
**ADDIS ABABA UNIVERSITY**

**COLLEGE OF BUSINESS AND ECONOMICS**

**SCHOOL OF COMMERCE**

**MA PROGRAM IN PROJECT MANAGEMENT**

# Assessment of Project team work during COVID-19; The case of Eka Kotebe General Hospital

By

Abebaw Bekele

**A Project Work Submitted to Addis Ababa University, College of Business and Economics, School of Commerce in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Project Management**

**Advisor: Bahran Asrat(PhD)**

**Addis Ababa, Ethiopia**

**October, 2023**

# Assessment of Project team work during COVID-19; The case of Eka Kotebe General Hospital

By
Abebaw Bekele

**A Project Work Submitted to Addis Ababa University, College of Business and Economics, School of Commerce in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Project Management**

**Advisor: Bahran Asrat (PhD)**

**Addis Ababa, Ethiopia**

**October, 2023**

## Statement of Declaration

I, the undersigned, declare that this study entitled “Assessment of Project team work during COVID-19; The case of Eka Kotebe General Hospital” is my own work. I have undertaken the research work independently with the guidance and support of my advisor. This study has not been submitted for any degree or postgraduate program in this or any other institutions and that all sources of materials used for the work have been duly acknowledged.

Declared by:

Name: Abebaw Bekele

Signature: _____

Date: October, 2023

Place: Addis Ababa, Ethiopia

**Addis Ababa University**

**School of Commerce**

**Graduate Studies**

## Statement of Certification

This is to certify that the project work prepared by Abebaw Bekele, entitled: “Assessment of Project team work during COVID-19; The case of Eka Kotebe General Hospital” and submitted in partial fulfillment of the requirements for the Degree of Master of Arts in Project Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved by Board of Examiners:

---------- ---------- ----------

Advisor Signature Date

---------- ---------- ----------

Internal Examiner Signature Date

---------- ---------- ----------

External Examiner Signature Date

## Acknowledgement

In completing this study, I would like to give my foremost gratitude and thankfulness to Almighty God in helping me get through this journey from start to end. I would like to thank my advisor Dr. Bahran Asrat for his unreserved assistance, insights, and advice. Finally, I would like to thank Eka Kotebe General Hospital's staff who provided me the necessary data for my sample study.

# Contents

# List of Tables

## Acronyms/ Abbreviations

COVID-19; Coronavirus Disease 2019

HHS; U.S. Department of Health and Human Services

NHS; National Health Service

OCB ; Organizational citizenship behavior

UWES ; Utrecht Work Engagement Scale

## Abstract

Teams operating in high-risk fields have distinct, often covert, characteristics influenced by the nature of their task, their hazardous and unforgiving operating environments, and the ambiguous ways in which clues to a crisis often emerge. Health care teams are among the high-risk operating teams, especially in the time of pandemics, like COVID-19. An explanative research design, with mixed approach was used in this study. The study area was Eka Kotebe General Hospital and COVID-19 frontline health professionals were used as study population. Adopted data collection tools on collective leadership, work engagement, psychological safety and organizational citizenship behavior were used to collect the quantitative data. Key informants were interviewed on the changes during the pandemic, as the qualitative part. This study included 242 participants, among which 60.7% of them were males. The mean age of participants with SD was 30.2 years. The healthcare professionals demonstrate effective planning, problem-solving, and support within their teams, though proactive problem identification could be enhanced. Work engagement was positive, with a need to improve perceptions of physical vitality. Psychological safety was high, except for speaking up about colleagues' mistakes. Overall, employees exhibit positive Organizational Citizenship Behaviors and collective leadership. Regression analysis reveals work engagement, and psychological safety as influencing factors on Organizational Citizenship Behavior and Collective Leadership. Encouraging psychological safety, work engagement, and addressing specific areas for growth can enhance team dynamics, organizational citizenship behavior and collective leadership. Additionally, qualitative findings highlight positive changes during the COVID-19 response and the potential for sustainability with proper support. For the future, conducting longitudinal studies to track the evolution of teamwork dynamics during extended crisis situations is recommended.

Key Words; Project teams, Crisis, COVID-19, OCB, Collective Leadership

# Chapter 1: Introduction

In the realm of healthcare, effective teamwork is the bedrock of patient care, particularly in times of crisis. Healthcare teams, both globally and in resource-constrained settings, operate under extraordinary pressures and challenges, making coordinated teamwork a matter of life and death. The onset of the COVID-19 pandemic brought these challenges into sharp focus, placing healthcare teams at the forefront of the battle against a relentless and fast-evolving threat. This chapter discusses the conceptual, empirical, and methodological underpinnings of this study, shedding light on the crucial role of teamwork in healthcare crisis management.

