent on each other and committed to the organization and have the potential to improve their provision of health services and sharing of their experiences to both clients and fellow practitioners (Lankhof, 2018).

Mutual respect implies trust in each other's skills, supporting each professional to work to his or her full scope of practice, accepting each other's assessment and to avoid duplicating tasks. The authors further state that respect requires the ability of professionals to self-reflect and understand where his/her competency ends, and where other health care workers' competency begins. This is because if not well managed, in the healthcare field there is always some potential for overlapping roles (Lankhof, 2018). As in other service settings, these interdependencies among professionals are not the simple sequential handoffs that would happen on conducting daily ward rounds, but rather are interactive, requiring feedback among staff as new information emerges regarding patient care (Weinberg, Miner & Rivlin, 2009).

Braun et al. (2011) conducted a retrospective study on the relationship between

coordination of maternal and infant HIV services effects and early infant diagnosis in Lilongwe, Malawi. Findings indicated that a disjointed provision of HIV care services by health workers led to high attrition rates of HIV exposed and infected infants, delayed diagnosis, and late initiation of Anti-Retroviral Therapy (ART). The findings also suggested that there was not much sharing of information about patient care among health workers.

Perceptions play a key role in behaviour and in what individuals' think they should say and do in a group setting. However, there is limited information on collaborative practice among health care workers in Malawi (Braun et al., 2011; Chodzaza, 2020). This study focused on how health care workers perceive Collaborative Capacity and Structural Features that enable Team Effectiveness, and how those perceptions were organized according to their cadre. It is not clear to what extent health care workers perceive collaborative capacity in their workplace. A clear understanding of Collaborative Capacity among health care workers is an important step to improving teamwork in the health care facility. This study, therefore, investigated the perceptions of health workers on the relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership, and Patient-Centred Care in Blantyre Malawi. The results of this study will help to identify strategies to promote collaborative capacity at the largest tertiary and academic hospital in Malawi.

1.2 Background

Early work on collaboration in the hospital setting depicted collaboration as occurring between health professionals mainly nurses and doctors. The attributes of collaboration were, for the most part, around sharing such as shared planning,

decision-making, responsibility, and power based on knowledge for patient care and their expertise rather than role or title (Henneman, Lee & Cohen, 1995). This study looks at collaboration from the perspective of six health care professionals from nursing/midwifery, medicine, physiotherapy, Pharmacists, Radiographers and Laboratory Technologists.

D'amour and Oandasan (2005) identified similar issues in relation to collaboration in their literature review which includes: sharing, partnership, interdependency, process, and power. The authors noted that what seemed to limit a clear understanding of collaboration among health care providers was the diversity of ways it was conceptualized and influenced including the lack of links with the outputs and patient perspective (D'Amour et al., 2005). Factors found to influence whether or not there is a collaboration among health care workers include individual readiness, accepting one's own role and expertise, respecting and trusting others, team effectiveness, leadership and organizational support.

Successful provision of services amongst health professionals requires a new way of thinking that replaces the provision of care using the traditional vertical approach (in which the physician is the head of the team) with a more horizontal approach (in which all members of the health care team participate more equally in decision-making). In the traditional vertical approach, the physician is a dominant figure and takes control in all areas of interventions, thereby minimizing interactions and teamwork among health care workers (Kelly et al., 2013).

According to Rose et al. (2011), the vertical approach to care is reinforced when health workers are socialized during their training in a discipline-specific approach, placing great value on professional autonomy which encourages them to work in isolation of other disciplines. The vertical approach is associated with errors and inefficiencies that may compromise patients' safety (Fewster-Thuente & Velsor-Friedrich, 2008; Rose, 2011). One example of an inefficiency that can occur is when a physician conducts a ward round in the absence of a nurse; some orders requiring immediate attention may not be fulfilled promptly if the nurse does not learn about the orders until much later following the rounds.

Collaboration is frequently cited in health care and has gained attention because it is one of the preferred solutions to most of the complex health problems in overall healthcare systems. Similarly, collaboration requires having different health care workers' interests coming together to negotiate freely around complex issues affecting patient care and achieving common goals (Reeves, Pelone, Harrison, Goldman & Zwarenstein, 2017).

Meeting the unique health and social services needs of patients is beyond the expertise of any single health professional, or organization. The care needed is diverse, complex, and labor-intensive. It requires health care workers to be well-skilled and highly committed to delivering quality, comprehensive, and effective services (Moncatar et al., 2021). Sullivan et al. (2019) conducted an observational cross-sectional study to examine Collaborative Capacity and Patient-Centered Care in the Veterans' Health Administration community living centres in the United States (US). These researchers found that teamwork and collaboration (measured as Task

Interdependence, Quality of Interaction and Collaborative Influence), differed significantly across occupational groups.

There is some evidence that shows that physicians and nurses do not always work together as a team in many health care settings (Zwarenstein, Goldman & Reeves, 2009). To enhance team effectiveness and quality patient outcomes, interprofessional team members need to maintain continuous communication with one another, while preserving their specialized functions (Smith, 2015). Rose (2011) suggested that all members of the health care team should have the opportunity to contribute their knowledge, expertise and skills to support their fellow team members' contributions in order to achieve a holistic approach to managing patients' health needs.

Enhancing collaboration and interpersonal communication among various health care professionals across different departments and sections is one strategy to optimize utilization of resources, improving the quality of care and safety of patients, as such, preventing unnecessary healthcare fragmentation in the health facilities (Moncatar et al., 2021). However, at times communication among health care workers is not highly emphasized (Needleman et al., 2011). Access to accurate and timely communication among health workers has long been associated with the provision of quality health care because timely communication can generate rapid responses to new information as it emerges resulting in minimizing delays and maximizing responsiveness to customer needs while as accurate communication reduces the potential for errors (Gittell et al., 2018). A study by Weldetsadik et al. (2019) on quality of patient care and nurses' working environment in Ethiopia: Nurses' and physicians' perception, suggested that the nurse-physician relation was the least of all the 5 subscales with a mean of 1.80. Similarly, Fawaz, Hamdan-Mansour, and Tassi (2018) reported that

Sixty-seven (63.8%) nurses reported that physicians and nurses don't have a good working relationship, and 79 (75.2%) nurses reported that there is no collaboration and teamwork between nurses and physicians.

However, in health facilities, at times the poor nurse–physician collaboration is mainly associated with nurses not being involved in the decision-making process by their medical colleagues regarding care and treatment interventions, thus making them feel less empowered and not to be part of the interprofessional team (Khan et al., 2019). A study by Dailey, Loeb and Peterman (2007) in the United States, showed a correlation between communication among health care workers and patient care outcomes including a 50% reduction of patient waiting time, a 25% reduction in worker absenteeism, a 50% reduction in emergency room visits and hospitalizations for patients with congestive heart failure, and an overall reduction of hospital charges.

More findings from other studies suggested that up to 70% of the adverse events in health care settings were related to poor collaboration as well as ineffective communication amongst health care workers (Fewster-Thuente & Velsor-Friedrich, 2008; Martin, Ummenhofer, Manser & Spirig, 2010). Martin et al. (2010) conducted a review of 14 randomized controlled trials that involved collaborative practice and patient outcomes. This review revealed significant improvements in at least one patient outcome for every study conducted. As such, collaboration has been proposed as one of the solutions to many problems in health care delivery including a reduction in the high costs of managing health care services and promoting Patient-Centered Care (Morgan, Carson, Gagnon & Blake, 2014).

Considering that Collaborative Capacity focuses on partnership and teams of health care workers, it is important that the patient as an individual is also involved and retains control over his/her care. The team members should use tools such as patient care plans to promote effective utilization of resources as well as provide the planned activities at the patient's bedside (Jones & Fitzpatrick, 2009; O'Malley & Reschovsky, 2011; Orchard, 2017). Furthermore, although the use of care plans by service providers are considered a type of routine inpatient care, they can stimulate relational coordination, because they provide task agreements and in addition, they give insight into the care process as a whole, the role of each person, and the importance of the task the individual is expected to perform (Van Houdt, Heyrman, Vanhaecht, Sermeus & De Lepeleire, 2013). The provision of care which is based on the proposed care plan extends across the continuum of care and supports the concept of Patient-Centered Care as such, reducing costs and promoting teamwork (Schang et al., 2013; Schultz & McDonald, 2014).

Patient-Centered Care is a holistic approach to the delivery of individualized care which includes physical, mental, socio-environmental and self-care (Castro, Van Regenmortel, Vanhaecht, Sermeus & Van Hecke, 2016). Patient-centeredness is one of the six improvement goals to enhance the quality of care in health care systems listed in *Crossing the Quality Chasm: A New Health System for the 21st Century* (Pronovost, Cleeman, Wright & Srinivasan, 2016). Quality of health care comprises the ability to conform to the highest level of standards of care and thereby satisfying client's needs (Government of Malawi, 2017b). This approach to care allows patients to take an active role in the decision-making process about their health and quality of life (Castro et al., 2016).

The provision of Patient-Centered Care is important because each individual has unique needs. The use of personalized care and involvement of patients in their own care encourages patients to take active roles as well as empowering them to be responsible for their own health (Santana et al., 2018). This type of personalized care improves the quality of care outcomes, optimizes utilization of resources, and promotes patients' and families' satisfaction (Otero et al., 2015). Furthermore, shared knowledge and skills among health workers and their confidence to communicate to one another promote effective decision-making and patients' health (Baker, 2010; Sullivan, Kiovsy, Mason, Hill & Dukes, 2015).

The complexities in performing everyday roles and the dynamics of highly demanding environment structures in which health professionals work, affect not only their performance in influencing the quality of health services but also patient care outcomes. The organizational structures that predict high levels of collaboration are those that are connected across workgroups rather than reinforcing the silos that separate them (Gittell et al., 2018).

Health care is provided within an environment to which the patient, client family come for consultation and assistance. The environment in which the services are provided is the first aspect of care experienced by the patient or client and may determine their response to intervention. Similarly, the ability of health care workers to practice effectively in such an environment depends on the collaboration and support of other health care professionals (Maylone, Ranieri, Griffin, McNulty & Fitzpatrick, 2011).

The study by Lapão (2016) stated the need for the availability of information and communication technology (ICT) in support of interprofessional collaboration. The author stated that part of the key to successful interprofessional collaboration could be found in the implementation of ICT as well as shared patient files.” Without medical technology and systems that are still stuck in a fragmented and non-integrative mindset, other attempts at effective and successful interprofessional collaboration are a challenge.

Abdulmelike (2018) suggested that an organization refers to an entity that is systematically arranged to perform tasks with the help of a group of people who have specialization and intention to achieve a common goal. In addition, group members have different roles and responsibilities, and are together included in an organizational system that has boundaries and linkages to connect to the broader context and the task environment. However, Prin, Eaton, Mtalimanja, and Charles (2018) suggested that limitations in structural features can be partly addressed by investment in human resources for health. Furthermore, shortage of staff may lead to inability to effectively prepare the operating room for daily cases, missing laboratory results from failure of staff to reorder necessary supplies and equipment needed to perform the different tasks necessary for patients. Achieving high performance in health care organizations requires Structural Features that support health information technology; promote Team Effectiveness, and measures to monitor Patient-Centered Care (Santana et al., 2018). Weinberg et al. (2011) suggested that organizational context is important for well-functioning collaborative clinical teams. Supportive organizational contexts and settings with a focus on person-centered care are associated with greater teamwork and collaboration (World Health Organization, 2010).

Similarly, improvement of more teamwork in the organisation may enhance communication and foster collaborative interprofessional relationships within the practice setting. Such improvements may include: training workshops in collaboration and communication skills; interprofessional rounds; journals clubs; research or special interest groups; and continuing professional development including workshops which may promote open discussion and dialogue among health professionals (Price et al., 2014).

Weinberg et al. (2011) conducted a study to examine relationships between selected Structural Features that promote Team Effectiveness, and measures of Collaborative Capacity including Task Interdependence, Quality of Interactions among members of the health care team, and measures of egalitarian collaboration. Structural Features that were examined included sufficient Staffing and Resources, Communication, and Information Technology; Human Resource Management; Control over Work, and Leadership to promote teamwork.

This study used the term interprofessional rather than interdisciplinary or multidisciplinary. This is as a response to the call from around the world under pressure to change the model of health care delivery into interprofessional collaborative care models in order to improve patient outcomes (Khalili, Hall & DeLuca, 2014). The term multidisciplinary differs from interprofessional “as the team members are composed of different academic disciplines (psychology, sociology, mathematics) rather than from different professions such as medicine, nursing and social work” (Reeves, Lewin, Espin & Zwarenstein, 2011). A multidisciplinary team differs from an interprofessional team because although it is a group of health

professionals from one or more disciplines who work together, they each make autonomous or separate decisions regarding recommended treatment of individual patients (McCallin & Ba, 2009).

An interprofessional team consists of two or more different healthcare professions with diverse specialized knowledge, skills, and abilities, who share a team identity and work closely together whereby each member contributes to achieving a common goal of which could not have been possible if a particular profession acted alone during provision of patient care (World Health Organization, 2010). Having acquired different knowledge and skills during preservice education, their main purpose is to protect the health of individuals, to ensure them to cope with diseases and disabilities (Reeves, Goldman et al., 2011). Healthcare teams require collaboration both within and between them, making a complex entity that is exceptionally well suited in readiness to dealing with dynamic and complex issues. Furthermore, these teams exist to pursue one or more goals, and they require interdependent actions between them to realize the goals of the organization (Luciano, DeChurch & Mathieu, 2018).

As earlier stated, Orchard, Sonibare, Morse, Collins, and Al-Hamad (2017) define interprofessional team members as any interaction between one or more health care professionals regularly for providing patient care. In the health facility, during the provision of care, team members may include: physicians, pharmacists, registered nurses, nurse practitioners, dietitians, occupational therapists, physical therapists, social workers, psychologists, health educators as well as others (Orchard et al., 2017). This study included Laboratory and Radiology Technologists that work within the same health care facility.

Interprofessional team in this study was defined as three or more individual health professionals from at least two or more varied health disciplines communicating and coordinating in delivering health outcomes (Reid et al., 2015). Such professional values that influence one's work should be promoted and held by health professional students throughout their career from student to practitioner and uphold the values of working together (Brown, Lindell, Dolansky & Garber, 2015). The current study used the same measures and methods used by Weinberg et al. (2011) to examine relationships between the structural factors and measures of Collaborative Capacity and Patient-Centered Care in a health care setting in Malawi. The study concepts will be described further in Chapter 2, in the discussion of the study's conceptual framework.

1.3 Problem Statement

Provision of care at a referral hospital is labour intensive. The work requires a mix of staff from different backgrounds who are able to collaborate in order to provide quality care (Sullivan et al., 2019). Health care workers comprise a diverse group of practitioners who delivers quality care to patients in a variety of settings. These professionals include: doctors, clinical officers, nurses/midwives, pharmacists, physiotherapists, radiography, and laboratory technologists/technicians (Iwu, 2014). Despite literature showing the effectiveness of Collaboration Capacity in the health care system, many health care workers report that they have limited interprofessional collaboration. Each member of the health care team may present differing perceptions that can influence the ability of others to interpret and collaborate during the provision of care (Lankhof, 2018). Perceptions of health care workers collaboration may vary based on demographic variables such as age, gender, cadre, educational levels and

practice location (Maylone et al., 2011). Thus, when attempting to practice in an interprofessional manner, conflict often arises among providers because health professions have diverse values (Brown et al., 2015).

Challenges in collaboration may also be due to the fact that health workers are socialized in their own professions, philosophies, values and theoretical perspectives inherent to their unique professions (Baker, 2010; Needleman et al., 2011). This makes learners to be socialized in isolation from those in other related professions. At the end of the program, each student will not only master the knowledge, skills and norms of his/her own profession but will also develop a silo identity (Khalili et al., 2014).

As a result, this isolation creates a lack of understanding of other professions as such, the care provided is fragmented and often fails to meet the needs of patients with multiple, complex and chronic conditions such as heart diseases, diabetes, and renal diseases (Gilbert, Yan & Hoffman, 2010; Government of Malawi, 2017b). The effects of such fragmented care include long patient stay in the wards which lead to congestion of patients in the hospitals as well as affecting the effectiveness and efficiency of the health care system (Fewster-Thuente & Velsor-Friedrich, 2008; Peterson, Anderson, Bourne & Boundy, 2018).

It is necessary to have a greater understanding of possibilities for collaborative capacity across diverse individuals and organizations working at tertiary level care, to ensure a responsive health care delivery system that addresses the unmet needs of patients (Moncatar et al., 2021). A collaboratively practicing workforce will be more

responsive, efficient, and considerate of a patient, family, and community roles, as well as providing improved care (Morley & Cashell, 2017).

An extensive review of published literature revealed that no studies were identified that specifically investigated health care workers' perceptions of Collaborative capacity in Malawi. Therefore, the present study assessed perceptions of health care workers on the relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership, and Patient- Centered Care in Blantyre district.

1.4 Significance of the Study

The results of this study provide a basis for establishing how different healthcare professionals perceive the level of collaboration within their work environments. It is important to determine if individuals' perceptions of Collaborative Capacity at the facility will improve inter-professional collaboration and communication among different cadres of the health care workers. The levels of perceptions will serve as a reference point to identify strategies to promote Collaborative Capacity among health care workers at the largest referral and academic hospital in Malawi.

The results can further help to provide baseline information and knowledge on how Collaborative Capacity and Structural Features relate to Team Effectiveness, Leadership, and provision of Patient-Centered Care among health care workers. Knowledge of these factors can inform policy, practitioners, and relevant stakeholders to design appropriate strategies that can be used to enhance better working relationships among health care workers in order to improve health care worker's

performance for the promotion of quality patient outcomes. In addition, the information from this study can generate areas for future research in this area of Collaborative Capacity. Collaborative practice is mandated by multiple organizations, and each profession has responded in unique ways and the roles of healthcare professionals are usually seen in “parallel rather than partnership.”

Furthermore, the information obtained from the study will provide insight into possible interventions and equip leaders with the data needed to promote positive Collaborative Capacity among health care workers in the working environment. The results of this study will further be used as a platform for the development of specific interventions to improve Collaborative Capacity among health care workers at a referral hospital.

1.5 Purpose

The purpose of the study was to examine health care workers perceptions regarding Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership, and Patient-Centered Care.

1.6 Objectives

1.6.1 Broad Objective

The broad objective of the study was to assess the relationship between Collaborative Capacity (a measure of team structure and interdisciplinary collaboration) and Structural Features that Enable Team Effectiveness, Leadership, and perceptions about Patient-Centered Care among health care workers in Blantyre, Malawi.

1.6.2 Specific Objectives

- Describe perceptions about Collaborative Capacity (Task Interdependence, Quality of Interactions, and Collaborative Influence) among health care workers in Blantyre, Malawi.
 - Compare differences in perceptions about Collaborative Capacity among health care workers in Blantyre, Malawi based on the cadre of health care workers.
- Describe perceptions of Structural Factors that Enable Team Effectiveness (Staffing and Resources, Communication and Information Technology, Human Resource Management/Job Rewards, and Control over Work) among health care workers in Blantyre, Malawi.
 - Compare differences in perceptions about Structural Features that enable Team Effectiveness among health workers in Blantyre, Malawi based on the cadre of health care workers.
- Describe perceptions about Leadership and Patient-Centered Care among health care workers in Blantyre, Malawi.
 - Compare differences in perceptions about Leadership and Patient-Centered Care among health care workers in Blantyre, Malawi based on the cadre of the health care workers.
- Explain the relationship between Collaborative Capacity with the independent variables of Structural Features that Enable Team Effectiveness, Leadership, and Patient-Centered Care as perceived by health care workers in Blantyre, Malawi.

- Compare the relationship between Collaborative Capacity and covariates of a cadre of health care workers, years of experience and ward/unit where working.

1.7 Organization of the study

This thesis comprises the preliminary part and the five chapters. The preliminary section consists of the title page, declaration, dedication, acknowledgement abstract, table of contents, list of figures, list of tables, abbreviations and acronyms, and definition of terms used in the study. This is followed by chapter one which presents the introduction and background of the study highlighting the reasons why it was important to conduct the study. It further describes the statement of the problem, highlights identified knowledge gaps, the significance of the study, including the purpose, aim, and objectives of the study. Lastly, it stipulates how the study has been organized.

Chapter two comprises the literature that was reviewed which is relevant to the study, and the conceptual framework which guided the study. This chapter contextualizes the research through engagement with a broad range of literature globally, regionally and locally that is relevant to the study. It further demonstrates why various researchers are suggesting the importance of Collaborative Capacity in the workplace.

Chapter three comprised the research methodology which presents the research philosophy, research design, target population, sample size, sampling design and procedure, data collection instrument, validity and reliability of the instrument, data collection procedure, and describes data analysis. This chapter concludes with ethical

considerations and participant's safety issues which is important and in line with sound ethical and safe research practice.

Chapter four comprises the results of the research study which presents the background information, descriptive statistics, and inferential statistics.

Chapter five present a discussion of the results according to the set objectives of the study. The discussion draws together the research process, stating how the variable of collaborative capacity performs a critical role in the health care environment. The chapter also stipulates limitations of the study, contribution of the study to the body of knowledge, conclusion and recommendations for policy, education, practice, and research for further study. In this study, approaches to measuring collaboration and evidence demonstrating the benefits of collaboration are presented. The structural factors which may determine collaborative behaviour are described.

1.8 Conclusion

Collaborative Capacity refers to the conditions needed for the coalition, partnership, or networks among teams in order to promote quality patient care. Health care workers support each other to develop skills and positive attitudes about working together. The chapter has given an overview of the study on Collaborative Capacity, Structural Features that promote Team Effectiveness, Leadership and Patient-Centered Care in order to achieve high performance in health care organizations.

Structural features affecting collaboration include Communication and Information Technology Staffing and resources, Human Resource Management and Control over

work. Effective leadership is needed to ensure that team members have a voice in team processes (e.g., decision-making); to set expectations around collaboration; and to facilitate frequent communications exchanges considering that communication is necessary to share critical information among team parameters (e.g., who does what), and establish a therapeutic team climate. The collaboration of services leads to more positive workplaces which in turn benefit clients, families and the community.

However, lack of collaboration results in the provision of fragmented care which is not able to meet the needs of patients with multiple, complex, and chronic conditions as such, affecting the effectiveness and efficiency of the entire health care system. The aim and objectives of the study have been stated. The purpose of the study has been highlighted including the nature of the research problem on how the research would be best shaped to answer the research objectives. The significance of the study to the needs of Malawi has been provided. The challenges and problem statement have been explained.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The broad objective of the study was to assess health workers' perceptions about Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care. This chapter presents a review of studies related to the key concepts examined in this study: perceptions of health care workers about collaborative capacity, leadership, patient-centered care, and structural features that enable team effectiveness (including staffing and resources, communication and information technology, human resource management, job rewards, and control over work).

This chapter included an in-depth review of the existing literature to establish evidence of the significance of the study for policy, practice as well as on- going discussion about the topic. In addition, the review demonstrates reasons researchers are suggesting the importance of Collaborative Capacity as a measure to improve healthcare. The researcher will examine aspects of perceptions on Collaborative Capacity and Structural Features among different health care workers and review the frameworks that have guided the research.

Finally, the literature review was guided by the study objectives thereby supporting the development of a conceptual framework to further guide the research process.

conceptual frameworks are needed to guide research in order to build a systematic body of knowledge of interprofessional collaborative practice. The framework enables the linkage of the findings of the study to the existing body of knowledge and it is also an indication that the quantitative study was well-developed.

The review included studies conducted internationally, regionally, and locally in Malawi. The following databases were used for literature search: PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), EBSCOHOST, including search engines namely: Google Scholar, and the Health Internet Access to Research Initiative (HINARI). In addition, the following search terms were used: Collaboration AND Collaborative Influence, health care workers OR professional AND Collaborative Capacity AND Leadership AND Patient-Centred Care, health workers knowledge on collaboration AND Structural Features for Team effectiveness OR Task Interdependence AND quality of care. Furthermore, titles, abstracts and full papers were screened to ensure that only those that addressed Collaborative Capacity among health care workers were selected and used. The review included only articles published in English. The review focused on works published between 2009 and 2019, however, some articles and books published earlier than 2009 were also included if the researcher considered them relevant and key to the current study.

2.2 Research Related to Health Care Workers' Perceptions about Collaborative Capacity (Task Interdependence, Quality of Interaction and Collaborative Influence)

Collaborative Capacity is defined as the “likelihood that providers, no matter how short their interaction, will collaborate as if they were members of a team of equals

even in the absence of formal team structure” (Sullivan et al., 2019, p.90). The author stated that collaboration involves all members of staff working collegially as a team in an environment of trust, respect, and open communication which enables the shared knowledge and skills of the providers to synergistically influence the provision of patient care.

However, collaboration can also imply that different interest individuals or groups coming together to negotiate freely around complexities and achieving common goals (Penny, 2015). Despite frequent references to the term in professional circles a lack of clarity exists about what the term actually means. As such, the World Health Organization (WHO) has expressed the importance of collaboration to meet the goals of improving teamwork among health care professionals. In a healthcare setting, collaboration is complicated by the fact that it involves various professionals who have been taught to manage client care based on discipline-specific frameworks (Sexton & Baessler, 2016).

Some of the critical attributes of collaborative practice include coordination, cooperation, shared decision making, and partnerships (Henneman et al., 1995). Coordination has traditionally been viewed as an information-processing problem involving shared understandings of the work and the context in which it is carried out (Gittell, Seidner & Wimbush, 2010). Collaboration among health care workers aims at facilitating the delivery of quality health care by service providers and relies on partnerships, communication and a supportive organizational context (Sullivan et al., 2019; Weinberg et al., 2011).

Research carried out in 14 hospitals that had achieved recognition from the American Nurses Credentialing Centre (ANCC), showed a positive correlation between the quality of physician-nurse relationships as evidenced by measures of collegiality and collaboration and the quality of patient care outcomes. In addition, high-quality relationships reinforce high-quality communication, encouraging participants to listen to each other and to take account of the impact of their own actions or inactions on those who are engaged in a different part of the process further contributing to the performance of the work process (Gittell, Weinberg, Pfefferle & Bishop, 2008).

This indicated that effective collaborative relationships between nurses and physicians were not only possible, but were directly linked to quality patient outcomes (El Sayed & Sleem, 2011). Similarly, Brown et al. (2015) in a study on Nurses' professional values and attitudes towards collaboration with physicians in the US, suggested that nurses with lower levels of education are more involved in direct patient care and viewed doctors as more authoritarian and less collaborative. The literature revealed that collaboration is perceived differently by nurses and physicians and is affected by the individuals' perceptions.

The difference between the professions is one where the physician is focused on healing and the nurse is focused on the lived experience (Brown et al., 2015). In addition, previous interprofessional education experience also resulted in lower scores on collaboration. The interactions between the various professionals affect the care that the patient, who is at the center of the collaborative practice stream, receives. Therefore, to effectively work in collaboration, members from different professions

must be familiar with each other's roles, responsibilities, and professional affiliations including areas of expertise (Lankhof, 2018).

Weinberg et al. (2011) surveyed 1,527 health care workers from nine hospitals in New York State to examine determinants of Collaborative Capacity. These researchers identified three components of Collaborative Capacity: Task Interdependence, Quality of Interaction (or norms of working together), and Collaborative Influence (defined as egalitarian collaboration). Weinberg et al. (2011) defined task interdependence as the “frequency of interaction relative to the need of information and pertains to the dependence of a provider on information from others” (p.718).

Task Interdependence requires acceptance of one another and understanding that systems must work together in harmony (Huth, Kelly & Van Sell, 2017). When Task Interdependence is low, participants can carry out their work in a relatively autonomous way with little regard for other professionals who are in the same workplace, whereas when Task Interdependence is high, participants become aware of and responsive to the actions that are taken by other participants (Gittell, Godfrey & Thistlethwaite, 2013)

The Quality of Interaction was conceptualized as the “norm of working together” and was measured by an index that examined the “frequency, timeliness, accuracy, problem-solving, nature of communication, and characterizations of relationships” (p. 718). The concept of Collaborative Influence (also referred to as “egalitarian collaboration”) is defined as the ability to get things done by getting people to

collaborate and building strong collaborative networks. Members seek solutions rather than blame. They think about as well as take into consideration both short-term and long-term goals. Members are interested in other points of view and welcome feedback to build mutual success.

Collaborative Influence was measured by the extent to which respondents perceived that they influenced decisions of their co-workers. Findings showed that Task Interdependence did not differ between hospitals and units but varied significantly by occupational groups. Weinberg et al. (2011) reported results of the post-hoc analysis related to Task Interdependence as follows: “doctors, nurse practitioners (NPs), and physician assistants (PA), case managers and social workers, and nurses have the highest degree of Task Interdependence and are not significantly different from one another. The lower scores of rehabilitation therapists, nurse’s aides and patient care technicians and unit clerks suggested that these roles are less interdependent with others” (p.720).

Maylone et al. (2011) stated that nurse practitioners rated both their perceptions of collaboration with physician colleagues as high, yet there was no significant correlation between the variables. Similarly, Reeves et al.(2017) in their meta-analysis to investigate the differences in interprofessional collaboration ratings between nurses and physicians, showed that physicians perceived more collaborative interactions compared to nurses, but nurses had more positive attitudes towards collaboration. In addition, Quality of Interaction also known as (Norms of Working Together) did not differ by the hospital but differed by both unit and occupational groups. Weinberg et al. (2011) described the results of the post-hoc Bonferroni analyses related to the

quality of interaction as follows: "...doctors, NPs, case managers, and social workers reported significantly higher quality interactions than did nurses or rehabilitation therapists. The 2 paraprofessional groups, nurses' aides/patient care technicians and unit clerks reported significantly lower quality of interactions compared with all groups except rehabilitation services" (p.720).

Similarly, Collaborative Influence (or egalitarian collaboration) did not differ by hospital setting but differed by units and occupation. "Post-hoc Bonferroni analysis of collaborative influence by occupational group suggested that doctors, NPs and PAs reported significantly greater influence over care decisions than did any of the other provider groups, followed by nurses, then by case managers/ social workers and rehabilitation services, then by paraprofessionals" (p.721). Weinberg et al. (2011) further reported that "in the case of both perceived team structure and collaboration, RNs reported higher scores than might be expected given their place in the education and salary hierarchy. We attributed this difference to the greater contact that RNs have with all occupational groups and to the direct line authority that RNs wield over other nursing staff namely Licensed Practical Nurse (LPNs) and aides" (p.721).

Findings from other studies suggest that many health care workers perceive problems related to Collaborative Capacity even though many organizations have emphasized the importance of promoting interprofessional collaboration. Jones and Fitzpatrick (2009) surveyed in Canada of Certified Registered Nurse Anaesthetist (CRNA) - Physician collaboration. Findings suggested that CRNAs reported role conflict and unclear expectations that led to increased job stress and dissatisfaction amongst the nurses and other health care workers.

Matziou et al. (2014) suggested that conflicts between physicians and nurses were often the outcome of different role expectations where nurses focused on teamwork and applied their knowledge directly to patient care, whereas physicians considered themselves as the main caregivers with nursing's main function as carrying out orders. In addition, nurses were not treated as equal members of the interprofessional team.

Health care is delivered in dynamic environments where providers care for many patients, each of whom may be served by several teams with different members. Furthermore, each team's approach to interprofessional collaboration may vary according to contextual factors (e.g., patient acuity, team composition, resource availability). As a result, health care professionals whether team leaders or team members must adjust their approaches based on contextual factors to meet the needs of patients and communities as a whole.

Considering that the complexities of health care cannot be met by the expertise of only one single profession, health workers are encouraged to clearly define the responsibilities and roles they will play in order to collaborate among themselves and provide quality care to patients including their families and prevent errors (Beier, 2014; Thannhauser, Russell-Mayhew & Scott, 2010). Pronovost, Cleeman, Wright, and Srinivasan (2016) reported on the importance of health care workers communicating effectively in order to ensure appropriate exchange of ideas and use of information technology during provision of care in order to reduce hospital-acquired infections and promote patient safety.

In addition, the use of information technology improves access to health care by providing access to specialists who are not available locally, and; at the organizational level, promoting the use of appointments as such, helping to shorten the patient waiting time (Lapão, 2016). This means that information technology has a significant influence on health care workers' practice, education, management, and research (Gaboury, M. Lapierre, Boon & Moher, 2011). The technology used in the clinical area for in-patient and out-patient care includes supportive computer programs and patient registries to co-design care with patients and families through sharing of patient reported outcomes and experience measures (Gittell & Logan, 2015).

However, some researchers have noted that effective communication among members of the health care team may be problematic. For example, Klinar et al. (2013) conducted a quantitative study of physicians' attitudes about the interprofessional treatment of chronic pain in Croatia. Findings suggested that effective cooperation and communication within interprofessional teams may be hindered by perceived lack of clarity and poor attitudes about each health workers' role in service delivery. When working within a team, professionals will likely seek feedback from members with whom they are likely to share many similarities. Moreover, individuals would be hard-pressed to trust members of other teams that pursue different goals, following different work processes (Luciano et al., 2018).

A guiding principle of the College of Physicians and Surgeons of Ontario (CPSO) is cooperation. This happens when members of the health care teamwork with partners, other health-care institutions, associations, and medical schools, to ensure

collaborative commitment, focus and shared resources for the common good of the profession and public” (Lankhof, 2018).

Reeves et al. (2017) conducted a systematic review of interprofessional collaboration to improve professional practice and health outcomes. Findings suggested that collaboration between health and social care workers may slightly improve patient functional status, professionals’ adherence to recommended practices, and efficient use of health care resources. In health facilities, collaboration goes beyond the traditional physician-nurse relationship as it includes other professionals such as pharmacists, laboratory technologists, physiotherapists, occupational therapists, social workers and other support staff who provide a wide range of services to clients or patients (World Health Organization, 2010). The mix of health professionals in a health facility and interdependence among them, provides for the integration of their beliefs, knowledge and skills necessary for the provision of quality and comprehensive care as well as providing a way to work together as a team (McCallin & BA, 2009; Dana Beth Weinberg et al., 2011).

Schadewaldt, McInnes, Hiller, and Gardner (2013) conducted an integrative review of 27 quantitative and qualitative studies regarding views and experiences of nurses and medical practitioners about collaborative practice. Findings showed that exposure to working together helped to overcome professional hurdles, dispelled concerns and provided more clarity around roles and the meaning of collaboration. In addition, nurse practitioners highlighted the importance of working in a reciprocal relationship. Support from the medical practitioners was crucial to establish a collaborative practice with the nurse practitioners. Nurses indicated that their relationship with

medical practitioners was often one-sided and usually initiated by nurse practitioners when the problem was beyond their scope. In contrast, medical practitioners who had some working experience with nurse practitioners expressed more positive attitudes towards the collaborative practice. This implied that a high level of nurse practitioners autonomy was a crucial component to collaboration because their limitations in autonomy and their inability to prescribe or order diagnostic tests were found to increase the medical practitioners' workload as such negatively influence collaborative practice (Schadewaldt, McInnes, Hiller & Gardner 2013).

The Canadian Nurses Association (CAN) produced a position statement that reinforced the importance of incorporating interprofessional collaborative practice models to improve access and delivery of safe, effective health care in Canada. Nurses are instructed to collaborate with other health care professionals to improve patient care while also recognizing and respecting the knowledge skills and perspectives of all providers involved in providing patient care (Lankhof, 2018). As knowledge concerning other health care workers' roles increased, positive changes took place in the nurses' attitudes toward collaboration. Nurses were able to respond positively or negatively towards a certain thing (idea, object, person, or situation). These attitudes often represent an important link to care coordination and collaborative practice (Baker et al., 2011).

Collaborative capacity also depends on an appreciation of one another's skills and abilities as lack of scope and role clarity has been associated with significant breakdowns in team communications. As with other complex systems, healthcare professionals work more effectively together when they can negotiate with one

another about how to best meet patient needs (Gittell, Beswick, Goldmann & Wallack, 2015).

Thannhauser et al. (2010) conducted a systematic review of interprofessional education and collaboration in the United States. Results indicated that poor attitudes of some individuals from one profession can have an impact on how health care workers perceive and behave towards each other in the health care setting. Jones and Fitzpatrick (2009) conducted a survey in Canada on Certified Registered Nurse Anaesthetists (CRNA) - Physician collaboration. Findings showed that the mean scores on attitudes towards collaboration for nurse anaesthetists were consistently higher at 51.8 (+_ SD 2.7) than for anaesthesiologists at 44.4 (+_SD 8.7). The findings further showed that there were some differences in attitudes towards the capacity to collaborate between nurses, anaesthetists and anesthesiologists.

In addition, Price, Doucet, and Hall (2014) conducted a systematic review of literature related to the historical social positioning of nursing and medicine, early socialization, and interprofessional collaboration. Findings suggested that there was a poor conceptualization of collaborative practice by health workers within the published literature due to lack of interprofessional education of students in colleges. Lack of adequate interprofessional knowledge leads to incorrect perceptions and professional individualism, which result in a dearth of patient referrals to health care practitioners at the next level of care (Ellapen et al., 2018).

The social positioning of the various health professions, most notably nursing and medicine, can create some challenges in providing interprofessional care. Different

professional cultures informed by a long history of social class, boundaries, and gender issues continue to undermine effective interprofessional collaboration and coordination among health care workers (Reeves et al., 2017). However, interprofessional collaboration among health workers during the provision of patient care, acknowledges the importance of effective interpersonal communication among health care team members towards better integrated Patient-Centered Care (Schmitt, Blue, Aschenbrener & Viggiano, 2011).

Many factors contribute to this lack of collaboration, including differing perspectives, values, role competition, and a physician-dominated hierarchy resulting in challenges in the provision of patient care (Brown et al., 2015). Failure to respond to patients' needs promptly can lead to negative clinical outcomes as well as reduced quality of life (Gittell et al., 2013). Furthermore, the authors state that effective interpersonal communication also reduces uncertainty in health workers relationship, facilitates interdisciplinary patient assessment, promote appropriate and timely referrals as such promoting efficient and effective utilization of material resources including continuity of care (Gittell et al., 2013).

The practice of exchanging ideas among providers happens when each health worker meets his or her obligation to the partnership and ensures a mutual responsibility and accountability towards each other (Reeves, Pelone, Harrison, Goldman & Zwarenstein, 2017). An example from medical imaging would be collaboration among radiation technologists, radiologists, and various support staff to identify and implement best practices in diagnostic imaging order, triage, acquisition, review, and reporting processes to improve, streamline, and standardize practice (Morley &

Cashell, 2017). This exchange fosters the trust that is essential for collaboration since health workers are open to share authority and count on each other to meet their obligations towards service provision (Sullivan et al., 2015).

Previous studies by Luciano et al. (2018) states that trust is a belief that simultaneously generates positive feelings but makes one vulnerable. In addition, the general predisposition to expect good things from most people (until or unless proven otherwise) it enables people to adapt to their groups, encouraging mutual understanding, social influence, and group loyalty alternatively, violations of trust can quickly generate negative reaction among members (Luciano et al., 2018). Some more evidence suggests that when health workers collaborate, they promote the exchange of ideas and their expertise in the way they interact with one another in the clinical area. In addition, they maximize effective utilization of scarce resources, hence creating greater opportunities for shared achievements as a team (Iwu, 2014).

Zwarenstein, Rice, Gotlib-Conn, Kenaszchuk, and Reeves (2013) conducted a study on the effect of interprofessional education on professional practice and healthcare outcomes in Canada. Findings suggested that communication between physicians and other health workers in the general internal medicine wards was rare. The type of communication was usually one-way and consisting of a brief request for information. At times, even if opportunities for interprofessional communication were available, they were generally overlooked.

El Sayed and Sleem (2011) identified the need to encourage health workers to collaborate as well as exchange their knowledge and skills about patient management,

and recognize divergent views in order to promote working in a group as well as group success. In addition, El Sayed and Sleem (2011) stated that surgical unit participant's total scores indicated a more positive attitude toward nurse-physician collaboration than medical unit. This could be attributed to the very nature of care, in which nurses must communicate and coordinate care with various multidisciplinary caregivers as they provide patient care.

Communication is an important component inpatient care and plays a key role in interprofessional collaborative practice such that Hussey and colleagues, in Barcelona, found that effective communication promoted greater continuity of care which was associated with lower probability of hospitalization and lower health care spending for patients with congestive heart failure, a chronic obstructive pulmonary disorder, and diabetes (Hussey et al., 2014).