## 1.1 Background of the study

Cohen and Bailey defined team as a collection of individuals who are interdependent in their tasks, share responsibilities for outcomes, see themselves and are seen by others as an intact social entity embedded in one or more larger social systems, and who manage their relationships across organizational boundaries{Cohen, 1997 #36;Cohen, 1997 #36}. And according to Katzenbach and Smith, a team is a small group of people who are constant in their commitment to a meaningful shared purpose, with common performance goals, complementary and overlapping talents, and a common approach to their job for which they are mutually accountable (Katzenbach, 1993 #37). These definitions imply that any team has a common goal and shared objective that necessitates constant monitoring and leadership. Team members must be consistent, interdependent, and accountable to one another. This applies for project teams too.

One key component in project teams is leadership. The concept of shared leadership (also known as distributed or collective leadership) has recently appeared in the literature and attracted significant attention as a result of the growth of self-managed teams and decentralized organizational architectures. It provides an alternative view of leadership, shifting from a traditional notion of leadership as a leader-centric and individual-level phenomenon to a dynamic, interactive group-level leadership phenomenon. Shared leadership is defined as a situation in which teams cooperatively exercise leadership power. Leadership is viewed as a sequence of role duties that can be fulfilled by any member of the group under shared leadership

conditions, or as an emergent team property where leadership influence and responsibilities are dispersed among numerous persons (Wu, 2018 #38).

Psychological safety is one of the main aspects of a positive team environment. Staff must believe that their work environment embraces and encourages collaboration and feedback in order to actively engage in decision-making. The widespread assumption that a work environment is a secure place to take interpersonal risks such as speaking out, asking questions, and sharing ideas and thoughts is referred to as psychological safety(Edmondson, 1999 #39).

Work engagement in any project team is primarily a motivational term that denotes the active deployment of personal resources toward the activities associated with a job function.It basically refers to the self-investment of personal resources in work. In other words, involvement signifies a convergence of physical, emotional, and cognitive energies that team members bring to their jobs(Christian, 2011 #42).

Organizational citizenship behavior (OCB) refers to the extra-role behaviors such as assisting colleagues, supporting others, and offering to take on additional responsibilities (Podsakoff, 1990 #44).

According to Amy L. Fraher, every group and organization has subtle and not-so-subtle dynamics that influence team behavior. Teams operating in high-risk fields, on the other hand, have distinct, often covert, characteristics influenced by the nature of their task, their hazardous and unforgiving operating environments, and the ambiguous ways in which clues to a crisis often emerge. Time pressure, peer pressure, personal risk exposure, professional competitiveness, inter- and intra-team member conflicts, reputation management, shifting tasks, conflicting goals, uncertainty, dealing with causalities, and otherwise living with the weighty ramifications of one's decisions frequently combine to make decision making in high-risk teams an exceptionally stressful activity (Sommer, 2016 #8).

Health care teams are among the high-risk operating teams, especially in the time of pandemics. One of the recent events that tested health care services and facilities is COVID-19 pandemic. Italy was one of the mostly affected countries by COVID-19 and health care teams were reported to experience burnout, psychological distress which affected patient management (Conti, 2021 #46). The HHS reported a growing prevalence of burnout and work place among health care

teams members during the pandemic in US (Impact of the COVID-19 pandemic on the hospital and outpatient clinician workforce: challenges and policy responses(Issue Brief No. HP-2022-13).In Poland, health care project teams faced issues such as the implementation of remote communication both within project teams and with external stakeholders, as well as the implementation of remote work within the organization; new challenges in the area of work-life balance, the need for project performance under the pressure of limited physical, human, and time resources; and the appearance of specific physical and mental impacts on project team members (Bednarz, 2021 #15).

There is an increasing recognition that health-care systems are complex, open, and adaptive, with emergent effects that are difficult to predict and control. Teams must respond flexibly to emerging problems in such a rapidly changing environment, but our understanding of how teams coordinate their efforts to respond flexibly is limited. Some of the characteristics of effective teams have been identified through research in fields such as psychology and management, but it is only recently that attention has been paid to investigating the dynamic features of teams and their adaptive capacity. Adaptive teams have received even less attention in health care settings.

## 1.2 Statement of the problem

Healthcare is a field where effective teamwork is paramount under normal circumstances, but it becomes even more critical during crisis situations. Crisis events, such as natural disasters, disease outbreaks, and large-scale accidents, place immense pressure on healthcare systems. One advantage of good team work in healthcare teams is for the sake of patient Safety. Teamwork is vital for ensuring patient safety. Effective communication among healthcare professionals reduces the risk of medical errors and enhances the overall quality of care (Leonard, 2004 #55). The other is benefit is efficient Resource Utilization. In crisis situations, resources such as medical supplies, personnel, and facilities are often stretched to their limits. Teamwork helps in coordinating resource allocation and ensuring that critical needs are met (Kinicki, 2009 #56). Healthcare teams must also adapt rapidly to changing circumstances during crises. Effective

teamwork enables quick decision-making and the ability to respond to unexpected challenges (Salas, 2005 #57).