Martin, Ummerhofer, Manser, and Spirig (2010) conducted a systematic review of research about an interprofessional collaboration among nurses and physicians in Greece. Findings showed that 13 of 14 randomized controlled trials that were reviewed reported at least one statistically significant association between higher nurse-physician communication and interprofessional collaboration and a positive patient outcome.

More research findings also suggest that effective communication and collaboration among health workers is associated with enhanced professional growth and staff retention. Such communication avoids the negative cycle of blaming and information hiding, keeping the focus on continuous improvement and learning (Gittel,

Weinberg, Pfefferle, et al., 2008). The term work environment is multidimensional, comprising social, physical and cultural aspects. All of these elements are required for ensuring a conducive work environment.

The physical aspects of the work environment are important and impact health care workers well-being. Working areas should be healing environments that respond to the needs of all the people within the respective wards and departments for both those who receive or give care (Havens, Vasey, Gittell & Lin, 2010; Khan et al., 2019). In contrast, a work environment lacking collegial relationships between nurses and doctors negatively affects their performance during patient care (Chong, Aslani & Chen, 2013).

Nurses and physicians have always been the key players in the health care arena and although the health care team is comprised of a number of other health professionals, the status of medicine and a large number of nurses in health facilities are central to interprofessional collaborative practice (Reeves, Goldman & Zwarenstein, 2009). Nurses and physicians have unique contributions to patient care but often do not appreciate the role of the other (Brown et al., 2015). At times, some providers have called for the profession of nursing and its members to better articulate their values as a means of promoting professionalism and their contribution to healthcare outcomes.

Other health workers may also experience problems communicating their roles and responsibilities to each other, thus contributing to poor interpersonal relationships and patient outcomes (Morgan, Carson, Gagnon & Blake, 2014). Therefore, positive relationships that underpin relational coordination (shared goals, shared knowledge,

mutual respect) will lead to higher levels of job satisfaction (Gittel, Weinberg, Bennett & Miller, 2008).

The adoption of an interprofessional team that involves members of more than one care group is important to promote and facilitate effective patient care management and building a resilient and innovative workforce (Moncatar et al., 2021). To this end, the authors reaffirm that interprofessional collaboration (IPC) works to ensure cohesion, consistent dialogue, and improved standards of care through the delivery of holistic services, and better continuity of care (Moncatar et al., 2021).

Perceptions play an important role in the maintenance of effective communication as such, Matziou et al. (2014) conducted a descriptive study about physician and nurse perceptions concerning interprofessional communication and collaboration in Greece. Findings showed that the following factors were associated with nurses' perceptions of interprofessional collaboration and communication: years of experience, size of the facility, a university degree and post-graduate studies. Factors associated with physicians' perceptions of communication with nursing staff included age, sex, years of experience and size of the clinic. Similarly, Penny (2015) suggests that factors associated with individuals to think and act in collaborative ways including childhood experiences, social norms, role models and mentors, and being exposed to previous positive or negative collaborative experiences.

Nurses and physicians did not share the same views concerning interprofessional communication and collaboration. Brown et al. (2015) conducted a study examining the correlation between nurses' professional values (such as trust, professionalism,

and caring) and their attitudes towards nurse physician collaboration at a tertiary hospital (involving inpatient, intensive, and outpatient care) in the United States, discovered a positive relationship between these two factors ($r = .26$, $p < .01$). This positive relationship was also influenced by previous interprofessional education (IPE) experience and with those having a master's or higher level of nursing education (Lankhof, 2018).

Reeves, Xyrichis and Zwarenstein (2018) is of the view that Interprofessional education, research and collaboration among academics and practitioners break down the barriers of professional individualism, antagonism, and competition, allowing a more holistic and multivalent approach to patient care - thereby responding to the needs of the patient in a more dynamic manner. Similarly, international healthcare academic fraternities have integrated interprofessional healthcare education into their teaching curriculum, which has translated into interprofessional collaboration. There is more literature-based evidence that interprofessional healthcare collaboration provides the best level of healthcare, which should encourage countries' healthcare practitioners to put aside their differences to collaboratively strive for the improvement of healthcare (Reeves et al., 2017a; San Martín-Rodríguez, Beaulieu, D'Amour & Ferrada-Videla, 2005).

Patients and families often try to organize amongst themselves in search of better services in the health facilities and seek in vain to demand their involvement to issues affecting their health. This resulting in delays in communication and collaboration among health workers, resulting in a negative impact on the provision of quality care and Collaborative Capacity (Sullivan et al., 2019).

An effective system of delivering care could help to improve the quality of patient care. However, evidence suggests that there are still some challenges within the health care system that can affect the development and delivery of collaborative care among health workers. Some of the challenges include the following: resistance to change amongst professionals, limited time to talk to each other, and poor relationships (Martin et al., 2010). Similarly, more barriers to collaboration that Schadewaldt et al. (2013) identified were a lack of understanding by medical practitioners regarding the unique role of the nurse practitioners. The authors further suggested that this lack of understanding decreased the level of confidence, trust, and respect between professionals and exemplified barriers to collaboration such as hierarchical relationships and power struggles.

One solution to the resistance expressed regarding interprofessional collaboration is the persistent encouragement and institutionalisation of tertiary interprofessional education among all healthcare students (Reeves, Goldman, et al., 2011). As such collaboration is an integration of activities and knowledge that requires a partnership of shared authority and responsibilities whereby in the learning environment, the learners prefer to work in groups and develop responsibility for their learning in the clinical area (Morley & Cashell, 2017).

Hierarchies have been identified as a common barrier to effective coordination and collaboration such that many healthcare settings continue to follow the rules of hierarchical systems where physicians are ranked higher in importance than other members of the health care team (Berry, Rock, Houskamp, Brueggeman & Tucker,

2013; Gotlib Conn, Kenaszchuk, Dainty, Zwarenstein & Reeves, 2014). One result of these hierarchies is that physicians may perceive that the environment is more collaborative than other staff members. For example, Adebayo and Ilesanmi (2016) reported that doctors perceived that the environment was collaborative and that communication was open, whereas nurses and other staff members (like pharmacists and physiotherapists) perceived communication problems. The differences in perceptions created an imbalance of power between doctors and other health workers leading to a lack of shared decision-making and less involvement of other cadres in planning, implementation and evaluation of patient care hence creating a sense of helplessness among the different cadres of health care workers in the facilities (Lam, Ng, Shen & Wong, 2015). Health workers at the top of the hierarchy had greater influence because of their level of education and social status while those at the bottom of the hierarchy were most likely to experience more delegation from the top hierarchy in a pattern of “We decide, you carry it out” (Weinberg et al., 2011).

While other authors refer how power operates over, with and for others and suggest that in most collaborative practice, each of the three power types exist to varying degrees (Lam et al., 2015). The hierarchical nature of healthcare delivery may prevent them from attaining their full scope of practice, while physicians were concerned that nurses were attempting to acquire roles in healthcare for which they were not fully prepared (Lankhof, 2018). These concerns regarding the roles of physicians and advanced practice nurses are deep-rooted in the historical context of healthcare delivery. Solutions are needed to promote overcoming the variety of barriers to interprofessional collaborative practice (Goldsberry, 2018).

Goldsberry (2018) stated that the process of integrating interprofessional collaboration is complex and involves overcoming historical hierarchical factors and professional boundaries. These professional barriers can cause a decline in team collaboration. As such, lack of collaboration leads to individual team members working in isolation. The integration of different healthcare professions during the provision of care can help to alleviate these barriers (Lankhof, 2018).

Morgan et al. (2014) conducted a review of research about the collaborative practice among obstetricians, family physicians, and midwives in Canada. Findings showed that challenges occur in the health sector because health workers have not been prepared through education or socialization to work collaboratively in the practice environment. The author further states that the training of students remained focused on their discreet programs, for example, each healthcare profession has its specialized language, theories, and values that make it distinct from other healthcare professions rendering them with limited opportunity to learn together and from each other as a result, not adequately prepared to work as a team.

The different socialization processes and legislation requirements of each profession influence collaborative practice. The World Health Organisation (2010) suggests that the health workforce can be made “collaborative practice ready” through interprofessional education considering that these health care graduates are expected to enter the workforce having been well equipped with the knowledge, skills, and positive attitudes in interprofessional collaborative education and practice experience (World Health Organisation, 2010, p. 7).

As such, competencies that characterize an “ideal collaborative practitioner” and thereby inform interprofessional education have been developed by The National Interprofessional Competency Framework Canadian Interprofessional Health Collaborative [CIHC], (2010) to encourage professionals to use consistent language and available concepts in both education and practice. The framework consists of four central domains which include the following: “role clarification, team functioning which address interprofessional conflict and collaborative leadership; and two domains which are related to: interprofessional communication and patient/client/family/patient-centered care” (CIHC, 2010, p. 23).

However, a report by the Institute of Medicine (IOM) on *To err is human: building a safer health system*, estimated that between 44,000 and 98,000 people die annually in US hospitals due to medical errors. Some of the reasons are a result of inadequate preparation of health professionals to work collaboratively as well as system inefficiencies to support collaborative practice hence incurring higher costs of care (Pronovost et al., 2016).

Matziou et al. (2014) conducted a descriptive study about physician and nurse perceptions concerning interprofessional communication and collaboration in Greece. Findings showed that the absence of collaboration among health workers resulted in errors and omissions during the provision of patient care. The need to decrease medical errors has led policymakers to develop an interprofessional practice model necessary to address quality of care (Lankhof, 2018).

Bringing health workers to work collaboratively in wards or departments, enable patients to be seen by a range of professionals within a short period, without the need for frequent travels to the health facility. Other researchers have reported that collaboration helped to ensure that patients received timely consultations and that health workers shared and learnt to appreciate the different approaches to health care (Parker et al., 2013; Reeves et al., 2018). Moncatar et al. (2021) stated that although the collaborative practice has been shown to improve professional practice in the workplace, delivery of care services, and health outcomes, especially for rapidly ageing societies, several interpersonal factors, including power and hierarchical differences among individuals, may inhibit its implementation

Some of the challenges to effective collaborative practice are context-specific like the type of patients being served, the specific wards and departments where care is provided, and poor communication among health workers (Morgan et al., 2014). Kelly et al. (2013) conducted a survey to assess attitudes and experience of pharmacists and physicians with collaborative practice in Newfoundland and Labrador. Results showed that although pharmacists and physicians agreed that collaborative practice could result in improved health outcomes for patients, this was not a routine part of their daily practice. Pharmacists expressed concerns over the lack of face to face communication with physicians while physicians expressed concerns relating to shared patient responsibility. However, both pharmacists and physicians agreed that a strong working relationship and exchange of information is needed to promote the provision of Patient-Centered Care.

During collaborative practice, health workers from different backgrounds work together to develop solutions related to problems affecting patient care. Health workers become involved in open discussion during ward rounds and meetings which assist in resolving their issues (Smith, 2015). Sullivan, Kioovsky, Mason, Hill, and Dukes (2015) conducted a study on interprofessional collaboration and education in the USA. Findings showed that shared decision-making reflected the interdependence among the team members as they provided patient care.

In support of this notion, Hepp et al. (2015) suggested that to improve collaboration and shared leadership, it was important to have all providers attend ward rounds or have equal input into patient discussions. However, the logistics and the practicalities around gathering all providers on the unit at the same time it was not always conducive. In addition, Stanley, Blanchard, Hohol, Hutton and McDonald (2017) suggests that shared clinical leadership works best in flatter organizational structures and nonhierarchical patterns of human relationships. Strong hierarchical organizational structures and ways of relating may present a challenge to the implementation of shared clinical leadership in the clinical area.

Although interprofessional relations have been highlighted as an important aspect for effective care provision and healthy workplaces, true collaboration is rare due to a lack of understanding across the health professionals (Baker, 2010). Similarly, El Sayed and Sleem (2011) states that collaboration is rare when there is a wide difference in power between the groups or individuals involved. In collaboration, problem-solving is a joint effort with no superior-subordinate, order-giving order-taking relationship. To achieve Collaborative Capacity and quality outcomes, there is

a need to strengthen communication and coordination among health care workers (Reeves, Pelone, Harrison, Goldman & Zwarenstein, 2017). Coordination among health care workers during patient care, supports an effective organization that makes it easier to access resources needed to accomplish one's work because of the intrinsic benefits of connecting with others (Gittel et al., 2013). As such, Coordination and collaboration must be adapted to the complexity of the situation. The existing networks between health care professionals are becoming more important with increasing complexity and uncertainty of the 'tasks' in health facilities across all systems of care (Van Houdt et al., 2013).

An appreciation and a clear understanding of health care workers' perceptions about Collaborative Capacity may facilitate the provision of activities that improve interactions amongst health professionals, a better working environment and the overall delivery of health care (El Sayed & Sleem, 2011). In addition, the success of Interprofessional collaboration practice is dependent on the positive perceptions of their practitioners towards each other, as influenced by their interprofessional knowledge regarding each practitioner's scope of practice in delivering quality health care (Ellapen et al., 2018). A positive attitude towards the capacity to collaborate is likely to be relevant to the Malawian context as potential drivers for health worker engagement and the potential targets for effective patient care delivery.

2.3 Structural Features that Enable Team Effectiveness

The practice environment refers to the physical–social–psychological characteristics of a work setting. These characteristics are associated with many factors and include the physical layout of the facility, the organizational policies and procedures, staffing

and resources including the characteristic behaviour of people at work, communication and Information Technology (Sullivan et al., 2019). A healthy practice environment is a work setting in which policies, procedures and systems are designed so that employees are able to meet the organizational goals and objectives as well as achieve personal satisfaction in their work area (Klopper, Coetzee, Pretorius, & Bester, 2012).

Hospitals are very costly and diverse environments that vary in size and complexity determined in part by their overall role and function within the larger health care system. The services provided by individual hospitals are determined and driven by a number of mechanisms, including government policies and procedures, population demographics, and the politics and power of service providers, including the structure of the facility (Daly, Jackson, Mannix, Davidson & Hutchinson, 2014).

The current health system–related constraints on patient care delivery in sub-Saharan Africa correspond to the prevailing weak status of structural health system elements such as lack of qualified staff, weak communication, and information systems. As a result, there is an ill distribution of the workforce and a lack of essential equipment, materials and drugs that further compromise their already limited availability through demotivation (Jeroen De Man et al., 2016).

Moncatar et al. (2021) state that in spite of excessive demands for midwifery care in Quebec hospitals in Canada, there are not enough midwives and other health professionals to cover the demand for services and then suggests that Interprofessional collaborative work between midwives and other maternity care professionals is crucial to improve access and women’s choices for maternity care.

Structural features represent the practice environment which serves as a primary setting in which health care professionals receive training, mentorship and socialization with regard to collaboration (Price et al., 2014).

Structural features examined in prior studies include the timing of inter-team coordination, level of inter-team interdependence, differentiation in component team roles and between team linkages, decentralized planning, and representational gaps (Luciano et al., 2018). The authors further state that several factors pose challenges to the effective delivery of care in clinical practice, some of which include the continuous stream of new technology, conflicting priorities of policymakers and the shortage of material and financial resources, such making the task of providing effective patient care with a challenge.

Oleribe et al. (2019) suggest that health care in Africa suffer from underfunding, leading to severe challenges across the six core components of World Health Organization (WHO) pillars of healthcare delivery: (i) service delivery, (ii) health workforce, (iii) health information system, (iv) access to essential medicines, (v) financing, and (vi) leadership/governance.

In addition, in Africa, the human resource crisis has severely affected the health care systems, the quality of services, and patient care delivery. As a result, the existing healthcare workforce often performs complex workloads (Thorsen, Tharp & Meguid, 2011). The authors state that in Malawi the physician- patient ratio is one physician per 62,000 compared to the World Health Organization's (WHO's) recommended ratio of one per 5000. Moreover, nursing vacancies are at 60%. On top of the

inadequate human resources (34.29%), more challenges include: inadequate budgetary allocation to health at (30%) and poor leadership and management (8.45%). These three problems accounted for over two-thirds of the perceived problems in the healthcare sector in Africa. Inadequate staffing, nurse to patient ratio and physical and emotional demands of critical care work environment caused stress and dissatisfaction among health care workers. Working in these environments has the potential for substantial healthcare workers' burnout resulting in impaired performance, negative attitudes, illness, absenteeism, and turnover (Thorsen et al., 2011).

The authors furthermore illustrate that burnout is related to one's job. It is a psychological term meaning a state of negative response to chronic job-related emotional, physical and mental exhaustion which result from staff giving too much of their time, energy, and effort on the job over a long time without adequate time to meet constant demands and recover. For instance, in the health care setting, burnout may affect up to 70% of nurses and between 30 to 70% of physicians and physician assistants while at the same time happening at a level sufficient to affect personal or professional performance (Bridgeman, Bridgeman & Barone, 2018).

Because healthcare workers are critical to the health and the development of quality care in general, their physical, emotional and mental wellbeing is of paramount importance in the effective provision of basic requirements for patient-centred care in health facilities. However, the majority of African countries are unable to meet the basic requirement for good healthcare systems (Khan et al., 2019). The need for interprofessional collaboration is now real and important, as it helps to alleviate the shortage of health care providers in the health facilities wards and departments, and

guarantees improvement in maternity and newborn care services in Canada.

In addition, Collaboration between midwives and other maternity care professionals assures continuity of care, and better outcomes for both women and newborns. Therefore, Collaboration is seen as an active process requiring the willingness to make meaningful contact between people of different backgrounds (Moncatar et al., 2021).

Interprofessional collaboration requires a variety of skills and competencies as well as a variety of contributions from different health and social care professions who provide services in the organizations (Matziou et al., 2014). The ultimate aim of the collaboration is to integrate services at the point of delivery so that integration has to take into account the individual and interpersonal as well as organizational and inter-organizational levels among providers. Characteristics of a healthy or positive practice environment have been described extensively in international literature by some organizations such as the International Council of Nurses (ICN); Institute of Medicine (IOM); American Nurses Credentialing Centre (ANCC), American Association of Critical Care Nurses (AACN); The Joint Commission for Accreditation of Hospitals (JCAHO); and the Registered Nurses Association of Ontario (RNAO). A synthesis of the criteria focuses on the quality of nursing leadership, collegial relationships, provision of quality care, nurse autonomy and active participation in decision making, including adequate staffing and resources.

However, Maylone et al. (2011) suggest that prescriptive authority limitations and decreased reimbursement in health care present some barriers to effective and efficient practice among professionals hence impacting the autonomy of healthcare workers to practice. A positive practice environment is crucial to job satisfaction, retention of health workers and favorable outcomes (Klopper et al., 2012).

Structural features are related to the healthcare system or context in which care is delivered, providing the foundation for Patient-Centered Care, and influencing the processes and outcomes of care (Santana et al., 2018). In addition, these authors state that another major structural component is providing a supportive work environment that ensures adequate resources for staff to practice Patient-Centred Care. The physical design of the healthcare environment influences patient safety (reducing errors, patient falls, infections, etc.) and patient experience by supporting privacy and comfort when receiving care.

The changes experienced by health care organizations, along with professional bodies and educational institutions, need to promote and support interprofessional collaboration in the interest of providing the best patient care. However, the way that healthcare is organized and health care workers are socialized and educated continues to present significant barriers to collaboration (Price et al., 2014). There has been an increased emphasis within human resource planning on the need to improve interprofessional collaboration among the health professions, given that effective teamwork is essential to enhance care provision and health outcomes for patients (Oleribe et al., 2019).

Shortage of qualified health care workers in health facilities may lead to poor health outcomes and ultimately impede the achievement of national health goals. In some of the countries in sub-Saharan Africa, the distribution of health workers and nurses at the various health levels and subdivisions reveal a shortage, and poor coverage for the services being provided (Abdulmelike, 2018). Furthermore, the authors suggest that to

ensure that care and services are still covered and effectively responsive to public health emergencies, health care workers should take on extra tasks to theirs, and also facilitate delegation of tasks to other available staff according to their cadre and experience to reduce morbidity and mortality in these health care facilities.

The challenges that healthcare systems in Africa's face require in-depth exploration to identify, generate and implement contextual solutions that make significant population-level health gains with efficient use of resources (Oleribe et al., 2019). The authors emphasize that regardless of the challenges of the health sector, the clinical areas of the hospital are critical to all health care organizations, given that it is at this level of care where consumers principally engage with the hospital system. In addition, it is at this point where consumers are recipients of health care services and where they witness and experience how the system functions.

Access to resources is also influenced by the amount of informal and formal power an individual within the organization possesses in addition, health care workers assert that they feel empowered and motivated when they perceive that their work environment provides enough growth opportunities and provides access to adequate materials and supplies necessary for the provision of care to patients (Lankhof, 2018).

In addition, effective communication requires observance of both personal and professional knowledge. Personal knowledge requires one to respect the values and level of competence of others within the team while professional knowledge requires an awareness of the distinctions between disciplines (Price et al., 2014). For example, one must be aware of the disciplinary frame of reference, the approach to care, and

the scope of practice of all members of the team. Professionals utilize both formal and informal interactions to develop familiarization. Communication in these interactions must be authentic, constructive, and open to foster trust and respect among team members (Lankhof, 2018; Price et al., 2014).

The growing incidence of chronic disease in the population and the human resource shortage requires a well-defined structure that can promote procedures and mechanisms for facilitating the delivery of care through teamwork and collaborative practice. Interprofessional education and collaborative practice are now considered credible strategies that can help mitigate the global health workforce crisis (WHO 2010).

Reeves, Goldman et al. (2011) stated that interprofessional education also occurs when medical, rehabilitative, nursing, and social science professions study interactively for the primary purposes of improving interprofessional collaboration and enhancing the health and wellbeing of patients. Interprofessional education, research and collaboration among academics and practitioners break down the barriers of professional individualism, antagonism, and competition, allowing a more holistic and team approach to patient care - thereby responding to the needs of the patient in a more dynamic manner.

A clear understanding of interpersonal dynamics among health care workers in the clinical area during patient care provides for cooperation that learners develop including direction for future interprofessional education and collaborative teamwork to ensure the provision of quality patient care (Price et al., 2014). Furthermore, well-

functioning interprofessional teams can promote efficiencies in the management of more medically complex patients 'conditions (Orchard & Rykhoff, 2015; Sullivan et al., 2019). In addition, a highly differentiated team generates boundary-enhancing forces and direct individuals' affective motives more toward their component teams than toward the other members. Conversely, in less differentiated teams, members will perceive more commonality between themselves and members of other teams, reducing real and perceived conflicts (Luciano et al., 2018). Having the necessary resources in the form of staffing, equipment, and materials to accomplish one's work as a team is an important source of job satisfaction (Gittell et al., 2013). In contrast, failure to put in place structures that promote interprofessional teams among health care workers, may affect collaborative practice and quality of patient care including demotivation of staff (Costanza, 2015).

Prin et al. (2018) suggest that Infrastructural limitations can be partly addressed by investment in human resources. For example, a staffing shortage may lead to an inability to adequately prepare the operating room for daily cases. Missing diagnostic laboratory results may come in as a result of failure to reorder necessary equipment, which may improve if more personnel were available to oversee the laboratory. Inappropriate staffing levels has clear implications for the provision of quality of patient care, such that there is a statistically significant association between staffing levels and hospital-related mortality, failure to rescue and other adverse patient outcomes (Khan et al., 2019). A surgical team not only relies on medical staff but also on supporting structures in the organization.

Several researchers have described structural features that influence team effectiveness to include the physical layout of the facility, equipment and materials such as policies, guidelines, standards and procedures that govern the relationship among health workers in their respective wards and departments within the health facility (Smith, 2015; Weinberg et al., 2011; World Health Organization, 2010).

Likewise, World Health Organization (2010) stated that there are mechanisms that shape how collaborative practice is introduced and executed. Examples of these mechanisms have been divided into three areas namely: institutional support mechanisms (i.e., governance models, structured protocols, shared operating resources, personnel policies, supportive management practices); working culture mechanisms (i.e., communications strategies, conflict resolution policies, shared decision-making processes); and environmental mechanisms (i.e., built environment, facilities, space design). Once a collaborative practice ready health workforce is in place, these mechanisms will help them to determine the necessary policies and procedures they will make including actions they might take to support collaborative practice.

The policies, standards, guidelines, protocols, and procedures provide guidance that supports effective planning and provision of care at all levels of health care delivery. In addition, the availability of these tools serves as a platform to influence the nature of relationships and interactions among health care workers in their daily practice (Government of Malawi, 2017b). This ensures that the work environment provides health care that is responsive to the needs of the patients including supporting the practice of health workers for quality care (Baker, 2010).

A report by Schang, Waibel and Thomson (2013) suggested that there is a need to promote a common vision and guiding principles encompassing collaboration and the necessary structural features to encourage collaborative practice in the workplace. When the vision statements that include the values underpinning quality patient care through collaboration result in clearly defined guidelines, procedures and protocols that enable Collaborative Capacity among health workers (Orchard, 2010).

The utilization of such vision statements that promote collaborative capacity encourage health workers to take collective ownership in the provision of care to patients, and create health care settings that promote safe, efficient and cost-effective Patient-Centered Care (Gilbert et al., 2010). The structural features exert powerful influences on the individuals and teams and become a salient context within which teams operate as such, affect members' motivation. In addition, if members of a team have more direct contact with one another than with the members of other teams, it will promote in-group biases and preferences. Furthermore, if teammates share common goals, it will likely facilitate their interpersonal attachment to tasks (Luciano et al., 2018).

Weinberg et al. (2011) proposed that Collaborative Capacity among health care teams is influenced by specific structural features such as: a clear direction or mandate; supportive organizational context that provides rewards, information, and resources; and leadership that promotes teamwork. The researchers measured supportive organizational context by assessing Staffing and Resources; Communication and Information Technology; Human Resource Management and rewards for performance; and control overwork. Findings showed that the measure of supportive

organizational context was positively associated with measures of task interdependence, quality of interactions and collaborative influence (the three measures of Collaborative Capacity). However, the relationship between collaborative influence and supervisory support was not significant. These findings lend support to the relationship between a supportive organizational context and collaborative influence (Weinberg et al., 2011).

Similarly, findings from other studies suggest that structural features can be affected by factors such as: the number of health workers providing care, their specialization, the way the facility is organized to offer care, the way human resources are managed including the way information flows in the facility (Sullivan et al., 2019; Weinberg et al., 2011). In hospital settings, health professionals work in different wards and departments providing both outpatient and inpatient services for children and adults according to their scope of practice as stipulated by the respective regulatory bodies (Price, Doucet & Hall, 2014). A well-defined scope of practice ensures effective collaboration as each health worker practices to the full extent of their scope as well as respects each other's contribution during the provision of care to patients in the health facility (Matziou et al., 2014). These elements provide useful information for the establishment of organisational practices. High-income countries tend to study interprofessional collaboration from organisational perspectives, rather than simply considering the linkage across the health professionals within the team (Lam et al., 2015).

The very definition of a profession implies boundaries. For example, each healthcare profession has its specialized language, theories, scope, and values that make it

distinct from other healthcare professions. These boundaries if not well handled by team members and leaders can create territorial behaviors causing conflict and further division between professions as a result, challenging collaborative practice in the workplace (Lankhof, 2018). Clearly defined professional boundaries and scope of practice enable health workers to effectively communicate their expertise and responsibilities to other professionals, hence influencing better accountability and responsibility of team members (Sullivan et al., 2015). Provision of care in the different sections of the health care facility among multiple providers such as doctors, nurses, and physiotherapists must be well coordinated to avoid duplication of diagnostic tests, inconsistencies in treatment, as well as confusion about conflicting patient care plans (Schang et al., 2013).

Jenkinson, Young and Kruske (2013) conducted a study focusing on the management of the discharge process by maternity services. The aim was to find ways to minimize fragmentation in the care of women and families transitioning between hospital-based postnatal care and community-based care. The gaps identified included a lack of involvement of women in the development and dissemination of discharge summaries including delays in information transfer to community care providers. These gaps also existed in the transfer of certain types of information, for example, psychosocial and cultural aspects of care, information about the baby and care provided by domiciliary staff (Jenkinson, et al., 2013).

The need for interprofessional collaboration in the provision of health services is obvious, as it helps to solve the shortage of health care workers in health facilities and guarantees some improvement inpatient care services in referral hospitals. This means

that collaboration among different cadres of health care workers assures continuity of care, and better outcomes for patients (Lam et al., 2015). Successful collaboration is also dependent on developing strong communication strategies and establishing organizational structures and processes to support the effective performance of health care providers in health facilities (Gilbert, Yan and Hoffman 2010). The World Health Organization's *Framework for Action on Interprofessional Education and Collaborative Practice*, calls upon policy-makers, decision-makers, educators, health workers, community leaders and global health advocates to strengthen interprofessional collaborative practice in all the services they deliver. The report explored some actions that health workers might take to support collaborative practice. The actions included: (a) Institutional support mechanism that includes availability of governance frameworks, structure protocols and supportive management practices. (b) Working culture mechanisms which consist of communication strategies, shared decision-making process and policies on conflict resolution; and (c) Environmental mechanisms which include physical space design and facilities. Having integrated infrastructure as well as services is essential to create and sustain a high-performance health care system for improved health outcomes.

Similarly, Klopper et al. (2012) suggest that the practice environment refers to the physical, social, psychological characteristics of a work setting. These characteristics are determined by a variety of factors which include the physical features, the organizational policies and the characteristic behaviour of people at work. These factors contribute further to a healthy practice environment in the work setting in which policies, procedures and systems are designed so that employees can meet the organizational objectives and achieve personal satisfaction in their work.

Numerous studies have attempted to explain the preparation of health care students in training colleges for collaborative practice, Fawaz et al. (2018) conducted a study on Challenges facing nursing education in the advanced healthcare environment in Ethiopia. The results showed that the working environment and management was not convenient to assure the quality of care since the status of nursing care was poor compared to national and international standards, in both the structure and process. In the study, at least (61% n=64) nurses, reported that they did not have the opportunity to participate in hospital affairs and governance. The authors state that Organizational structure and systemic conditions such as professional, educational, and social environment within and outside the care setting play a critical role in the practice of teamwork and collaboration among health care workers, but have received less attention in allocating adequate resources to improve the structure (Moncatar et al., 2021).

It is incumbent upon leaders to create a favourable work environment for health care providers and to bring the quality of patient care to the required standard. Building leadership skills requires both classroom-based learning (to be aware of the skills) and ongoing reflection and practice (Bates, 2018). Furthermore, the author states that a leader should be the one who understands and supports the vision, mission, values, and goals of the organization with a sense of purpose and moral commitment. At a tertiary facility, Leaders come from a variety of disciplinary backgrounds and build upon their expertise to reach this population through the acquisition of collaborative specific knowledge and skills. Therefore, collaborative leaders possess core knowledge of the populations and their needs. They continually seek new knowledge

and improvement of abilities and skills central to effective, self-reflective, and evidence-based leadership. The collaborative leader demonstrates professionalism in attitudes and working habits to train, and mentor future leaders to promote patient-centered care.

Achieving high performance in health care requires a clear direction and effective leadership and management that demonstrates a high value of interprofessional collaborative care (Reeves et al., 2017; Stout, Zallman, Arsenault, Sayah & Hacker, 2017). This enables health workers to have the ability to see the situation in the context of the system and understand factors that influence health care provision (Kontogianni et al. 2011). Kelly et al. (2013) studied pharmacist and physician views on collaborative practice in Newfoundland and Labrador. Findings suggested the need to make some changes on infrastructure in order to facilitate effective coordination and collaboration as poor working environments made it difficult for health workers to effectively perform their work.

Chong et al. (2013) conducted studies in the USA, Europe and China and found that an environment lacking in resources, strong leadership and collegial relationships among health workers led to burnout and dissatisfaction among staff hence resulting in poor patient care outcomes. Structural features are therefore seen as part of the broader strategy to improve quality health care delivery as well as strengthening the performance of the health system (Santana et al., 2018; Schang et al., 2013)

A study conducted by Chimwaza et al. (2014) identified factors that influence health worker decisions about leaving the health services in Malawi. The authors' findings

highlighted some demotivating factors experienced by health workers such as unfair treatment, disrespect, and lack of basic materials and equipment in the wards. These factors were among the reasons influencing mid-level providers to leave their jobs and join the private sector or non-governmental organizations in search of better working conditions. The study recommended the need to improve the working environment by ensuring the availability of adequate human resources, equipment, and material supplies for the achievement of Patient-Centered Care. Similarly, health care workers must also be fully engaged and collaborate with their fellow team members to maximizing the provision of quality care (Schang et al., 2013). Implementation of an inclusive and comprehensive Interprofessional practice strategy is a key human resource for health solutions across health and other related service sectors that is fundamental to the implementation of quality patient care and promotion of provider satisfaction (Moncatar et al., 2021).

Health care workers need to be socialized formally within their educational programs and clinical practice settings about how to relate to other members of the team. Having opportunities for the various health professionals to collaborate during service provision can improve interprofessional teamwork (Price et al., 2014). Similarly, Behruzi et al. (2017) identify that conflict has been reported between many healthcare professionals in the health care organization. The level of conflict or co-operation between these health care professionals would mostly depend on the organization and culture of the working environment. Similarly, the authors highlight that collaboration in midwifery terms has been characterized to promote several efforts by a team of midwives and physicians towards each other to share functions, reward and effecting care to women and their families (Behruzi et al., 2017).

The term collaboration is important because it is used with related terms such as co-operation, teamwork, and coordination (Weinberg et al., 2011). D'Ámour, Ferrada-Videla, Martin-Rodriguez and Beaulieu (2005) suggested similar terms in relation to collaboration in their literature review and included such sharing, partnership, interdependency, process and power. The authors noted that what seemed to limit understanding of collaboration was the diversity of ways it was conceptualized including lack of links with outputs and the limited patient perspective (D'Ámour, et al., 2005).

In hospitals' wards and departments, better collaboration and coordination of care among health care workers leads to effective teamwork across units and smoother handover, which can influence employees' perceptions. This is because effective care coordination, prevents staff from disregarding specific tasks to reduce their workload during busy periods, and helps them prioritize important activities related to patient care (Antonelli, McAllister & Popp, 2009).

At times, structural features exert powerful influences on the individuals and teams and become a salient context within which teams operate as such, affect members' motivation. Furthermore, if members of a team have more direct contact with one another than with the members of other teams, it will promote in-group biases and preferences. Furthermore, if members of the team share common goals, it will likely facilitate their interpersonal skills and improve their attachment to tasks (Luciano et al., 2018).

Frontline healthcare providers can also identify inefficiencies related to organizational structures and workflows, and to poor policies and procedures for the delivery of optimal patient care in South African maternity services, maternal and perinatal deaths have been associated with deficiencies in frontline clinical leadership (Mianda & Voce, 2018)

2.4 Leadership and Patient-Centered Care among Health Workers

Leadership in health care influences teams' effectiveness by facilitating action and ensuring that resources necessary for providers to perform patient care and work as a team are available (Mianda & Voce, 2018). The leadership of healthcare professionals is critical for strengthening the quality of care to patients as such, the current and future demands of the dynamic healthcare environment need effective leadership that promotes integration in all healthcare settings for an efficient response to the local and global demands of the healthcare system (Daly et al., 2014).

Effective leadership has been linked to a wide range of functions including system performance, achievement of health reform objectives, timely care delivery, system integrity, and an integral component of the health care system (Sfantou et al., 2017) Furthermore, the authors state that leadership has been recognized as a major indicator for developing quality organizational culture and effective provider performance in health care provision. In addition, the authors define leadership as the relationship between the individual/s who led and those who make the choice to follow, while it refers to the behaviour of directing and coordinating the activities of a team or group of people towards a common goal. In addition, Fahmi et al. (2016) states that leadership has also been described as the ability to manage resources and

share power between stakeholders which can facilitate effective communication and institutional arrangement needed in the collaborative planning process

Some of the priorities of leadership in health care should be to strategically integrate clinical services as well as assessing workflows at all levels of service provision. This process includes creating committees, workgroups, and management structures necessary to implement and advance the clinical integration efforts and services (Glassman, 2017). Seaton, Jones, Johnston, and Francis (2020) conducted a study to explore the perceptions of allied health professionals regarding interprofessional collaboration in primary health care. This review identified diverse key elements related to interprofessional collaboration among primary health care providers, as well as their perceived performance by allied health professionals.

Similarly, Mianda and Voce (2018) conducted a review of the literature towards identifying a model to inform effective clinical leadership development interventions among frontline healthcare providers in Australia. The authors suggested that leadership improved patient care including the performance of a high-quality health care system that consistently ensures the provision of a safe environment as well as quality patient care.

Poor frontline clinical leadership in the clinical setting has been associated with adverse events and clinical litigation settlements, prompting many healthcare systems, particularly in High-Income Countries (HICs), to invest significantly in interventions that support clinical leadership development (Mianda & Voce, 2018). In addition, the authors identified effective leadership roles to include the following: setting direction,

providing the vision and promoting professionalism, teamwork, interprofessional collaborations, and continued medical education.

Furthermore, leadership was perceived as representing the nursing contribution to patient care and having the resources to perform tasks as a team effectively. Team members, however, may have conflicting perceptions of leadership structures and responsibilities as such decreasing the team's effectiveness and affecting quality patient care. However, poor patient care and adverse events have been reported in health facilities around the world, prompting health systems to call for strong clinical leadership that achieves quality patient care

High-Income Countries invest in interventions to develop clinical leadership among frontline healthcare workers at the point of care. Initiatives to promote and develop clinical leadership among frontline health care providers have been implemented in the UK, the USA, Canada and Australia (Stanley et al., 2017). However, the author in Africa generally, there has been slow progress in promoting and developing clinical leadership among frontline health care providers, with the concepts of clinical leadership development still under-researched.

Mianda and Voce (2018) conceptualized leadership as a role to be performed by every frontline health care provider in direct contact with patients, regardless of the position held in the organizational hierarchy. The author suggests that this approach of leadership departs from traditional leadership models whereby leadership is distributed among individuals instead of being embodied in one individual to improve

effectiveness and efficiency in the organization in a bid to promote quality patient care.

However, leadership roles may be shared among frontline health care providers, regardless of the cadre or position held in the organizational hierarchy to positively impact service delivery during the provision of patient care. A leader must be able to do the following: Create a vision of the future that's inspiring; motivate people to engage with the vision positively; effectively manage the delivery of the vision and Coach a team who will work together to achieve the vision and mission of the hospital (Moncatar et al., 2021).

The gaps in knowledge exist in what is known about the concept of clinical leadership and its application with health care workers. Adding to what can be known about leadership in this area is important if health care workers are to play an important part in providing quality healthcare delivery (Stanley et al., 2017). With the increased emphasis on developing clinical expertise, interventions for clinical leadership development must include frontline healthcare workers who have been practicing for some time and may serve the purpose of updating veteran healthcare workers to new evidence-based practices of care. A holistic conceptualization of leadership, paying attention to clinical skills, leadership skills, team building, team management, the environment of care, and quality service delivery (Mianda & Voce, 2018).

In addition, more qualities attributed to effective clinical leaders include approachability, role modeling, visibility and availability to support, advise and guide, capacity to remain calm and confident in crisis, ability to gain support and influence

others, ability to promote change, ability to communicate effectively and impact on standards of care. Leadership promotes quality of care and is an important element for achieving high productivity among health care workers within healthcare organizations, and is delivered to the degree to which the probability of achieving the expected health outcomes is increased and in line with updated professional knowledge and skills within health services (Stout et al., 2017). The authors further state that many factors pose challenges to the effective delivery of care in clinical practice, some of which include the following: a continuous flow of new technology in the health sector, a pull from old traditions, conflicting priorities of policymakers, and the shortage of material and financial resources as such, making the task of promoting effective leadership a challenge.

Leadership is increasingly recognized as playing a key role in determining the performance and success of an organization by facilitating effective communication and interpersonal relationship within a complex health system (Fahmi et al., 2016).

The provision of safe and effective care is a priority that requires good leadership. Complete engagement and good leadership are essential characteristics health care workers require to achieve and sustain improvement in the quality and safety of the services they provide to their patients (Bates, 2018).

Supportive leadership that is fully committed to clearly defined goals of the organization is key to a successful implementation of collaborative practice, care for multi-morbid persons, and higher teamwork perceptions among health workers (Stout et al., 2017). In healthcare, leaders are viewed as being central in influencing clinical team practice, patient safety and quality care (Bates, 2018). Some leadership functions

may be shared by several members of a group, some leadership functions may be allocated to individual members, and a particular leadership function may be performed by different people at different times. As such, the need for coordination is necessary for performing highly interdependent tasks requiring high levels of knowledge and information exchange among health care workers (Feng, Hao, Iles & Bown, 2017).

Leadership promotes the capacity to set policy and overseeing strategic direction, managing resources, and maintaining a commitment to get work done (Daire, Gilson & Cleary, 2014). The exercise of leadership within organizations includes focusing collective attention, mobilizing material resources, and inspiring others to participate in decision-making. Leadership refers to the processes involved in leading and is a socially constructed phenomenon that is required to achieve a better quality health care system. (Dana Beth Weinberg et al., 2011) measured leadership with an 11-item measure of Supervisory Support. Contrary to the researchers' expectations, findings indicated that supervisory support was not significantly associated with providers' degree of task interdependence or with providers' personal demographic characteristics. However, as expected, Supervisory Support was associated with providers' perceptions of the quality of their interactions with co-workers.

A study by Stout et al. (2017) in the USA showed that participants reporting effective leadership were ten times as likely to have high practice teamwork perception compared with those without effective leadership. As such effective leadership was the main factor associated with high practice teamwork perception and has been frequently cited as one of the most important factors contributing to Patient-Centered

Care. Most studies of leadership in health care portray the leader as someone responsible for maximizing team performance, as a strategic resource within their organization (Bates, 2018; Daire et al., 2014; Fahmi et al., 2016). Such leaders influence and facilitate the work of providers, and ensure that they are ready to meet patient care-related challenges Dow, DiazGranados, Mazmanian, and Retchin (2013) suggested that leaders, especially those who are organizationally and culturally empowered should strive to assess and meet the needs of all team members as well as create an inclusive, open environment that facilitates collaboration.

Fahmi et al. (2016) stated that leadership plays a vital role in managing diverse participants to promote collaborative planning processes by overcoming conflicts, structuring knowledge and resources among stakeholders to provide Patient-Centred Care. Stanley et al. (2017) Suggested that frontline health care providers, for example, nurses, midwives, allied health care providers and doctors providing direct patient care, are well-positioned for providing, and benefiting from, the clinical leadership required to ensure both quality patient care and a healthy and safe clinical work environment. However, in many cases, frontline health care providers are neither clear about what is clinical leadership nor are well prepared to provide it and they do not have clear career pathways to encourage them to engage in clinical leadership roles.

Leadership has been a priority within health care for some time now as it recognizes the need to build alliances as well as engaging health care workers to form a strong workforce and work collaboratively (Timmins, 2015). However less attention has been given to its outcomes as some reports on health service failures at an organisational level have regularly identified ineffective leadership being a

contributory factor to poor quality of care and poor health outcomes (Orchard & Rykhoff, 2015). Leadership, therefore, requires a unique blend of knowledge and skills that promote open discussion as well as support innovation and improvement in the work environment. The combination of leadership and communication is seen as an important success factor for interprofessional collaboration and commitment to promoting quality of care (Daire et al., 2014).

Furthermore, one significant element of their work is that team leaders are expected to have the knowledge, skills and ability to help members from various professions learn how to work as team members by integrating their theoretical knowledge, skills, and attitudes, professional and regulatory obligations into team practice (Stanley et al., 2017). Effective leadership has the overall responsibility for the performance of the team by inspiring and overseeing the services delivered by health workers. Leadership facilitates joint decision-making and helps to resolve conflicts that may arise during the delivery of patient care. In addition, leaders enable organizations to develop systems in which patients receive quality care and health care workers are supported to interact as a team (Smith, 2015).

Weakness in the leadership role can affect the cohesion and performance of health workers. As such, the inclusion of leadership competencies in health care workers education must help to prepare future professionals for leadership roles in collaborative practice. Health care workers must be prepared with foundational leadership competencies to meet the challenges of leading collaboratively with other professions (Goldsberry, 2018).

In low-income countries, however, clinical leadership development is not well established. This review of the literature was conducted towards identifying a model to inform clinical leadership development interventions among frontline healthcare providers, particularly for improved maternal and newborn care. All studies reviewed arose in High-Income settings, demonstrating the need for studies on frontline clinical leadership development in low-and middle-income settings. Clinical leadership development is an ongoing process and must target both novice and veteran frontline health care providers (Mianda & Voce, 2018).

Reeves et al. (2017) state that understanding, embracing, and dealing with conflict effectively are fundamental roles of any leader. These fundamental leadership skills must be integrated into health care workers education to prepare future providers for leadership roles in a collaborative team. During the provision of care, leaders should provide ongoing support to health care workers to ensure improved communication and collaboration along with respect for each professional unique knowledge base (Martin et al., 2010).

Respect is fundamental to employees' trust in others (Lankhof, 2018). In addition, the capacity for care provision among health care workers could further be improved when leaders emphasize the provision of Patient-Centered Care including the use of a common patient record which should act as a reference point for effective collaboration (Mickan, Hoffman & Nasmith, 2010). The authors state that effective collaboration among health care teams may improve patient education and patient's full involvement in their care, including behavioral changes such as information

seeking and effective delivery of information, patient involvement in decision-making, and patient participation in self-care.

When communicating information to patients and families on approaches that are consistent and responsive, ensures understanding and enables patients to participate in care decisions. Patients should be the primary actors in medical decision-making, and health care workers should adopt a supportive role (Morley & Cashell, 2017). The authors further state that patients, family members, and other stakeholders ideally participate in the delivery of health care as part of a multifunctional health care team. This is achieved by creating an opportunity for a broad range of ideas, considerations, and compromises to be worked out as early as possible to avoid errors.

In a patient-centered culture, once patient needs have been determined, decisions are made about how best to carry out certain patient care interventions. Effective decisions and negotiations operate most smoothly when team members understand each other's roles and responsibilities and are comfortable with the patients' needs and each other's practice (Bailey, 2019). During the provision of Patient-Centered Care, the leader ensures that members of the team remain focused on their work including setting clear tasks and ensuring equitable allocation of human and material resources to achieve the mission and goals of the organization (Orchard & Rykhoff, 2015).

Furthermore, the leader in the organization guides the integrated health care workers expertise to facilitate other parties to work collectively (Fahmi et al., 2016). Overall, the vast majority of studies assessing patient outcomes in the literature, have reported

adverse outcomes defined as unintentional injuries or complications associated with clinical management, rather than the patient's primary condition, resulting in death, disability, or extended stay in hospital (Stout et al., 2017). However, if leaders emphasize a top-down approach too strongly then a hierarchy might be created that can cause members to feel helpless, as such leading to the inhibition of their performance as a team.

Similarly, the authors highlighted that quantitative data revealed a strong correlation of leadership and safety, effectiveness, and equity in care. For instance, transformational leadership increases nursing unit organization culture and structural empowerment Health care workers as individual cadres will not be able to keep up with the ageing population, chronic comorbidities, and advances made by technology and science which is developing very fast to meet the needs of patients. Given the shift towards chronic and complex illness, collaboration across health care teams is needed to ensure the provision of high-quality patient outcomes (Bailey, 2019).

It is therefore important that leaders should promote and facilitate a spirit of shared power and authority based on mutual trust and respect among health care workers (Smith, 2015). Shared power is the ability to act or exercise influence on others mainly to pursue or protect the interest and preference of others (Baker et al., 2011). All health care professionals should recognize that leadership and followership are complementary roles hence they should be empowered and willing to move between these roles as the situation arise (Dow et al., 2013). In addition, effective leadership has an impact on organizational commitment for health care workers and in return higher levels of job satisfaction, higher productivity, staff retention, patient safety,

and overall positive health outcomes (Stout et al., 2017). In health facilities, the source of power for leaders is derived from their professional roles (e.g. doctor, nurse, physiotherapist, and pharmacist), knowledge, personal characteristics, and links to networks of other powerful actors in leadership positions (Bates, 2018). Having a higher professional base and technical skills may increase the power in an individual to lead collaboratively as well as manage complex health care systems. Power can also be relational and context-dependent, but if not used appropriately, power can generate misunderstandings between providers and patients (Smith, 2015). Shared power among health care workers promotes the achievement of collective actions for improvement of service delivery in the working area (Lam et al., 2015).

Leadership has not been a priority for many health care workers' programs; instead, emphasis is placed on clinical practice competence only. To be able to lead others in practice, a health worker must have confidence in his or her knowledge and skills as a clinical provider and a leader (Goldsberry, 2018). In Malawi, the public health care system is experiencing leadership challenges as the majority of leaders have no or limited training before being offered a managerial position (Daire et al., 2014). Most undergraduate programs for health care professionals do not place much emphasis on leadership and management. Individuals are often promoted based on their years of experience, and thus they may be ill-prepared for their new responsibilities (Bates, 2018).

Improving leadership and governance across the health sector and at all levels of care is one of the stated objectives in Health Sector Strategic Plan II, which states that effective leadership helps to reduce duplication of efforts in the facilities, strengthens

accountability, and promotes collaboration among health care workers (Government of Malawi, 2017a). In addition, the authors focus on ways in which effective leadership promotes communication, greater responsibility, and job clarity in health care teams hence leadership influences patient-centered communication, continuity of care and collaboration. Leaders are often more familiar with team members and are skilled at performing such functions as problem-solving and planning, whereas external leaders may have a better perspective for developing and training team members or managing the team's boundaries, An organization's recognition of the leader's responsibility for team performance, is another situational factor that shapes leadership in health care settings. Formal leaders are embedded in the organizational hierarchy and control the pathways to escalate team member's concerns and to access necessary resources for the provision of patient care (Goldsberry, 2018).

A team's success on a given task depends upon at least four conditions: The task must be suitable for teamwork, the team must include the right group of people to perform the task, the team members must combine their resources effectively to complete the task, and the organization must provide a supportive context for the team. Daly et al. (2014) suggested that health care is delivered in dynamic environments where providers care for many patients, each of whom may be served by several teams with different members. Further, each team's approach to interprofessional collaboration may vary according to contextual factors such as patient acuity, team composition, resource availability just to mention but a few. Health care professionals whether team leaders or team members must adjust their approaches based on contextual factors to meet the needs of patients and communities (Stanley et al., 2017).

Recognizing that health care teams have varied structures and engage in diverse processes, education leaders should strive to develop curricula that help trainees gain a deeper understanding of collaborative work. Health care workers at all stages of training who learn about these concepts will gain a deeper understanding of collaborative work and become better equipped to participate in and lead teams. We also propose knowledge, attitudinal, and behavioural competencies related to each concept that we believe should inform the efforts of educators, practitioners, and clinical and administrative leaders as they strive to improve collaborative practice and patient care.

Furthermore, Gittel et al. (2010) suggest that Patient-Centered Care, which aims to bring together multiple members of the formal care provider team as well as family members and others with significant relationships to the client. In such an approach, the patient not only has strong one-on-one connections with each person involved in the delivery of care, but providers themselves are connected in a supportive relationship so that the patient does not fall through the gaps created by conflict, misunderstanding or fragmented efforts.

2.5 Relationship between Collaborative Capacity and Patient-Centered Care

Providing effective healthcare services to populations demands a well-trained and collaborative practice ready healthcare workforce (World Health Organization, 2010). Considering the central role of such collaborative practice ready health care workforce play in providing quality of care and better patient outcome, it is understandable that the poor relationship and a lack of teamwork have a negative

impact on the quality of care (Price et al., 2014). Yet more improvements would be done if there was more collaboration among health care workers in their areas of practice. as such, active teamwork practice is associated with increased job satisfaction of the staff which will also contribute to quality patient care (Klopper et al., 2012).

There is a general agreement that quality of care cannot be improved without integrating health care professionals' efforts as well as having all health care professionals acknowledging and recognizing the various roles of each care professionals in the provision of patient care (Lankhof, 2018). Collaboration among health care teams may improve patient education and patient engagement in their care, including behavioral changes such as information seeking and effective delivery of information, patient involvement in decision-making, and patient participation in self-care (Morley & Cashell, 2017).

Regarding issues related to patient and family participation in their care, there is an emphasis on the centrality of the doctor-patient involvement through the sharing of information, objectives, power and responsibilities (DuGoff, 2014). Involving patients and families as partners in care is considered the cornerstone of patient-centered care. It includes the understanding by the patients of their situation and participation in the decision-making process. In this sense, shared decision-making can also be considered one of the techniques of patient-centered care between practitioners and patients. Patients' participation in care is seen as an opportunity for them to exercise their rights to self-care which is understood as a way of managing the healthcare process including the collaboration of the health care team and the users. Different

philosophies of care among health care providers may lead to poor communication, tension, diversity of the attitudes, practice and collaboration of health care workers (Price et al., 2014). Therefore, there is a need for providers to develop a better understanding of collaboration to positively influence the interprofessional and inter-organizational collaboration among health care workers to promote quality health care delivery at the hospital (Moncatar et al., 2021).

Morgan, Pullon, and McKinlay (2015) describes the interplay between the two topics and defines the Patient-centered Interprofessional Collaborative Practice as continued interaction between two or more professionals or disciplines, organized around a common effort to solve or explore a common issue, and including the patients' participation to its maximum. Furthermore, the authors suggest that patients' participation in healthcare acknowledges the singularities of the patient as a unique human being, with moral competency and self-consciousness.

There are strong arguments made throughout the literature in support of interprofessional collaborative patient-centred practice as a means of improving patient care. Today's society is characterized by an ageing population that is faced with increasingly complex health co-morbidities, such as hypertension, diabetes, cancers and many more. However, Patient-centered care (PCC) is increasingly recognized as a key dimension of quality healthcare, but unfortunately remains poorly implemented in practice (Jeroen De Man et al., 2016).

The concept of Patient-Centred Care, refers to the provision of care that is respectful of and responsive to individual patient's values, needs, and preferences (Chan &

Wood, 2010). Furthermore, The United States Institute of Medicine has proposed six specific areas for improving 21st-century health care systems. Health care should be safe, effective, timely, efficient, equitable, and patient-centered. They defined Patient-Centered Care as “providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions”.

The terms ‘person- and people-centered care’, emphasize that individuals are active partners in their care process and not the mere passive recipients of care prescribed by knowledgeable and powerful health workers (Jeroen De Man et al., 2016). Collaborative practice “is designed to promote the active participation of each discipline inpatient care. It enhances patient and family centred goals and values, provides mechanisms for continuous communication among caregivers, optimizes staff participation in clinical decision making within and across disciplines and fosters respect for the disciplinary contributions of all professionals (Chan & Wood, 2010).

Similarly, Moncatar et al. (2021) suggested that collaboration, conflict resolution, participation, and cohesion were most likely to influence staff satisfaction and perceived team effectiveness. A trusting and mutually respectful relationship might create positive feedback among health care workers in the different wards/units (Chodzaza, 2020). Promotion of patients is needed to enable them to own the necessary knowledge, skills, and attitudes to make choices on issues they define as important.

Health care workers can promote their competencies by supporting and strengthening their patients. Promoting a sufficient level of health literacy patient participation in health care is a crucial dimension as it is often used interchangeably with patient empowerment. Without patient participation, it is impossible to promote patient empowerment in-hospital care. Patient empowerment is a personal process that one completes independently; health care providers can only support this process by involving patients in decisions that affect their quality of life.

The care includes viewing patients holistically and engaging them to allow their unique perspectives to guide care decisions, and also enabling them to make decisions about their health care (Sullivan et al., 2019). Similarly, the role of the patient and patient-clinician interactions is important, to the interprofessional team depicts that interactions are in two ways which involve establishing shared values, goals, and expectations as well as information to meet the needs of the client. Furthermore, collaborative patient-clinician interactions generate trust and rapport which in turn lead to greater levels of openness, negotiation, successful adherence to medical care strategies, and reduced anxiety (Morley & Cashell, 2017).

The World Health Organization (WHO) has developed policy frameworks for people-centred health care highlighting person-centredness as a core competency of health workers, and as a key component of quality health care (World Health Organization, 2010). Fundamental to high performing front line teams are the focus and inclusion of patients and families in all aspects of care delivery and design. Interprofessional care teams around the world are increasingly experiencing the benefits of full partnership with all people involved in healthcare (Gittell et al., 2015).

The lack of emphasis on Patient-Centred Care in medical education remains a barrier to its implementation, resulting in practices gaps. Current education tends to focus on the biomedical model, is not standardized across healthcare sectors and professionals, and is not co-developed with patients and healthcare providers (Santana et al., 2018). Patient-centred care requires providers to work collaboratively with one another and to build relationships with the patient that facilitate the self-identification of personal goals, and provision of direct care that is appropriate, timely, and responsive to the patient's needs (Weinberg et al., 2011). As such, patient-centred care positively influences the satisfaction of both the patient and the health care workers (Stout et al., 2017).

Maylone et al. (2011) suggested that the ability to practice as a team depends on collaboration and support of other health care workers to further improve the quality of patient outcomes and the cost of health care services. The author further states that collaboration is a complex phenomenon because it can be interpreted differently by various health care workers. In addition, it is difficult to determine and measure the elements necessary for collaborative practice. As such, lack of collaboration can cause individual team members to always become tentative in expressing their views regarding service delivery, assisting in a client's plan of care, as well as being not being actively involved in the organization.

A better understanding of the factors that affect the collaboration of health care workers is necessary to facilitate improvements regarding the provision of patient care. The change in focus from professions and services towards a focus on the patients and their health needs is seen as important in transforming the service model

that may potentially promote rational use of the health care system (Santana et al., 2018). In addition, communication and participation of patients in care is an opportunity for patients to exercise their rights for autonomy as an important condition for self-care which is understood as a way of managing the healthcare process through the collaboration of the health team and the service users and not a merely prescriptive activity.

Bailey, (2019) Suggested that lack of effective communication has been the leading cause of detrimental patient outcomes over several years. The author further suggests the need for effective interdisciplinary collaboration and communication to improve teamwork, build relationships, and improve patient outcomes. The interactions between the various professionals affect the care that the patient, who is at the center of the collaborative practice stream, receives. One of the important objectives of collaborative practice is sharing common goals, common vision and developing a sense of belonging (Lankhof, 2018).

Health care workers need to develop strong bonds and work together respectfully and in a trustworthy manner to achieve a cohesive focus for the provision of Patient – Centred Care. Furthermore, in order to maintain this bond and work in collaboration, health care workers as members of the team, must be familiar with each other's roles, responsibilities, and professional affiliations or areas of expertise (Lankhof, 2018).

Achieving better relationships among healthcare workers in health facilities requires more than the recognition of multiple occupational groups as being part of the care process. It requires workplace practices that demonstrate a high value for healthcare workers to engage in decisions that support the provision of patient care (Weinberg et

al., 2011). Such relationships facilitate problem-solving in the context within which collaboration occurs. Patient-Centered Care puts patients and their preferences at the centre of care thereby promoting greater interdependence, greater influence in decision-making and quality interactions among providers (Weinberg et al., 2011).

As health professionals shift their focus towards patient's needs, their scope of practice is broadened beyond the limits of their professional activities. This shift is an enabler for changes in the current health care model towards comprehensive care and potentially impacting the quality of services through interprofessional collaboration (Santana et al., 2018), Interprofessional collaboration is still recognized as a technique to improve patient outcomes and the cost-effectiveness of health care in a variety of health care settings.

Collaboration involves all members working collegially as a team in an environment of trust, respect, and open communication which enables the shared knowledge and skills of the providers to synergistically influence the client care provided (Lankhof, 2018). In addition, the impact of collaboration on patient safety has also been studied in various contexts. Several authors have identified reductions in rates of medical error when interprofessional collaboration is strong and teams are trained to work safely, cooperatively, and in a coordinated way to avoid gaps in quality assurance measures (Morley & Cashell, 2017).

Weinberg et al. (2011) studied predictors of Collaborative Capacity and Patient-Centered Care among a group of 1,527 health workers in nine hospitals in New York. These researchers measured Patient-Centered Care by responses to three questions

related to workers' perceptions of the extent to which they based their decisions on patient/family needs, were encouraged to talk with patients and families about their fears/concerns, and the opportunity to relate to patients as people. These researchers found that Collaborative Influence was positively associated with both Patient-Centered Care and supportive organizational context. In addition, Quality of Interaction was positively and significantly associated with Patient-Centered Care. Task Interdependence was also positively associated with Patient-Centred Care, and supportive organizational context. These findings suggest that Collaborative Capacity (Task Interdependence, Quality of Interactions and Collaborative Influence) was positively associated with the provision of Patient-Centered Care (Weinberg et al., 2011).

Many patients experience frustrations because of having to provide the same information repeatedly to more than one health worker (Orchard, 2010). Patient-Centered Care improves patient care experiences and creates public value for services. During service provision, when health care workers involve patients and their families in decision-making, the quality and safety of patient care rises and provider satisfaction increases (Stout et al., 2017). In shared decision-making, both patients and health care workers have the opportunity to share information critical to patient care. Collaborative practice and shared decision-making promotes mutual respect among health workers despite their professional differences (Adebayo & Ilesanmi, 2016).

Lankhof, (2018) suggested that mutual respect involves valuing “the contributions of others involved in the work process as well as consider the impact of [one’s] own

actions on the ability of others to do their work”. Leadership is therefore considered a core element for a well-coordinated and integrated provision of care, both from the patients and healthcare professionals. It is essential regardless of where care is delivered (e.g., clinics or inpatient units, long-term care units, or home care facilities), especially for those who are directly involved with patients for long periods (Stout et al., 2017). Supportive interprofessional collaborative practice should be undertaken to create a collaborative environment that will improve healthcare outcomes for patients, families, and communities.

2.6 Conceptual Framework

The conceptual framework for assessing Collaborative Capacity and guided the development of research objectives, organization of literature, presentation, interpretation, and discussion of results was based on the framework proposed by Weinberg et al. (2011) and it is presented in Figure 1. The conceptual framework suggests that Collaborative Capacity (a dependent variable) is influenced by Structural Features that enable Team Effectiveness, Leadership that promotes Teamwork, and Patient-Centered Care (the independent variables). Although other models regarding collaboration exist (Gaboury et al., 2009, used Input , Process and Output conceptual framework drawn from Organizational Management Theory in order to study collaboration within teams; Kilpatrick, Lavoie-Tremblay, Lamothe, Ritchie, and Doran (2012) used a framework for acute care nurse practitioner role enactment to assess their team performance; Legare et al.(2011) used a conceptual framework for Interprofessional Shared Decision Making following the knowledge-to- action process framework; Misfeldt, Suter, Oelke, and Hepp (2017); Mulvale et al. (2016) used a conceptual framework of contextual factors affecting provider mix and

quality of collaboration, advancing Community-Based Collaborative Mental Health Care; Stutsky and Laschinger (2014) this model provided a suitable conceptual approach for this research because it originated with a focus on health care workers, and has been influential in supporting Collaborative Capacity in the US and internationally.

Figure 1 shows the proposed interaction among the study variables. Collaborative capacity can be measured by assessing Task Interdependence (frequency of interaction and dependence on other health care workers for information), Quality of Interactions (how team members relate to one another), and Collaborative Influence (egalitarian collaboration among team members) (Weinberg et al., 2011).

2.6.1 Structural Features that Promote Team Effectiveness

Members of the interprofessional team bring together a range of functional expertise to the task at hand and this is achieved by creating an opportunity for a broad range of ideas, considerations, and compromises to be worked out as early as possible to avoid costly errors and miscommunication (Morley & Cashell, 2017). Considering the complexity of the technology and the potential impact of errors, a range of equipment safety procedures, quality control measures, and quality assurance activities need to be coordinated across a range of professional groups.

Weinberg et al. (2011) conceptualized a supportive organizational context as including four Structural Features that Promote Team Effectiveness: Staffing and Resources; Communication and Information Technology; Human Resource

Management and Job Rewards; and Control over Work. All these factors promote quality patient care and staff motivation in the organization.

2.6.1.1 Staffing and Resources

Staffing is the managerial function of hiring and developing the required personnel to fill in the various positions in the organization. Some of the factors for promoting collaborative practice include adequate staffing, effective utilization of supplies of medical equipment and resources, teamwork, capacity building as well as conducting regular meetings to develop solutions to problems affecting the provision of care (Baker, 2010).

Effective utilization of available material resources is critical in promoting synergy and collaborative capacity. Having resources without synergy may undermine collaborative efforts among professionals. Resources can be categorized as hard resources such as equipment, drugs, and materials, and also soft resources such as knowledge, skills, expertise (Lai, 2012). Without adequate resources in the workplace, it becomes a challenge to provide quality patient care. Therefore, the authors state that the success of service delivery requires the capacity to mobilize and utilize resources effectively.

Internationally, interprofessional education and collaborative practice are now considered important strategies that can help mitigate the global health workforce crisis as learners share knowledge and experiences on how to cooperate with other students hence developing responsibility for working as a team during patient care. The growing evidence and research base continue to identify interprofessional

collaboration as beneficial to health workers, systems and communities (World Health Organization, 2010).

In addition, collaborative teams generally have more horizontal rather than hierarchical power structures, more open and inclusive communication, and greater levels of role understanding, respect, and appreciation between members (Moncatar et al., 2021; Morley & Cashell, 2017). As such, highly collaborative, high-performance teams may also drive value and process improvement. Promoting collaborative teams may also benefit staff and the organizations in the facilities in which they work (Lankhof, 2018). Staff satisfaction and retention are higher in health care organizations where its members engage in a collaborative culture of quality and safety because highly collaborative, high-performance teams may also drive value and process improvement for quality assurance. Key determinants of collaboration can be thought of as including the opportunity, ability, and willingness of health care workers to function as team members and collaboratively work with the team.

Gaboury et al. (2011), state that the constructs contributing to collaboration include practitioners' attitudes and educational background, health care system and financial pressures. While communication and power relationships were regarded as factors affecting collaboration. Weinberg et al. (2011) developed a 6-item measure of Staffing and Resources (to be reviewed further in Chapter 3) as one component of a supportive organizational context.

2.6.1.2 Communication and Information Technology

Communication is defined as “The act or process of using words, sounds, signs, or behaviours to express or exchange information or to express one’s ideas, thoughts, feelings, etc., to someone else” (Bailey, 2019). Communication involves the exchange of information among health workers through open discussion and consulting with each other to achieve quality patient outcomes. Communication promotes mutual trust and enables health workers to adapt to changing situations (Gittell et al., 2015). In health care facilities, effective and respectful communication among members of the team is facilitated when health workers attend grand rounds together and freely share information using patient charts to foster collaboration and care provided to patients (Smith, 2015).

A study conducted by Weinberg et al. (2011) reported that poor communication patterns in the hospital facility could limit information flow on the team and undermine the delivery of quality care. Miscommunication can be minimized through anticipation of and knowledge of how to handle issues and understanding how the different individuals react to conflict (Braun et al., 2011). In everyday practice, health workers as a team can use a common e-health platform to share experiences to improve health information exchange across providers and patients.

The e-health platform is a web-based electronic record available via the internet that can be used from computers, mobile phones, and tablets to register digital images, compare images over time, request advice, and discuss the most appropriate treatment for each patient (Lapão, 2016). The use of the e-health platform in the health facility can improve their decision-making skills on how to pursue common goals and mutual

accountability for effective and efficient patient care and working relationship leading to better care, a better quality of life for the patient, and provider satisfaction (Loversidge, 2012).

Use of Communication and Information Technology using e-health is an emerging field of medical informatics referring to the organization and delivery of information and other health services using the internet and related technologies (World Health Organization, 2010). This platform can be used as tool to meet the challenges of healthy ageing including universal and equitable access to health services in the context of the increasing burden of chronic diseases (Lapão, 2016). The author suggests that e-health can improve access to a wide range of services at all levels of health care covering both communicable and non-communicable conditions such as mental illness, heart and cerebrovascular disease, diabetes, cancer, and trauma including services such as radiology, laboratory, and rehabilitation. In addition, e-health can enhance efficiency in clinical decision-making and prescribing, through effective communication among health care workers including promotion and adoption of a healthy lifestyle.

Daily activities in the health care facilities are associated with communication and information processing involving multiple health care workers. Most decisions made on patient care should be based on accurate and complete information to prevent medical errors. Many studies draw attention to information and communication as an important area for facilitating collaboration during the provision of care (Gaboury et al., 2011). During the working relationship, the use of information technology in the health care delivery system promotes effective sharing of accurate data among health care workers to promote quality patient care. Furthermore, information networks are

important in the promotion of more collaboration or synergy as well as combining resources, such as human and material resources (Lai, 2012).

In addition, the information networks accommodate various channels of information, either formal or informal, that are important for information storage, retrieval, and exchange for quality patient care. It is important to note that, just having information channels only does not mean effective communication can be obtained. There is a need to properly use the channels to effectively organize information to promote quality patient care through collaboration among health care workers (Lai, 2012).

Effective Communication and Information Technology has implications for influencing health workers' practice, education, management of health services including policy-making and research (Klopper et al., 2012). During pre-service training, students tend to acquire more advanced technological experience within their field of study. Information technology also involves electronic references, such as e-books, a multitude of internet-hosted material, computer access and broadband internet services and video-conferencing which facilitate classroom learning and support provision of services. Educators have a double-edged role: to include the appropriate employment of technologies in education and training of health care providers to employ technology in clinical practice (Klopper et al., 2012).

The process of information exchange and feedback among organizations results in a shared vision, knowledge, and actions that constitute team learning. As a result, decision making in the network tends to be more rational as a team than individual decision making. Weinberg et al. (2011) developed 5- item measure of

Communication and Information Technology to reflect one component of a supportive organizational context. This measure is discussed in Chapter 3.

2.6.1.3 Human Resource Management and Job Rewards

Human Resource Management (HRM) involves developing workers' skills, recruiting and retaining qualified workers, as well as promoting broader worker engagement in their work and organizations in areas of promoting and preserving health, diagnosing and treating diseases including management (Baker, 2010). Professional disciplines involved in collaborative care have varying education, roles, responsibilities, authority, and supporting organizational structures which influence their ability to work as a team and provide patient care (Morley & Cashell, 2017).

For health workers to work as a team in the facilities, it requires the availability of effective human resource management practices that highly value health care workers and seek to retain and support them in their work. This implies in that such practices typically require greater investments in both workers and their work hence leading to better outcomes for patients as well as job satisfaction among health care workers (Weinberg et al., 2011). Caring are actions which concern the well-being of a patient such as listening, comforting, looking after, attending to. This caring behaviour might be affected by the attitude and perception of providers as they manage individuals in health facilities (Choi, 2017). Caring for individuals who are unwell places considerable demands on health care workers considering that they are expected to manage their feelings and emotions so that they appear "professional" all the time (Government of Malawi, 2017a).

Professional groups have distinct cultures because of their specialized training, professional identity, including positions and roles which they hold within the health care system. These professionals with greater knowledge, skills and attitudes with Interprofessional collaboration may be more engaged with interprofessional practice as a member of the team (Morley & Cashell, 2017). However, in health facilities, some health care workers may experience low levels of job satisfaction which might be related to the dissatisfaction of professionals with working conditions that are insecure, high job turnover, etc. A survey of nurses who left the profession between June 2016 and May 2017 showed that 44% left because of poor working conditions and increased workload (NMC 2017). Similarly Koy, Yunibhand, Angsuroch and Fisher (2015) conducted a review on the relationship between nursing care quality, nurse staffing, nurse job satisfaction, nurse practice environment and burnout in Thailand. The review showed that job satisfaction and burnout contributed to the intention (of nurses) to leave the service, absenteeism, high turnover, and adverse outcomes in-hospital care. All these factors mentioned contributing to making the health care professionals to manage the care of a patient as an isolated act and attributing less importance to coordination and the provision of quality care.

The burnout among healthcare workers detracts from the quality and quantity of services and care rendered which may subsequently contribute to poor patient outcomes. Additionally, it may exacerbate the challenges of achieving collaborative practice. Satisfaction with the job influences perceptions of coordination and collaboration, an association which can be argued both ways: the most satisfied individuals are more motivated to do a good job and are therefore more willing to communicate with the other levels and vice-versa, those individuals that work in a

more coordinated way and/or in an environment that favours coordination, respect and collaboration are more satisfied with their job (Vázquez et al., 2017).

The motivation of health care workers can be associated with retention and efficiencies that derive from avoiding costs of recruitment and training of new staff. Health worker motivation can also lead to improvements in their work performance which could ultimately lead to improved patient care (Government of Malawi, 2018). In addition to improved patient care, when health care workers collaborate, their relationships are associated with positive outcomes for individual providers, the team as well as improvement in the performance of the organization. Similarly, Price et al. (2014) stated that enhancing the quality of health care workers' relationships can improve the work environments, increase job satisfaction and promote staff retention in the organization.

Lankhof (2018) in a study on Perceptions of Collaboration and mutual respect among members of Interprofessional teams in the USA stated that employees, who are empowered and are treated fairly and with respect, are more likely to trust management and their colleagues in the working area. Furthermore, members remain committed to the organizations' mission and have the potential to change the delivery of healthcare and improve the experiences of both clients and practitioners goals. However, many healthcare facilities continue to follow the rules of hierarchical systems where physicians are ranked higher in importance than other members of the healthcare team.

In Malawi, since the launch of the Health Sector Strategic Plan II in 2016, the Ministry of Health together with other cooperating partners have directed their efforts towards increasing the staffing levels in various health care facilities, improved training capacity for health training institutions to improve the quality and quantity of output as well as providing necessary tools and an enabling environment for improved work performance (Government of Malawi, 2018).

An integrated and well-functioning Human Resource Management system such as recruitment, deployment, transfer, promotion, and performance management is the foundation on which to base implementation of effective human resource performance. Weinberg et al. (2011) developed an 8-item measure of Human Resource Management and resources as a measure of one component of a supportive organizational context. The measure is discussed further in Chapter 3.

2.6.1.4 Control Over Work

Modern organizations are often complex entities in which interprofessional teams are increasingly called on to find more efficient and effective ways to deliver quality services. This demand is creating increasing pressure on institutions to focus on developing health care workers who are prepared to work in rapidly changing, environments influenced by technological advances to combat the burden of acute and chronic diseases and conditions (Castro et al., 2016).

These conditions mandate practitioners to adopt participatory approaches to patient care that enhance critical decision making, problem-solving and working together as a team. Health care workers who are working as a team are empowered and have a

sense of control on how to do their job including having an opportunity to contribute on how to promote patient care and the general improvement of their welfare, are more likely to experience job satisfaction (Morgan et al.,2015).

In addition, adequate staffing levels in the organisation allows for better care coordination so that workload is distributed evenly as well as an exchange of critical information about patients improves knowledge about their health issues (Oleribe et al., 2019). Practitioners working together needed to consider their main purpose(s) and how they could respond to patients' needs. Therefore, during patient care, it was important to stress that teamwork was just one of the forms of interprofessional work alongside other forms, specifically, coordination, networking, and collaboration (Reeves et al., 2017).

Collaborative practice is effective when there are opportunities for shared decision-making and routine team meetings to help health workers decide on common goals and patient engagement (Baker, 2010). Shared decision-making ensures the perspectives of all disciplines are considered during the planning process so that clients' benefits can be maximized. In addition, active involvement of clients and their family allow their day-to-day concerns and needs are regarded in developing the healthcare choices and goals to arrive at a mutual agreement (Lam et al., 2015).

Perception of how leaders distributed resources, provides up-to-date communication and provides support to health care professionals because their perceptions on how they perform their job may influence their engagement with other providers and turnover among staff members (Castro et al., 2016). Furthermore, the authors also

emphasize that supporting patient-centeredness can be seen as a precondition for patient empowerment which involves embracing patient participation in care according to their individual needs, desires, and circumstances as a strategy.

Orchard and Bainbridge (2015) Health care can become more patient-centered, which in turn will facilitate patient empowerment. The authors describe patient empowerment as a process that enables patients to exert more influence over their health thereby increasing their capacities to gain more control over issues they define as important. Lam et al. (2015) suggest that shared-decision making also facilitates empowerment for clients, enhancing their satisfaction towards the healthcare services and improving their self-management of illness. In addition, the author stated that share-decision making is an attribute that can foster collaboration and can drive the whole team to achieve a common goal that cannot be reached when individuals work on their own. Shared-decision making is important to informed consent and patient-centered care.

Weinberg et al. (2011) developed 6 -item measure of Control over Work as a measure of one component of a supportive organizational context. This measure is reviewed in Chapter 3.

2.6.2 Leadership that Promotes Teamwork

It has been acknowledged that within the health care system leadership is not the exclusive domain of any professional group. Rather, all members of the health care team are identified as potential leaders (Daly et al., 2014). Leadership is the capacity to set policy and strategic direction, manage resources, and maintain staff commitment to getting work done (Bates, 2018; Daire et al., 2014; Weinberg et al., 2011).

In a healthcare team, leadership must be shared with a focus on building trust and sharing power (Wilson, 2013). The leaders' influence over teams may be more important for diverse cadres of health care professionals working as interprofessional teams because team members prefer to talk with others who share a similar language and understanding (e.g., within disciplines *versus* across disciplines). To enable the promotion of teamwork among a diverse group of health care workers, a leader must establish common ground and understanding of shared goals, mutual trust and clear expectations to enable the group to provide quality care (Orchard et al., 2017). Teamwork is conceptualized as professionals with explicit roles coming together towards the achievement of a common goal. In addition, teamwork is seen as essential to health care service delivery and has become a central feature of health care reform universally.

A leader can promote the effectiveness of the team by providing performance feedback and support to members who have less experience so that they feel valued and motivated to improve their performance (Stout et al., 2017; Weinberg et al., 2011). Effective teamwork is pivotal to a common understanding of patient care decisions as such, contacts that occur through working together at the same site is expected to foster more frequent, higher quality, and effective communication among participants over time. Such communication leads to stronger relational ties and giving rise to higher levels of relational coordination (Gittell et al., 2015). Health care workers who are rigid with hierarchical chains of command which are being reinforced by the unique professional role socialization that separates the healthcare disciplines from one another in training and practice requires leadership that is

committed to plan and shift the practice to a new, collaborative way of thinking and doing things (Dana Beth Weinberg et al., 2011). To lead teams successfully, individuals should develop knowledge, attitudes, and behaviours in the domain of leadership. They need foundational knowledge about the range of professionals on health care teams, what each profession requires to accomplish its work, and learn to recognise and overcome barriers to collaborative practice (Dow et al., 2013). Stanley et al. (2017) stated that leaders were valued if they presented ideas logically and effectively, were flexible, had appropriate clinical skills and if they displayed high moral character.

Leaders also needed to remain visible in practice, recognize optimal performance and express appreciation promptly. Booyesen et al. (2012) stated that according to the literature, there is no consensus as to when the concept of interprofessional teamwork, as well as the introduction of the roles of the different team members, should be incorporated into the education of healthcare professionals. Leadership is recommended for the potential impact on clinical practice and on the clinical care environment, and contributes to safe and quality patient care, and to job satisfaction and retention of frontline healthcare providers (Mianda & Voce, 2018).

Booyesen et al. (2012) in their study found that there was no consensus among working professionals as to when the concept of an interdisciplinary approach, as well as the roles of the various disciplines, were introduced. Taking an individual perspective, effective leaders require personal qualities that reflect positive attitudes toward their profession, have the courage and capacity to challenge the status quo, effectively address care quality issues, and engage in reflective practice (Daly et al., 2014). In her major study, Weinberg et al. (2011) developed an 11-item measure of

Supervisory Support (reviewed further in Chapter 3) as a measure to reflect “Leadership that Promotes Teamwork”.

2.6.3 Patient-Centered Care

The role of the patient and health care worker interactions is important, to the interprofessional team. These interactions involve establishing shared values, goals, and expectations as well as information between the two to establish a conducive environment necessary for sharing ideas to promote quality care (Santana et al., 2018)

A caring environment has a great impact on the operationalization of patient-centeredness. Such an environment respects patients’ values and choices to care by a collaborative team that is empathic, respectful, compassionate and treats patients with dignity, and being non-judgemental hence regarding them as individuals (Castro et al., 2016). Furthermore, collaborative patient health worker interactions generate trust and rapport which in turn lead to greater levels of openness, negotiation, successful adherence to medical care, and reduced anxiety. The importance of collaboration on patient safety has also been studied in various contexts. Such that several authors have identified reductions in rates of medical error when interprofessional collaboration is strong and teams are trained to work safely, cooperatively, and in a coordinated way to avoid gaps in quality assurance (Morley & Cashell, 2017). Patient-Centered Care refers to a holistic approach aimed at the delivery of individualized care to patients and families that addresses their physical, mental, social, and self-care needs (Castro et al., 2016). The authors furthermore illustrate that the emphasis is on assisting people in gaining control over the factors that might affect their health. Patients are increasingly invited to take an active role in their care as well as in the organization of

care as such patients have come to be seen as experts on their own bodies, symptoms, and situations.