During crisis situation, healthcare teams will face multiple challenges to operate. One is communication breakdowns. In high-stress situations, breakdowns in communication can occur, leading to misunderstandings and errors (Foronda, 2016 #58). Traditional hierarchical structures in healthcare can also hinder effective teamwork. During crises, flattened hierarchies may be necessary to facilitate communication and collaboration. Different healthcare professionals, such as doctors, nurses, and paramedics, may have varying perspectives and priorities. Effective teamwork requires bridging these disciplinary divides (Reeves, 2013 #59).

Globally there are evidences of effective team work in healthcare for better patient management and outcome. According to Leonard et al, poor communication among healthcare teams can lead to delays in decision-making, mismanagement of resources, and errors in patient care during crises (Leonard, 2004 #55). Hospitals may struggle to allocate resources efficiently during crises when teamwork is lacking. This can include shortages of critical medical supplies and personnel (Rosen, 2018 #60). Additionally, without clear roles and responsibilities, team members may not know their specific contributions during a crisis, leading to confusion and reduced effectiveness (Lingard, 2002 #61).

In the case hospitals in resource-constrained settings, health care facilities often face chronic shortages of essential supplies, healthcare personnel, and infrastructure, making crisis management even more challenging (Blaauw, 2013 #62). Weak healthcare systems, characterized by inadequate governance, financing, and service delivery, can contribute to difficulties in managing crises.

The COVID-19 epidemic inspired an unprecedented response from healthcare teams. Changes were swiftly implemented at all levels of health systems worldwide to stop the spread of the virus and guarantee the security of services. Despite the pre-pandemic healthcare system's normally slow rate of change, new ideas have been swiftly approved and put into action. The widespread effects of COVID-19 on healthcare have necessitated faster innovation design, implementation, and learning across different organization types and healthcare delivery

methods while also attempting to place little to no additional stress on already overworked healthcare workers.

Multidisciplinary individuals make up healthcare teams, who operate in high stakes scenarios. These teams were put through extra strain and testing during crises like COVID-19. Any lessons we can draw from these events can be applied to improving team dynamics not only in the healthcare industry but possibly in other fields as well.

In the medical field, teamwork is essential and can make a difference in patient care and safety. In order to fully utilize health care teams for good, it will be essential to comprehend teamwork in crisis situations like COVID-19. To enhance our health care system, teamwork needs to be well researched and understood. Our healthcare system was put to the test by crises like the COVID-19 epidemic, and we need to learn to change the way we do things. This issue has not yet been the subject of reports in Ethiopia.

## 1.3 Research questions

1. How was the organizational behavior and collective leadership of health care teams working as a frontline health care workers during COVID-19 pandemic?
2. What were the factors associated with organizational behavior and collective leadership of the health care teams?

## 1.4 Research objective;

### 1.4.1 General

To describe the common team work experiences during COVID-19 among health care teams working at Eka Kotebe General Hospital and associated factors

### 1.4.2 Specific

- To describe the collective leadership level of health professionals and associated factors
- To describe the work engagement level
- To describe the psychological safety level
- To identify the organizational citizenship behavior of health professionals and associated level

## 1.5 Significance of the study

Team management is constantly evolving, and contemporary teams appear to be distinct from earlier ones. Some of the variables influencing this evolution include crisis circumstances such as COVID-19. Understanding and analyzing teams in light of these conditions will aid in anticipating and managing team behavior changes.

Health care teams are ideal for this type of research for two key reasons. One, because these teams are dealing with the lives of human beings, good management will be critical. Second, because these teams operate at a high risk level, their results and recommendations can be shared with other sector teams. To the best of my knowledge, no study on team management from the standpoint of COVID-19 has been conducted in Ethiopia. This fact distinguishes and elevates this study.

The findings of this study can help Ministry of health to develop policies and measures to improve team work during crisis. Hospitals and health facilities can also benefit from this study by improving their approach to their teams to improve collective leadership and organizational citizenship behavior.

## 1.6 Scope of the study

The study took place at Eka Kotebe General Hospital, Ethiopia's first COVID-19 treatment center. Over a two-year period, more than 1000 health professionals and support employees were involved in the care of COVID-19 patients. The hospital is giving service for the general population currently due to the current low number of infected COVID-19 patients. This study focused on health participants who were frontline care providers during the pandemic from March 2020 up to July 2022.

Specialist physicians, general practitioners, nurses, midwives, pharmacists, laboratory technicians, psychologists, and others make up the health care teams. These teams provided health treatment to individuals who had been admitted with varied degrees of disease severity.

Most team members were separated from their family members, particularly during the early stages of the pandemic. The research took place between March and September of 2023.

## 1.7 Organization of the study

This study was a mixed study with quantitative and qualitative components. The quantitative cross sectional aspect used the frontline health care providers at Eka Kotebe General Hospital as study population. A self- administered questionnaire used to collect data on socio-demographic characteristics and team work experience during COVID-19 pandemic. A qualitative approach was used with interviewing key team leaders.

## 1.8 Definition of key terms

- **Collective leadership** is characterized by team members working together to make decisions and carrying out duties that would often be performed by a hierarchical leader. According to the collaborative leadership theory, even people without official leadership positions could influence the team's deliberations. Teamwork, as it is typically defined as the activity of cooperating in a group with other people, is distinct from this. Even in a team with an authority figure, one can still work well together.
- The widespread assumption that a work environment is a secure place to take interpersonal risks such as speaking out, asking questions, and sharing ideas and opinions is referred to as **psychological safety**. The ongoing global response to COVID-19 emphasizes the importance of psychological safety in healthcare teams; the continuous adaptation and redesign of services has required enhanced collaboration, engagement, creativity, innovation, and knowledge sharing across teams and across organizations.
- **Work engagement** is a cognitive state in which people devote their personal resources and energies to their job duties and activities. Key features of work engagement include vigour (high levels of energy and mental resilience while working), devotion (a sense of passion or pride in one's work), and absorption (being fully engrossed in one's work).
- **Organizational citizenship behavior (OCB)** refers to these extra-role behaviors such as assisting colleagues, supporting others, and offering to take on additional responsibilities.

# Chapter 2: Review of related literature

This chapter introduces the concept of shared leadership, which represents a departure from traditional, leader-centric notions of leadership. Shared leadership acknowledges that leadership roles can emerge from within the team, with members collectively exercising leadership power. Psychological safety, work engagement, and organizational citizenship behavior are explored as essential components of positive team environments.

## Theoretical Aspect of team and teamwork

The multiplicity of team types contributes to the variation in definitions. Teams serve a range of functions (e.g., learning, producing a product, solving difficulties, obtaining acceptability), take various forms (e.g., virtual, co-located), and have varying numbers and durability (Cohen, 1997 #36). But generally speaking, any team can be defined as group of two or more individuals with common and shared objective and purpose and whose task is interdependent (Katzenbach, 1993 #37). Teams must have a relevant Shared Purpose. The purpose or aim is set collectively by the team members; within this purpose, each team member has particular tasks that are discussed and agreed upon. Another feature of any team is consistent membership. Members become more comfortable with and informed about each other's ability levels, and they become more devoted to share their knowledge and abilities in order to develop fellow team members for as long as the team remains.

The team concept first appeared in the late 1920s and early 1930s with the now-classic Hawthorne Studies. This entailed a series of study activities aimed at delving deeply into what happened to a group of workers under varied settings. After much deliberation, the researchers determined that the most important aspect was the development of a sense of group identity, social support, and cohesion that resulted from increased worker engagement (Dyer, J. L., 1984).

COL Casey Haskins contends that any conversation about a team eventually gets to the question of leaders. Leadership is the most important aspect in determining a team's success, whether it is positive or negative. Leaders frequently take on the dominant role, and it is assumed that they are the most essential members of the team. Even when it is obvious that the efforts of the rest of the

team were at least as important as the leader's, credit or blame is often ascribed to the team leader (Salas, 2013 #47).

Teamwork is crucial in many sectors of life, but it is especially important in health care. Over decades of research, teamwork failure has frequently been identified as a key source of preventable deaths and adverse events. All forms of sentinel events, from retained foreign objects to pregnancy related events and pharmaceutical errors, are caused by poor communication and coordination. Everywhere we look, gaps in teamwork endanger patients. Dr. Peter J. Pronovost categorizes health care teams into five major groups. The first is the 'Team of Equals,' which consists of boards of directors, committees of physicians or executives that manage the organization and represent its constituents. 'Command-and-control teams' work in emergencies such as disasters and life-threatening circumstances. 'Expert leader dominated teams' are made up of care providers who work under the guidance of an expert in functional areas to give care. 'Multidisciplinary teams' collaborate to create methods, procedures, and policies that allow divergent groups to work effectively together. The term 'Co-management teams' refers to a relatively recent team idea in which clinical and administrative leadership are combined to collaboratively manage procedures and systems (Salas, 2013 #47).