Patients' experiential knowledge is now considered to be complementary to professionals' knowledge and important for the success of the treatment and improving the quality of care. By inviting patients and families to participate in care decisions, the gap between professional knowledge and knowledge by experience can be bridged, while health care becomes more patient-centered (Castro et al., 2016). The partnership between providers, patients, and their families in shared decision-making, coordination, and cooperation is particularly important when the goals and values of different team members may be very different (Lankhof, 2018). A highly interconnected team process may be thought of as an interprofessional team. Such a team features strong communication and shared ownership of the inputs and outputs of the overall process of patient-centred care.

The use of Patient-Centered Care is viewed as an approach that respects the individuality, values, ethnicity, social background, and information needs of the patient. As such, Patient-centered care improves health outcomes such as care effectiveness, patients' experiences and outcomes, and health care worker satisfaction, and also decreases health care-related costs and health care utilization (Santana et al., 2018). For this study, a measure developed by Weinberg et al. (2011) was used to determine the extent to which respondents believed that they could provide Patient-Centered Care. Weinberg et al., (2011) assessed health care workers' perception of Patient-Centered Care by asking them to respond to 3- items reflecting the extent to

which they believed that they could provide individualized care to patients and families. This measure will be discussed in Chapter 3.

2.6.4 Collaborative Capacity

Collaborative Capacity is the likelihood that providers, no matter how brief their exchange or interdependent task, will collaborate as if they were members of the team even in the absence of a formal team structure (Sullivan et al., 2019). This implies that providers influence other health care workers' decision-making to enhance Quality of Interaction as well as Collaborative Influence to enable the promotion of effective decision-making during the provision of Patient-Centered Care.

Collaborative Capacity is needed for Cooperation (contributing one's issues to the team, understanding and valuing the contributions of other team members), Coordination (working together to achieve shared goals), partnership (open, respectful relationships cultivated overtime in which all members work equitably together to achieve shared outcomes) or networks among teams in an organization in order to prioritize critical decisions made for Patient-Centered Care as well as shared decision making (relying on working together to explore options, requiring negotiations, communication with each other, and an achieving a respectful power balance) (Morley & Cashell, 2017; Orchard, King, Khalili & Bezzina, 2012). Furthermore, the authors stipulate that these factors maximize the contributions of each participant to address complex patient needs and an interprofessional team relationship involving respect and trust.

As health care workers manage patients together, they ensure the enhancement of shared planning over time, functioning cooperatively as colleagues and equals with respect and a view to finding solutions together. Considering that health care involves the participation of patients, family, and a diverse team of often highly specialized health care professionals. Involvement of all team members in a cooperative and coordinated way is essential to providing quality patient care (Orchard et al., 2012).

The collaboration further promotes trust and mutual understanding among health care workers (Weinberg et al. 2011). In addition, the author suggested that Collaborative Capacity is a measure of team structure and collaboration and is reflected by Task Interdependence (frequency of interaction relative to the need of information), Quality of Interaction (or norms of working together), and Collaborative Influence (also conceptualized as “egalitarian collaboration”). Each of these concepts will be defined below.

2.6.4.1 Task Interdependence

Task Interdependence addresses the frequency of interaction relative to the need for information and pertains to the dependence of a health care worker on information from others (Weinberg et al., 2011). In large organisations, it can be difficult to recognise task interdependence and the effect it can have on reaching goals as such health care workers depend on one another for action (Stutsky & Spence Laschinger, 2014). The author stipulates that the increasing complexity of health problems demands the expertise and contributions from each professional to address patient’s needs. The author further states that effective collaboration requires that professionals be interdependent than being autonomous to promote quality care. When team

members become aware of such interdependencies, synergy emerges, and individual contributions are maximized; the output of the whole becomes much larger than the sum of inputs from each part. Such interdependency should eventually lead to collective action and provider satisfaction.

Task Interdependence are a set of rules and requirements that determines how information and resources will be shared among members assigned to interdependent tasks (Weinberg et al., 2011). Sharing of information among health care workers in the work environment encourages partnership and collaboration among health care workers across all levels of service delivery, as a result, such individuals appreciate the personal contribution of their peers (Iwu, 2014). Traditionally, the task one performs and complete affects other members within the organisation. As such coordination has been seen as an information-processing issue to be resolved by health care teams. This can be done by designing and utilizing appropriate coordinating mechanisms such as team organisational charter to ensure the necessary flow of information between members who play different roles in the health facility but need optimal results (Gittell et al., 2015).

Coordination is where every task within the hierarchy is associated with a role and hence able to manage the workload of every team member. Currently, coordination is understood to be a relational process that occurs through a network of relationships among people who perform interdependent tasks including organizing the care, improving the quality of health care delivered, and achieving cost savings (Gittell et al., 2013; Van Houdt et al., 2013). Gittell et al. (2013) suggest that because coordination is the management of task interdependence, it is fundamentally a

relational process that identifies specific dimensions of relationships that are integral to the coordination of interdependent work. If there isn't agreement about how much interdependence is needed in the organisation, members who believe they are not interdependent, will complain that other healthcare workers are asking them to do some activities and be part of the decisions that are not a good use of their time. Furthermore, those who need interdependence will be frustrated by colleagues who seem uncooperative and they will complain that they cannot get the help they need (Gittell et al., 2013) The authors emphasize that unless the team reaches an agreement on this area, they will have a difficult time in their working relationships and achievement of teams results and organizational goals.

Organisations use tools and software that foster effective communication and help to keep track of the groups' tasks and create a culture of accountability, trust, and cooperation to foster the improvement of the team performance and achievement of their goals. In her study, Weinberg et al. (2011) assessed Task Interdependence by creating a summary score of responses to a single question in which respondents indicated how often they need information from different provider groups to do their jobs. In this study, respondents were asked about the extent to which they needed information from 10 different provider groups. This measure is discussed in Chapter 3.

2.6.4.1 Quality of Interactions (or Norms of Working Together)

Norms stipulate how members relate to one another and how much effort they spend on a given task. Expectations about acceptable behaviour tend either to be "imported" to the group by members or established very early. Norms regulate many aspects of

the team and tend to remain in place until something unusual occurs to force a rethinking about what behaviors are and are not appropriate in the group (Weinberg et al., 2011). Interprofessional collaboration is expected to create stronger ties among those who work at the same site, because of increased opportunity for contact. Health care workers who work together in the same location, for example, nurses or physicians have greater opportunity for contact with each other than with their colleagues who work in different locations. Proximity, or co-location, has been found to create stronger ties in the form of frequent, higher quality communication (Gittel et al., 2013).

The authors also suggest that frequency and duration of contact among group members have been shown to increase creativity and learning among health care workers as a group. Similarly, recent work suggests that group stability fosters group learning about the expertise of each group member. Weinberg et al. (2011) created a measure of Quality of Interaction by asking health care workers to respond to eight questions about their interactions with different members of the health care team. These researchers then created an overall score as the mean response across all 8-items and across all different health care groups. This measure was used in the current study and will be discussed in Chapter 3.

2.6.4.3 Collaborative Influence

Collaborative influence has the ability to get things done by getting professionals to coordinate and build strong collaborative networks (Weinberg et al., 2011). When a situation arises, members seek solutions rather than blaming each other. They are interested in the other person's point of view and welcome feedback to build mutual

success. In addition, Tamm and Luyet (2019) states that in the health facility, a health care worker not only is a good team player but also enables others to be good team players, including facilitating partnerships across organizations. The author stipulates five skills essential to increasing one's collaborative influence in the team and includes the following:

Firstly, a collaborative intention entails maintaining a non-defensive presence and making a personal commitment to seek mutual gains in a relationship as one provides care; Secondly, truthfulness meaning committing to speak and listen to the truth, as well as creating a culture in the team where it feels safe to raise difficult issues. It is important to note that telling the truth requires awareness, honesty, and openness. Thirdly, self-accountability implying taking responsibility for the choices leaders to make, either through action or inaction, and unforeseen consequences of those choices; Fourthly, self-awareness and awareness of others: Committing to know oneself deeply and showing a willingness to deal with difficult interpersonal issues feelings, fears, values, intentions and patterns of behavior; lastly, solving problems and skillfully negotiating one's way through the conflict in any long-term relationship. These skills are important in facilitating collaboration among health care workers (Tamm & Luyet, 2019).

During the collaboration, health care workers actively looking for more opportunities to make joint decisions to achieve quality care. This implies that as they collaborate and influence each other, health care workers give up sole ownership of an idea or decision and become flexible to accommodate the views of other providers. Similarly, during health care provision, collaboration does not mean compromising ideas and visions. It means knowing how to listen, how to present ideas clearly without creating

any barriers, and how to nurture an environment conducive for collaborative influence (Sullivan et al., 2019). The author further states that when a member is not clear about the intention of the team or its strategic objectives the individual may unconsciously undermine the effort of the team as such affecting the principles of Collaborative Influence and not able to effectively contribute to the provision of quality care. Weinberg et al. (2011) conceptualized Collaborative Influence as a measure of egalitarian collaboration among team members. These researchers measured Collaborative Influence by calculating a mean score response to a question about the extent to which health workers felt they had a say in what different provider groups do with patients. Further information about this measure will be provided in Chapter 3.

2.6.5 Proposed Relationships among Concepts in the Conceptual Framework

This framework was chosen to guide this study and is intended to inform health care policy, education and professional practice. The framework proposes that Collaborative Capacity (a dependent variable) is influenced by the independent variables namely: Structural Features that Enable Team Effectiveness, Leadership that Promotes Teamwork, and Patient-Centered Care. These independent variables can become manipulated by the researcher. In addition, Collaborative capacity is greatly influenced by both the existing knowledge, skills and attitudes members bring to the table including the efforts taken to build, support, and access this capacity. Figure 1 shows the proposed interaction among the study variables.

Independent variables

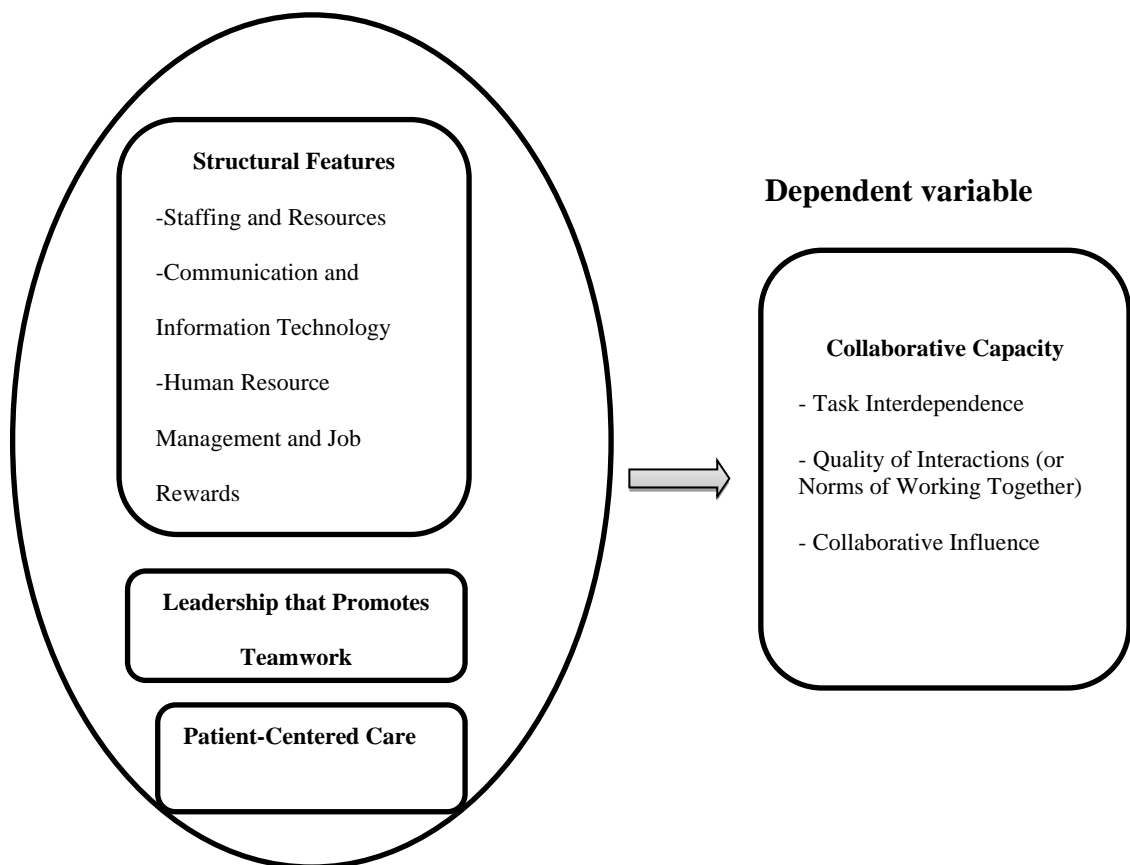


Figure 1: Conceptual framework on Collaborative Capacity (Based on findings reported by Weinberg et al. (2011))

2.7 Conclusion

This chapter has presented a review of previous studies focused on collaborative practice among health workers globally, regionally, nationally, and locally. Results from some studies suggest that improving Collaborative Capacity among health care workers in hospital settings increases providers' and patients' levels of satisfaction. However, lack of Collaborative Capacity among health care workers could affect effective interactions during service provision resulting in delayed diagnosis of patients' condition as well as late initiation of treatment. The conceptual framework provides direction on concepts to be measured in this study.

While different healthcare systems have been experimenting with IPC to improve the health and wellbeing of patients, and their functioning, pieces of evidence are primarily from high-income countries. Most of the studies reviewed were conducted in high-resource countries like Canada, the USA, and the United Kingdom where Interprofessional care can be traced back to Second World War. Although there is some literature about interprofessional collaboration in these countries, yet little is known about the distinct challenges to implementation that may be faced by healthcare systems in low- and middle-income countries (LMICs) and very little of it is focused on African countries. In Malawi, there is limited literature on the perception of health workers on Collaborative Capacity. To understand better the relationship between Collaborative Capacity and quality health outcomes, there is a need for further research in a variety of health care settings.

This study focuses on perceptions of healthcare workers about Collaborative Capacity at a referral hospital in Blantyre, Malawi, aims to fill part of this gap. On the one

hand, this study is conducted to provide information regarding the relationships between Collaborative Capacity and Structural Features that promote Team Effectiveness. It is also there to improve job conditions that would not only be of importance for health care workers' wellbeing but could also be expected to positively affect the quality of patient care.

The ultimate aim of the collaboration is to integrate services at the point of delivery. This integration has to be taken into account by the individual factors as well as organizational levels. Individuals include factors such as skills, competence, and work experience. On the other hand, the structures of the organization include degree of formalization, distribution of resources, competition, management and leadership governance- can also have an important impact on the dynamic and coalition

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methods that were used to achieve the study objective that aimed to assess the relationship between Collaborative Capacity and structural features that Enable Team Effectiveness, Leadership and Patient-Centered Care among health workers in Blantyre Malawi. Research methods refer to the research decisions that are taken within the framework of specific determinants unique to the study. This chapter provides details of the types of data that were collected, how data were collected, and how data were analyzed. The chapter also describes the study design, study setting, study population, inclusion and exclusion criteria, the sampling technique and sample size, utilization of the data collection instrument, pre-testing and reliability and validity of the data collection instrument, the data collection procedure, plans for data analysis, and ethical considerations

Research Philosophy

The choice of research philosophy helps the researcher to clarify the overall research strategy to be used in the study (Burns & Grove, 2010). Furthermore, a research paradigm is a perspective that is based on a set of shared values, concepts and practices. McNabb (2017) explains that there are three research paradigms namely: positivism, interpretivism and realism which help a researcher to develop an understanding and knowledge about the topic of research. Positivism is based on rigid

rules of logic measurement, truth, absolute principles and prediction in which causes probably determine effects or outcomes. The interpretive paradigm emphasizes understanding of the meaning individuals ascribe to their actions and the reactions of others while The critical social theory paradigm is concerned with the study of social institutions, issues of power and alienation, and envisioning new opportunities (Creswell & Creswell, 2017).

In addition, the author state that the key assumption of positivist is that organisations are rational entities, in which rational explanations offer solutions to rational problems as such, positivist methodology is directed at explaining relationships as it attempts to identify causes that influence outcomes and provides a basis for prediction and generalization. Positivist research uses the scientific method to develop general abstract laws describing and predicting patterns in the physical world. It is most commonly aligned with quantitative methods of data collection and analysis (Creswell 2009). The quantitative approach is underpinned by positivism philosophy and is an approach where knowledge development is built on three principles of skepticism, determinism and empiricism (Hovorka & Lee, 2010).

This study sought to explain the relationship between Collaborative Capacity and Structural Features that promote Team Effectiveness, Leadership, and Patient-Centered Care at a referral hospital. In addition, the study utilized quantitative data as it sought to identify causes that influence Collaborative Capacity and formulated several recommendations.

The choice of research philosophy used in the study helped the researcher to clarify the overall research strategy, evaluate different methodologies, and selecting or adapting of methods that have been previously used. The research paradigm of the study was positivism, an approach that relies on scientific evidence where the researcher is an objective analyst and hence is not affected by the subject of the research (Hovorka & Lee, 2010). A quantitative approach was used to collect data relevant to this research.

3.2 Study Design

The study design refers to the overall research plan for collecting data to answer the research questions (Polit & Beck, 2014) In this study, the research design used was cross-sectional where all measurements were collected at a particular point in time in form of a survey from the sampled cadres of health care workers at one of the referral hospitals in Malawi from July 2017 to November 2017. The use of a cross-sectional study design was particularly suitable because they are generally quicker, cheaper to perform, and often based on a questionnaire survey. They are used for estimating the prevalence of behaviour in a population (Sedgwick, 2014). However, because data on each participant are recorded only once it would be difficult to infer the temporal association between a risk factor and an outcome. Therefore, only an association, and not causation, can be inferred from a cross-sectional study. This study was both descriptive and correlational in nature since the focus was on investigating different perceptions of health workers regarding Collaborative Capacity and considered structural factors that enabled Team Effectiveness, Leadership and Patient-Centred Care. Descriptive studies focus on finding out “what is” and describe the behaviour of the subject, present characteristics, and frequencies of occurrence of a phenomenon of

a person, group or situation without influencing these phenomena (Grove, Burns & Gray, 2012; Polit & Beck, 2012:379). Furthermore, a descriptive research study is preferable when there is no change in the routine of participants who are being studied and when there is no planned change in the environment scheduled (Bailey, 2019). Correlational studies examined relationships among different variables, in this case, measures of Collaborative Capacity, Patient-Centered Care and selected structural features (Grove, Burns & Gray, 2014). Using a cross-sectional study enabled the researcher to collect numerical data from different health care workers in Blantyre, utilizing a structured questionnaire (the Care Coordination Survey tool developed by (Weinberg et al., 2011).

A quantitative research method used a systematic way of collecting data according to an established plan, in numerical form using a structured tool, and analyzed statistically using mathematically based methods (Creswell & Creswell, 2017; Grove et al., 2014). Variables are measured, relationships between variables are explained, predictions, and comparisons are projected to a larger population (Leavy, 2017; Polit & Beck, 2014). In addition, a quantitative research design is most commonly aligned with a positivist scientific method that uses numerical data set of orderly disciplined procedures to obtain information as an approach where knowledge development is built on principles of empiricism in which causes determine effects or outcomes (Polit & Beck, 2012:14). LoBiondo-Wood and Haber (2014) stated that positivism is deductive in that it reduces ideas into small, discreet sets of ideas necessary to test variables.

The positivist understands the underlying cause of a phenomenon using orderly procedures. The paradigm underlying the traditional scientific approaches, assumes

that there is a fixed orderly reality that can be predicted or objectively studied by using numerical analysis of the data (LoBiondo-Wood & Haber, 2014). Positivists use a larger sample and maximize validity by providing a control mechanism that minimizes biases by both the researcher and participants (Burns & Grove, 2010; LoBiondo-Wood & Haber, 2014).

With the understanding that nature is orderly, and that objectivity exists independent of human observation, the researcher used a positivist research philosophy approach to the study by using a structured tool to gather data and a statistical package for data analysis. The quantitative design best suited the study's intention and was used to objectively study health workers' perceptions of the relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care in Blantyre and it best suited the study's intention.

3.3 Study Setting

The setting is the physical location and conditions in which data collection takes place in a study (Polit & Beck, 2012) In this study, the study setting where data were collected was at the tertiary hospital which is a Government-owned referral hospital located in Blantyre City in Malawi. The public health services are organized and subsidized by the Government of Malawi, Ministry of Health with a catchment area of approximately 6 million people in the southern region of the country. The services offered include curative, rehabilitative, and preventive programmes, as well as other specialized services such as dental, medical, surgical, emergency and trauma, obstetrics and gynaecology, paediatrics, and mental health. All personnel employed

by the government and are managed by the rules and regulations that govern civil service.

This hospital was purposively selected as an ideal site to complete the survey questionnaire from respondents due to the significant proportion of health care workers at the facility. A purposive sample is comprised of respondents who are likely to be able to provide information and the phenomenon under study. It is located in the southern region of Blantyre District. This setting was ideal because it is the largest government referral and academic hospital in Malawi. The hospital has a total of 49 wards and departments with a capacity of 1,400 beds, organized in six major units according to specialties. The units are as follows: Accident Emergency and Trauma Centre (AETC), Clinics, Medical, Obstetrics and Gynaecology, Paediatrics, Surgical, Technical support, and Theatre/Intensive Care Unit (ICU). Each unit has several wards which range from 5 to 10 wards, with an average of 6 (HMIS Quarterly Report, 2016).

This hospital was purposefully chosen by the researcher as a study site because of the easiness of access to the researcher since it is the largest in the country, serves as a teaching hospital, is an academic facility for health professional students, and provides specialized care from different professionals such as doctors, registered nurses/midwives, pharmacists, radiographers, laboratory technicians, physiotherapists, social workers, dental technicians, nurse/midwives technicians, clinical officers and anaesthetists.

The hospital also provides secondary and specialized tertiary level care to both out-patients and in-patients who are referred and admitted from urban and rural

government, health centres, CHAM, and private hospitals within Blantyre District. Many of the patients have two or more chronic conditions and hence require a multisectoral team to assess, plan and manage their care. As a referral hospital, it also receives patients from other districts and central hospitals in the country that require an interprofessional team to coordinate their care and manage them comprehensively. It was anticipated that the health care workers in different departments and wards at this hospital would provide a suitable setting to assess how they collaborate among themselves during the provision of patient care. The practicalities and cost of undertaking a study, representativeness as well as the population was taken into consideration while choosing the site.

This study replicated the methods used by Weinberg et al. (2011) which included a sample of health care workers from 45 units across 9 hospitals and 7 health systems in New York. This study included a sample from one central hospital in Malawi so that Collaborative Capacity could be assessed from different cadres of health care workers in different units hence help to promote effective structures necessary to promote Patient-Centered Care.

3.4 Study Population

A population is a well-defined set of a whole group of individuals the researcher wants to study that contains all variables of interest to provide comprehensive information in the study (Burns & Grove, 2010). Herbert and colleagues (2007) looked at the relational aspects of collaboration from the perspective of eight professionals from nursing, medicine, occupational therapy, physical therapy and massage therapy to elicit why people choose to practice collaboratively.

In this study, considering that patients who come to the referral hospital often have chronic and multiple conditions and that no single professional can manage to meet all the needs of such patients, there is a need therefore that health care workers to coordinate and work together to provide health services as a team (Matziou et al., 2014; Reid et al., 2015). The study population included all health care professionals at the hospital, who were licenced to practice by their respective regulatory bodies and were involved in providing direct patient care. The total number of health care workers at the facility was 526 (65 medical doctors, 346 nurses/midwives (registered and technicians), 59 clinical officers, 9 physiotherapists, 14 pharmacists, 25 laboratory technologists and 8 radiology technologists) when the study was conducted (Government of Malawi, 2017).

Gittell et al. (2015) suggested that though different cadres of health care workers may weaken coordination by breaking down communication and relationships among participants who work in different areas of specialization, they all have in common working at the same facility a referral hospital as a result, they face similar issues and challenges in the work environment. Health care professionals needed to understand not only their role but also the roles of the various health care providers working with them, regardless of their training, background, and current occupation in order to provide an environment conducive to a collaborative team approach to patient care (Bailey, 2019).

The opportunity that emerges from working at the same facility has the potential to create a stronger relationship such as shared knowledge, experiences, goals, and

mutual respect. Mutual respect may develop from other attributes such as understanding the roles of each professional and enhancing communication and teamwork. Furthermore, teammates should work towards the common goal by utilizing and integrating their expertise, skills, and knowledge. Interprofessional teams show better clients' outcomes with the common goal while the teammates can overcome their differences to accomplish clients' needs collectively (Lam et al., 2015). Interprofessional collaboration requires a variety of skills and competencies as well as a variety of contributions from professions.

The list of health care workers that formed the focus of the study including the details of their qualifications and their specific roles at the hospital is described below as follows:

Medical Doctors undergo 5 years of university training in medicine including $1\frac{1}{2}$ year of internship before they qualify with a Bachelors' degree in Medicine and Surgery. They assess patients, diagnose diseases and illnesses, and treat a variety of conditions. They may order and perform tests and use those tests to diagnose and treat their patients. Medical doctors also perform administrative duties as well as risk management. Their overall responsibility is to lead the health care team in examining, diagnosing, and treating patients with various conditions. Medical doctors play a crucial role not only in verifying complex diagnoses and facilitating the treatment of patients but also in shaping their patients' views on health issues to ensure that the highest standards in patient care are maintained. Doctors are expected to be at the center of coordination and decision-making, but they tend to be present in the hospital intermittently because of their external responsibilities while other members of the

care team, including nurses, physiotherapists, pharmacists, radiography technologists, are largely hospital-based and therefore work together on an ongoing basis.

- Registered Nurses (RN) undergo 4 years of university training in nursing and midwifery before they qualify with a Bachelors' degree in Nursing and Midwifery. They play a leadership and managerial role in the wards/departments. They also provide nursing and midwifery care to patients such as preparing a nursing care plan, administering the prescribed medications, monitoring, and evaluating patients' conditions, maintaining nursing care records, and communicating with families and other health workers. They also play a critical role in health promotion, disease prevention and delivering primary and community care. They provide care in emergency settings and are key to the achievement of universal health coverage
- Nurse Midwife Technicians (NMT) undergo 3 years of nursing and midwifery training in Christian Health Association of Malawi (CHAM) Nursing Colleges and a Government-run College of Health Sciences (MCHS). They qualify with a college diploma in Nursing and Midwifery. They are many health care workers responsible for providing basic care to patients such as bathing, feeding, administering the prescribed medications under the supervision of a registered nurse-midwife.
- Clinical Officers (CO) undergo 3 years of training in clinical medicine including a 1-year internship. They qualify with a Diploma in Clinical Medicine. Their duties include assessing, diagnosing and prescribing medications for treating patients' conditions. They also perform routine medical and surgical procedures, referring patients to other practitioners. They work under the supervision of medical doctors. Unlike doctors, clinical

officers cannot perform intensive specialised surgeries. They participate in patient consultations and discussion of cases with doctors on the best management suited to the patient's needs. Overall, clinical officers provide health education services and health promotion, disease control, prevention, and management; the follow-up, data collection, disease surveillance, monitoring and evaluation, standards and home-based care and research

- Pharmacists undergo 4 years of university training in pharmacy including a 1-year internship. They qualify with a Bachelors' degree in Pharmacy. Pharmacists are responsible for ordering, receiving medicines and raw materials, controlling, checking stock levels, storage and dispensing drugs and medical supplies. They provide advice to patients regarding proper use, dosage, and the normal and side effects of medicines. Pharmacists, frequently offer advice to customers as well as evaluate customer's needs. They monitor the prescriber's orders and have extensive knowledge about specific medicine. Pharmacists are responsible for ensuring the accuracy of the prescriptions they fill because improper use of medication can pose serious health risks. They have direct input into the prescribing process as well as helping doctors, clinical officers, nurses, and other health professionals including patients with all aspects of prescriptions and promotion of rational use of medicines and medical supplies.
- Laboratory Technologists undergo 4 years of university training in Laboratory Science. They qualify with a Bachelors' degree in laboratory Science. They prepare reagents, glassware, and samples for microscopic analysis.

They perform tests in a wide range of areas like blood banking, chemistry, haematology, immunology, and microbiology. They analyze blood and other body fluids including tissues for abnormal chemical levels, cells, or bacteria to enable confirm diagnoses of diseases and progress of response to intervention in individuals. They record the results in the workbook and report results to assist doctors in diagnosis, monitoring, treating, and preventing diseases. Overall, they strive to maintain competence in Laboratory Information System and actively participate in Quality Improvement programs essential to ensure that laboratory testing is accurate, timely and meets customer needs.

- Radiography Technicians undergo 3 years diploma program. They provide diagnostic imaging services in health care delivery such as x-ray services, ultrasound, and computed tomography for efficient and effective diagnoses and management of patients. Radiographers undertaking this work not only highly have specialist skills in imaging modalities but are experienced in the care and techniques required for scanning acutely ill patients who require urgent assessment during a critical period of the care pathway. Additionally, they may also have the advanced practitioner skills to review and report the images obtained to help facilitate rapid access to thrombolytic therapy by the stroke care team, or neurosurgical review, within the short timescale required. Radiographers provide a written report of the results of your examination which he or she will send to your doctor
- Physiotherapists undergo 4 years of university training in physiotherapy including a 1- year internship. They qualify with a degree in Physiotherapy. They provide rehabilitation services to patients disabled or made immobile by physical problems caused by illness, injury or ageing to build their strength,

make them able and mobile again (Government of Malawi, 2018). Physiotherapists deliver active or passive services and focus on early mobilization, which is beneficial for reducing the long-staying time in health facilities and add to quality of life. A physiotherapist is an important member of a multidisciplinary team and plays an important role in the wards to improve the patient's quality of life. They manage musculoskeletal and physical complications of patients' condition in the wards. They assess and treat acute, sub-acute and chronic conditions with modalities such as manual therapy (mobilisations, manipulation and soft tissue techniques), exercise therapy, electrotherapy and splinting. Such treatment can help restore the patient to full function following soft tissue injury or fracture.

The very definition of a profession implies boundaries. For example, each healthcare profession has its own specialized language, theories, and values that make it distinct from other healthcare professions. These boundaries if not well handled can create territorial behaviors causing conflict and further division between professions as a result, challenging the collaborative process (Price et al., 2014).

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria

Inclusion criteria are the desired characteristics in the targeted population that determine eligibility to participate in the research (Burns & Grove, 2010; Polit & Beck, 2014). In this study, the inclusion criteria included:

- health worker employees
- licensed to practice by their regulatory bodies,

- working at QECH wards/ departments during the period of the study
- able to understand the English language
- consented to participate in the study

3.5.2 Exclusion Criteria

Exclusion criteria are the characteristics in the targeted population that will make them ineligible to participate in the study (Burns & Grove, 2010; Polit & Beck, 2014).

In this study the exclusion criteria included:

- health care employees not working at QECH
- those who were not licensed to practice by the regulatory bodies
- those in training
- those who did not consent to participate in the study

3.6 Sampling

This study used stratified random sampling which is a useful method for data collection if the population is heterogeneous. Stratification means the arrangement or classification of that specific characteristic of individuals are represented in the sample into different groups, and the sample reflects the true proportion of individuals with certain characteristics of the population (Creswell & Creswell, 2017).

In this method, the entire heterogeneous population was divided into several homogenous groups known as “strata” (Bluman, 2018). Each of the groups was homogenous and had some characteristics that were important to the study. The study identified population strata and determined how many participants were needed from each of the strata. By using information about the population characteristics, a fraction of each stratum was multiplied by the required sample size. The study ensured that all

strata of health workers at the facility were represented in the sample according to the proportion which they occurred in the population (LoBiondo-Wood & Haber, 2014).

Random sampling was then employed to select the required calculated number of participants in each stratum, each participant in the population had an equal chance of being selected to minimize selection bias and as such, important for drawing a conclusion (Creswell & Creswell, 2017). The author further stipulates that with randomization, a representative sample from a population provides the ability to generalise to a population. Every member in each stratum for instance nurse/midwife or pharmacists was assigned a number and random numbers from Bluman (2009) were used to randomly select participants of the study. A total of 384 health workers were sampled to participate in the study, with a break down per each cadre as follows: 47 medical doctors, 252 nurses (both RNM and NMT), 43 clinical officers, 18 laboratory technologists, 6 radiology technologists, 10 pharmacists, and 7 physiotherapists.

3.7 Sample Size

The sample size was calculated as the number of people to participate in a study, and is an important factor in the power analysis and statistical conclusion (Denise F Polit & Beck, 2013a). Because no previous studies were found that investigated health workers' perceptions about Collaborative Capacity at a referral hospital in Blantyre, Malawi, in this study, we adopted the standard deviation reported in a similar study that was conducted by Weinberg et al. (2011). Statistically acceptable sample size for the study was calculated using a formula by Singh and Masuku (2014) adequacy of sample size in quantitative health studies. This formula was chosen because this study

was quantitative cross-sectional. The formula for the sample size calculation was as follows:

$$n = \frac{(Z_{\alpha}) \times s^2}{e^2}$$

n is the required sample size for the study.

Z_{α} is the factor associated with a desired level of confidence. As for a 95% confidence level, the corresponding Z_{α} score is usually set at 1.96;

s is the estimated standard deviation for the outcome variable of interest (i.e., Collaborative Capacity) among the health care workers. Since there was no literature regarding the standard deviation of Collaborative Capacity among health workers in Malawi, in this study we adopted the standard deviation reported in a similar study that was conducted by Weinberg et al. (2011);

e is the margin of error or the sampling precision /accuracy of the study findings expressed as a decimal point of 0.05 which is 5%.

3.7.1 Sample Size Calculation

The sample size calculation is provided in the formula as follows:

$$n = \frac{(Z_{\alpha}) \times s^2}{e^2}$$

$$n = \frac{1.96 \times (0.68 \times 0.68)}{0.05^2}$$

$$n = 362.5216$$

n = 363

To account for possible study design effects, the sample size was increased to 384 health workers to improve the efficiency and precision of the results from the statistical analyses based on the desired 95% confidence level. This gave over 80% power to detect significant differences among the dependent variables of Collaborative capacity and independent variables of Structural features, Leadership and Patient-Centered Care. The variables are from the questionnaire that was used in the study.

3.7.2 Actual Number of Participants per Cadre

The exact number of participants selected per cadre of health workers was determined using the sampling proportional to the size of health workers in each cadre. The calculation was done using the following formula:

Sample proportional to size $nh = \frac{(Nh) \times n}{(N)}$

nh is the sample size of stratum h_1

Nh is the population size of stratum h_1

N is the total population size

n is the total sample size

$$nh = \frac{(Nh) \times n}{(N)}$$

For calculation of the actual number of participants per cadre, see Appendix 1.

3.8 Data Collection Instrument

The study instrument was a previously developed and validated questionnaire titled the “Care Coordination Survey” by Weinberg et al. (2011). Permission was obtained from the author Professor Dana Beth Weinberg to use the instrument during the study in Malawi. Permission was granted on 12th January 2017, and the questionnaire was adapted for data collection to suit the Malawi context (see Appendix 2 for permission from the author, Appendix 3 for the original questionnaire, and Appendix 4 for the adapted questionnaire used for data collection). The questionnaire had four sections with a total of 168 items.

The first section included multiple-choice questions on socio-demographic characteristics of participants with a total of seven questions. The questions included sex, the highest level of education, years of experience, cadre, the ward/department, how long one has worked in the ward/department. The second section was on communication about different aspects of the job among health workers with 54 questions. The third section was on perceptions about Organizational Structural Features that Enable Team Effectiveness amongst the different cadres with 10 questions each per cadre (a total of 10 cadres and 100 items). The fourth section measured respondents’ perceptions of the hospitals’ health workers’ relationships, with seven questions.

Table 1 illustrates the specific items that were used to measure each of the variables addressed in this study on Collaborative Capacity (Task Interdependence, Quality of Interaction and Collaborative Influence). Following the table, there is a detailed description of how each variable was measured. Table 1 also includes information

about the Cronbach alpha reliability of each scale in the Weinberg et al. (2011) study, and the Content Validity Index for the current study, based on ratings by four content experts (to be discussed in a subsequent section).

Table 1: Measures and Indices of Collaborative Capacity

Factor	Item	Cronbach α reported by Weinberg et al. (2011)	Content Validity Index by four content experts
Collaborative Capacity			
Task Interdependence	How often do you need information from (provider groups) to do your job?	0.84	100%
Quality of Interaction	<ol style="list-style-type: none"> 1. Do they give you information when you need it? 2. How often can you trust the information they give you? 3. When there is a problem, do they work with you to solve the problem? 4. Do they know very much about the work you do? 5. Do they respect the work you do? 6. Do they have the same goals as you do for taking care of patients? 7. How often do you agree with how they care for patients? 8. When you have important information to share, do they listen? 	0.84	100%
Collaborative Influence	How often do you have a say in what [provider groups] do with patients?	0.99	100%
Structural Features that Enable Team Effectiveness			
Staffing and Resources	<ol style="list-style-type: none"> 1. I work with staff who knows what they are doing. 2. There is enough staff to get the work done. 3. Someone with experience is 	0.81	100%

	<p>available to help me when I have questions.</p> <p>4. Adequate support services give me the time I need to do my job.</p> <p>5. There is enough time with patients to meet their needs.</p> <p>6. I can pace my work and do not have to rush.</p>		
Communication and Information Technology	<p>1. I have the time and opportunity to discuss patient care decisions with other staff.</p> <p>2. Information technology makes it easy for me to get information about patients.</p> <p>3. Information technology makes it easy to share information about patients</p> <p>4. I have enough time to communicate with other staff about patient care.</p> <p>5. I have enough time to learn what I need to know about patients.</p>	0.82	100%
Human Resource Management/ Job Rewards	<p>My job offers...</p> <p>1. Active staff development, continuing education programs, or training opportunities</p> <p>2. The chance to gain new skills and knowledge.</p> <p>3. Decent benefits</p> <p>4. Decent pay</p> <p>5. Opportunity to get a better job in this hospital</p> <p>6. Good job security.</p> <p>7. Rewards, such as bonus pay or gifts, for a job well done.</p> <p>8. Appreciation for a job well done.</p>	0.84	100%
Control over Work	<p>1. Hospital leaders seem to know what my typical day is like.</p> <p>2. Hospital leaders respond to staff concerns.</p> <p>3. I have the opportunity to serve on hospital committees.</p> <p>4. I have a lot of say about what</p>	0.75	100%

	<p>happens on my job.</p> <p>5. I take part in making decisions that affect my work.</p> <p>6. I have the freedom to decide how to do my job</p>		
Leadership that “Promotes Teamwork”	<p>My supervisor...</p> <ol style="list-style-type: none"> 1. Respects my ability to do my job 2. Ignores my input (reverse coded) 3. Trusts me to do my job well 4. Talks down to me (reverse coded) 5. Shows me recognition when I do good work 6. Questions everything, I do (reverse coded) 7. Supports progress in my career, such as further training 8. Disciplines staff who do not do their job well 9. Is good about following up and resolving problems. 10. Uses mistakes as learning opportunities, not criticism. 11. Supports my decisions about how to do my work 	0.90	100%
Patient-Centred Care	<ol style="list-style-type: none"> 1. I make decisions based on patients’ or their family needs 2. I am encouraged to talk to patients and families about their fears and concerns 3. I have the opportunity to relate to patients as people not as bodies or disease 	0.70	100%

All the questions were close-ended with a 5-point Likert scale that measured collaboration along a continuum from *all the time* to *never*, adopted from Weinberg et al. (2011). No changes were made to the original scale for this study. For each item, the scores were as follows: 4- all the time, 3 - most of the time, 2 - some of the time, 1

- rarely and 0 - never. Some items were reverse-scored. Below is the detailed information about how the score for each variable was calculated:

Measures of Collaborative Capacity

(a) **Task Interdependence** was measured by calculating a mean score for responses about each of the ten other health care worker cadres to one question: *“How often do you need information from (provider groups) to do your job?”* If respondents did not respond to this question for at least three other cadres, their data were not included for this variable.