## Empirical Aspect of team work

According to the NHS Staff 2019 poll, in terms of autonomy and control, the number of staff who said they were involved in changes impacting their team had remained constant at 52% since 2015, while only 56% believed they had a choice in how they conducted their work. Just over one-third (34.5%) believed senior managers act on employee feedback, while only 36% believed senior managers try to include employees in crucial decisions. This was right before the COVID-19 pandemic hit the nation (What does the 2019 NHS Staff Survey truly tell us about how staff needs are being met? | The King's Fund (kingsfund.org.uk)).Surprisingly, despite the horrific expectations and circumstances, health and social care workers were a continual beacon of hope for the nation during the COVID-19 pandemic period, improving the way they work and the way services are delivered. These conditions demonstrated that in order to feel competent, personnel must have autonomy and control, a higher sense of belonging, and be supported, rather than merely being overwhelmed by an enormous workload. Compassionate and collective

leadership (individually and institutionally) was the key factor in this paradoxical transition to ensuring personnel had the proper assistance (Learning from staff experiences of Covid-19: let the light come streaming in | The King's Fund (kingsfund.org.uk)).

During the Covid-19 pandemic, many teams had to adapt swiftly to remote work setups. Effective communication became crucial, with teams relying heavily on digital tools like video conferencing and messaging platforms to stay connected. Maintaining work engagement posed challenges, as some employees struggled with the blurring boundaries between work and home life. Psychological safety also became a priority, as leaders worked to ensure that team members felt supported and comfortable expressing their concerns. Successful teams focused on building trust and maintaining regular check-ins to foster a sense of belonging and teamwork despite the challenges. Leadership played a critical role in setting clear expectations, providing guidance, and demonstrating empathy towards the unique challenges faced by each team member.

A number of researchers have sought to define shared leadership. Pearce and Sims thought of it in terms of the "serial emergence" of multiple leaders over the course of a team's life (Pearce, 2002 #48). Carson et al. connected it to the distribution of leadership power among team members (Carson, 2007 #49). According to Shane and Fields (2007), shared leadership is a state or quality of mutual influence (Wood, 2007 #51). These meanings are more similar than they are distinct. They all emphasise the importance of many group members' distributed, collective, and/or mutual influence. Team members jointly exert leadership influence, engage in decision-making, accomplish tasks normally reserved for a hierarchical leader, and, when appropriate, offer guidance to other members to assist in achieving group goals under the condition of shared leadership. A systematic review of the literature found that internal team environment (i.e., shared purpose, voice and social support) and team heterogeneity are antecedents that are positively related to the emergence of shared approaches of leadership (Wu, 2018 #38).

One factor for positive team environment is psychological safety (Carson, 2007 #49). Staff must believe that their work environment embraces and encourages collaboration and feedback in order to actively engage in patient care decision-making. The widespread assumption that a work environment is a secure place to take interpersonal risks such as speaking out, asking questions, and sharing ideas and thoughts is referred to as psychological safety (Edmondson, 1999 #39)The

response to COVID-19 emphasises the importance of psychological safety in healthcare teams; the continuous adaptation and redesign of services has required enhanced collaboration, engagement, creativity, innovation, and knowledge sharing across teams and across organisations (Anjara, 2021 #11).

For health professionals to develop shared leadership and improve their team work, they need to be engaged to their jobs and teams. Job engagement is defined by scholars as a cognitive state in which individuals invest their personal resources and energies in their job roles and duties. The primary qualities of work engagement include vigour, devotion, and absorption. Vigour refers to high levels of energy and mental resilience when working, as well as a willingness to put effort into one's work and perseverance in the face of adversity. A sense of significance, passion, inspiration, pride, and challenge characterise dedication. Absorption is defined as being entirely concentrated and deeply engrossed in one's task, with time passing swiftly and difficulty disconnecting oneself from work (Seppälä, 2008 #54). According to the existing literature, engagement is critical for overcoming the numerous challenges connected with healthcare provision, such as high workloads and insufficient staffing levels, and it allows employees to feel attachment and engagement to their job responsibilities (Anjara, 2021 #11).

In any team with shared leadership and work engagement, along with psychological safety, the team members will eventually develop behaviours of a discretionary nature that are not part of the employee’s formal role but nevertheless promote the effectiveness of the organisation. These sorts of behaviours are described as "organisational citizenship behaviours." When healthcare staff feel comfortable taking interpersonal risks, they actively engage as part of the team and may subsequently participate in extra-role behaviours to support their colleagues (Podsakoff, 1990 #44).

This study tries to express the team work experience of frontline health care workers during COVID-19 and explore factor for successful collaboration and team work. One hypothesis is psychological safety will promote collective leadership and organisational citizenship behaviours. Similarly work engagement will also have a pre-requisite influence on the collective leadership and organisational behaviour of teams.

# Chapter 3: Research Methodology

The chosen research design for this study was causal/explanatory in nature, aimed at both describing common team work characteristics and exploring the factors that influence them. Here discussed is the structure of the study, which takes the form of a case study with survey tools, anchored in a cross-sectional research timeline. The study's approach was a mixed one, incorporating both qualitative and quantitative components to provide a comprehensive understanding of the research questions at hand.

## 3.1 Research Design

A causal/ explanatory research design was implemented for this study, where the common team work characters were described and the factors were explored. The study structure is a case study with survey tools, where cross sectional research timeline is used. The approach of the study was mixed approach, where both qualitative and quantitative components were used.

## 3.2 Description of study variables

Four variables were evaluated in this study, which are psychological safety, work engagement, organizational citizenship behavior and collective leadership. Socio-demographic characteristics like gender, age, profession and year of experience were also included.

**Dependent Variables:**

- Organizational Citizenship Behavior
- Collective leadership

**Independent variables:**

- Psychological safety
- Work engagement
- Gender
- Age

- Profession
- Year of experience

### 3.3 Description of study area and target population

The study area was Eka Kotebe General Hospital, which was the pioneer treatment center during the COVID-19 pandemic. The health care teams provided service for more than 2 years during the pandemic. Frontline health care workers who participated in the caring and treatment of COVID-19 patients during the pandemic at Eka Kotebe General Hospital were used as the study population.

### 3.4 Sampling technique/methods and sample size

According to the human resources department of Eka Kotebe General Hospital, the total number of health care professionals who worked during the COVID-19 pandemic was 615. Sample size was calculated from this population with the 'Slovin's formula',

$$\mathbf{n= N / 1+ N(e)^2}$$

Based on this, the calculated sample size was 242. Simple random sampling technique was followed, where everyone had equal chance of participation.

For the qualitative part of the study, key informant interview was conducted. The task force manager who was responsible in the overall operation of the emergency management, the clinical leader who operated as the medical director and the human resource department head were interviewed.

### 3.5 Data collection – source, types, instruments

The primary data was obtained from the responses of the participants to the self-administered questionnaires. The questionnaire was sent via goggle form link. The data collection questionnaire instruments were adapted from standard measuring scales used to evaluate the latent variables.

The Collective Leadership Scale (Hiller, 2006 #53) was used to evaluate collective leadership. This is a 25-item questionnaire that examines four aspects of collaborative leadership: planning and organising (six items), problem solving (seven items), support and consideration (six items), and development and mentoring (six items). However, due to the significant time constraints on healthcare professionals and to lessen participant response burden, only the first three domains, totaling 19 items, were maintained. All elements were scored on a seven-point Likert scale ('rarely' = 0, 'always' = 7), with higher scores indicating greater degrees of collective leadership.

The Utrecht Work Engagement Scale UWES (Seppälä, 2008 #54) was used to assess work engagement. The UWES consists of 17 items that assess three aspects of work engagement: vigour (six items), dedication (five items), and absorption (six items). All elements were scored on a seven-point Likert scale ('rarely' = 0, 'always' = 7), with higher scores indicating higher levels of work engagement.

The Organisational Citizenship Behaviour Scale (Podsakoff, 1990 #44) was used to assess OCB. This is a 24-item measure that evaluates five aspects of organisational citizenship behaviour: altruism, conscientiousness, sportsmanship, courtesy, and civic virtue. However, only three categories were kept, namely altruism (five items), courtesy (five items), and civic virtue (four items), totaling 14 items, in order to reduce participant response burden and avoid overlap with UWES. Higher scores indicate higher levels of OCB. Items were scored on a seven-point Likert scale ('strongly disagree' = 0,'strongly agree' = 7).

The Psychological Safety Scale (O'Donovan, 2020 #52) was used to assess psychological safety. This measure is intended to assess health-care professionals' psychological safety in connection to their team leader (nine items), fellow team members (seven items), and the entire team (three items). All items were scored on a seven-point Likert scale ('strongly disagree' = 0,'strongly agree' = 7), with higher scores indicating greater psychological safety.

### 3.6 Data analysis – model, techniques, software

The data was exported to SPSS 25. Measures of central tendency and dispersion were used in descriptive analysis. Frequency with percentage was used to describe categorical variables. Mean

and Standard Deviation were used to measure central tendency and dispersion respectively. The linear regression model was used to analyze the relationship between the independent and dependent variables.