(b) **Quality of Interactions** was measured by calculating a mean score across the following 8 items for all of the health care cadres with whom each respondent indicated that they worked with:

1. *Do they give you information when you need it?*
2. *How often can you trust the information they give you?*
3. *When there is a problem, do they work with you to solve the problem?*
4. *Do they know very much about the work you do?*
5. *Do they respect the work you do?*
6. *Do they have the same goals as you do for taking care of patients?*
7. *How often do you agree with how they care for patients?*
8. *When you have important information to share, do they listen?*

(c) **Collaborative Influence** was measured by calculating a mean score for responses about each of the ten other health care worker cadres to one question: *“How often do you have a say in what [provider groups] do with patients?”*. If respondents did not respond to this question for at least three other cadres, their data were not included for this variable.

Measures of Structural Features that Enable Team Effectiveness

(a) **Staffing and Resources** were measured by calculating a mean score

from responses to the following six items:

1. *I work with staff who knows what they are doing.*
2. *There is enough staff to get the work done.*
3. *Someone with experience is available to help me when I have questions.*
4. *Adequate support services give me the time I need to do my job.*
5. *There is enough time with patients to meet their needs*
6. *I can pace my work and do not have to rush.*

(b) **Communication and Information Technology** was measured by

calculating a mean score from responses to the following five items:

1. *I have the time and opportunity to discuss patient care decisions with other staff.*
2. *Information technology makes it easy for me to get information about patients.*
3. *Information technology makes it easy to share information about patients.*
4. *I have enough time to communicate with other staff about patient care.*
5. *I have enough time to learn what I need to know about patient*

(c) **Human Resource Management/Job Rewards** was measured by

calculating a mean score from responses to the following eight items:

My job offers...

1. *Active staff development, continuing education programs, or training opportunities*
2. *The chance to gain new skills and knowledge.*
3. *Decent benefits.*
4. *Decent pay.*
5. *Opportunity to get a better job in this hospital.*
6. *Good job security.*
7. *Rewards, such as bonus pay or gifts, for a job well done.*
8. *Appreciation for a job well done.*

(d) **Control over Work** was measured by calculating a mean score from responses to the following six items:

1. *Hospital leaders seem to know what my typical day is like.*
2. *Hospital leaders respond to staff concerns.*
3. *I have the opportunity to serve on hospital committees.*
4. *I have a lot of say about what happens at my job.*
5. *I take part in making decisions that affect my work.*
6. *I have the freedom to decide how to do my job*

Leadership that Promotes Teamwork was measured by calculating a mean score from responses across the following 11 items (three of which were reverse-coded):

My supervisor...

1. *Respects my ability to do my job.*
2. *Ignore my input (reverse coded).*
3. *Trusts me to do my job well.*
4. *Talks down to me (reverse coded).*
5. *Shows me recognition when I do good work.*

6. *Questions everything I do (reverse coded).*
7. *Supports progress in my career, such as further training.*
8. *Disciplines staff who do not do their job well.*
9. *Is good about following up and resolving problems.*
10. *Uses mistakes as learning opportunities, not criticism.*
11. *Supports my decisions about how to do my work*

Patient-Centered Care (PCC) was measured by calculating a mean score across responses to the following three items:

1. *I make decisions based on patients' or their family's needs.*
2. *I am encouraged to talk to patients and families about their fears and concerns.*
3. *I have the opportunity to relate to patients as people, not as bodies or diseases.*

Demographic Characteristics

Data were collected on the following demographic characteristics to be used as study covariates, each measured on a nominal scale:

1. *Cadre*
2. *Ward/unit of work*
3. *Years of experience - was measured on a ratio scale by calculating a mean score and standard deviation across the entire sample.*

3.9 Pretesting of the Data Collection Instrument for the Malawi Context

Pre-testing of the data collection instrument is a smaller version of the proposed study conducted before conducting the actual study to test methods to be used in the larger study, to examine the clarity, reliability and validity as well as refine the data collection instrument if needed (Leavy, 2017: 98). In this study, pretesting of the data collection instrument was done at a different hospital from the study site, the Kamuzu Central Hospital (KCH). See Appendix 5 for documentation of permission to use this hospital by the Hospital Director.

The data collection instrument was tested on participants who met the same inclusion characteristics of the larger study who worked at a hospital different from the study site. A total of 38 participants comprising doctors, nurses, physiotherapists, pharmacists, and laboratory technologists participated in the pretesting of the tool. The researcher and five research assistants, who were trained and were able to speak English and had prior experience in data collection, conducted the pretesting of the tool in June 2017. A repeat of the pretesting of the tool was done 2 weeks after the initial exercise. Pre-testing was performed to assess the face validity of the questionnaire and the clarity of the questions, as well as to streamline all data collection procedures. Pretesting was used to determine whether participants understood the tool and whether any changes were needed on the tool, how questions were answered by respondents and if they were addressing the objectives of the study. The pretesting also examined the clarity, consistency, and flow of the questions as well as the actual time it took to administer the questionnaire so that improvements could be made as appropriate. The facility, respondents, and the data obtained for purpose of pre-testing the instrument were excluded from the main study but were

only used to refine the instrument. The questionnaire took an average of 50 minutes to complete.

The demographic section of the questionnaire was amended as follows: cadres who were not found at the facility, race of participant, and qualifications of the parent of the respondent were removed. Other areas added in the same section of the questionnaire included the following: How long the participant had worked in the ward/ department. No changes were made to the actual items measuring the main study variables, or to the way they were scored.

3.10 Validity and Reliability of the Research Instrument

In quantitative research reliability and validity of the research tools are very important for reducing errors that might have been raised from measurement problems in the research study (Burns & Grove, 2010).

3.10.1 Validity

Validity is concerned with the integrity of the conclusions that are generated from research. Validity refers to the degree to which an instrument measures what it purports to measure as well as estimates how accurately the data in the study represents a given variable in the study (Polit & Beck, 2014). Burns and Grove (2010) indicate that the validity of the research instruments varies from one sample to another and one situation to another. This study adapted and used a Care Coordination survey which was developed and previously validated by Weinberg et al. (2011) in the USA. The accuracy and appropriateness of the care coordination instrument to the Malawi context was conducted by the researcher.

Internal validity is defined as the degree to which evidence supports a claim that one can conclude that the independent variables, not extraneous variables, produced changes in the dependant variable within the context of the study and not due to methodological error (Schmidt & Brown, 2017). A threat to internal validity can occur with the selection of study participants and instruments used. Efforts were made to obtain an unbiased sample.

In this study, the researcher used a random sampling technique which is an effective way of controlling extraneous variables, therefore, achieving validity. In addition, the researcher used inclusion criteria which brought elements of the same characteristics into the study. The researcher trained research assistants on the data collection process. The study was conducted at one site therefore it was easier for the researcher to control the environment. Procurement of adequate sample size also helped to reduce the threat to the internal validity of this study

External validity is defined as the degree to which the results can be generalized to and across other subjects, settings, situations and times (Schmidt & Brown, 2017). In this study, results could be generalized to health care workers at the hospital because random sampling was used, a strong technique that allows generalizability. Due to time and cost constraints of developing a new questionnaire, the researcher with permission from the author Weinberg et al. (2011) adapted the questionnaire with consideration of the Malawian context and used terms that were not difficult or ambiguous. The items used simple words with few syllables, and sentences with few words, short questions that asked for one variable (Streiner, Norman & Cairney, 2015).

Construct validity “examines the fit between conceptual and operational definitions of variables and determines whether the instrument measures the theoretical construct that it purports to measure” (Burns & Grove 2005:793). The structured questionnaire was reviewed by four experts and Professor Weinberg who verified that the construct validity was acceptable because the operational definitions and concepts used in the study were relevant to the conceptual framework (see Figure 1).

Content related validity examined the extent to which any measurement included major elements that are relevant to the construct to be examined (Polit & Beck, 2014). The criterion-related validity mostly indicates some statistical relationship that exists between scores of a test and one or more criteria. Construct related validity examines the degree to which an intervention can be a good representation of any construct theorized as having potential cause to beneficial outcomes (Burns & Grove, 2010).

In this study, content validity was done to determine the degree to which content experts believed that the research instrument would collect data to reflect the study variables and constructs. Content validity index is a method of measuring validity for multi-item scales based on expert ratings of relevancy in the construct domain (Polit & Beck, 2014). The content validity of the questionnaire was determined by sending the questionnaire to experts in the field.

The care coordination survey tool was reviewed by four content experts who were purposively identified and included two educators and two clinical specialists. The four experts were required to give their professional opinion on how well the items represented measures and indices of Collaborative Capacity (Burns & Grove, 2010; Polit & Beck, 2014). These experts rated each item on the survey on a four-point

ordinal rating scale of relevance as follows: not relevant =1, somewhat relevant =2, quite relevant =3 and highly relevant =4.

Data from the four experts were quantified through a Microsoft Excel spreadsheet. A Content Validity Index (CVI) was then calculated for each scale by calculating the percentage of experts who rated the scale items as a “3” or “4” (“quite relevant” or “highly relevant”). The CVI for each scale is reported in Table 1, and in Appendix 6.

3.10.2 Reliability

Reliability denotes the consistency of measures obtained in the use of an instrument and indicates the extent of the random error measurement method and the confidence placed on the research results (Burns & Grove, 2010). Three factors mostly considered in reliability include: stability, internal reliability, and inter-observer consistency. In this study, internal reliability was evaluated using Cronbach’s Alpha which measures the internal consistency and establishes if items within a scale measure the same construct i.e. how closely related a set of test items are as a group (Polit & Beck, 2014). The authors observe that the Cronbach Alpha value of 0.7 is the threshold for determining reliability. (Kline, 2000) note a scale of $0.7 \leq \alpha < 0.9$ is good meaning the items in the test are correlated and a scale of $0.6 \leq \alpha < 0.7$ is acceptable. The care coordination survey tool used was an adapted research instrument from Weinberg et al. (2011). Cronbach’s alpha reliability coefficients for the subscales ranged from 0.70 to 0.99. The Cronbach alpha reliability was also calculated for the present study and will be reported in Chapter 4. Cronbach’s alpha reliability coefficients for the subscales ranged from 0.70 to 0.99. Table 1 shows that Collaborative Influence had the highest reliability ($\alpha= 0.99$), followed by Leadership

that promotes teamwork ($\alpha=0.90$), Task Interdependence, Quality of Interaction, Human Resource Management/ Job Rewards ($\alpha=0.84$), Communication and Information Technology (0.82), Staffing and Resources ($\alpha=0.81$), Control over Work ($\alpha=0.75$) and Patient-Centred Care ($\alpha=0.70$). This illustrates that all the nine variables were reliable as their Cronbach's alpha reliability coefficient for the subscales ranged values exceeded the prescribed threshold of 0.7 as contended by Weinberg et al. (2011). As such, all the 168 items in the questionnaire jointly lie within the recommended range for reliability.

3.11 Recruitment Process

An appointment was made with the Hospital Director, informing him about the commencement of the data collection exercise and the need to recruit participants to the study. The Hospital Director was also briefed on how the information to be collected would be protected and used during the study. A copy of the letter of introduction of the research and an invitation to participants to the study was given to the Hospital Director. This was followed by a meeting for the unit matrons and heads of the department. The meeting was conducted to discuss with them how participants in their units and departments would be identified and recruited to participate in the research.

In addition, information about the study was posted on notice boards of the hospital describing the presence of the study at the facility. This was done to raise awareness of the study amongst staff at the facility. The researcher then approached ward managers to seek their help in the identification of eligible participants for the study. Once the participants were sampled for the study on the ward /department roster, a

booking of appointments was done using a face-to-face contact as well as on the cell phone to confirm the date, time, and venue of the interview. Recruitment continued until the desired sample of 384 was achieved. All respondents who were invited agreed to participate in the study.

3.12 Data Collection Process

Data collection is an important element in the process of production of useful data on targeted variables of interest for analysis to address a research problem (Burns & Grove, 2010). In this study, data collection started soon after ethical approval of the protocol which was provided in April 2017 by the College of Medicine Research and Ethics Committee (COMREC). The formal procedure was subsequently followed to guide the collection of data. The respondents were contacted individually and were requested to indicate their informed consent to participate in the study. Explanations were given about the research study which included the background. Before data collection, five health workers (three registered nurse midwives, one clinician, and one technician) were chosen as research assistants to ensure data collection was completed in the specified time. The criteria used to choose the research assistants were trained health workers registered with the relevant regulatory bodies, with experience in research data collection, and interested and accepted to assist with data collection.

As part of the preparation, 2-day training was conducted by the researcher to orient the research assistants about the design and objectives of the research study, sample size, recruitment criteria, recruitment process, data-collection tool, the process of data collection, protection of participants' privacy, and confidentiality of data. The training

ensured that there was understanding of the protocol and the instrument by research assistants for uniformity, completeness, and quality data.

3.13 Data Collection Procedure

Data collection is the systematic gathering of information from selected units of a study to gather empirical evidence relevant to the research purpose (Burns & Grove, 2010). It is an essential element in the production of useful data for analysis. The target of the data collection from the sample is that the results will be able to be generalized to that population. Data were collected using a self-administered structured questionnaire with the help of the research assistants to ensure that the process was systematic and organized. The use of research assistants was helpful because they had some prior knowledge and experience in data collection. The questionnaire used was in hard copy form, written in English because participants were trained health workers who were able to read, and communicate in English.

Booking of appointments with participants was done using a telephone to confirm the date, actual time, and venue of the interview. Allowing participants to select times for data collection ensured the empowerment of participants in the study. Administration of the questionnaire was arranged at the convenience of the respondent in terms of place, date, and time. Questionnaires were delivered by the researcher and research assistants to all the respondents of the study. On the agreed day and time of data collection, the researcher or research assistant met the participant in a private room free from interruption to promote privacy and confidentiality. Each respondent was given a participant information sheet. The researcher and research assistants verbally explained the study and reviewed the information on informed consent with the

participant. Each participant was allowed to read through the information sheet and ask questions regarding the protocol before deciding to take part in the study.

Once the respondent had read and understood the procedure, the researcher and research assistants obtained informed consent through a signature. The researcher and assistants handed the questionnaire to the participant for self-administration, and they waited for the participant to complete it. This helped to clarify any areas in which the participants were not clear. The process lasted for 50 minutes on average. The presence of the researcher and research assistants enhanced the completeness and correctness of the data. This procedure was repeated on several days of appointments until the required sample size was reached.

Participation in the survey was voluntary, and all the participants completed an anonymous self-administered questionnaire. The researcher exercised care and control to ensure all questionnaires issued to the respondents were received and to achieve this, a register of questionnaires was maintained, which provided a clear account of the questionnaires that were issued, and those that were received back. No incentives were offered to respondents to complete the questionnaire.

3.14 Data Analysis

Data analysis involved the process of systematic organization and synthesis of the data applying statistical techniques to describe, condense, and evaluate data to support

decision-making (Creswell & Creswell, 2017). Before processing the responses, the collected data were prepared for statistical analysis. Validation and checking were done after questionnaires were received from the respondents. The responses on the questionnaire were checked for completeness, legibility, clarity, consistency, and appropriateness which is an important role in processing data into useful information.

In this study, all data from the questionnaires were entered into the computer and analysed using a Statistical Package for Social Science (SPSS) program for Windows, version 21.0 (IBM, Armonk, NY, 2012). Statistical packages are used for data analysis so that the findings can be generalised to individuals other than those who participated in the study, provided that a random sampling method had been used. Descriptive and inferential statistical analysis techniques for summarizing data were used to organize that data into formats that were easy to understand interpret, and draw conclusions as recommended by Mash and Ogunbanjo (2014). A Cronbach's alpha test was done to check for internal consistency of the data. The study took a similar approach to data analysis by Weinberg et al. (2011) were based on the specific objectives of this study, data were analysed using the Analysis of Variance (ANOVA) model to establish associations between each of the dependent variables and linear models to establish the strength of dependent variables from the values of independent variables and to draw comparisons among units and cadres as well as examined associations. The F-ratio generated in the ANOVA table was utilized to measure the probability of chance departure from a straight line. The p-value of the F-ratio generated should be less than 0.05 for the equation to be statistically significant at a 95% confidence level. In case the p-value is greater than 0.05, the model is not statistically significant. For the individual variables, p values of the coefficients

generated in the regression analysis would have to be less than 0.05 for their relationship to be concluded significant at a 95% confidence level

The results were presented in form of figures, charts, and tables. Frequencies of distribution were also used to present summarised data for all the variables namely: gender, roles, level of education, years of practice, and wards. This was done to provide an overview of the participants' perceptions of Collaborative Capacity.

The first objective related to perceptions about Collaborative Capacity (Task Interdependence, Quality of Interactions, and Collaborative Influence) among health care workers was addressed using descriptive statistics (i.e., means and standard deviations) for each of the three variables of interest (i.e., Task Interdependence, Quality of Interactions, and Collaborative Influence) by the occupation/cadre of the health care worker. In addition, a non-parametric test which is a rank-based Kruskal-Wallis H test was performed to determine whether there were statistically significant differences for each of the three variables of interest across all the cadres of the health care workers.

Similarly, the second objective which describes perceptions on Structural Features that Enable Team Effectiveness (i.e., Staffing and Resources, Communication and Information Technology, Human Resource Management/Job Rewards, and Control over Work) was addressed using descriptive statistics (i.e., means and standard deviation) for each of the component of Team Effectiveness (i.e., Staffing and Resources, Communication and Information Technology, Human Resource Management/Job Rewards, and Control over Work) among health care workers. In

addition, Kruskal-Wallis tests were performed to establish whether there were statistically significant differences for each element of team effectiveness across all occupation/cadres of health care workers.

The third objective which described perceptions about Leadership and Patient-Centered Care among health care workers was also addressed using descriptive statistics (i.e., means and standard deviation) for each component of the two variables of interest (i.e., Leadership, and Patient-Centred Care) by the occupation/cadre of health care workers. Furthermore, Kruskal-Wallis tests were carried out to determine if there were statistically significant differences for each of the two variables of interest across all occupation/cadres of health care workers.

The final objective which described the relationship between Collaborative Capacity with the independent variables of Structural Features that Enable Team Effectiveness, Leadership, and Patient-Centred Care as perceived by health care workers was analysed using the Analysis of Variance (ANOVA) model to establish associations between each of the three dependent variables of interest (i.e., Task Interdependence, Quality of Interactions, and Collaborative Influence) and a set of covariates i.e., ward/unit, cadre, and years of experience. In addition, descriptive statistics (i.e., means and standard deviations) for the most significant covariates across the three ANOVA models were calculated and presented. Furthermore, Logistic models were run to establish relationships between each of the three dependent variables of interest (i.e., Task Interdependence, Quality of Interactions, and Collaborative Influence) and a set of covariates i.e., Staffing and Resources, Communication and Information

Technology, Human Resource Management and Job Rewards, Control over Work, Leadership, and Patient-Centred Care.

3.15 Ethical Consideration

The quality of informed consent in research is determined by the extent to which participants understand the process of informed consent as well as making decisions to participate in the study (Tam et al., 2015). In this study, some of the respondents' rights that were protected included: right to confidentiality, privacy, anonymity, and protection from harm (Burns & Grove, 2010; Polit & Beck, 2014; Tam et al., 2015). In this study, before data collection, to ensure that the study was feasible and maintained scientific integrity, a research proposal was submitted to the University of Malawi College of Medicine Research and Ethics Committee (COMREC) through Kamuzu College of Nursing for ethical approval. The committee granted ethical clearance on 13th April 2017, certificate number P.02/17/2123 see Appendix 7. Secondly, institutional authorization to pre-test the questionnaire at Kamuzu Central Hospital and to conduct the study at the hospital was obtained from the Hospital Directors through a written request respectively. See Appendix 8 and Appendix 9.

A presentation was made to the hospital management about the research and about how the information to be collected would be used and protected. The researcher clarified her position as a student further stated that this study was academic research needed as a requirement for the partial fulfilment of the PhD program in Interprofessional Education and Health Care Leadership. During the study, the rights of participants were observed and respected by obtaining written consent from the health workers before they completed the surveys (see Appendix 10). An information

sheet was read to respondents to ensure that everyone fully understood the purpose of the study, data collection procedures, and risks involved in the research. Participants were informed that the study was for academic purposes. They were further informed that their participation was entirely free and that an individual had the freedom to either accept or decline to participate in the study. In addition, respondents were informed that they could also withdraw from participating in the study any time without giving reasons and would not attract any penalty. A consent form was signed by respondents as evidence that they understood and were willing to participate in the study. The consent form contained the researchers' contact information, identified that this study was being conducted to complete the dissertation requirement for the University of Malawi. The form further described how the respondents were selected and included the purpose of the study.

To maintain the confidentiality of participant information, code numbers instead of names were assigned and these codes were used throughout the study. Respondents were guaranteed that the information they provided would be kept confidential throughout the study period. During the analysis of data, anonymity was maintained by collecting limited demographic information and using code numbers instead of names on all data collection instruments.

All entered data from the questionnaires were stored in an external password-protected hard drive and locked away in a filing cabinet accessible only by the researcher and supervisors. All completed questionnaires and other data management software tools such as hard drives and flash disks were stored in a lockable filing cabinet in a secure storeroom accessed by the researcher and supervisor to maintain

confidentiality and security of the data and the equipment. All data used for the study will be destroyed 3 years following the completion of the study

3.16 Dissemination of the Results

The findings of the study will be presented to the managers and staff at the study site, the referral hospital in Blantyre city, Malawi, and to the student's academic program, the University of Malawi, Kamuzu College of Nursing (KCN). The findings will also be presented in different seminars, workshops, and professional meetings. In addition, a manuscript describing the results of the study will be submitted for publication in a professional peer-reviewed journal. Hard copies of the dissertation will be made available in the library of KCN and the hospital for graduate students as well as other researchers and readers.

3.17 Conclusion

The chapter has described the research method and materials used in this study including the study design that guided the conduct of the study. The chapter has also described the setting; population; sampling; data collection instrument; pre-testing of data collection instrument; validity and reliability; data collection procedure, data analysis and data management. The chapter further described the process of obtaining relevant permissions from management, and ethical considerations. The next chapter presents the results of the study.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the study findings of the quantitative descriptive study conducted on Collaborative Capacity whose broad objective was to assess the relationship between Collaborative Capacity (a measure of team structure and interdisciplinary collaboration) and Structural Features that Enable Team Effectiveness, Leadership, and Patient-Centered Care among health care workers in Blantyre, Malawi. The first section of this chapter presents respondents' demographic characteristics collected which included identification of specific healthcare discipline, gender, and years worked in that discipline. Subsequent sections present the findings related to each of the study objectives.

4.2 Respondents' Demographic Characteristics

This section presents information regarding the socio-demographic characteristics of respondents obtained from the questionnaire (see Table 2). A total of 384 health workers participated in the study with an overall response rate of 100%. Many of the participants in the study were females (64.58%; n=248). Most of the respondents had a diploma as their highest level of education (42.19%; n=162) followed by a bachelor's degree (39.32%; n=151). Overall, regarding the cadres, nurse/midwife technicians were in the majority (40.36%; n=155) of the sample. In terms of years of experience, more than half of the respondents had greater than 5 years of experience

in their roles (57.81%; n=222). Respondents were working in clinics, paediatric, surgical, medical, theatre/ICU, obstetrics and gynaecology, technical support departments, or the Accident Emergency and Trauma Centre (AETC). It is clear from the socio-demographic characteristics results in Table 2 that most respondents were working in the paediatric and medical units (25.52%; n=98) and (25.26%; n=97) respectively.

Table 2: Socio-demographic Characteristics of Respondents n=384

Variable	Frequency	Percentage
Sex		
Male	136	35.42%
Female	248	64.58%
Highest level of education		
Certificate	52	13.54%
Diploma	162	42.19%
Bachelor's degree	151	39.32%
Master's degree	18	4.69%
Doctorate degree	1	0.26%
Years of experience		
< 1 year	9	2.34%
1-2 years	94	24.48%
3-4 years	59	15.36%
>5 years	222	57.81%
Roles/Cadre		
Specialists/Consultants	6	1.56%
Registrars	22	5.73%
Medical Officers	18	4.69%
Clinical Officers	44	11.46%
Registered Nurse/Midwives	96	25.00%
Nurse/Midwife Technicians	155	40.36%
Physiotherapists	8	2.08%
Pharmacists	10	2.60%
Laboratory Technologists	18	4.69%
Radiology Technologists	7	1.82%
Ward/Department		
AETC	9	2.34%
Clinics	26	6.77%
Medical	97	25.26%
Obstetrics and Gynaecology	42	10.68%
Paediatric	98	25.52%
Surgical	35	9.11%
Technical Support	43	11.20%
Theatre/ICU	35	9.11%

4.3 Findings Related to Study Objectives

4.3.1 Objective 1: Describe perceptions about Collaborative Capacity (Task Interdependence, Quality of Interactions and Collaborative Influence) among Health Care Workers in Blantyre, Malawi

Table 3 shows the means of the three measures of Collaborative Capacity (Task Interdependence, Quality of Interaction, and Collaborative Influence) by role/cadre of respondents. The results show that the overall mean score for Task Interdependence was 2.593. Task Interdependence was highest among Physiotherapists (2.775), Laboratory Technologists (2.756), Registrars (2.682), Nurse/Midwife Technicians (2.635), Clinical Officers (2.599), Registered Nurse/Midwives (2.529) and Medical Officers (2.503). However, the means of Task Interdependence was reportedly lowest among Radiology Technologists (2.240).

The results in Table 3 further suggest that the Quality of Interaction was highest among Registrars (2.976), Clinical Officers (2.958) Specialists (2.896), Medical Officers (2.879), Nurse Midwife Technicians (2.816) and Registered Nurse-Midwives (2.746). On the other hand, the Quality of Interactions was lowest among Radiology Technologists (2.344) and Pharmacists (2.222).

Finally, on Collaborative Influence, the mean scores in Table 3 indicate that Specialists (2.890), Registered Nurse-Midwives (2.699), Clinical Officers (2.636), Registrars (2.631), Medical Officers (2.618), Nurse Midwife Technicians (2.575), and Physiotherapists (2.502) had reported higher means over care decisions, whereas Pharmacists (1.964) and Radiology Technologists (1.925) reported lower mean levels of Collaborative Influence. Overall, Pharmacists and Radiology Technologists

reported the lowest mean scores across all three measures of Collaborative Capacity (Task Interdependence, Quality of Interaction and Collaborative Influence).

Table 3: Means of Task Interdependence, Quality of Interactions, and Collaborative Influence by Role/Cadre N=384

Role/Cadre	Task Interdependence	Quality of Interactions	Collaborative Influence
Specialists/Consultants			
Mean	2.472	2.896	2.890
Standard deviation	0.434	0.546	0.709
Registrars			
Mean	2.682	2.976	2.631
Standard deviation	0.637	0.542	0.738
Medical Officers			
Mean	2.503	2.879	2.618
Standard deviation	0.464	0.282	0.331
Clinical Officers			
Mean	2.599	2.958	2.636
Standard deviation	0.586	0.460	0.560
Registered Nurses/Midwives			
Mean	2.529	2.746	2.699
Standard deviation	0.689	0.533	0.685
Nurse/Midwife Technicians			
Mean	2.635	2.816	2.575
Standard deviation	0.821	0.569	0.809
Physiotherapists			
Mean	2.775	2.680	2.502
Standard deviation	0.635	0.583	0.675
Pharmacists			
Mean	2.401	2.222	1.964
Standard deviation	0.778	0.328	0.877
Laboratory Technologists			
Mean	2.756	2.600	2.084
Standard deviation	1.068	0.587	0.980
Radiology Technologists			
Mean	2.240	2.344	1.925
Standard deviation	0.217	0.382	0.363
Overall sample			
Mean	2.593	2.791	2.571
Standard deviation	0.736	0.543	0.7503

4.3.2 Objective 1a: Compare Differences in Perceptions about Collaborative Capacity among Health Care Workers in Blantyre, Malawi Based on Role/Cadre of Health Care Worker

Non-parametric Kruskal-Wallis tests were performed to establish whether Collaborative Capacity differed significantly between the respondents based on their roles/cadres. The results presented in Table 4 suggest that all three components of Collaborative Capacity varied significantly between cadres: Task Interdependence ($\chi^2=17.588$, $p=0.0457$); Quality of Interaction ($\chi^2=29.280$, $p=0.0006$); and Collaborative Influence ($\chi^2=21.482$, $p=0.0107$).

Table 4: Results of Kruskal-Wallis equality of populations rank test for Collaborative Capacity by Role/Cadre n=384

Role/Cadre	Task Interdependence		Quality of Interactions		Collaborative Influence	
	n	Rank Sum	n	Rank Sum	n	Rank Sum
Specialists/Consultants	6	1028.00	6	1231.00	6	1419.50
Registrars	22	4536.00	22	5058.50	22	4555.50
Medical Officers	18	3151.50	18	3793.00	18	3530.50
Clinical Officers	44	8503.50	44	10096.50	44	8679.00
Registered Nurse Midwives	96	17466.00	96	17632.50	96	20013.50
Nurse Midwife Technicians	155	30995.00	154	30289.50	155	30236.00
Physiotherapists	8	1754.50	8	1377.00	8	1449.00
Pharmacists	10	1590.50	10	724.50	10	1180.50
Laboratory Technologists	18	3998.00	18	2683.50	18	2300.50
Radiology Technologists	7	897.00	7	650.00	7	556.00
Degrees of freedom		9		9		9
Chi-square		17.588		29.280		21.482
Probability		0.0457		0.0006		0.0107

To further examine differences in the three measures of Collaborative Capacity by cadre, the individual cadres were combined into three groups: Medical Staff (including Specialists/Consultants, Registrars, Medical Officers, and Clinical Officer), Nursing/Midwifery Staff (including Registered Nurses/Midwives, and Nurse/Midwife Technicians), and Technical Support Staff (including Pharmacists, Physiotherapists, Laboratory Technologists, a Radiology Technologists). Table 5 shows the means of the three measures of Collaborative Capacity between these respondent groups. The overall mean scores for Task Interdependence were ranged between 2.594 and 2.591. The mean score showed minimal differences in their values as follows: Nursing/Midwifery Staff (2.594); Technical Support Staff (2.593); and Medical Staff (2.591).

The results in Table 5 indicate that the mean scores on Quality of Interaction ranged between 2.943 and 2.485. The score was highest among Medical Staff (2,943), slightly lower among Nursing/Midwifery Staff (2.789) and lowest among Technical Support Staff (2.485). Finally, on Collaborative Influence, the mean scores in Table 5 indicate that Medical Staff (2.648), Nursing/Midwifery Staff (2.622), had higher means for Collaborative Influence, compared to Technical Support Staff (2.108).

Overall, Medical Staff reported higher means on Quality of Interaction and Collaborative Influence and Support Staff reported the lowest mean scores on Quality of Interaction, Task Interdependence, and Collaborative Influence respectively. These results were consistent with those from individual cadres of health care workers in Table 3.

Table 5: Means of Task Interdependence, Quality of Interactions, and Collaborative Influence by Specialisation n=384

Specialisation	Task Interdependence	Quality of Interactions	Collaborative Influence
Medical Staff			
Mean	2.591	2.943	2.648
Standard deviation	0.564	0.453	0.577
Nursing/Midwifery Staff			
Mean	2.594	2.789	2.622
Standard deviation	0.773	0.555	0.765
Technical Support Staff			
Mean	2.593	2.485	2.108
Standard deviation	0.844	0.522	0.830
Overall sample			
Mean	2.593	2.791	2.571
Standard deviation	0.736	0.543	0.750

Kruskal-Wallis tests were conducted to establish whether Collaborative Capacity differed significantly between the three groups of respondents based on the collapsed categories. The results presented in Table 6 suggest that all three components of Collaborative Capacity varied significantly between cadres: Task Interdependence ($\chi^2= 9.903$, $p=0.0201$); Quality of Interaction ($\chi^2=22.722$, $p=0.0001$); and Collaborative Influence ($\chi^2=16.600$, $p=0.0002$). Post hoc Bonferroni analysis of Task Interdependence showed a significant difference between Medical Staff and Nursing/Midwifery Staff including Technical Support Staff ($p=0.000$ and $p=0.006$ respectively). Collaborative Influence showed a significant difference between Medical Staff and Technical Support Staff ($p=0.000$) again between Nurses/Midwifery Staff and Technical Support Staff ($p=0.0001$). Lastly, for Quality of Interaction, there was a significant difference between Medical staff and Technical Support Staff ($p=0.000$) and between Nursing/Midwifery Staff and Technical Support Staff ($p=0.002$). These results (significance level) were similar to the ones calculated

for the individual cadres of health care workers on the three components of Collaborative Capacity in Table 4.

Table 6: Results of Kruskal-Wallis equality of populations rank test for Collaborative Capacity by Specialisation n=384

Specialisation	Task Interdependence		Quality of Interactions		Collaborative Influence	
	n	Rank Sum	n	Rank Sum	n	Rank Sum
Medical Staff	90	17219.00	90	20179.00	90	18184.50
Nursing/Midwifery Staff	251	48461.00	250	47922.00	251	50249.50
Technical Support Staff	43	8240.00	43	5435.00	43	5486.00
Degrees of freedom		2		2		2
Chi-square		9.903		22.722		16.600
Probability		0.0201		0.0001		0.0002

4.3.3 Objective 2: Describe Perceptions of Structural Factors that Enable Team Effectiveness (Staffing and Resources, Communication and Information Technology, Human Resource Management/Job Rewards, and Control over Work) among Health Care Workers in Blantyre, Malawi

Table 7 shows the means for the four components of Team Effectiveness (i.e., Staffing and Resources, Control over Work, Human Resource Management, and Communication and Information Technology) by role/cadre. The results show that the mean scores for Staffing and Resources varied between 2.772 and 1.829. The mean scores were highest among Specialists (2.772), Clinical Officers (2.762), Laboratory Technologists (2.628), Medical Officers (2.537), Nurse/Midwife Technicians (2.359), and Registrars (2.356). However, Staffing and Resources was reported lowest among Physiotherapists (1.829) and Radiology Technologists (1.857).

The results in Table 7 further suggest that the mean score values for Control over Work ranged between 2.396 and 1.120. The mean scores were highest among Specialists (3.056), Medical Officers (2.257), Clinical Officers (2.257), and Registrars (2.144). However, Control over Work was reported lowest among Pharmacists (1.857) and Physiotherapists (1.896).

The mean score values for Human Resource Management in Table 7 ranged between 2.396 and 1.120. The mean scores were highest among Specialists (2.396), Medical Officers (2.146), Clinical Officers (1.888), Registrars (1.784), and Laboratory Technologists (1.771). On the other hand, Human Resource Management was lowest among Pharmacists (1.461) and Radiology Technologists (1.120).

Finally, Communication and Information Technology mean scores values per cadre ranged between 3.233 and 1.755. The mean scores were highest among Specialists (3.233), Clinical Officers (2.959), Medical Officers (2.800), Nurse Midwife Technicians (2.679), Registrars (2.664), whereas Physiotherapists (1.925) and Pharmacists (1.755) reported lower scores. The results reported in Table 7 indicated that Specialists/Consultants reported the highest mean scores across all four measures of Team Effectiveness, whereas Physiotherapists, Pharmacists, and Radiology Technologists reported the lowest mean scores across the variables.

Table 7: Means of Four Structural Factors that Enable Team Effectiveness by Role/Cadre n=384

Role/Cadre	Staffing and Resources	Control over Work	Human Resource Management	Communication and Information Technology
Specialists/Consultants				
Mean	2.772	3.056	2.396	3.233
Standard deviation	0.841	0.765	1.041	0.794
Registrars				
Mean	2.356	2.144	1.784	2.664
Standard deviation	0.679	0.891	0.516	0.933
Medical Officers				
Mean	2.537	2.257	2.146	2.800
Standard deviation	0.630	0.968	0.838	0.931
Clinical Officers				
Mean	2.762	2.255	1.888	2.959
Standard deviation	0.693	0.653	0.863	0.560
Registered Nurses/Midwives				
Mean	2.141	1.956	1.433	2.519
Standard deviation	0.661	0.752	0.758	0.865
Nurse/Midwife Technicians				
Mean	2.359	1.921	1.588	2.679
Standard deviation	0.676	0.733	0.944	0.798
Physiotherapists				
Mean	1.829	1.896	1.156	1.925
Standard deviation	0.684	0.821	0.834	0.968
Pharmacists				
Mean	2.067	1.817	1.461	1.755
Standard deviation	0.425	0.524	0.831	0.572
Laboratory Technologists				
Mean	2.628	1.981	1.771	2.611
Standard deviation	0.617	0.779	0.750	0.885
Radiology Technologists				
Mean	1.857	1.929	1.120	2.143
Standard deviation	0.504	0.686	0.497	0.443
Overall sample				
Mean	2.350	2.014	1.621	2.632
Standard deviation	0.695	0.764	0.868	0.832

4.3.4 Objective 2a: Compare Differences in Perceptions about Structural Features that Enable Team Effectiveness among Health workers in Blantyre, Malawi based on the Cadre of Health Care Workers

Kruskal–Wallis tests were conducted to establish whether Team Effectiveness differed significantly based on respondents' roles/cadres, and the results are presented in Table 8. The results suggest that all four components of Team Effectiveness varied significantly between respondents' roles/cadre: Staffing and Resources ($\chi^2 = 43.140$, $p=0.0001$); Control over Work ($\chi^2=19.741$, $p=0.0196$); Human Resource Management ($\chi^2= 27.635$, $p=0.0011$); and Communication and Information Technology ($\chi^2 = 33.557$, $p=0.0001$).

Table 8: Results of Kruskal-Wallis equality of populations rank test for key components of Team Effectiveness n=384

Role/Cadre	Staffing and Resources		Control over Work		Human Resource Management		Communication and Information Technology	
	N	Rank Sum	N	Rank Sum	N	Rank Sum	N	Rank Sum
Specialists/Consultants	6	1502.00	6	1918.50	6	1644.50	6	1586.00
Registrars	22	4309.00	22	4656.00	22	5010.00	22	4369.50
Medical Officers	18	4199.50	18	4145.00	18	4685.50	18	3870.00
Clinical Officers	44	11357.50	44	10109.00	44	10114.00	44	10584.00
Registered Nurses/ Midwives	96	14974.50	96	17798.00	96	16257.50	96	17014.50
Nurse/ Midwife Technicians	155	30349.50	155	27694.50	155	28698.00	155	30526.50
Physiotherapists	8	907.00	8	1456.00	8	1090.00	8	899.00
Pharmacists	10	1374.00	10	1574.00	10	1745.00	10	723.00
Laboratory Technologists	18	4189.50	18	3273.50	18	3811.50	18	3567.50
Radiology Technologists	7	757.50	7	1295.50	7	864.00	7	780.00
Degrees of freedom	9		9		9		9	
Chi-square	43.140		19.741		27.635		33.557	
Probability	0.0001		0.0196		0.0011		0.0001	

To further examine differences in the three measures of Team Effectiveness by cadre, the individual cadres were combined into three groups: Medical Staff (including Specialists/Consultants, Registrars, Medical Officers, and Clinical Officer), Nursing/Midwifery Staff (including Registered Nurses/Midwives, and Nurse/Midwife Technicians), and Technical Support Staff (including Pharmacists, Physiotherapists, Laboratory Technologists, and Radiology Technologists). Table 9 shows the means for the four components of Team Effectiveness (i.e., Staffing and Resources, Control over Work, Human Resource Management, and Communication and Information Technology) by these three collapsed respondent groups. The results show that the mean scores for Staffing and Resources varied between 2.619 and 2.223. The mean score was highest among Medical Staff (2.619), whereas Staffing and Resources were the lowest among Nursing/Midwifery Staff (2.276) and Technical Support Staff (2.223).

The results in Table 9 indicate that the mean score values for Control over Work ranged between 2.281 and 1.919. The mean scores were highest for Medical Staff (2.281). Control over Work was lowest for Technical Support Staff (1.919). The mean score values for Human Resource Management in Table 8 ranged between 1.948 and 1.478. The mean score was highest among Medical Staff (1.948) followed by Nursing/Midwifery Staff (1.529), and lowest for Technical Support Staff (1.478).

Finally, Communication and Information Technology mean scores values per cadre ranged between 2.873 and 2.208. The mean score was highest for Medical Staff (2.873) and lower for Nursing/Midwifery Staff (2.618) and Technical Support Staff (2.208). The results reported in Table 8 indicate that Medical Staff reported the

highest mean scores, and Technical Support Staff reported the lowest mean scores across all four measures of Team Effectiveness.

Table 9: Means of four Structural Features that Enable Team Effectiveness by Specialisation n=384

Specialisation	Staffing and Resources	Control over Work	Human Resource Management	Communication and Information Technology
Medical Staff				
Mean	2.619	2.281	1.948	2.873
Standard deviation	0.698	0.807	0.805	0.763
Nursing/Midwifery Staff				
Mean	2.276	1.935	1.529	2.618
Standard deviation	0.677	0.739	0.879	0.826
Technical Support Staff				
Mean	2.223	1.919	1.478	2.208
Standard deviation	0.659	0.699	0.778	0.840
Overall sample				
Mean	2.350	2.014	1.621	2.632
Standard deviation	0.695	0.764	0.868	0.832

Kruskal–Wallis tests were conducted to establish whether Team Effectiveness differed significantly between groups of respondents based on the three groups. The results presented in Table 10 showed that all four components of Team Effectiveness varied significantly between respondent groups based on these groups: Staffing and Resources ($\chi^2 = 19.818$, $p= 0.0001$); Control over Work ($\chi^2=14.589$, $p= 0.0007$); Human Resource Management ($\chi^2= 20.176$, $p=0.0001$); and Communication and Information Technology ($\chi^2 = 18.973$, $p=0.0001$). Since the Kruskal–Wallis test was significant, a post hoc analysis was performed to determine how, and which groups differed from other groups. Post hoc Bonferroni analysis of Control over Work showed significant differences between Medical Staff, Nursing/Midwifery Staff and Technical Support Staff ($p=0.001$ and $p=0.029$ respectively). While Human Resource

Management was significantly different between Medical Staff, Nursing/Midwifery Staff and Technical Support Staff ($P=0.000$ and $p=0.009$ respectively). For Communication and Information Technology, a significant difference between Medical Staff and Nursing/Midwifery Staff and Technical Support Staff ($p=0.033$ and $p=0.000$). Similarly, there were significant differences between Nursing/Midwifery Staff and Technical Support Staff ($p=0.007$). The significant difference ($p<0.05$) was consistent with the values in Table 8.

Table 10: Results of Kruskal-Wallis equality of populations rank test for key components of Team Effectiveness by Specialisation n=384

Specialisation	Staffing and Resources		Control over Work		Human Resource Management		Communication and Information Technology	
	N	Rank Sum	n	Rank Sum	n	Rank Sum	n	Rank Sum
Medical Staff	90	21368.00	90	20828.50	90	21454.00	90	20409.50
Nursing/Midwifery Staff	251	45324.00	251	45492.50	251	44955.50	251	47541.00
Technical Support Staff	43	7228.00	43	7599.00	43	7510.50	43	5969.50
Degrees of freedom	2		2		2		2	
Chi-square	19.818		14.589		20.176		18.973	
Probability	0.0001		0.0007		0.0001		0.0001	

4.3.5 Objective 3: Describe Perceptions about Leadership and Patient-Centered

Care among Health Care Workers in Blantyre, Malawi

Table 10 shows mean scores of Leadership and Patient-Centred Care by roles/cadre of the health care workers. The results indicate that the overall sample mean was 2.722 for Leadership and was highest among Specialists/Consultants (3.394), Registrars (2.967), Medical Officers (2.919), Clinical Officers (2.902), Laboratory Technologists (2.808), and Nurse/ Midwife Technicians (2.722). However, Leadership was reportedly the lowest among Physiotherapists (2.261).

Furthermore, the results in Table 11 show that Patient-Centered Care had an overall sample mean score of 3.229. Individually, the mean scores were highest among Medical Officers (3.648), Specialists (3.648), Registrars (3.485), Clinical Officers (3.417), and Physiotherapists (3.375). However, mean scores for Patient-Centered Care were lowest among Laboratory Technologists (2.556), and Radiology Technologists (2.524).

Table 11: Means of Leadership and Patient-Centred Care by Role/Cadre n=384

Role/Cadre	Leadership (Supervisory Support)	Patient-Centred Care
Specialists/Consultants		
Mean	3.394	3.611
Standard deviation	0.541	0.491
Registrars		
Mean	2.967	3.485
Standard deviation	0.677	0.542
Medical Officers		
Mean	2.919	3.648
Standard deviation	0.615	0.491
Clinical Officers		
Mean	2.902	3.417
Standard deviation	0.644	0.708
Registered Nurses/Midwives		
Mean	2.545	3.219
Standard deviation	0.689	0.711
Nurse/Midwife Technicians		
Mean	2.722	3.198
Standard deviation	0.579	0.806
Physiotherapists		
Mean	2.261	3.375
Standard deviation	0.772	0.576
Pharmacists		
Mean	2.570	3.033
Standard deviation	0.547	0.853
Laboratory Technologists		
Mean	2.808	2.556
Standard deviation	0.612	0.647
Radiology Technologists		
Mean	2.696	2.524
Standard deviation	0.633	0.836
Overall sample		
Mean	2.722	3.229
Standard deviation	0.644	0.759

4.3.6 Objective 3a: Compare Differences in Perceptions about Leadership and Patient-Centered Care among Health Care Workers in Blantyre, Malawi based on the Workers' Cadres

Kruskal-Wallis tests were conducted to establish whether measures of Leadership and Patient-Centered Care differed significantly based on respondents' roles/cadre and the results are reported in Table 12. The results suggest that both Leadership and Patient-Centered Care varied significantly between cadres: Leadership ($\chi^2= 26.500$, $p= 0.0017$); and Patient-Centered Care ($\chi^2 =37.617$, $p= 0.0001$).

Table 12: Results of Kruskal-Wallis equality of populations rank test for Leadership and Patient-Centred Care n=384

Role/Cadre	Leadership (Supervisory Support)		Patient-Centred Care	
	n	Rank Sum	n	Rank Sum
Specialists/Consultants	6	1813.50	6	1499.50
Registrars	22	5324.00	22	5006.00
Medical Officers	18	4116.00	18	4651.00
Clinical Officers	44	9972.50	44	9883.00
Registered Nurses/Midwives	96	15830.00	96	18003.50
Nurse/Midwife Technicians	155	29374.50	155	29314.50
Physiotherapists	8	985.00	8	1651.50
Pharmacists	10	1587.50	10	1665.00
Laboratory Technologists	18	3552.50	18	1572.50
Radiology Technologists	7	1364.50	7	673.50
Degrees of freedom		9		9
Chi-square		26.500		37.617
Probability		0.0017		0.0001

To further examine differences in perceptions about Leadership and Patient-Centered Care by cadre, the individual cadres were combined into three groups: Medical Staff (including Specialists/Consultants, Registrars, Medical Officers, and Clinical Officer), Nursing/Midwifery Staff (including Registered Nurses/Midwives, and Nurse/Midwife Technicians), and Technical Support Staff (including Pharmacists, Physiotherapists, Laboratory Technologists, a Radiology Technologists). Table 13 shows mean scores of Leadership and Patient-Centred Care based on these three collapsed groups. The results indicate that the overall sample mean was 2.722 for Leadership and was highest among Medical Staff (2.954) compared to Nursing/Midwifery Staff (2.654) and Technical Support Staff (2.633). Furthermore, the results in Table 13 show that Patient-Centered Care had an overall sample mean score of 3.229. Individually, the mean scores were highest among Medical Staff, (3.493) compared to Nursing/Midwifery Staff (3.206) and Technical Support Staff (2.814).

Table 13: Means of Leadership and Patient-Centred Care by Specialisation n=384

Specialisation	Leadership (Supervisory Support)	Patient-Centred Care
Medical Staff		
Mean	2.954	3.493
Standard deviation	0.642	0.617
Nursing/Midwifery Staff		
Mean	2.654	3.206
Standard deviation	0.628	0.769
Technical Support Staff		
Mean	2.633	2.814
Standard deviation	0.643	0.771
Overall sample		
Mean	2.722	3.229
Standard deviation	0.644	0.759

Kruskal-Wallis tests were conducted to establish whether measures of Leadership and Patient-Centered Care differed significantly based on these three groups of cadres. The results are reported in Table 14. The results suggest that both Leadership and Patient-Centered Care varied significantly between the groups: Leadership ($\chi^2=18.061$, $p=0.0001$); and Patient-Centered Care ($\chi^2=27.685$, $p=0.0001$). Since the Kruskal-Wallis test was significant, a posthoc analysis was performed to determine how and which groups differed from each other group. Post hoc Bonferroni analysis of Leadership showed a significant difference between Medical Staff and Nursing/Midwifery Staff including Technical Support Staff ($p=0.000$ and $p=0.019$ respectively). While Patient-Centred Care showed a significant difference between Medical Staff and Nursing/Midwifery Staff as Technical Support Staff ($P=0.005$ and $p=0.000$ respectively). Similarly, a significant difference between Nursing/Midwifery Staff and Technical Support Staff ($p=0.004$). The significance level ($p<0.05$) is similar to those reported for individual cadres in Table 12.

Table 14: Results of Kruskal-Wallis equality of populations rank test for Leadership and Patient-Centred Care by Specialisation n=384

Specialisation	Leadership (Supervisory Support)		Patient-Centred Care	
	N	Rank Sum	N	Rank Sum
Medical Staff	90	21226.00	90	21039.50
Nursing/Midwifery Staff	251	45204.50	251	47318.00
Technical Support Staff	43	7489.50	43	5562.50
Degrees of freedom		2		2
Chi-square		18.061		27.685
Probability		0.0001		0.0001

4.3.7 Objective 4: Describe the relationship between Collaborative Capacity with the independent variables of Structural Factors that Enable Team Effectiveness, Leadership, and Patient-Centered Care as perceived by Health Care Workers in Blantyre, Malawi

Linear regression models were used to examine the relationship between Collaborative Capacity and Structural Factors that Enable Team Effectiveness, Leadership, and Patient-Centered Care and the results are reported in Table 15. During analysis, the AETC unit was selected as the "Base or Reference Category" to which every Ward/Department was compared, and thus the AETC is not listed separately in Table 15.

The results suggest that Task Interdependence was positively and significantly associated with Communication and Information Technology (coefficient=0.201, p=0.000). This implies that the adoption of effective utilization of Communication

and Information Technology fosters Task Interdependence among health care workers.

Results in Table 15 also indicate that Quality of Interactions was positively and significantly associated with Staffing and Resources (coefficient 0.144 $p=0.001$), Communication and Information Technology (coefficient=0.175, $p=0.000$), Supervisory Support (coefficient 0.181, $p=0.000$), and Patient-Centered Care (coefficient 0.080, $p=0.024$). Holding all other factors constant, the mean Quality of Interactions score for Clinic (coefficient= -0.363, $p=0.040$), Obstetrics and Gynaecology (coefficient= -0.363, $p=0.029$), and Theatre/ICU (coefficient= -0.397, $p=0.019$) were each significantly lower than the mean Quality of Interactions score for AETC.

Collaborative Influence was positively and significantly associated with Communication and Information Technology (coefficient=0.233, $p=0.000$), Supervisory Support (coefficient=0.164, $p=0.009$), Patient-Centered Care (coefficient=0.148, $p=0.004$). It was also negatively and significantly associated with years of practice/experience (coefficient= -0.009, $p=0.045$). Holding all other factors constant, the mean Collaborative Influence score for Medical (coefficient= -0.459, $p=0.046$), Obstetrics and Gynaecology (coefficient= -0.517, $p=0.034$), Paediatric (coefficient= -0.466, $p=0.043$), and Surgical (coefficient= -0.504, $p=0.040$) were each significantly lower than the mean Collaborative Influence score for AETC.

Table 15: Results from Linear Regression Models n=384

	Task Interdependence			Quality of Interactions			Collaborative Influence		
	Coefficient	Std error	P> t	Coefficient	Std error	P> t	Coefficient	Std error	P> t
Staffing and Resources	-0.022	0.068	0.749	0.144	0.042	0.001	0.102	0.061	0.097
Communication and Information Technology	0.201	0.056	0.000	0.175	0.035	0.000	0.233	0.050	0.000
Human Resource Management	-0.059	0.055	0.284	-0.031	0.034	0.357	-0.037	0.050	0.456
Control over Work	0.116	0.064	0.070	0.029	0.039	0.460	0.066	0.058	0.256
Supervisory Support	-0.032	0.069	0.648	0.181	0.043	0.000	0.164	0.062	0.009
Patient-Centred Care	0.018	0.056	0.744	0.080	0.035	0.024	0.148	0.051	0.004
Years of practice/experience	-0.008	0.005	0.088	-0.004	0.003	0.137	-0.009	0.004	0.045
Ward/Department									
Clinics	-0.285	0.285	0.318	-0.363	0.176	0.040	-0.404	0.257	0.117
Medical	-0.084	0.254	0.742	-0.281	0.157	0.074	-0.459	0.229	0.046
Obstetrics and Gynaecology	-0.228	0.269	0.397	-0.363	0.166	0.029	-0.517	0.242	0.034
Paediatric	0.104	0.254	0.682	-0.292	0.157	0.063	-0.466	0.230	0.043
Surgical	-0.210	0.272	0.440	-0.313	0.168	0.062	-0.504	0.245	0.040
Technical Support	-0.002	0.276	0.994	-0.250	0.170	0.143	-0.424	0.249	0.089
Theatre/ICU	-0.027	0.273	0.922	-0.397	0.168	0.019	-0.319	0.246	0.196
Cadre/Role									
Registrars	0.328	0.337	0.331	0.392	0.208	0.060	0.121	0.304	0.690
Medical Officers	0.180	0.344	0.602	0.252	0.212	0.237	0.040	0.311	0.899
Clinical Officers	0.249	0.319	0.435	0.307	0.197	0.119	0.054	0.288	0.852
Registered Nurse Midwives	0.249	0.311	0.423	0.327	0.192	0.089	0.338	0.281	0.229
Nurse Midwife Technicians	0.402	0.312	0.198	0.357	0.192	0.064	0.213	0.281	0.450
Physiotherapists	0.571	0.398	0.153	0.415	0.246	0.092	0.338	0.359	0.347
Pharmacists	0.211	0.381	0.581	-0.054	0.235	0.817	-0.192	0.344	0.577
Laboratory Technologists	0.432	0.350	0.218	0.084	0.216	0.696	-0.299	0.316	0.345
Radiology Technologists	-0.004	0.416	0.992	0.018	0.256	0.945	-0.231	0.375	0.538
Constant	1.820	0.451	0.000	1.263	0.280	0.000	1.073	0.407	0.009

4.3.8 Objective 4b: Compare the Relationship between Collaborative Capacity and Covariates of Cadre of Health Care Workers, Years of Experience and Ward/Unit where working

Table 16 shows the results from Analysis of Variance (ANOVA) a statistical procedure for testing mean differences among three or more groups by comparing variability between groups to variability within groups and yielding an *F*-ratio statistic (Polit & Beck, 2012:719). The ANOVA test compared group means for Task Interdependence, Quality of Interactions, and Collaborative Influence by ward/department, roles/cadres, and years of experience of health care workers, Staffing and Resources, Communication and Information Technology, Human Resource Management, Control over Work, Supervisory Support, and Patient-Centered Care. These results show that, collectively, the independent variables account for a significant proportion of variations in each of the dependent variables.

Task Interdependence varied significantly with participants cadre/roles, years of experience, and Communication and Information Technology ($P < 0.009$, $p < 0.008$, and $p < 0.000$ respectively). However, Task Interdependence did not differ significantly with the wards and departments, Human Resource Management, Control over Work, Supervisory Support, and Patient-Centered Care ($p > 0.05$). The ANOVA results in Table 16 further suggest that Quality of Interaction differed significantly between participants' roles/cadres, Staffing and Resources, Communication and Information Technology, Supervisory Support, and Patient-Centered Care ($p < 0.05$) but did not vary significantly between ward/department, participant's years of experience, Human Resource Management, and Control over Work ($p > 0.05$).

Finally, results in Table 16 also indicated that Collaborative Influence varied significantly between the cadres/roles, across Communication and Information Technology, Supervisory Support and Patient-Centered Care ($p < 0.05$). However, Collaborative Influence did not differ significantly between the wards/departments, and across years of experience, Staffing and Resources, Human Resource Management, and Control over Work ($p > 0.05$).

Table 16: Results from the Analysis of Variance models**Model 1: Task Interdependence**

<i>Source of variation</i>	<i>Partial SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>Prob>F</i>
Model	28.919	25	1.157	2.320	0.000
Ward/Department	5.917	7	0.845	1.690	0.110
Roles/Cadre	9.870	9	1.097	2.198	0.009
Years of experience	5.932	3	1.977	3.960	0.008
Staffing and Resources	0.008	1	0.008	0.020	0.899
Communication and Information Technology	6.302	1	6.302	12.620	0.000
Human Resource Management	0.370	1	0.370	0.740	0.390
Control over Work	0.681	1	0.681	1.360	0.244
Supervisory Support	0.032	1	0.032	0.060	0.801
Patient-Centred Care	0.048	1	0.048	0.100	0.757
Residual	178.830	358	0.500		
Total	207.750	383	0.542		
R square	0.1392				

Model 2: Quality of Interactions

<i>Source of variation</i>	<i>Partial SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>Prob>F</i>
Model	42.875	25	1.715	8.780	0.000
Ward/Department	1.607	7	0.229	1.170	0.316
Roles/Cadre	3.332	9	0.370	2.355	0.007
Years of experience	0.236	3	0.079	0.400	0.751
Staffing and Resources	2.593	1	2.593	13.280	0.000
Communication and Information Technology	4.600	1	4.600	23.560	0.000
Human Resource Management	0.150	1	0.150	0.770	0.382
Control over Work	0.057	1	0.057	0.290	0.590
Supervisory Support	3.509	1	3.509	17.970	0.000
Patient-Centred Care	1.183	1	1.183	6.060	0.014
Residual	69.699	357	0.195		
Total	112.575	382	0.295		
R square	0.381				

Model 3: Collaborative Influence

<i>Source of variation</i>	<i>Partial SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>Prob>F</i>
Model	66.144	25	2.646	6.350	0.000
Ward/Department	2.959	7	0.423	1.010	0.421
Roles/Cadre	8.518	9	0.946	2.270	0.018
Years of experience	1.813	3	0.604	1.450	0.228
Staffing and Resources	1.419	1	1.419	3.410	0.066
Communication and Information Technology	8.268	1	8.268	19.840	0.000
Human Resource Management	0.125	1	0.125	0.300	0.585
Control over Work	0.285	1	0.285	0.680	0.409
Supervisory Support	2.831	1	2.831	6.790	0.009
Patient-Centred Care	5.119	1	5.119	12.280	0.001
Residual	149.195	358	0.417		
Total	215.339	383	0.562		
R square	0.307				

4.3.9 Compare the Relationship between Collaborative Capacity and Covariates of Cadre of Health Care Workers, Years of Experience and Ward/Unit where working

This study used the same instrument and replicated a study of health care workers in nine hospitals and seven health care systems in upstate New York, in the USA (Weinberg et al., 2011). Sullivan et al. (2019) used similar measures of Collaborative Capacity as were used in the present study and the study by Weinberg et al. (2011) in a study of health care workers in 20 community living centres managed by the Veterans Administration in the USA. Similarities and differences in findings from the three studies will be explored in the discussion of findings related to each study objective.

Table 17 compares the means and standard deviations of the major study variables across the three studies (Sullivan et al., 2019; Weinberg et al., 2011, and the present study). All three studies used the same measures and a 5-point Likert scale, however, Sullivan et al. (2019) used a range of 1-5, whereas Weinberg et al. (2011) and the present study used a range of 0-4. Thus, the means reported by Sullivan et al. (2019) need to be adjusted by lowering them by 1 point to compare them to the means reported by Weinberg et al. (2011) and those reported for the present study.

The specific cadres of health care workers differed in the three studies. Weinberg et al. (2011) compared physicians, nurse practitioners/physician assistants, rehabilitation therapists, case managers/social workers, registered nurses, nurses' aides, clerks, and secretaries. The cadres included in the Sullivan et al. (2019) study included physicians, nurse practitioners, rehabilitation therapists, nurses, social workers/case

managers, direct care workers, nutritionists, pharmacists, psychologists, and “other”. The cadres compared in the current study included Specialists/consultants, Registrars, Clinical Officers, Medical Officers, Registered Nurses/Midwives, Nurse/Midwife Technicians, Physiotherapists, Pharmacists, Laboratory Technologists, and Radiology Technologists.

The scores on the study variables in the current study were compared across the individual cadres, and across cadres that were collapsed into three categories: Medical Staff (including Specialists/Consultants, Registrars, Medical Officers, and Clinical Officer), Nursing/Midwifery Staff (including Registered Nurses/Midwives, and Nurse/Midwife Technicians), and Technical Support Staff (including Pharmacists, Physiotherapists, Laboratory Technologists, a Radiology Technologists).

The standard deviations for the variables across the three studies ranged from 0.49-0.86. For comparison purposes, a difference of 0.5 in the means was considered suggestive of a difference in the means reported across the three studies. The mean scores reported by Sullivan et al. (2019) were decreased by 1.0 for this comparison, since those researchers used a scale from 1-5, rather than the 0-4 scale used by Weinberg et al. and in the present study. The study findings revealed that scores on Task Interdependence, Quality of Interactions, and Collaborative Influence were similar in the three studies (see Table 17).

The means for Supportive Organisational Context reported by Weinberg et al. (2011) and Sullivan et al. (2019) were much higher than those reported in the present study (2.59, 3.50, and 2.00, respectively. This was the only variable with a difference of

greater than 0.5 in the mean for the present study. Scores on Collaborative Influence were slightly higher in the present study (2.57) as compared to Weinberg et al. (2011) and Sullivan et al. (2019) (2.35 and 3.30, respectively). Overall, however, findings from this study are consistent with those reported by (Weinberg et al., 2011) and Sullivan et al. (2019).

Scores on Task Interdependence in the current study were significantly different by cadre, based on analyses of each individual cadre as well as the combined groups. The scores were highest among Physiotherapists, Laboratory Technologists, Registrars, Nurse/midwives Technicians, Clinical Officers, Registered Nurse/Midwives, and Medical Officers, respectively, and lowest among Radiology Technicians. When the cadres were combined into three groups (Medical Staff, Nursing/Midwifery Staff, and Technical Support Staff, the mean scores on Task Interdependence were similar across all groups, although the results of Kruskal-Wallis tests indicated significant differences between the three cadres.

Table 17: Comparison between Weinberg et al. (2011) and Sullivan et al. (2019) Studies and Present Study

Variable name	Findings from Sullivan et al. (2019) *		Findings from Weinberg et al. (2011)		Findings from Present Study	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Task Interdependence	3.59	0.79	2.61	0.68	2.59	0.74
Quality of Interactions	3.85	0.65	2.91	0.49	2.79	0.54
Collaborative Influence	3.30	0.86	2.35	0.87	2.57	0.75
Patient-Centred Care	4.38	0.69	3.31	0.73	3.23	0.76
Supervisory Support	3.42	0.73	2.53	0.50	2.72	0.64
Supportive Organisational Context	3.50**	0.62	2.59	0.56	2.00	0.65
Years of practice/experience	9.80	9.23	8.16	9.23	9.220	9.331

**Sullivan et al.(2019) used a Likert scale with values ranging from 1-5, whereas the Weinberg et al. (2011) and present study used scales with values ranging from 0-4, and thus the Sullivan et al. means are higher. These mean scores should be decreased by 1 point to compare them with the other two studies.

** Denotes differences of more than 0.5 from the present study

4.4 Conclusion

This chapter has presented the summary of results from the study about health care workers perceptions about Collaborative Capacity (a measure of Team structure and interdisciplinary collaboration) and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care in health care workers in Blantyre. The results showed that Specialists/Consultants had the highest mean scores on Quality of Interaction and Collaborative Influence, while Pharmacists and Radiology Technologists had the lowest scores across the three measures of Collaborative Capacity (Task Interdependence, Quality of Interaction and Collaborative Influence). More compressed results showed that Medical staff reported higher means on Quality of Interaction and Collaborative Influence while Support Staff reported the lowest mean scores of the three components of Collaborative Capacity.

Similarly, Specialists/Consultants had the highest mean scores across all four measures of Team Effectiveness, Leadership and Patient-Centered Care whereas Physiotherapists, Pharmacists and Radiology Technologists had the lowest mean scores across all four measures of Team Effectiveness including Leadership and Patient-Centered Care. Furthermore, the results showed that collectively, the independent variables (Control over Work, Staffing and Resources, Human Resource Management, Supervisory support, and Patient-Centered Care) accounted for a significant proportion of variations in each of the dependent variables of Collaborative Capacity according to respondents' roles/cadres. The next chapter will present a discussion of the synthesis of the findings in relation to objectives and

conceptual framework. In addition, limitations, recommendations, and suggestions for future research will be addressed.

CHAPTER 5

DISCUSSION

5.1 Introduction

This chapter discusses the findings of the study in relation to the study objectives, literature review, and conceptual framework. In addition, this chapter discusses study limitations; contributions of the study to knowledge, practice, and research; conclusions; and recommendations for further study. The purpose of this study was to assess the relationship between Collaborative Capacity (a measure of team structure and interdisciplinary collaboration) and Structural Features that Enable Team Effectiveness, Leadership, and Patient-Centered Care among health care workers in Blantyre, Malawi.

The research objectives were to: describe perceptions about Collaborative Capacity (Task Interdependence, Quality of Interactions, and Collaborative Influence) among health care workers; describe perceptions of Structural Features that Enable Team Effectiveness (Staffing and Resources, Communication and Information Technology, Human Resource Management/Job Rewards, and Control over Work) among health care workers; describe perceptions about Leadership and Patient-Centered Care among health care workers in Blantyre, Malawi; and to explain the relationship between Collaborative Capacity with the independent variables of Structural Factors that Enable Team Effectiveness, Leadership, and Patient-Centered Care. A total of 384 respondents participated in the study by responding to a researcher-administered

questionnaire (6 Specialists, 22 Registrars, 18 Medical Officers, 44 Clinical Officers, 96 Registered Nurses/Midwives, 155 Nurse/Midwife Technicians, 10 Pharmacists, 18 Laboratory Technologists, 7 Radiology Technologists, and 7 Physiotherapists). In this chapter, I will compare the findings in my study to the literature, draw conclusions and implications, and make recommendations.

5.2 Discussion of Findings Related to the First Study Objective: Perceptions about Collaborative Capacity (Task Interdependence, Quality of Interactions and Collaborative Influence) among Health Care Workers in Blantyre, Malawi

Collaborative Capacity is the extent to which providers have influence over other health care workers' decision-making (Weinberg et al., 2011). Collaboration requires mutual respect, open and honest communication and shared decision-making to promote positive attitudes among health care workers for effective provision of care (Adebayo & Ilesanmi, 2016). In this study, Collaborative Capacity was measured by Task Interdependence, Quality of Interaction (or Norms of Working Together), and Collaborative Influence (defined as Egalitarian Collaboration).

Scores on Task Interdependence in the current study were significantly different by cadre, based on analyses of each individual cadre as well as the combined groups. The scores were highest among Physiotherapists, Laboratory Technologists, Registrars, Nurse/midwives Technicians, Clinical Officers, Registered Nurse/Midwives, and Medical Officers, respectively, and lowest among Radiology Technicians. When the cadres were combined into three groups (Medical Staff, Nursing/Midwifery Staff, and Technical Support Staff, the mean scores on Task Interdependence were similar across all groups, although the results of Kruskal-Wallis tests indicated significant

differences between the three cadres. This finding is similar to the finding reported by Weinberg et al. (2011) who reported that doctors, nurses, social workers, physician assistants, and case managers had significantly higher levels of Task Interdependence than did Rehabilitation Specialists, Nurses' Aides, and Patient Care Technicians. Similarly, Sullivan et al. (2019) found that doctors, nurse practitioners, nurses, and social workers had higher scores on Task Interdependence compared to the other cadres studied.

Scores on Quality of Interaction in the current study were significantly different by cadre, based on analyses of each individual cadre as well as the combined groups. Quality of Interaction scores was highest among Medical Staff, slightly lower among Nursing/Midwifery Staff and lowest among Support Staff. This finding is slightly different from the finding reported by Weinberg et al. (2011) who found that doctors, nurse practitioners, case managers and social workers had higher Quality of Interaction than nurses or Rehabilitation Therapists. Sullivan et al. (2019) found that the highest Quality of Interaction scores were reported by physicians, nurse practitioners/nurse managers, social workers, nutritionists, psychologists, and rehabilitation specialists, with lower scores reported by nurses and lowest scores by direct care workers.

Scores on Collaborative Influence in the present study were also significantly different by cadre, based on the analyses of each individual cadre as well as the three collapsed groups, and indicated that the mean scores were higher for Medical Staff and Nursing/Midwifery Staff and lowest for Support Staff. This finding is similar to the finding reported by Weinberg et al. (2011) who reported that doctors, physician

assistants, and nurse practitioners reported higher levels of Collaborative Influence than any other group.

Sullivan et al. (2019) also found that scores on all measures of Collaborative Influence differed by the cadre of the worker. Physicians, Nurse Practitioners, and Nurse Managers reported significantly higher scores than did direct care workers such as licensed practical nurses or nursing assistants.

The results from the two studies in the US and the current study in Malawi suggested that higher status occupations such as physicians, nurse practitioners, and physician assistants, reported higher levels of Task Interdependence, quality of interactions, and collaborative influence, compared with more technical occupational groups who might be considered to have a lower status. The results that the Technical Support Staff in Malawi reported lower levels of all three measures of Collaborative Capacity might be explained by the fact that these health care workers as mentioned in the literature review, mostly work in their departments on hospital wards, and are usually not involved in ward rounds or ward meetings.

This is similar to a study by El Sayed and Sleem (2011) which suggests that nurses play a passive role such as only delivering information to the physician during ward visits, they do not actively participate in the discussions to influence decisions that affect patient care as such they have low self-esteem in this regard. Stutsky and Spence Laschinger (2014) also suggests that interprofessional practitioners that work collaboratively are comfortable explaining their role to other professionals, they put aside the role issues, Providers are aware of their own and others' limitations, and

they have professional maturity. In contrast, the author also emphasizes that the strongest predictors of Interprofessional collaborative practice included trust, cooperation, and communication skills. Without strong relational skills, IPC will not be as effective. It is possible that the restricted range of these variables may have been a factor in low mean scores by Technical Support Staff.

In addition, situations, where doctors had high mean scores, could be a result of their frequent interaction with other members of the health care team as they encounter patients during ward rounds or handover meetings. There are unique benefits to working in a shared location or talking in person through face-to-face meetings to benefit from non-verbal cues. Unfortunately, there is minimal interaction with Technical support staff regarding patient care delivery. However, with the advent of technology and workplace dynamics, online communication is preferred to in-person. Furthermore, due to a lack of effective use of information technology in the facilities, it limits online communication with other health workers in the facility. This is similar to Spit, Pajor, Wiatrak, Szylińska and Rotter (2019) regarding the opinion of medical students on the role of a physiotherapist in providing health services the authors stated that most subjects (70.7%) agreed with the statement that a physiotherapist can solve some health issues of patients without consulting a doctor. Yet 84% of subjects expressed their willingness to work alongside a physiotherapist in the future whereas 86.7% consider a physiotherapist as an integral part of the healthcare team. The fact that most subjects indicated their willingness to work with physiotherapists gives hope that striving for interdisciplinary healthcare teams bound by close cooperation with all of its members will become an actual state of affairs in the future, which is essential in effective patient recovery (Szpyt et al., 2019).

Another important finding was that Kelly et al. (2013) reported that approximately, Forty-five percent of pharmacists reported practicing in an independent pharmacy setting. While most pharmacists and physicians reported collaborating in their past encounters, more than one-third of physicians and one-quarter of pharmacists have never or rarely practiced collaboratively. Technical support staff only provide support to other health care workers or consult upon request. The silos in which pharmacists practice may act as barriers to collaboration (Kelly et al., 2013). This is because the individuals in the group has in-depth exposure to each other hence developing “in-group” alliances to each other as a result the other health care workers outside their group are not afforded the same level of trust as it is occurring in their group (Orchard, 2010). Seaton et al. (2020) suggest that Allied health professionals working close to health practitioners from other professions had more regular interprofessional interactions than those who were geographically separated. As such, the Co-location of multiple health care services within the same physical space may offer increased opportunities for interprofessional collaboration. Health care organizations, for instance, which are structurally rigid with hierarchical chains of command that are reinforced by the uniprofessional role socialization, separates the healthcare disciplines from one another both in training and in practice (MacPhee, Chang, Havaei & Chou, 2014).

Medical Staff tend to be more engaged inpatient care in the wards of the study hospital which is a referral hospital. They examine, diagnose and prescribe treatment for patients with complex conditions. This is in contrast to what pharmacists stated that they would like to participate more in decisions regarding identification and management of drug-related problems, managing drug interactions, providing drug

information to inform decisions around patient drug therapy and assisting to modify drug therapy to resolve patient-specific problems (Kelly et al., 2013). What is surprising is that ideally, both professions should have experience with collaborative practice during their undergraduate professional training and can continue to build on these experiences once in practice, for example, by attending joint continuing education activities and conferences.

However, the difference in perceptions between medical staff and Technical Support Staff in this study shows that incorporating the interprofessional collaborative practice into the in-service education of the various health care professionals is a viable solution to overcoming the professional boundaries and historical barriers to Interprofessional collaboration. WHO (2010), states that all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches and informatics. This will ensure the utilization of common space, providing an element of cohesion and shared ownership. The interdisciplinary team is a well-structured entity with a common goal and a common decision-making process.

Adebayo and Ilesanmi (2016) stated that Nurses and physicians have always been the key players in the health care arena and although the health care team is comprised of several other health professionals, the status of medicine and the large numbers of nurses' position place these two groups as central to interprofessional collaborative care. However, even though few professions work as closely as nursing and medicine, they are often perceived and portrayed in opposition to one another.

The two professions are at times positioned, within the literature and the social world, as both superior and inferior to one another in respect to patient care (Price et al., 2014). This discrepancy could be attributed to the fact that as stated earlier, most participants in the study had a good understanding of the role of the doctor than the other groups of health professionals. This could have been attributed to the possibility that in practice, doctors fulfil roles that may be perceived to be within other health professional's scope of practice.

Furthermore, in the study, the results reveal that participants believed that the doctor was the most valuable member of the interdisciplinary team, whereas members of the allied health professions were not rated as highly. Various studies have documented that the physician plays a dominant role. Therefore, in the study by (Booyesen et al. (2012) the doctor was often viewed as the leader of the team. This may contribute to a tendency to ascribe a higher value to the profession. Furthermore, Booyesen et al. (2012) stated that with increased experience by health care workers, there was a decrease in the desire to learn more about the scope of practice of the various disciplines. This could be associated with a low understanding of other professionals' roles and bearing the consequences on patient safety, quality of care, and retention of health care workers. Belonging to a team instills a sense of positive self-esteem for the individual such that participants view their interaction in a group as positive thereby improving their own value within the group.

Some authors have speculated that the difference in perceptions about Collaborative Capacity according to roles/cadres of health care workers could be a result of their professional socialization and educational level (Matziou et al., 2014). Such that

during pre-service education, students are “socialized” to adopt a specific discipline-based vision of the services which they will be offering after they qualify to lead to the poor conceptualization of collaborative practice (Baker, 2010; Lam et al., 2015; Price et al., 2014). When health care workers are not in frequent contact with one another, it is easy to lose track of how they impact one another’s work. Brown (2014) stated that a significant positive relationship was found between nurses’ professional values and positive attitudes toward collaboration with physicians ($p < 0.01$). In addition, attitude toward collaboration with physicians was also positively associated with a master’s or higher levels of education ($p < 0.005$).

However, El Sayed and Sleem (2011) revealed that positive correlations were found between scores of total collaboration factors and length of experience. The results indicated that the physicians' and nurses' attitudes toward collaboration became more positive with increased years of experience. One possible explanation for such improvements in attitude toward collaboration with increasing experience might be the result of a greater knowledge concerning the nurses' role. Hence interprofessional education interventions were able to reduce the difference in interprofessional collaboration between nurses and physicians (Brown et al., 2015).

This also shows that the way that health services are organized and health care workers are socialized continues to present significant differences to collaboration (Price et al., 2014). In addition, Brown et al. (2015) suggested that nurses with lower levels of education and more involvement in direct patient care viewed doctors as more authoritarian and less collaborative, and previous IPE experience also resulted in lower scores on collaboration. The relationship was more associated with sharing

office space, interdependent encounters (practitioners asking for advice from other providers), as well as the supervisory involvement of the medical practitioner in the workplace (Schadewaldt et al., 2013).

One solution to the challenges expressed regarding interprofessional collaboration is the persistent encouragement and institutionalisation of interprofessional education among all healthcare students (Ellapen et al., 2018). The authors' further state that while the primary goal of interprofessional education is to get students talking to one another to better understand each other's roles and responsibilities, applying interprofessional team concepts that focus on timely communication of key information for service delivery is important. Reeves et al. (2017) suggest that networking as an important concept for interprofessional practice in the workplace, should be added to provide opportunities for learners to engage with large and diverse groups of health workers as a result, they will be better equipped for the realities of clinical practice.

Effective interprofessional education promotes learning together in teams as a result, it fosters respect among the health professions, eliminates harmful stereotypes, and promotes patient-centred care because health care workers have the skills to put their interprofessional knowledge into action and do so with respect for the values and beliefs of their colleagues. In addition, Communication and relationship patterns are embedded in professional identities and organizational cultures (World Health Organization, 2010).

A team's success on a given task depends upon at least four conditions: The task must be suitable for teamwork, the team must include the right group of people to perform the task, the team members must combine their resources effectively to complete the task, and lastly, the organization must provide a supportive context for the team to perform effectively. Therefore, understanding the roles and responsibilities of other professional's roles is important in increasing the effectiveness of working teams and collaborative practice. In addition, an organizational culture that respects health care worker's values and choices had an impact on patient-centered care. Health care workers who are empathic, respectful, compassionate and non-judgmental during care provision become supportive and committed to the values of patient-centered care where the health care workers provide access to team members' knowledge and skills while the patient retains control over his/her care (Brown et al., 2015; Orchard, 2010).

The lower mean scores by the Technical Support Staff are a challenge because of the importance of including all members of the health care team in collaborative patient care. Furthermore, it might produce animosity between professions thereby creating obstacles to formulating an interprofessional team. A diverse range of perceptions regarding interprofessional healthcare collaboration exists owing in no small part to a lack of interprofessional knowledge of the individual across the various healthcare disciplines (Ellapen et al., 2018).

However, interprofessional healthcare collaboration provides the best level of healthcare, which should encourage healthcare workers to put aside their differences and work towards the improvement of healthcare Booyesen et al. (2012) suggested that it could be that as healthcare students and professionals become more specialized in

their fields, they become less at ease with taking on responsibilities for which they are not necessarily qualified.

Findings from many studies have identified the negative impact on patient care when all cadres do not collaborate effectively (Beier, 2014; Kelly et al., 2013). To effectively collaborate with each other, health care workers must consider the skills and qualities of other professionals. A change in their socialization could begin with the adoption of interprofessional education during pre-service education in health training institutions to improve collaborative relationships and interprofessional teamwork (Lam et al., 2015). During Interprofessional education “students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcome” (World Health Organization, 2010, p.13).

Similarly, Reeves (2009) states that interprofessional education occurs when medical, rehabilitative, nursing and social science professions study interactively for the primary purposes of improving interprofessional collaboration and enhancing the health and wellbeing of patients. Interprofessional education, research and collaboration among academics and practitioners break down the barriers of professional individualism, antagonism and competition, allowing a more holistic approach to patient care thereby responding to the needs of the patient in a more dynamic manner (Ellapen et al., 2018).

In addition, the differences in the level of education influence the way health care workers perform and communicate with each other in the health facility hence interprofessional education leads to effective collaborative capacity for effective

collative practice (Aiken et al., 2014; Baker, 2010). In addition, Price et al. (2014) suggest that this education needs to be followed by policies and actions within the practice setting that optimize and promotes interprofessional collaboration and effective teamwork as such, all professions should be consulted and included in the development of standards, policies, and guidelines concerning interprofessional collaboration to promote efficient and effective service delivery in the health sector. How each health care worker contributes during the provision of care is based on the knowledge, skills, and expertise they possess. A high level of educational qualification is associated with the acquisition of higher knowledge and skills necessary in managing patients with complex conditions as a result reducing errors and promoting positive health outcomes. Learning to work within interprofessional teams requires each profession to relinquish profession-specific ownership over the patient/client's care and to acknowledge and respect the roles, knowledge, and expertise each profession can offer as a member of the health care team (Orchard et al., 2017).