## 3.7 Reliability and validity analysis

The reliability of the instrument, both for the full scale and individual subscale was checked by Cronbach's alpha. The following table summarizes the finding on reliability on this study. (Table 1)

*Table 1 Reliability of the instrument*

| **Measurment scale** | **Full scale Cronbach's Alpha** | **Individual sub scale** | **Cronbach's Alpha** |
|---|---|---|---|
| Collective Leadership Scale | 0.945 | Planning and organising | 0.939 |
| | | Problem solving | 0.930 |
| | | Support and consideration | 0.918 |
| Utrecht Work Engagement Scale | 0.937 | Vigour | 0.883 |
| | | Dedication | 0.853 |
| | | Absorption | 0.88 |
| Organisational Citizenship Behaviour Scale | 0.935 | Altruism | 0.899 |
| | | Courtesy | 0.906 |
| | | Civic virtue | 0.854 |
| Psychological Safety Scale | 0.945 | Team leader | 0.904 |
| | | Fellow team members | 0.904 |
| | | Entire team | 0.886 |

The validity of the questionnaire was checked by Pearson correlation coefficient, with p value of $< 0.05$ taken as a significant value. The Pearson's Correlation values for each instrument was compared with the standard Pearson Correlation table values and the calculated values were all

greater than the critical value in the table. Based on this, the instrument was found to be valid. (Table 2)

*Table 2 Validity of the instrument*

| List of scales | Pearson's Correlation | P value | Sample size |
|---|---|---|---|
| Planning and Organizing | 0.849 | .000 | 242 |
| Problem Solving | 0.672 | .000 | 242 |
| Support and Consideration | 0.336 | .000 | 242 |
| **Collective Leadership** | **0.733** | **.000** | **242** |
| Vigor | 0.429 | .000 | 242 |
| Dedication | 0.356 | .000 | 242 |
| Absorption | 0.458 | .000 | 242 |
| **Work Engagement** | **0.469** | **.000** | **242** |
| Team Leader | 0.486 | .000 | 242 |
| Peers | 0.337 | .000 | 242 |
| Team | 0.350 | .000 | 242 |
| **Psychological safety** | **0.455** | **.000** | **242** |
| Altruism | 0.305 | .000 | 242 |
| Courtesy | 0.285 | .000 | 242 |
| Civic Virtue | 0.417 | .000 | 242 |
| **Organisational Citizenship Behaviour** | **0.379** | **.000** | **242** |

## 3.8 Ethical Consideration

Ethical approval was sought from the Institutional review board of Eka Kotebe General Hospital. Participants' personal information like name, address and others was anonymized. Consent was taken after participants agree to engage.

## CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

In this chapter, the data analysis part is presented. The demographic information of the respondents is discussed inititally. The scales for the organizational behavior, work engagement, psychological safety and collective leadership then are presented. The factor analysis are then discussed finally.

### 4.1 Demographic Information of the respondents

This study included 242 participants, among which 60.7% (n= 147) of them were males. The mean age of participants with SD was 30.2 years (SD= 4.01). The mean (SD) of experience of participants in years was 4.2 years (2.6). Seventy (28.9%) participants were physicians and 27.3% (n=66) of them were nurses. Laboratory technicians (12.4%), pharmacists (9.1%), midwives (8.3%) and other health professionals were also included. (Table 3)

*Table 3 Demographic characteristics of respondents*

| Variables | Categories | Frequency | Percent (%) |
|---|---|---|---|
| Age | | Mean = 30.22 Years (SD = 4.01) | |
| Experience | | Mean = 4.2 Years (SD = 2.6) | |
| Gender | Male | 147 | 60.7 |
| | Female | 95 | 39.3 |
| Profession | Physician | 70 | 28.9 |
| | Nurse | 66 | 27.3 |
| | Laboratory Technicians | 30 | 12.4 |
| | Pharmacist | 22 | 9.1 |
| | Midwives | 20 | 8.3 |
| | Psychiatry Nurses | 18 | 7.4 |
| | Msc in Psychiatry | 12 | 5 |
| | Radiology | 4 | 1.7 |

## 4.2 Descriptive Statistics

### 4.2.1 Collective leadership scale

In the collective leadership scale, three subscales were evaluated by the instrument. Planning and organization had 6 items, problem solving had 7 items and support and consideration was evaluated by 6 items.

In ‘Planning and Organizing’ subscale the highest-rated item was" participants involvement in Organizing tasks so that work flows more smoothly" with a mean score of 4.80, indicating that participants contribute to their team proficiency in this aspect. The lowest-rated item was "participants involvement in Allocating resources according to team's priorities" with a mean score of 4.07.

In ‘Problem Solving’ subscale Participants rated "Diagnosing problems quickly" and "Using our team’s combined expertise to solve problems" highest in this dimension, with mean scores of 5.14 and 5.07, respectively suggesting a strong problem-solving capability within the team. "Identifying problems before they arise," was the lowest which received a mean score of 4.58.