However, a major problem with this kind of application is that the current health care environment continues to challenge the collaborative practice of the health care workers. As stated earlier this is as a result of their professional socialization during pre-service education which makes individuals adopt a specific discipline-based vision of services leading to a lack of collaborative practice. Reeves, Lewin et al. (2011) states that teamwork has five common elements namely: shared identity, clear roles/tasks/goals, the interdependence of members, integration of work, and shared responsibility.

These elements help to define the essence of a real team among health care workers. In addition, the complexity of a team's actual work which is termed 'team tasks' affect the delivery of patient care including the effectiveness of different teams designed to provide well-coordinated and safe care in different clinical settings to improve the quality of patient care. As a result, if the health care teams cannot effectively and efficiently work together, they are unlikely to succeed in the given task.

However, some professionals inherently possess the necessary characteristics for collaboration while others can learn the skills if willing to step outside personal comfort zones. Other authors concur that attitude and personality are a key to collaboration but skills can also, to an extent, be taught and practiced (Adebayo & Ilesanmi, 2016; Aiken & McColl, 2009; Ellapen et al., 2018; Sullivan et al., 2019).

Results of the study by Matziou et al. (2014) showed that a higher qualification such as a university degree and post-graduate studies were significant to promoting interprofessional communication and collaboration. In their analysis of collaboration, Maylone et al. (2011) identified those health practitioners with a greater scope of practice, that is who perform high complexity activities perceived higher levels of collaboration. These findings were consistent with previous studies by (Santana et al., 2018) who suggested that increased education of health care workers and organizational support lead to better collaboration among health care workers as well as contribute to the overall quality of patient care.

5.4 Discussion of Findings Related to the Second Study Objective: Structural Factors that Enable Team Effectiveness (Staffing and Resources, Communication and Information Technology, Human Resource Management/Job Rewards, and Control over Work) Among Health Care Workers in Blantyre, Malawi

Teams of people working together for a common cause in the organization are important in improving its overall effectiveness (World Health Organization, 2010). Organizational effectiveness is the ability to obtain and use scarce resources such as staffing, equipment, and materials, successfully and integrate the utilization of these resources to promote the provision of quality care. Weinberg et al. (2011) created a variable to measure the degree of supportive organizational context by measuring Structural Features that promote Team Effectiveness (Staffing and Resources, control over work, Human Resource Management, Communication, and Information Technology). The mean score for Supportive Organizational Context reported by Weinberg et al. (2011) was 2.59 (s.d. 0.56) and the mean reported by Sullivan et al. (2019) was 3.5 (s.d. 0.62). The mean score for the same measure in the present study was 2.00 (s.d. 0.65). (Recall that the means reported by Sullivan et al. (2019) must be reduced by 1.0 to compare them to those reported by Weinberg et al., (2011) and in the present study). There could be many factors influencing why the respondents in Malawi perceived lower levels of Supportive Organizational Context compared to respondents in the USA, including lower levels of human and material resources, as well as more limited access to Communication and Information Technology.

It is worth noting that the frequency of overall rating on structural features that promote team effectiveness in this sample was lower than those seen in two other

studies that used the same instrument to measure Collaborative capacity among health care workers in the USA. With the availability and effective use of Information technology, health care workers can collaborate on almost all patient care anytime using the internet connection and other available application tools appropriate for use.

However, communication between individuals within the same team can sometimes seem difficult. This could be because in health facilities from low and middle-income countries the use of media platforms for patient care is limited due to inadequate hard and software equipment in the respective facilities. Most healthcare workers rely on in-person meetings or the use of hard copies like patient files, health passport books for information. As such information sharing and updates among providers to help them communicate in a fast manner using online facilities is a challenge. Considering these challenges, a study by (Lapão, 2016) suggests that leaders should encourage the participation of health care workers' development of their expertise on the use of e-health services, therefore, making communication easier and more direct to each needs, as a result, enhancing the acceptability of providers.

The results of this study indicated that there were significant differences in perceptions about Structural Features that Enable Team Effectiveness among different cadres of health workers. Medical Staff reported higher mean scores on Staffing and Resources, Control over Work, Human Resource Management, including Communication and Information Technology. Technical Support Staff reported the lowest mean scores on Staffing and Resources, Control over Work including Communication and Information Technology. The studies reported by Weinberg et al. (2011) and Sullivan et al. (2019) showed that supportive organizational context was

positively associated with task interdependence $P < 0.01$ and Quality of interaction was positively and significantly associated with supportive organizational context $P < 0.01$ and Collaborative Influence was positively and significantly associated with supportive Organizational context $P < 0.01$

The use of technology will enhance quick access to patient information, provision of second opinions and quick reference to guidelines, all of which contribute to scaling up the competencies and compliance with professional standards, as a result, improving patient safety and service effectiveness (Lapão, 2016). Efforts should be made to improve communication through the promotion of interprofessional training towards effective communication as well as supporting co-operation among health care workers to improve patient outcomes and provider satisfaction.

The acquisition or development of digital skills by health workers is critical for the effective and efficient provision of health care services. This has implications for the education of health workers, the management of health services, policymaking and research. Proper e-health service implementation requires adjustments in service delivery and in how work is organized. Competencies to work in a digitalized environment have already been identified as among the core competencies which health professionals must have to deliver the services that meet the current and future needs of populations (Lapão, 2016).

More solutions to the resistance expressed regarding interprofessional collaboration by some professionals are the persistent encouragement and institutionalisation of tertiary interprofessional education among all healthcare students. As earlier stated, some high-income level international countries have integrated interprofessional

health care education into their teaching curriculum, which has resulted in interprofessional collaboration. The institution is an important avenue that affects the participation of various health care workers in the decision-making process and collaboration.

Kelly et al. (2013) reported that Physicians believed that the most important pharmacist functions were to help improve patient adherence and to fill prescriptions however, physicians reported collaborating least frequently to receive advice to adjust drug dosages or to add/discontinue/ modify patient drug therapy to manage a specific drug-related problem. Lam et al. (2015) conducted a study about how is Interprofessional Collaboration Applied by Radiation Therapists in the Radiation Therapy Department in British Columbia. Findings showed that the top three professionals who radiation therapists collaborate with were radiation oncologists, nurses, and medical physicists, respectively and that the frequency of their Inter Professional Collaboration was mostly one to five times in 5 working days.

The variations of health workers' perceptions could be due to different hierarchies that are set up in the practice area. Some cadres of health care workers are in a relatively subservient role causing power imbalance. The imbalanced power may make it difficult for participants to collaborate effectively. Furthermore, because of hierarchies that are set up in the wards and departments, some health care workers may experience a sense of powerlessness. The bureaucratic systems in many hospitals do not support the development of interprofessional collaboration. This, therefore, calls for organizations to replace traditional bureaucratic structures with more relational structures such as hiring and training staff across functional teamwork,

performance measurement and reward (Gittell et al., 2013). In this way, providers working together should always think about the main purpose(s) of their being and also how they could respond to local clinical/patient needs (Reeves et al., 2018). Therefore, stressed that teamwork is a form of interprofessional work alongside other forms, specifically, collaboration, coordination and networking. Similarly,

In the hospital setting, the lack of awareness by some doctors regarding the rights of a physiotherapist may result in communication problems between the two cadres, such as delays or lack of referrals, which may put the patient's health in danger. As a result, it is important to create a well-organised team that would have two main rules: the well-being of patients and cooperation between all co-workers.

In contrast to earlier findings, Seaton et al. (2020) conducted a comprehensive literature search using three electronic databases and a manual search. The review identified diverse key elements related to interprofessional collaboration in health care, as perceived by allied health professionals. Opportunity for frequent, informal communication appeared essential for interprofessional collaboration to occur among health care workers. The availability of good structural features supports members to respect each other's contributions, appreciate diversity, and communicate effectively to enhance Team Effectiveness (Weinberg et al., 2011). In addition, when members subscribe to the norms and values of the organization, their commitment to providing quality patient care increases. A well-organized and appropriate organizational structure is associated with positive outcomes for both health workers and patients such as responsible stewardship, satisfied employees, good relationships, and quality patient care.

The effective organizational structure facilitates interpersonal communication skills and collaboration among health care workers and their participation in decision-making during the provision of care in the different wards/ departments hence promoting rational use of materials and resources (El Sayed & Sleem, 2011). Furthermore, there are similarities between the attitudes expressed by health care workers in this study and those described by Sullivan et al. (2019) and Weinberg et al (2011) that a safety organizational climate connected to transformational leadership style is strongly linked to improved process quality, high organization culture and positive patient outcomes. Quality of care is an important element for achieving high productivity among health care workers within healthcare organizations.

Effective Human Resource Management that is responsive to the needs of health care workers is necessary to enable the achievement of team effectiveness (Weinberg et al., 2011). However, at times in the work environment, issues such as lack of equipment and resources, weak information systems, poor communication, and lack of collegial relationship, may affect the overall provision of care resulting in staff feeling dissatisfied with the job as well as poor teamwork (Chong et al., 2013). Similarly, (Sullivan et al., 2019) stated that participants from public and private hospitals reported that informal sharing of information was largely contained within specific professions (i.e., nurse-to-nurse only). Overall, supportive organizational contexts and settings with a focus on person-centered care are associated with greater teamwork and collaboration (Weinberg et al., 2011).

5.5 Discussion of Findings Related to Third Study Objective: Describe Perceptions about Leadership and Patient-Centered Care

Successful implementation of Patient-Centered Care by health care workers in health care facilities can be stimulated by a supportive leadership that is trusted and committed to the provision of quality health services (Leijten et al., 2018). Influential leaders know that collaboration during patient care is more productive than persuasion. As such, effective leadership of healthcare professionals is critical for strengthening the quality and integration of care. By developing deeper relationships that centre on shared objectives, we increase the likelihood that other health care workers will listen to one another and consider different options.

Leadership that promotes interdependent behaviour like cooperation, knowledge sharing, and mutual assistance on tasks is necessary to meet patient's needs as well as promote successful collaboration (Baker et al., 2011). Whether in formal or informal leadership roles, each team member must contribute to the team process. The shift away from traditional hierarchical approaches to collaborative leadership can be facilitated by a team learning environment, whereby, the focal leader steps back from making unilateral decisions and encourage the team to brainstorm solutions (Sullivan et al., 2019). The authors stipulate that the team leader's role ensures that providers have the right skill mix and support diversity to achieve the tasks and goals of the organization. This may involve internal staff rotation and continuous staff development with regular supervision to monitor and guide performance.

Leadership that involves provision of strategic direction and influencing group activities also unify individuals with a shared vision and values of the organization.

The leader has many roles such as coordinator, supervisor, team leader, resource allocator and monitor (Bates, 2018). In addition, the leader supports individuals to cope with changes as well as promote effective coordination and interdependency among different health care workers to reduce duplication and fragmentation of the service delivery to patients (Stout et al., 2017). To effectively influence the provision of quality care, the leader must be clear about the intent to have on others. Hence when one is clear about the intent, it will be easier to behave in ways that have the impact we deserve otherwise if the intent for the provision of care is not clear, health care workers may unconsciously undermine their efforts.

Scores on the measure of Supervisory Support that was used to assess Leadership were similar in the current study to those reported by Weinberg et al. (2011) and Sullivan et al. (2019). In this study, there were significant differences in perceptions of supervisory support based on a cadre of health care workers. The mean scores for Leadership were highest among Medical Staff and lowest among Technical Support Staff. The difference in the mean scores could be a result of factors such as lack of training in leadership and governance of the facility. Despite the growing support for collaborative leadership models, there is evidence to suggest that interprofessional teams need a team leader to operate effectively (Orchard & Rykhoff, 2015). They require leaders who promote collaboration by allowing enough time for staff to discuss and reflect on practice, as well as encouraging staff to interact with those outside their profession.

The leader strives to invest time in building the team by setting expectations for working together and creating a climate of mutual respect, high levels of participation,

and commitment to excellence. Leadership that builds trust and mutual understanding as well as negotiates common goals whereby all the parties have equal rights to use opportunities, and present arguments to express their feelings to order and counter-attack orders (Fahmi et al., 2016). Leaders should provide messages that link collaboration and patient outcomes as well as set priorities concerning the establishment of healthy workplace environments (Price et al., 2014).

Leaders strive to maintain an integrated role when working within teams. They are also engaged in daily learning with the team to support those who possess a clear focus on the assigned task and empower every member to feel a sense of responsibility towards the success of the team. Feng et al. (2017) suggested that inter-professional health care teams view clinical leadership as collaborative and fluid and determined by the fit between tasks and team member expertise. Mentorship is important for increasing the ability of resident physicians to develop collaborative leadership roles within teams.

These results match those observed in earlier studies that an effective leader aims at fostering effective communication and encouraging collaboration to overcome conflicts between health workers (Fahmi et al., 2016; Feng et al., 2017). As a result, effective leadership was one of the main characteristics which were associated with high practice teamwork which contributed to quality improvement efforts amongst health care workers as well as provision of Patient-Centered Care (Baker, Egan-Lee, Martimianakis & Reeves, 2011, Stout et al., 2017).

Similarly, Mianda and Voce (2018) suggest that leadership played a key role in creating a safe working environment and was perceived as having the purpose of promoting staff retention and providing organizational support, in the effort to improve patient outcomes. In addition, Stanley and Stanley (2018) stated that the majority of respondents either agreed or strongly agreed that clinical leaders need to have the skills and resources necessary to perform tasks effectively (93.8%) or work well in a team (95.4%). That they need to be able to communicate well, present ideas logically and effectively (97.0%), be flexible and able to improve and respond to a variety of situations with appropriate skills and interventions (94.1% in a timely manner).

However, Stanley and Stanley (2018) stated that Bureaucracy within the workplace was a barrier ineffective leadership hindering their progression of clinical leadership. This barrier was linked to a lack of time and high clinical demand that prohibit engagement in activities associated with clinical leadership. In addition, it was also linked to other barriers, such as a lack of mentoring (9.6%), part-time work (8.8%) and remote area practice or isolation (4.0%).

Leaders used the coaching style to guide team members towards collective learning. They also provide a supportive role in dealing with the challenges of incorporating team members' knowledge and helping them to build on each other's contributions through ongoing relationships (Bates, 2018). Some key aspects that facilitate collaboration including smaller healthcare systems, strong leadership, trust, role delineations, effective communication, having programs under one supervisor and physically close services.

Patient-Centered Care is an approach that is grounded in mutually beneficial partnership. It involves providing care that is respectful and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions. It seeks an integrated understanding of the patients' physical, emotional and spiritual life needs as such, enhancing the continuing relationship between the patient and the health care worker and improvement of the health system (Government of Malawi, 2017b).

The mean scores on the measure of Patient-Centered Care in the present study were similar to the scores reported by (Weinberg et al., 2011) and Sullivan et al. (2019). There were significant differences in health care workers' perceptions of Patient-Centered Care between cadres in the current study. Medical Staff reported higher mean scores, and Technical Support Staff reported lower mean scores. Provision of Patient-Centered Care may be affected by a perceived lack of clarity and respect of each health care worker's roles and responsibilities in the service delivery areas.

Castro et al. (2016) suggest that patient-centeredness is also associated with other positive outcomes such as improved quality of care, enhanced adherence, improved illness-related knowledge and health behaviour, and decreased health care utilization through the promotion of efficiency. In addition, Patient-centeredness is based on mutually beneficial partnerships between the patient, his family, and the health care provider, and is characterized by open communication and exchange of clinical knowledge among health care workers patients and their families.

The essential characteristics of patient-centered care are empathy, listening and treating patients with dignity and respect, and regarding them as individuals (Castro et al., 2016). The authors found that professionals might work together with the same client but do so independently, may exchange knowledge, skills and expertise in the process of care, or interact in more complementary ways, to share decision-making. The best care would come from an inter-professional approach where the team shared decision-making and relied on interpersonal communication rather than formal referral systems.

Weinberg et al. (2011) found that Patient-Centered Care was associated with effective leadership which was necessary for providers to act collaboratively and promote quality patient outcomes. Santana et al. (2018) suggested that Patient-Centered Care can improve timely access to care which has the potential to reduce hospital admissions, decrease utilization of health care services as well as reduces morbidity and mortality in patients with acute or chronic illnesses. Leadership was considered a core element for a well-coordinated and integrated provision of care, both from the patients and healthcare professionals. Similarly, Ellapen et al. (2018) stated that Interprofessional collaboration has been shown to enhance patient well-being and reduce the medical expense of non-communicable diseases (NCDs) and Orthopaedic injuries. Unfortunately, not all medical, rehabilitative, nursing and social science practitioners support interprofessional collaboration.

5.6 Discussion on Findings Related to the Fourth Study Objective: The Relationship between Collaborative Capacity and Structural Features that Promote Team Effectiveness, Leadership and Patient-Centered Care

Achieving effective relationships among health care workers requires workplace practices that demonstrate a high value for health workers to engage in decisions that support the provision of quality patient care (Weinberg et al., 2011). Communication and information exchange is widely recognized as an important aspect for the proper functioning of health care organizations which is necessary to promote Collaborative Capacity (Task Interdependence, Quality of Interaction, and Collaborative Influence), Team Effectiveness, as well as Leadership. Effective communication calls for health care workers to collaborate and embrace a collective vision based on mutual trust (Lam et al., 2015; Weinberg et al., 2011).

Results from this study showed that Task Interdependence was positively and significantly associated with Communication and Information Technology but was not positively associated with the following: supervisory support, Staffing and Resources, Human Resource Management, Control over Work, and Patient-Centered Care. Quality of Interaction in this study was positively and significantly associated with Communication and Information Technology, Staffing and Resources, Supervisory Support and Patient-Centered Care but was not associated with Human Resource Management. Finally, Collaborative Influence was positively and significantly associated with Communication and Information Technology, Supervisory Support, Patient-Centered Care, and negatively associated with years of experience of health care workers.

A diverse range of perceptions regarding interprofessional healthcare collaboration may exist due to a lack of interprofessional knowledge of the individual scope of practice across the various healthcare disciplines. Health workers caring for the same patient may have little contact with each other and not engage in any helpful interaction or teamwork hence affecting patient care outcomes. Effective utilization of Communication and Information Technology including Supervisory support to offer feedback monitoring performance, including adequate Staffing and Resources to offer Patient-Centered Care might promote Collaborative Capacity among health care workers as well as influence the provision of quality patient care (Weinberg et al., 2011).

Similar to the findings in this study which showed that Task Interdependence was not significantly associated with supervisory support, Weinberg et al. (2011) also found that Supervisory Support was not significantly associated with providers' degree of Task Independence ($P=0.151$). Similarly, Sullivan et al. (2019) reported that Supervisory Support was not related to any measure of teamwork or collaboration. However, these researchers did find that Supportive Organizational Context and Patient-Centered-Care were both related to Task Interdependence, Quality of Interaction, and Collaborative Influence.

However, Mianda and Voce (2018) Suggested that leadership in the clinical area was seen as a role to be fulfilled by every frontline health care provider, regardless of the position in the health system as it was perceived as representing an important contribution to effective resource utilization, teamwork, and Patient-Centred Care. Similarly, Stanley and Stanley (2018) suggests that leadership is important to enable

maximize the potential of health care workers as well as making them possess clinical expertise in practice area and utilize interpersonal skills to deliver quality patient care

Findings from this study also indicated a significant negative relationship between respondents' years of experience and Collaborative Influence. More than half of the respondents had greater than 5 years of experience in their work. Having such several health care workers with more years of experience may suggest that they have had the opportunity to learn about effective ways on how to interact with other and sharing experiences and knowledge with other professionals thereby maximizing the strengths and skills of each health care worker enhancing the efficiency of teams (World Health Organisation, 2010).

However, El Sayed and Sleem (2011) suggested that positive correlations were found between scores of total collaboration factors and length of experience. Results indicated that the physicians' and nurses' attitudes toward collaboration became more positive with increased years of experience as a result of a greater knowledge concerning the nurses' role. On the contrary, the years of previous experience seem to influence other health care workers' opinions. In addition, Matziou et al. (2014) stated that nurses with fewer years of experience reported that often they were not informed properly by the physicians of the department ($p=0.039$) and they were more skeptical regarding physicians' trust in their work ($p=0.029$). In addition, they disagreed more with the opinion that having good relations resulted in better collaboration ($p=0.025$).

As mentioned in the literature review, to promote quality care, a health facility requires adequate numbers of qualified and experienced staff to effectively engage in care provision and decision-making process. As such, health care workers with long years of experience could guide newly qualified health workers to promote their self-confidence, improve interaction, enhance professionalism in the work environment and promote staff motivation as well as effective and efficient health service delivery (Baker, et.al. 2011).

Oleribe et al. (2019) suggested that three key challenges in the healthcare system may solve over two-third of the problems associated with the healthcare system included training and capacity building for health workers (29.69%), increase budgetary allocation to health (20.31%) and advocacy for political support and commitment (12.31%). Similarly, it is the responsibility of training programs to ensure that graduates have the foundation necessary to work within a variety of professional settings to contribute to the health and well-being of our patients and the interprofessional team as a whole.

El Sayed and Sleem (2011) suggested that a positive correlation existed between nurse-physician collaboration and years of experience. Similarly, Matziou et al. (2014) found that younger physicians with fewer years of clinical experience were more likely to recognize nurses' skills and accept their opinions about treatment and decision-making. On the contrary, less experienced nurses reported lower levels of collaboration and reported that physicians did not treat them as equal members of the patients' care team.

Goldsberry (2018) also suggest that collaborative leaders must examine their own beliefs, values, and behaviors to ensure their ability to encourage team efforts instead of relying solely on themselves. This ability to work for the greater good of the team as opposed to fulfilling one's interests is a core competency of an effective leader. In addition, the collaborative leadership competencies can be used as a tool to strengthen the leadership abilities of current health care professionals in national, state, and local health facilities including, academia, and other organizations. In particular, the framework can assist in orienting those new to the field to the goals and methods of patient-centred care, assess and promote leadership capacity, and guide continuing education efforts.

The above studies from high-income countries like the United States of America yielded higher results than from low-income countries like Malawi. This can be explained partly by the high emphasis on the perception of collaborative practice in high-income settings. This means that in low-income countries, the collaborative practice should be part of their goal in their health care settings.

5.7 Discussion of the Relationship between the Study Findings and the Conceptual Framework

In this study, the conceptual framework proposed a relationship between the dependent variable of Collaborative Capacity (measured by the three variables of Task Interdependence, Quality of Interactions, and Collaborative Influence). The independent variables in the framework were: Structural Features that Enable Team Effectiveness (Staffing and Resources, Communication and Information Technology, and Human Resource Management and Job Rewards); Leadership that Promotes

Teamwork; and Patient-Centered Care. The organizational context with a supportive culture encourages health care providers to work as a team and to view their input as a variable source of information for ongoing and subsequent decision-making for action as well as improvement of services (Sullivan et al., 2019). In this study, Task Interdependence specifically varied significantly with Communication and Information Technology. However, Task Interdependence was not related to Human Resource Management, Control over Work, Supervisory Support, and Patient-Centered Care. Quality of Interaction was related to Staffing and Resources, Communication and Information Technology, Supervisory Support, and Patient-Centered Care. Finally, Collaborative Influence was positively and significantly associated with Communication and Information Technology, Supervisory Support, and Patient-Centered Care. However, Collaborative Influence was not related to Staffing and Resources, Human Resource Management, and Control over Work. Basing on the findings of this study, the conclusion is that there were variations between the independent variable of Structural Features that Promote Team Effectiveness, Leadership and Patient-Centered Care and the dependent variables of Collaborative Capacity. Therefore, the study findings were related to the conceptual framework.

Similarly, the conceptual framework proposed by Weinberg et al. (2011) suggested that Collaborative Capacity (a dependent variable) was influenced by the independent variables of Structural features that promote Team Effectiveness, Leadership the Promotion of Patient-Centered Care. The findings supported the predicted relationship as outlined in the conceptual framework. This study showed that Quality of interaction and Collaborative Influence varied significantly with some factors that

promote Team Effectiveness (Communication and Information Technology, Supervisory Support, Staffing and Resources) including Patient-Centered Care. However, Task Interdependence did not differ between Staffing and Resources, Control over Work, Supervisory Support, Human Resource Management, and Patient-Centered Care but varied significantly with Communication and Information Technology. Similarly, Sullivan et al. (2019) reported that Supportive Organizational Context and Patient-Centered-Care were both related to Task Interdependence, Quality of Interaction, and Collaborative Influence.

Lankhof (2018) stated that a positive correlation between mutual respect and collaboration coincided with the concept of interprofessional hence showed that professionals from different disciplines can work together in a respectful, unified manner. The interactional component of the model was important because one of the objectives of collaborative practice is sharing common goals, a common vision, and developing a sense of belonging. Team members need to develop strong bonds and work together respectfully and in a trustworthy manner to achieve a cohesive focus.

Differences about collaborative relationships indicate how some professions focus more on trust and respect while others emphasize accountability. In addition, Lankhof (2018) showed that neither years of experience or years with the present employer was statistically significant in predicting mutual respect based on the total collaboration score. The relationship between the results related to the theoretical framework helped support the structure around which this phenomenon Collaborative Capacity was built. Furthermore, connecting the relationship between the results and the literature reviewed is essential to increase support for the study and its findings.

The relationship demonstrated in this study show that better awareness of a health care workers' qualifications is connected with better communication, which is essential to efficient interprofessional collaboration in the workplace (Szpyt et al., 2019). Overall, the findings from this study and from the studies reported by Weinberg et al. (2011) and Sullivan et al. (2019) support the studies' conceptual frameworks that proposed relationships between Structural Factors, Leadership, and Patient-Centered care on measures of Collaborative Capacity. The conceptual framework has also provided a guide that could be used to ultimately improve the quality of patient care and provider satisfaction. With further research it is hoped that the proposed conceptual framework will be a valuable tool for use by healthcare leaders, educators, and clinical staff in meeting the goals of the organization.

5.8 Strengths and Limitations of the Study

This study makes several contributions to our understanding of Collaborative Capacity. Although previous studies have shown the benefits of relational forms of coordination for airline passengers (Gittell, 2001) and hospital patients, this is the first study to present evidence suggesting the impact of Collaborative Capacity on health care workers at a referral hospital. This is the first study to present evidence suggestive of the impact of Collaborative Capacity on Structural Features that promote Team Effectiveness. Although findings from this study contribute to the body of knowledge about collaborative capacity, the study had several limitations that must be acknowledged. Understanding the study limitations may pave the way for recommendations for future research studies. The study is limited since all of the participants were drawn from only one government tertiary facility in Blantyre city,

Malawi. It would be important to extend this study to include hospitals in other district hospitals including CHAM and private hospitals.

Firstly, this study used a cross-sectional design, and thus the findings reflect only the specific time when the research was conducted. The findings also do not reflect changes in health workers' perceptions over time. Secondly, this study used the self-reporting nature of the data. Participants who responded to the survey may be more receptive to collaboration, feel more respected, and work in interprofessional teams or they may be disgruntled employees who do not work in a team. Either of these scenarios may not be an accurate representation of the general population.

The study was conducted among health care workers based on their responses to a self-reported care coordination questionnaire that had been used in the USA but had not been previously used in Malawi. Although the questionnaire had adequate internal consistency reliability in both settings, there is a need for further research to validate the instrument in a variety of settings. Fourthly, the sample included only health workers at a government referral facility. The findings may not be extrapolated to other facilities in Malawi, including the district, Christian Health Association of Malawi (CHAM), and private hospitals. However, although the differences may limit generalizability, it is important to note that since the study site was the largest public referral hospital, therefore some lessons may be more generalizable for similar settings.

Lastly, during data collection, the use of a structured questionnaire did not allow for further probing of responses. Participants may have felt obligated to complete the

survey because they were in a controlled environment. Therefore, there is a need for an in-depth study, covering a wider selection of health facilities in the country to yield more data. Adding a qualitative component to this study would allow the health care workers to elaborate on why a certain score was chosen and to provide examples of how collaborative Capacity and Structural Features that promote Team Effectiveness, Leadership and Patient-Centred Care are demonstrated in practice areas. The other limitation is that patient perspectives regarding collaborative practice is not included in the study. More research is required to obtain a better understanding of the dynamics of collaborating teams and the processes involved in leadership and Patient-Centered Care. The knowledge obtained will affect positive change by guiding future research

5.9 Implications of the Study

Despite the study limitations, the findings from this study were consistent with findings from studies using similar instruments in the USA and contribute to the body of research exploring relationships between Collaborative Capacity, Structural Factors Enabling Team Effectiveness, Leadership, and Patient-Centered Care. The strengths of this study include the large number of health care workers who completed the survey and the use of validated instruments that are associated with outcomes in other settings. Our study findings have important implications for education, practice, and research. This section discusses the implications of the study findings for practice, education, and future research.

5.9.1 Implications for Policy and Practice

This study's findings have implications for developing policies, procedures, and protocols to promote Collaborative Capacity and the provision of quality Patient-Centered Care. It provides a unique opportunity for health workers at all levels in the health facilities to reflect on how they might better utilize interprofessional collaborative practice strategies to strengthen health system performance and improve health outcomes. We anticipate that Collaborative Capacity may affect quality outcomes in part through its effect on employee job satisfaction (Chong et al., 2013).

Given that job satisfaction is expected to foster higher levels of patient satisfaction because of the processes that occur during service delivery. The findings that there were differences in perceptions of all three aspects of Collaborative Capacity (Task Interdependence, Quality of Interactions, and Collaborative Influence), suggests that there is a need for both pre-professional and in-service education to promote interprofessional collaboration and better communication and interaction between different cadres of health worker. The need for ongoing education in interprofessional collaboration is also supported by the finding that there were differences in perceptions about Patient-Centered Care as well as Structural Factors that Enable Team Effectiveness based on the cadre of the respondent (Staffing and Resources, Communication and Information Technology, Human Resource Management/Job Rewards, and Control over Work).

In-service education has been shown to promote practical learning and to help practitioners relate new knowledge to their work environment. This is the most appropriate approach to improve not only the knowledge of participants but also the

skills, behaviors and attitudes of participants for effective health care delivery (Mianda & Voce, 2018). Health care delivery involves the participation of patients, families, and a diverse team of specialized health care professionals.

The involvement of all these team members in a cooperative and coordinated way is essential to providing collaborative care (Morley & Cashell, 2017). All health care workers should be included in the development of standards, guidelines, and protocols and standards concerning interprofessional collaboration and Collaborative Capacity. Clarifying these concepts from the perspective of health care workers will support better education and greater efficiencies in the delivery of patient care.

Findings related to the third study objective confirmed the anticipated relationship between the three components of Collaborative Capacity, Leadership, Patient-Centered Care, and the Structural Factors that Enable Team Effectiveness. These findings highlight the importance of ensuring quality leadership, adequate Staffing and Resources, Communication and Information Technology, and appropriate rewards and control overwork to promote interprofessional collaboration and quality Patient-Centered Care.

There is a need to enhance communication among nurses, physicians, and all health professionals from education to practice. In a healthcare team, leadership must be shared and with a focus on building trust and sharing power such that common goals must be identified and mutual trust established (Morgan et al., 2015). Communication among team members must be effective and respectful to promote quality patient care.

Leaders must examine their own beliefs, values, and behaviors to ensure their ability to encourage team efforts instead of relying solely on themselves (Stanley & Stanley, 2018). The leader must have competency in dealing effectively with conflict so that resolution is quick, and the team does not suffer. This can be achieved by ensuring that healthcare workers participate fully in activities like grand rounds as well as departmental meetings.

In addition, the health care workers should be encouraged to support effective utilization of resources to achieve quality patient outcomes and interprofessional collaborative practice in their respective wards and departments at the hospital. For practice, our findings suggest that health care workers can be partners in achieving desired health outcomes. Practitioners should continually assess and build collaborative capacity as well as empower communities to respond to new challenges and developing new competencies, new relationships, and new solutions.

Support structures was the structural features associated with Interprofessional Collaborative Practice as such, there will be a need for leaders to ensure that: (i) health care workers have the physical space and resources time to meet to discuss patient care; (ii) collaborative behaviors are integrated into day-to-day functioning; and (iii) necessary policies and/or guidelines are in place to facilitate professionals to work together.

5.9.2 Implications for Education

The study findings have implications for both pre-service education and for continuing professional in-service education. Some of the skills that some health care providers have linked with collaboration such as the ability to reflect on practice, confidence, communication and respect for others have been argued as individual behaviour rather than competencies around collaboration (Penny, 2015). As such, the ability of healthcare workers to create successful collaborative relationships can build or break their careers.

In addition, there is proof documenting that inter-professional healthcare training techniques could be efficient in enhancing patient outcomes and decreasing healthcare expenses as when various health care practitioners of different disciplines cooperate in managing a patient's case, diagnosis can be more accurate thus leading to fewer misdiagnosed cases, fewer referrals and few visits to other health care facilities and consequently more prompt and more accurate treatment. To promote cooperative performance (Klopper et al., 2012).

Incorporating Inter-Professional Education curricula may be challenging, but strong leadership, persistence, and commitment can serve to overcome these challenges. Leadership skills are needed as core competencies in health professionals' education to prepare future providers for leadership roles in collaborative teams. There is a need to institute academic centres of excellence to demonstrate the drive for interprofessional collaboration.

Booyesen et al. (2012) stated that deliberate efforts should be made to introduce students to the concept of interprofessional teams, as well as the roles of the different disciplines. Ongoing training should be provided for practicing healthcare professionals in this regard. This will ensure that pre-service educational programs incorporate opportunities for interprofessional education so that each health professional cadre has the opportunity to learn how to effectively communicate and work with team members from other cadres.

This type of collaboration might be taught in structured classroom, clinical, and simulation learning experiences. All health professional programs should also incorporate education about effective leadership, provision of Patient-Centered Care, and factors that promote teamwork and collaboration. As a result, the students will learn how to function as collaborative members of a healthcare team and carry this knowledge and skill into their future practice. Similarly, staff will put their interprofessional knowledge into action with respect for the values and beliefs of their colleagues (WHO 2010). Similarly, in-service educational sessions in teamwork and communication skills fosters respect among the health professions and ensures that opportunities for health care workers to collaborate are also playing an important role. Luciano et al. (2018) discussed the importance of continuing education opportunities for practitioners to improve interprofessional collaboration and to improve healthcare outcomes. However, this ongoing education needs to address issues such as core competencies, collaborative culture, and concerns with the present educational system.

In-service education should focus on strengthening Leadership, Human Resource Management, interprofessional collaboration, and Patient-Centered Care. These in-service programs should eliminate persistent negative stereotypes attitudes towards other professionals and provide a meaningful exchange of information resulting in a shared vision necessary to continuously promote Collaborative Capacity in the practice areas (Khalili et al., 2014).

In addition, when new health care workers are deployed to the wards and departments at the hospital, they would also be oriented to Collaborative Capacity competencies to ensure a “collaborative practice-ready” health workforce in which staff will be working together to provide comprehensive services in a wide range of health-care and promote efficient utilization of scarce human and material resources. Similarly, the authors suggest that providing interprofessional education opportunities to newly employed practitioners as well as conducting orientation of health care workers on components specific to interprofessional goals and initiatives within the organization may increase collaboration and respect for one another and patient care (Lankhof, 2018).

Leadership development should be an ongoing process and must target both novice and veteran frontline health care workers. This means that the content of clinical leadership development interventions must encompass a holistic conceptualization of clinical leadership, and should use work-based learning, and team-based approaches, to improve clinical leadership competencies of frontline healthcare workers and overall improvement of service delivery (Price et al., 2014).

5.9.3 Implications for Research

Scientific research suggests that inter-disciplinary cooperation results in various positive consequences, in both acute and primary care settings (World Health Organization, 2010). The knowledge gained from this study will support affect positive change by guiding future research. In addition, this study will help fill a gap by focusing specifically on the relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness.

Although the study findings contributed to knowledge about Collaborative Practice, Structural features that promote team effectiveness, Leadership, and Patient-Centred Care in Malawi, there is a need for further research that addresses the study limitations related to setting, sampling, design, and measurement. Because this study was conducted in only one hospital in Malawi, it would be useful to replicate the study in other hospitals and compare the findings across different studies. Prospective designs would also be useful, to monitor changes in Collaborative Practice over time, and evaluate changes in Collaborative Practice following implementation of in-service or professional development programs as recommended in this study above.

Furthermore, it would also be useful to incorporate qualitative study designs to gather more in-depth perspectives from both health care workers and patients and families, about collaborative practice, and Patient-Centered Care. The health care workers must collaborate and work together as a team to provide increased evidence-based research to support Interprofessional Collaborative practice. In addition, there is a need to identify forums that will support to disseminate the results of various research studies on collaboration to provide opportunities for open dialogue, discussion as well as

problem-solving, as such creating an ongoing awareness of the need for improved collaboration among health care workers.

Lastly, although the study instrument had adequate internal consistency reliability, there is a need for further research to confirm the validity of the measure across different settings. More research is required to obtain a better understanding of the dynamics of collaborative capacity and the processes involved in interprofessional collaborative practice among health care workers.

5.10 Conclusion

This research provided data on how collaborative Capacity is being perceived by health care workers and how they interacted with other professionals in the wards/departments. These study findings suggest that health care workers had different perceptions regarding Collaborative Capacity and Team Effectiveness, Leadership and Patient-Centered Care at the hospital according to their cadres. In addition, Communication and Information Technology was positively associated with Collaborative Capacity.

Some factors necessary for promoting Collaborative Capacity in the health facility include adequate Staffing and Resources to enhance performance, Leadership that promote Teamwork, and Patient-Centered Care. From a methodological perspective, the knowledge base was expanded by utilizing a quantitative correlational approach, an existing theory, and reliable, validated instruments. The knowledge obtained can influence practice, education, and guide future research.

The results of the study can be used to guide educators, practitioners, researchers, and policymakers on developing policies, guidelines and protocols that would promote health care workers performance as they interact to provide Patient-Centered Care as well as strategies on how to support health care workers who are able to jointly identify the key strengths of each member of the health-care team and use those strengths to manage the complex health issues

The strengths of this study include the large number of health care workers who completed the survey and the use of a validated instrument that is associated with outcomes in other settings. This study has also helped to fill a gap in the literature by determining that there were differences in perception among different cadres of health care workers on Collaborative Capacity and Structural Features that promote Team Effectiveness among health professionals working in wards/departments at a referral hospital in Blantyre, Malawi. The study has detected a significant positive relationship between collaboration Capacity and Structural Features that promote Team effectiveness. Nurses with diploma education and those who are spending the majority of their work in direct patient care more readily ascribe to physician authority.

5.11 Recommendation

Interprofessional Collaborative Practice

Considering that Pharmacists, Physiotherapists, Laboratory, and Radiology Technologists reported the lowest mean scores across all three measures of Collaborative Capacity (Task Interdependence, Quality of Interaction and Collaborative Influence) reveals the gaps that qualified staff enter the practice setting

with the inability to work in interprofessional teams. Considering that the health care system is composed of several wards and departments including limited human and materials resources, an interprofessional team would be essential for the provision of patient safety.

The interprofessional team works towards minimizing adverse events caused by miscommunication with others caring for the patient as well as misunderstandings of roles and responsibilities among providers. This calls for providing interdependence of tasks among providers to determine how information, materials, and expertise will be shared between team members who are assigned to provide interdependent tasks necessary to achieve a common goal. Healthcare team members come together to provide services and enable improvements in the patient's condition. Accommodating and accepting one another idea has been shown to better outcomes of patient care.

Task Interdependence

Task Interdependence requires more than one entity working together harmoniously and frequently considering that one person or department cannot solely provide complete and competent patient care alone. Therefore, the commitment and mutual reliance of all team members are important. There is a need therefore for leaders to create forums and platforms to encourage health care workers to share information among them to perform their job competently and accomplish a shared goal. In addition, ensure availability of effective teamwork which will support individuals to provide the needed support to focus on their own and others' professional growth.

There is also a need to constitute an orientation program for new employees at the facility to provide them with an opportunity for professional development of

teamwork as an expected practice and norm in the institution. Encourage health care workers to put aside their differences and learn to collaborate and strive to improve health care.

Quality of Interactions “norms of working together”

To promote quality of interactions, among health care workers there is a need to constantly provide adequate information when needed for effective decision-making. Need to develop trust among health care workers to enable effective information processing for patient care. Furthermore, when there are issues to sort out for patient care, providers should ensure efficient utilisation of resources for problem-solving. Provide scheduled orientation sessions to enable providers to appreciate and respect each other’s roles and responsibilities during the provision of patient care. Professional regulatory bodies should prescribe an interprofessional health care team of the professional health care team to educate and manage conditions or illnesses among Malawians. Furthermore, there is also a need to develop, implement, monitor, and evaluate Continuous Professional Development on Interprofessional Education Program with a shift from a traditional silo approach of education to a greater collaborative approach.

Collaborative Influence (egalitarian collaboration)

Collaborative influence refers to the ability to get things done through people who are working collaboratively as a team as well as building strong networks. Some of the characteristics of Collaborative Influence include members seeking solutions to problems together rather than blaming each other. Members are free to have a say and contribute on issues that affect their work with respect to patient care. Health care

workers are interested in other people's views and welcome feedback to build mutual success. There is a need to:

Provide In-service training of teams in healthcare as multidisciplinary to improve their efficiency. Encourage teams to use the word 'we' as a marker of interdependence rather than 'I' and 'you' marker of independence. Conduct interdependent games where different cadres of health care workers would be invited to list a series of tasks that they regularly perform in the team any aspects in which the team needs input and coordination from both parties to be completed.

Structural Features that Promote Team Effectiveness

The results in the study showed that Specialists/Consultants reported the highest mean scores across all four measures of Team Effectiveness, whereas Physiotherapists, Pharmacists, and Radiology Technologists reported the lowest mean scores across the variables. The results further showed that health care workers' perceptions about Structural Features that promote Team Effectiveness varied significantly between respondents' cadre.

There is a need to develop strategies to reinforce collaborative practice among health care workers by utilizing a revitalized quality care approach. That will help in addressing issues and achieving comprehensive quality health services, effective use of appropriate technology, as well as patient and community involvement and participation in care.

Human Resource Management

Strong leadership, governance and accountability are crucial to ensure that the overall processes of planning and coordination of Human Resources Management and development are efficient and focused on priorities regarding health services. Collaboration and interprofessional communication are crucial for team-based care in emerging health care reform. These competencies assume individual willingness to learn about the roles and values of other professions and to appreciate how combined expertise offers quality and effective patient care.

Medicine and Nursing rely on one another's skills in the delivery of safe, patient centered care. For this to happen, concepts of interprofessional teamwork begin in the academic setting. In the health delivery area, there is a need to:

Promote team-based patient rounds in the wards at the hospital which can occur at designated times and incorporate other cadres from various disciplines. The patient rounds would enable health workers to communicate their input on issues affecting patient care and promote a clear and cohesive plan of care. With a clear channel for information coming to rounds and a clear plan of care formulated at rounds, team members can more effectively and efficiently complete their responsibilities, avoid duplication of effort, improve continuity of care for the patient.

Patient-Centered Care

Results of the study showed that both Leadership and Patient-Centered Care varied significantly between cadres. Several initiatives that employ Patient-Centered Care where the perspective of individuals, families, and communities are adopted appear to make better progress as they have the greater potential to unite the often diverse

objectives including professional and organisational goals. Patients are no longer passive recipients of service; they are now seen to be taking a more active role in their care, engaging in a range of activities and interactions that promote their health and wellbeing with different stakeholders.

The people-centred approach helps care systems understand that outcomes must go beyond cost-efficiencies created through new organisational and professional processes to ensure that they also improve people's care experiences and outcomes. There are some recommendations that individuals and organizations from health, service delivery, and other sectors need to come together to promote people-centered and integrated health services a reality. There is a need to promote responsive leadership and good governance to facilitate trust and respect among health care workers. Leaders should ensure that professionals practice in line with available evidence and technology thereby promoting teamwork. In addition, leaders should make necessary provisions of resources to ensure that appropriate numbers of health care workers are adequately trained to provide interprofessional practice.

Health care workers should be encouraged to talk to patients and families about their fears and concerns, make decisions based on patients' or their families' needs as well as relate to patients as people with feelings and not as bodies or diseases.

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APPENDICES

Appendix 1: Proportional sampling calculation for a stratified sample

$$nh = \frac{(Nh) \times n}{N}$$

nh = Sample size of the stratum

Nh = Population size of the stratum

N = Total population size

n = Total sample size

Medical Doctors $nh = (65/526) \times 384$

= 47.45 Therefore 47 medical doctors need to be surveyed in order to have a representative sample.

Nurses $nh = (346/526) \times 384$

= 252.52 Therefore 253 nurses need to be surveyed in order to have a representative sample.

Clinical Officers $nh = (59/526) \times 384$

= 43.07 Therefore, 43 clinical officers need to be sampled in order to have a representative sample

Physio Therapists $nh = (9/526) \times 384$

= 6.57 Therefore seven physiotherapists need to be sampled in order to have a representative sample.

Radiography technologists $nh = (8/526) \times 384$

=5.84 Therefore, six radiography technologists need to be sampled in order to have a representative sample

Laboratory technologists $nh = (25/526) \times 384$

=18.2 Therefore, 18 laboratory technologists need to be sampled in order to have a representative sample.

Pharmacists $nh = (14/526) \times 384$

= 10.22 Therefore, 10 pharmacists need to be sampled in order to have a representative sample

Appendix 2: Permission letter to use the Care Coordination tool



Brandeis University

Schneider Institutes for Health Policy

Institute for
Behavioral Health
Institute on
Healthcare Systems

The Heller School
Mailstop 035
PO Box 549110
Waltham, Massachusetts
02454-9110

781-736-3900
781-736-3905 Fax
<http://sihp.brandeis.edu>

January 12, 2017

Tulipoka Soko
Kamuzu College of Nursing,
University of Malawi

Dear Tuli,

I have received your request to use/adapt the Care Coordination survey tool which you would like to use in your study for your dissertation. I am happy to grant you permission to use this tool for your work on Collaborative Practice. Please let me know if you have any questions about the tool or need any assistance.

I look forward to hearing about the results you receive.

Best regards,

A handwritten signature in black ink, appearing to read "Jennifer Perloff".

Jennifer Perloff, PhD

Deputy Director, Institute for Healthcare Systems, Schneider Institutes for Health Policy
The Heller School for Social Policy and Management, Brandeis University
415 South Street, MS 035
Waltham, MA 02454-9110

Appendix 3: Original Care coordination tool

Care Coordination Survey

Section 1: Information about You

On what hospital unit(s) do you work most often?

1. What is your role?

MARK (X) ONE

- 1 Case Manager
- 2 Clerk
- 3 Hospitalist
- 4 Licensed Practical Nurse
- 5 Registered Nurse
- 6 Nurse's Aide/ Patient Care Technician
- 7 Occupational Therapist
- 8 Physical Therapist
- 9 Social Worker
- 10 Resident Physician
- 11 Speech and Language Pathologist

2. How long have you been working in this role?

_____ Years

3. Thinking about the unit on which you work most often, how long have you been working on this unit?

MARK (X) ONE

- 1 Less than one year
- 2 1-2 years
- 3 3-4 years

4 More than five years

4. How many hours per week do you work on this unit?

MARK (X) ONE

- 1 12 hours or less per week
- 2 12-24 hours per week
- 3 24-36 hours per week
- 4 More than 36 hours per week

5. Do you know most of the people working on this unit?

MARK (X) ONE

- 0 No
- 1 Yes

6. Are you male or female?

MARK (X) ONE

- 0 Male
- 1 Female

7. What race do you consider yourself?

MARK (X) ALL THAT APPLY

- American Indian or Alaska Native
- Asian
- Black or African-American

Native Hawaiian or Other Pacific Islander

White

8. Are you of Hispanic or Latino origin?

MARK (X) ONE

0 No

1 Yes

9. Were you born in this country?

MARK (X) ONE

0 Yes

1 No

10. Are you currently in school?

MARK (X) ONE

0 No

1 Yes

11. What is the highest degree you received in school?

MARK (X) ONE

1 High school diploma or GED

2 LPN Diploma

3 Associate's Degree

4 Nursing Diploma

5 Bachelor's Degree or BSN

6 Master's Degree

7 Doctorate or MD

8 Don't know

MARK (X) ONE

1 High school diploma or GED

2 Associate's Degree

3 Nursing Diploma

4 Bachelor's Degree or BSN

5 Master's Degree

6 Doctorate or MD

7 Don't know

12. What is the highest degree your father received in school?

MARK (X) ONE

- 1 High school diploma or GED
- 2 LPN Diploma
- 3 Associate's Degree
- 4 Nursing Diploma
- 5 Bachelor's Degree or BSN
- 6 Master's Degree
- 7 Doctorate or MD
- 8 Don't know

13. What is the highest degree your mother received in school?

MARK (X) ONE

- 1 High school diploma or GED
- 2 LPN Diploma
- 3 Associate's Degree
- 4 Nursing Diploma
- 5 Bachelor's Degree or BSN
- 6 Master's Degree
- 7 Doctorate or MD
- 8 Don't know

Section 2: Supports for Individual and Team Performance

This section has statements about different aspects of jobs. Some of these statements may apply to your job, and others may not. For each statement, please tell us how often it is true for your job – most of the time, some of the time, rarely, or never.

Hospital Decision-Making

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
1. Hospital leaders seem to know what my typical day is like.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
2. Hospital leaders respond to staff concerns.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
3. I have the opportunity to serve on hospital committees.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
4. I have a lot of say about what happens on my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
5. I take part in making decisions that affect my work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Staffing and Resources

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
6. I work with staff who know what they are doing.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
7. There is enough staff to get the work done.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
8. Someone with experience is available to help me when I have questions.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
9. Adequate support services give me the time I need to do my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
10. There is enough time with patients to meet their needs.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Job Demands

The following statements are about how demanding some jobs can be.

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
11. My job requires me to work very fast.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
12. My job requires me to work very hard.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
13. I can pace my work and do not have to rush.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Professional Empowerment

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
14. I really care about what I do on the job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
15. I have mastered the skills needed to do my job well.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
16. The work I do is important.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
17. I have the freedom to decide how to do my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
18. I use my judgment about how best to do my work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
19. I am good at my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
20. I ask my co-workers for help if I need it.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
21. I need permission to make even small decisions.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
22. If I see a problem at work, I speak up.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
23. I see myself as a professional.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
24. I draw on my training to do my work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Job Rewards and Opportunities

The following statements are about job rewards and opportunities.

My job offers ...	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
25. Active staff development, continuing education programs, or training opportunities	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
26. The chance to gain new skills and knowledge.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
27. Decent benefits.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
28. Decent pay.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
29. Opportunity to get a better job in this hospital.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
30. Good job security	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
31. Rewards, like bonus pay or gifts, for a job well done.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
32. Appreciation for a job well done.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Your Supervisor

The following statements are about your supervisor. If you have more than one supervisor, answer about the one with whom you have the most contact.

My supervisor:.	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
33. Respects my ability to do my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
34. Ignores my input.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
35. Trusts me to do my job well.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
36. Talks down to me.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
37. Shows me recognition when I do good work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
38. Questions everything I do.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
39. Supports progress in my career, such as further training.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
40. disciplines staff who do not do their job well.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
41. is good about following up and resolving problems.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
42. uses mistakes as learning opportunities, not criticism.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
43. supports my decisions about how to do my work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
44. consults with me on daily decisions.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Delivering Patient-Centered Care

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
45. High standards of patient care are expected by hospital leaders.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
46. I make decisions based on patients' or their families' needs.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

47. I am encouraged to talk to patients and families about their fears and concerns.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
48. I have the opportunity to relate to patients as people, not as bodies or diseases.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Communication about Patients

The following statements are about your opportunities and resources for communication and patient care.

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
49. I have the time and opportunity to discuss patient care decisions with other staff.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
50. Information technology makes it easy for me to get information about patients.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
51. Information technology makes it easy to share information about patients.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
52. I have enough time to communicate with other staff about patient care.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
53. I have enough time to learn what I need to know about patients.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
54. I participate in regular meetings or rounds to discuss patient care.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Section 3: Team Effectiveness

Who do you work with?

MARK (X) ALL THAT APPLY

- Nurses
- Doctors
- Residents
- Nurses' Aides
- Nurse Practitioners and Physician Assistants
- Case Managers and Social Workers
- Rehabilitation Services
- Pharmacy Services
- Nutrition Services
- Other _____

Please answer the questions related your relationships and communication with each of these occupational groups. If you do not work with a particular occupational group, please skip the questions related to it.

Nurses on your unit

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□

e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Doctors on your unit

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□

Residents on your unit

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□

c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□

Nurse's Aides on Your Unit

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□

Nurse Practitioners and Physician Assistants on Your Unit

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the	4□	3□	2□	1□	0□

information they give you?					
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□

Case Managers and Social Workers

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□

Rehabilitation Services (Physical therapists, occupational therapists, speech and language pathologists)

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□

c. How often can you trust the information they give you?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. When there is a problem, do they work with you to solve the problem?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Pharmacy Services

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□

Nutrition Services

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the	4□	3□	2□	1□	0□

information they give you?					
d. When there is a problem, do they work with you to solve the problem?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Section 4: Rating Your Hospital

1. In my current job, physicians and nurses have good working relationships.

1Strongly disagree

2Disagree

3Agree

4Strongly agree

2. In my current job, there is a lot of teamwork between nurses and doctors.

1Strongly disagree

2Disagree

3Agree

4Strongly agree

3. How would you rate the care provided on your unit?

1Poor

2Fair

3Good

4Very Good

5Excellent

4. If a family member got sick, how likely would you be to recommend this hospital?

1Not at all likely

2Not too likely

3Somewhat likely

4Very likely

5. Overall, how satisfied are you with your job?

1Very satisfied

2Somewhat satisfied

3Somewhat dissatisfied

4Very dissatisfied

6. How often do you feel burned out from your work on your unit?
- 0 Never
 - 1 Sometimes
 - 2 Often
 - 3 Always
7. Thinking about the next three months, how likely are you to continue working on your unit?
- 1 Very likely to continue
 - 2 Somewhat likely to continue
 - 3 Somewhat likely to leave
 - 4 Very likely to leave
8. Thinking about the next three months, how likely are you to continue working in this hospital?
- 1 Very likely to continue
 - 2 Somewhat likely to continue
 - 3 Somewhat likely to leave
 - 4 Very likely to leave

Section 5: Psychological Empowerment

Listed below are a number of self-orientations people have with regard to their work role. Please indicate the extent to which you agree or disagree each one describes your self-orientation.

	<i>MARK</i> <i>(X) ONE</i> <i>ANSWER</i> <i>FOR EACH</i>	VERY STRONGLY DISAGREE	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	VERY STRONGLY AGREE
1. I am confident about my ability to do my job.		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
2. The work that I do is important to me.		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
3. I have significant autonomy in determining how I do my job.		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
4. My impact on what happens in my department is large.		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
5. My job activities are personally meaningful to me.		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
6. I have a great deal of control over what happens in my department.		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

7. I can decide on my own how to go about doing my own work.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
8. I really care about what I do on my job.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
9. My job is well within the scope of my abilities.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
10. I have considerable opportunity for independence and freedom in how I do my job.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

Appendix 4: Adapted Questionnaire: Care coordination survey

Title: Relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient- Centered Care: Perceptions of health care workers in Blantyre, Malawi.

Instructions

Please respond to the following statements from your perspective of being a member of staff at QECH. If you work on more than one ward, provide answers based on the team you work with most often. Please try to answer each question to the best of your ability.

Your responses are confidential, and the results will be aggregated and used to understand your views on collaborative Capacity.

Code number.....

Ward.....

Date of interview.....

Starting time..... **Finishing time**.....

Name of interviewer.....

Section 1: Demographic information

Please tick in the box the category you belong to

14. Sex

Mark (x) one

- 1 Male
- 2 Female

15. What is your highest level of education?

Mark (x) one

- 1 Diploma
- 2 Degree
- 3 Master's Degree
- 4 Doctorate Degree
- 5 Others.....

16. What is your cadre/role?

Mark (x) one

- 1 Specialist/Consultant
- 2 Registrar
- 3 Medical Officer
- 4 Clinical Officer
- 5 Registered Nurse/Midwife
- 6 Nurse/Midwife Technician
- 7 Physiotherapist
- 8 Pharmacist
- 9 Laboratory Technologist
- 10 Radiographer Technologist
- 11 Others.....

17. How long have you been practicing in this role? Years

18. In which ward/unit do you work most often?

.....

19. Thinking about the ward/unit on which you work most often, how long have you been working on this unit?

Mark (x) one

- 1 Less than one year
- 2 1-2 years
- 3 3-4 years
- 4 More than five years

20. Do you know all staff working on this unit?

Mark (x) one

- 0 No
- 1 Yes

Section 2:

This section has statements about different aspects of the job. For each statement, please tick in the boxes how often it is true for you on the job whether it is: All the time, most of the time, some of the time, rarely, or never.

<i>Hospital Decision-Making</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
1. Hospital leaders seem to know what my typical day is like.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
2. Hospital leaders respond to staff concerns.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
3. I have the opportunity to serve on hospital committees.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
4. I have a lot of say about what happens on my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
5. I take part in making decisions that affect my work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
<i>Staffing and Resources</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
1. I work with staff who knows what they are doing.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
2. There is enough staff to get the work done.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
3. Someone with experience is available to help me when I have questions.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
4. Adequate support services give me the time I need to do my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
5. There is enough time with patients to meet their needs.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

<i>Job Demands</i>					
The following statements are about how demanding some jobs can be.					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
6. My job requires me to work very fast.	4□	3□	2□	1□	0□
7. My job requires me to work very hard.	4□	3□	2□	1□	0□
8. I can pace my work and do not have to rush.	4□	3□	2□	1□	0□
<i>Professional Empowerment</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
9. I really care about what I do on the job.	4□	3□	2□	1□	0□
10. I have mastered the skills needed to do my job well.	4□	3□	2□	1□	0□
11. The work I do is important.	4□	3□	2□	1□	0□
12. I have the freedom to decide how to do my job.	4□	3□	2□	1□	0□
13. I use my judgment about how best to do my work.	4□	3□	2□	1□	0□
14. I am good at my job.	4□	3□	2□	1□	0□
15. I ask my co-workers for help if I need it.	4□	3□	2□	1□	0□
16. I need permission to make even small decisions.	4□	3□	2□	1□	0□
17. If I see a problem at work, I speak up.	4□	3□	2□	1□	0□
18. I see myself as a professional.	4□	3□	2□	1□	0□
19. I draw on my training to do my work.	4□	3□	2□	1□	0□
<i>Job Rewards and Opportunities</i>					

The following statements are about job rewards and opportunities.					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
I believe my job offers ...					
20. Active staff development, continuing education programs, or training opportunities	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
21. The chance to gain new skills and knowledge.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
22. Decent benefits.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
23. Decent pay.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
24. Opportunity to get a better job in this hospital.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
25. Good job security	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
26. Rewards, like bonus pay or gifts, for a job well done.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
27. Appreciation for a job well done.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
Your Supervisor					
The following statements are about your supervisor. If you have more than one supervisor, answer about the one with whom you have the most contact.					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
My supervisor:					
28. Respects my ability to do my job.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
29. Ignores my input.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
30. Trusts me to do my job well.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
31. Talks down to me.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

32. Shows me recognition when I do good work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
33. Questions everything I do.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
34. Supports progress in my career, such as further training.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
35. Disciplines staff who do not do their job well.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
36. Is good about following up and resolving problems.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
37. Uses mistakes as learning opportunities, not criticism.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
38. Supports my decisions about how to do my work.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
39. Consults with me on daily decisions.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
<i>Delivering Patient-Centered Care</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
40. High standards of patient care are expected by hospital leaders.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
41. I make decisions based on patients' or their families' needs.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
42. I am encouraged to talk to patients and families about their fears and concerns.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
43. I have the opportunity to relate to patients as people, not as bodies or diseases.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
<i>Communication about Patients</i>					
The following statements are about your opportunities and resources for communication and patient care.					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER

44. I have the time and opportunity to discuss patient care decisions with other staff.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
45. Information technology makes it easy for me to get information about patients.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
46. Information technology makes it easy to share information about patients.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
47. I have enough time to communicate with other staff about patient care.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
48. I have enough time to learn what I need to know about patients.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
49. I participate in regular meetings or rounds to discuss patient care.	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Section 3: Team Effectiveness

Who do you work with?

MARK (X) ALL THAT APPLY

- Specialists/Consultants
- Registrars
- Medical Officers
- Clinical Officers
- Registered Nurse/Midwives
- Nurse Midwife Technicians
- Physiotherapist
- Social Workers
- Radiologists
- Pharmacists
- Pharmacy Technicians
- Laboratory Technologists
- Other

Please answer the questions related your relationships and communication with each of these occupational groups. If you do not work with a particular occupational group, please skip the questions related to it.

Specialist /Consultants on your unit

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□

Registrars in your unit

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4☐	3☐	2☐	1☐	0☐
b. Do they give you information when you need it?	4☐	3☐	2☐	1☐	0☐
c. How often can you trust the information they give you?	4☐	3☐	2☐	1☐	0☐
d. When there is a problem, do they work with you to solve the problem?	4☐	3☐	2☐	1☐	0☐
e. Do they know very much about the work you do?	4☐	3☐	2☐	1☐	0☐
f. Do they respect the work you do?	4☐	3☐	2☐	1☐	0☐
g. Do they have the same goals as you do for taking care of patients?	4☐	3☐	2☐	1☐	0☐
h. How often do you agree with how they care for patients?	4☐	3☐	2☐	1☐	0☐
i. When you have important information to share, do they listen?	4☐	3☐	2☐	1☐	0☐
j. Do you have a say in what they do with patients?	4☐	3☐	2☐	1☐	0☐
<i>Medical officer in your unit</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4☐	3☐	2☐	1☐	0☐
b. Do they give you information when you need it?	4☐	3☐	2☐	1☐	0☐
c. How often can you trust the information they give you?	4☐	3☐	2☐	1☐	0☐
d. When there is a problem, do they work with you to solve the problem?	4☐	3☐	2☐	1☐	0☐

e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
<i>Clinical officers in your unit</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Do they give you information when you need it?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. How often can you trust the information they give you?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. When there is a problem, do they work with you to solve the problem?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

<i>Registered Nurse/Midwives in Your Unit</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□
e. Do they know very much about the work you do?	4□	3□	2□	1□	0□
f. Do they respect the work you do?	4□	3□	2□	1□	0□
g. Do they have the same goals as you do for taking care of patients?	4□	3□	2□	1□	0□
h. How often do you agree with how they care for patients?	4□	3□	2□	1□	0□
i. When you have important information to share, do they listen?	4□	3□	2□	1□	0□
j. Do you have a say in what they do with patients?	4□	3□	2□	1□	0□
<i>Nurse/Midwife Technicians in your unit</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4□	3□	2□	1□	0□
b. Do they give you information when you need it?	4□	3□	2□	1□	0□
c. How often can you trust the information they give you?	4□	3□	2□	1□	0□
d. When there is a problem, do they work with you to solve the problem?	4□	3□	2□	1□	0□

e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
<i>Laboratory Technologists in the hospital</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Do they give you information when you need it?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. How often can you trust the information they give you?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. When there is a problem, do they work with you to solve the problem?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

<i>Physiotherapists in the hospital</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Do they give you information when you need it?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. How often can you trust the information they give you?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. When there is a problem, do they work with you to solve the problem?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
<i>Pharmacy Services in the hospital</i>					
	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Do they give you information when you need it?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. How often can you trust the information they give you?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

d. When there is a problem, do they work with you to solve the problem?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
<i>Radiographers in the hospital</i>					
	ALL THE TIME	MOST OF THE TIME	SOME OF THE TIME	RARELY	NEVER
a. Do you need information from them to do your job?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Do they give you information when you need it?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. How often can you trust the information they give you?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. When there is a problem, do they work with you to solve it?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Do they know very much about the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
f. Do they respect the work you do?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
g. Do they have the same goals as you do for taking care of patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
h. How often do you agree with how they care for patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
i. When you have important information to share, do they listen?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

j. Do you have a say in what they do with patients?	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
Section 4: Rating Your Hospital					
In my current job, health workers have good working relationships.					
1 <input type="checkbox"/> Strongly disagree					
2 <input type="checkbox"/> Disagree					
3 <input type="checkbox"/> Agree					
4 <input type="checkbox"/> Strongly agree					
2. In my current job, there is a lot of teamwork between health workers					
1 <input type="checkbox"/> Strongly disagree					
2 <input type="checkbox"/> Disagree					
3 <input type="checkbox"/> Agree					
4 <input type="checkbox"/> Strongly agree					
3. How would you rate the care provided on your unit					
1 <input type="checkbox"/> Poor					
2 <input type="checkbox"/> Fair					
3 <input type="checkbox"/> Good					
4 <input type="checkbox"/> Very Good					
5 <input type="checkbox"/> Excellent					
4. if a family member got sick, how likely would you recommend to this hospital					
1 <input type="checkbox"/> Not at all likely					
2 <input type="checkbox"/> Not too likely					


3 <input type="checkbox"/> Somewhat likely
4 <input type="checkbox"/> Very likely
5. Overall, how satisfied are you with your job?
1 <input type="checkbox"/> Very satisfied
2 <input type="checkbox"/> Somewhat satisfied
3 <input type="checkbox"/> Somewhat dissatisfied
4 <input type="checkbox"/> Very dissatisfied
6. How often do you feel burned out from your work on your unit?
0 <input type="checkbox"/> Never
1 <input type="checkbox"/> Sometimes
2 <input type="checkbox"/> Often
3 <input type="checkbox"/> Always
7. Thinking about the next three months, how likely are you to continue working in this hospital?
1 <input type="checkbox"/> Very likely to continue
2 <input type="checkbox"/> Somewhat likely to continue
3 <input type="checkbox"/> Somewhat likely to leave
4 <input type="checkbox"/> Very likely to leave

Thank you very much for your participation

Appendix 5: Permission letter to pre-test the questionnaire at KCH

Kamuzu College of Nursing,
Private Bag 1,
Lilongwe,
5th February, 2017.

The Hospital Director,
Kamuzu Central Hospital,
P.O. Box 149,
Lilongwe

Authority granted

(H)
09/02/17

Dear Sir,

RE: REQUEST FOR PERMISSION TO CONDUCT A PILOT TESTING OF THE QUESTIONNAIRE

I am Tulipoka Soko a Doctoral student at Kamuzu College of Nursing pursuing a PhD in Interprofessional Collaborative Health Care Leadership as a Principal Investigator. My supervisor is Dr. D. Jere. As part of fulfilment of the program, I am required to complete a research project. The study title is "Health workers' perspectives of care coordination a proxy for collaborative practice at Queen Elizabeth Central Hospital".

I would therefore like to request for permission to conduct a pilot testing of the questionnaire to a number of health workers at KCH in order to check if questions are addressing the objectives of the study and to determine the consistency of the information collected. Data obtained will not be used in the main study.

. Please do not hesitate to contact me on in case you need for further information
Yours Sincerely,

(Signature)

Tulipoka Nellie Soko (Mrs.)

Mobile cell number 0888897552 email: tulisoko@yahoo.com

Appendix 6: Content Validity Index of the Care Coordination tool by the four content experts

SCORING OF THE TOOL BY THE 4 EXPERTS										
KEY: 1= not relevant, 2= somewhat relevant, 3= quite relevant, and 4= highly relevant.										
			Rat er	Rat er	Rat er	Rat er	Tot al	Me an	Me an	CVI (perc ent ratin g items as 3 or 4)
			1	2	3	4				
Factor		Collaborati ve Capacity								
Task interdepend ence	1	1. How often do you need information from (provider groups) to do your job?	4	4	4	4	16	4	4	100%
Quality of interaction	2	1. Do they give you information when you need it?	4	4	4	4	16	4		100%
	3	2. How often can you trust the information they give you?	4	4	3	4	15	3.75		
	4	3. When there is a problem, do they work with you to solve the problem?	3	3	3	4	13	3.25		
	5	4. Do they know very much about the work	4	4	4	4	16	4		

		you do?								
	6	5. Do they respect the work you do?	4	4	4	4	16	4		
	7	6. Do they have the same goals as you do for taking care of patients?	3	4	4	4	15	3.75		
	8	7. How often do you agree with how they care for patients?	4	4	4	4	16	4		
	9	8. When you have important information to share, do they listen?	4	4	4	4	16	4		
								30.75	3.84	
Collaborative influence	10	1. How often do you have a say in what [provider groups] do with patients?	4	3	4	3	14	3.5	3.5	100%
		Structural Features that Enable Team Effectiveness								
Staffing and Resources	11	1. I work with staff who knows what they are doing.	4	3	4	4	15	3.75		100%
	12	2. There is enough	4	4	4	4	16	4		

		staff to get the work done.								
	1 3	3. Someone with experience is available to help me when I have questions	4	4	4	4	16	4		
	1 4	4. Adequate support services give me the time I need to do my job.	3	3	3	4	13	3.25		
	1 5	5. There is enough time with patients to meet their needs.	4	3	4	4	15	3.75		
	1 6	6. I can pace my work and do not have to rush.	3	3	3	4	13	3.25		
								22	3.66	
Communication and Information Technology	1 7	1. I have the time and opportunity to discuss patient care decisions with other staff.	4	4	4	4	16	4		
	1 8	2. Information technology makes it easy for me to get information about patients.	3	2	4	3	12	3		100%
	1 9	3. Information	2	3	3	4	12	3		

		technology makes it easy to share information about patients								
	20	4. I have enough time to communicate with other staff about patient care.	3	3	4	4	14	3.5		
	21	5. I have enough time to learn what I need to know about patients.	4	4	4	4	16	4		
								17.5	3.5	
Human Resource Management/Job rewards		My job offers...								
	22	1. Active staff development, continuing education programs, or training opportunities	4	4	4	4	16	4		100%
	23	2. The chance to gain new skills and knowledge.	3	4	4	4	15	3.75		
	24	3. Decent benefits	4	3	4	4	15	3.75		
	25	4. Decent pay	3	4	3	4	14	3.5		
	26	5. Opportunity	3	3	4	3	13	3.25		

		to get a better job in this hospital								
	27	6. Good job security.	4	4	4	4	16	4		
	28	7. Rewards, such as bonus pay or gifts, for a job well done.	4	3	3	4	14	3.5		
	29	8. Appreciation for a job well done.	3	4	4	4	15	3.75		
								29.5	3.68	
Control overwork	30	1. Hospital leaders seem to know what my typical day is like.	3	4	4	4	15	3.75		100%
	31	2. Hospital leaders respond to staff concerns.	4	4	3	4	15	3.75		
	32	3. I have the opportunity to serve on hospital committees.	3	4	4	4	15	3.75		
	33	4. I have a lot of say about what happens on my job.	4	4	4	4	16	4		
	34	5. I take part in making decisions that affect my work.	4	3	4	3	14	3.5		
	35	6. I have the freedom to decide how to do my job	3	3	4	3	13	3.25		

								22	3.66	
Leadership that Promotes Teamwork		My supervisor...								
	36	1. Respects my ability to do my job	4	4	4	4	16	4		100%
	37	2. Ignores my input (reverse coded)	4	4	4	3	15	3.75		
	38	3. Trusts me to do my job well	4	4	4	4	16	4		
	39	4. Talks down to me (reverse coded)	3	3	4	4	14	3.5		
	40	5. Shows me recognition when I do good work	4	4	4	4	16	4		
	41	6. Questions everything I do (reverse coded)	4	4	4	3	15	3.75		
	42	7. Supports progress in my career, such as further training	4	3	3	4	14	3.5		
	43	8. Disciplines staff who do not do their job well	4	4	4	4	16	4		
	44	9. Is good about following up and resolving problems.	4	4	4	4	16	4		
	4	10. Uses	4	3	3	3	13	3.25		

	5	mistakes as learning opportunities, not criticism.								
	46	11. Supports my decisions about how to do my work	3	3	3	4	13	3.25		
								41	3.72	
Patient-centred care	47	1. I make decisions based on patients' or their family needs	4	3	4	4	15	3.75		100%
	48	2. I am encouraged to talk to patients and families about their fears and concerns	3	4	3	3	13	3.25		
	49	3. I have the opportunity to relate to patients as people not as bodies or disease	4	4	4	4	16	4		
								11	3.66	

Appendix 7: Ethical approval Certificate



Appendix 8: Request Letter to Conduct Study at QECH

Kamuzu College of Nursing,
Private Bag 1,
Lilongwe,
5th February, 2017.

The Hospital Director,
Queen Elizabeth Central Hospital,
P.O. Box 95,
Blantyre.

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I am Tulipoka Soko a Doctoral student at Kamuzu College of Nursing pursuing a PhD in Interprofessional Collaborative Health Care Leadership as a Principal Investigator. My supervisor is Dr. D. Jere. As part of the fulfilment of the program, I am required to complete a research project. The study title is “**Health workers’ perspectives of care coordination a proxy for collaborative practice at Queen Elizabeth Central Hospital**”.

The study is expected to assess how health workers perceive care coordination during delivery of patient care at QECH. The study will gather information on the structures, processes, including benefits and challenges regarding care coordination. Furthermore, the research findings will guide researchers, policy makers, practitioners, and other stakeholders on how to promote care coordination for quality patient outcomes.

I would therefore like to request for permission to conduct the study at QECH. Please do not hesitate to contact me on in case you need for further information
Yours Sincerely,



Tulipoka Nellie Soko (Mrs.)

Mobile cell number 0888897552 email: tulisoko@yahoo.com

Appendix 9: Approval letter to conduct study at QECH

Telephone: (265) 01 874 333 /877 333
Facsimile: (265) 01 876928
Email: queenshosp@globemw.net



In reply please quote No. QEC/GEN/2

All communications should be addressed to:
The Hospital Director

QUEEN ELIZABETH CENTRAL HOSPITAL
P.O. BOX 95
BLANTYRE
MALAWI

07th February 2017

The Chairperson
COMREC
P/Bag 360
Chichiri
Blantyre 3

Dear Sir,

RE: HEALTH WORKERS' PERSPECTIVES OF CARE COORDINATION - A PROXY FOR COLLABORATIVE PRACTICE AT QUEEN ELIZABETH CENTRAL HOSPITAL BY MRS T. SOKO

We are writing in support of the above named study that it can take place at QECH as envisaged. It will assess how health workers perceive care coordination during delivery of patient care at this hospital through gathering information on the structures, processes, including benefits and challenges regarding care coordination.

We hope that the research findings will guide researchers, policy makers, practitioners and other stakeholders on how to promote care coordination for quality patient outcomes. We support that this research take place at this hospital.

A handwritten signature in black ink, appearing to be 'AG'.

Dr Andrew Gonani
HOSPITAL DIRECTOR

Appendix 10: Information Sheet and Informed Consent

A copy of informed consent for participants working at QECH

Participants are being invited to participate in a study entitled: Relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care: perceptions of health care workers in Blantyre Malawi.

Name of Principal Investigator-Tulipoka Nellie Soko

Name of Organisation- Kamuzu College of Nursing

Name of Sponsor- Nursing Education Practice Initiative

INFORMATION

This informed consent is in two parts:

- Part 1 is the information sheet (which I will explain the information about the study)
- Part 2 is the certificate of consent (where you will sign if you choose to participate in the study)

Part I: information sheet

Introduction

My Name is Tulipoka Nellie Soko, pursuing a PhD in Interprofessional Health Care Leadership at Kamuzu College of Nursing. I am conducting a research on “Relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care: perceptions of health care workers in Blantyre, Malawi”. I am going to give you information and invite you to take part in this research. If the consent form contains information that you may not understand fully, please do not hesitate to ask for any clarification and I will gladly explain it to you.

Purpose of the research

The researcher seeks to investigate the relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care. Data obtained in this study will provide information on how health care workers perceive the relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care during health care service provision.

Specifically, it is expected that data obtained from this study will highlight views held by health care workers that would influence Collaborative Capacity at the health facility. Data from health workers will provide information on the Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care. The results of this study will provide practitioners, researchers, policy makers, educators, and other stakeholders with information to help them gain a better understanding on how to promote Team Effectiveness and Collaborative Capacity amongst health care workers in order to improve the quality of service delivery.

Type of research intervention

The research will involve your participation in responding to a questionnaire which will take on average 45 minutes.

Participant selection

You have been invited to participate in the research study because your experience of working at QECH will provide better understanding on Collaborative Capacity as an important element that promotes Patient-Centred Care.

Voluntary participation

Your decision to take part in the study is entirely voluntary. It is your choice whether to participate in the study or not. In the event that you choose not to participate, I

would like to assure you that there will be no consequences. You may decide and choose to withdraw your participation at any time even if you agreed earlier without giving any explanation. If you agree to participate in the study, I will conduct an interview with you which will last between 15 to 20 minutes. Your name will not be included on the questionnaire or identified at any time during the interview instead you will be given a number.

I will sit down with you in a private room without any disturbance to ensure your comfort. If you do not wish to answer any of the questions, you may do so and move on to the next question. The information provided during the interview will be confidential and no one else but the interviewer and the research supervisor will access the information. The questionnaire will be destroyed after 2 years.

Duration

Data collection for the research will take place over a period of 12 weeks.

Risks

I do not envision any significant risk associated with your participation in the research. You may feel some discomfort when asked to reveal certain information about Collaborative Capacity.

Benefits

There will not be a direct benefit to you, but your participation and responses will help me find out more about your views and perspectives on collaborative practice and how it can be achieved in the workplace. You will not be provided with any financial incentive to make you take part in the study.

Confidentiality

I will not share information about you with anyone outside the research team. All information that will be collected will be kept confidential. Any information about

you will not have your name on it, but a number that will be known only by the research team. The interview information will be kept safely under lock and key and will only be shared among the researcher and my research supervisor.

Sharing the results

Nothing that you will tell me will be shared with anybody outside the research team and nothing will have your name on it. The information that will be obtained from this research will be consolidated and shared with you and other members of staff at the facility.

Right to refuse or withdraw

Participation in this research is entirely voluntary and you do not have to take part if you may wish to do so. You may choose to withdraw from the interview at any time and this will also not affect your work. You will be given an opportunity at the end of the interview to review your responses so that they can be modified, removed and clarifications made before closure.

Who to contact?

If you have any questions, you can ask them now.

If you wish to ask later you can contact me on Tulipoka Soko, Kamuzu College of Nursing, and P.O. Box 415, Blantyre. Cell phone number: 0888897552.

This proposal was reviewed and approved by the College of Medicine Research and Ethics Committee (COMREC) whose task is to ensure that research participants are protected from harm. If you wish to find out more about COMREC, please contact; COMREC Secretariat, P/Bag 360, Chichiri, Blantyre 3, Telephone number- 01989766/ 01871911

Part II: Participants' consent form

I have been invited to participate in the research titled “Relationship between Collaborative Capacity and Structural Features that Enable Team Effectiveness, Leadership and Patient-Centered Care: Perceptions of health care worker in Blantyre, Malawi.”

I have read the information about the research and the researcher has also read it to me. I acknowledge that I have had the opportunity to obtain additional information regarding the study. I have had the opportunity to ask questions and they were answered to my satisfaction. I understand that I am free to withdraw my consent at any time and to discontinue participating in the interview without any consequences. I acknowledge that I have and fully understand the information. I understand that my participation is voluntary and the information I will give will be accessed by the researcher.

I hereby voluntarily give the consent to participate in the study.


Print name of participant.....

Signature of participant... ..

Print name of interviewer.....

Signature of interviewer.....

Appendix 11: Registration receipt from Nurses and Midwives Council of Malawi

	NURSES AND MIDWIVES COUNCIL OF MALAWI P.O. Box 30361 Lilongwe – Malawi		Tel: (265) 01 772 044 / 730 Fax: (265) 01 773 932 E-mail: nmcm@nmcm.org.mw www.nmcm.org.mw	
	Account No. 2012-03455		General Receipt	
Receipt No.	866920	Date	15-Mar-2019	
Received from:	NELLIE MWANJA TULIPOKA SOKO	Reg. No.	G/1981/1192 M/1983/780	
Address:	MINISTRY OF HEALTH BOX 30377 LILONGWE			
The Sum of (In Words)	Thirty Thousand Kwacha Only AP - ANNUAL REGISTRATION FEES 2019/2020 Your account balance is MWK 0.00			
Paid by:	CASH	Amount:	MWK 30,000.00	
RECEIVED BY:	BKAFWAMBA	Signature	Official Stamp	
COMMENT:	[Empty field]			