In ‘Support and Consideration’ all items received high mean scores, indicating that participants perceive their team as being supportive and considerate. "Showing patience toward other team members" received the highest mean score of 5.40, highlighting the team's ability to demonstrate patience and understanding. (Table 4)

*Table 4 Collective leadership scale description*

| Construct and items | Never (%) | Rarely (%) | Occasionally (%) | Sometimes (%) | Often (%) | Very often (%) | Always (%) | Mean | (SD) |
|---|---|---|---|---|---|---|---|---|---|
| Planning and Organizing | | | | | | | | | |
| • Planning how the work gets done. | 16 (6.6) | 32 (13.2) | 38 (15.7) | 30 (12.4) | 50 (20.7) | 49 (20.2) | 27 (11.2) | 4.33 | 1.791 |
| • Allocating resources | 35 (14.5) | 28 (11.6) | 30 (12.4) | 38 (15.7) | 40 (16.5) | 44 (18.2) | 27 (11.2) | 4.07 | 1.948 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| according to team's priorities | | | | | | | | | |
| • Setting our team's goals. | 24 (9.9) | 36 (14.9) | 25 (10.3) | 14 (5.8) | 43 (17.8) | 67 (27.7) | 33 (13.6) | 4.44 | 1.981 |
| • Organizing tasks so that work flows more smoothly. | 15 (6.2) | 24 (9.9) | 20 (8.3) | 28 (11.6) | 42 (17.4) | 74 (30.6) | 39 (16.1) | 4.80 | 1.804 |
| • Deciding how to go about our team's work. | 15 (6.2) | 30 (12.4) | 21 (8.7) | 26 (10.7) | 62 (25.6) | 55 (22.7) | 33 (13.6) | 4.60 | 1.785 |
| • Providing helpful input about team's work plans. | 8 (3.3) | 21 (8.7) | 33 (13.6) | 25 (10.3) | 60 (24.8) | 60 (24.8) | 35 (14.5) | 4.77 | 1.656 |
| Problem Solving | | | | | | | | | |
| • Deciding on best course of action when problems arise. | 9 (3.7) | 26 (10.7) | 32 (13.2) | 39 (16.1) | 50 (20.7) | 53 (21.9) | 33 (13.6) | 4.60 | 1.692 |
| • Diagnosing problems quickly. | 4 (1.7) | 10 (4.1) | 23 (9.5) | 32 (13.2) | 55 (22.7) | 78 (32.2) | 40 (16.5) | 5.14 | 1.456 |
| • Using our team's combined expertise to solve problems | 7 (2.9) | 10 (4.1) | 25 (10.3) | 30 (12.4) | 56 (23.1) | 74 (30.6) | 40 (16.5) | 5.07 | 1.531 |
| • Finding solutions to problems | 9 (3.7) | 12 (5.0) | 19 (7.9) | 28 (11.6) | 74 (30.6) | 60 (24.8) | 40 (16.5) | 5.01 | 1.546 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| affecting team performance. | | | | | | | | | |
| • Identifying problems before they arise | 8 (3.3) | 26 (10.7) | 25 (10.3) | 43 (17.8) | 63 (26.0) | 52 (21.5) | 25 (10.3) | 4.58 | 1.597 |
| • Developing solutions to problems. | 4 (1.7) | 19 (7.9) | 20 (8.3) | 38 (15.7) | 63 (26.0) | 60 (24.8) | 38 (15.7) | 4.94 | 1.530 |
| • Solving problems as they arise. | 11 (4.5) | 17 (7.0) | 21 (8.7) | 28 (11.6) | 56 (23.1) | 64 (26.4) | 45 (18.6) | 4.95 | 1.685 |
| Support and Consideration | | | | | | | | | |
| • Providing support to team members who need help. | 2 (0.8) | 14 (5.8) | 13 (5.4) | 28 (11.6) | 50 (20.7) | 83 (34.3) | 52 (21.5) | 5.34 | 1.441 |
| • Showing patience toward other team members. | 7 (2.9) | 8 (3.3) | 13 (5.4) | 31 (12.8) | 39 (16.1) | 81 (33.5) | 63 (26.0) | 5.40 | 1.525 |
| • Encouraging other team members when they’re upset. | 6 (2.5) | 12 (5.0) | 19 (7.9) | 18 (7.4) | 45 (18.6) | 88 (36.4) | 54 (22.3) | 5.33 | 1.545 |
| • Listening to complaints and problems of team members. | 7 (2.9) | 15 (6.2) | 17 (7.0) | 23 (9.5) | 52 (21.5) | 75 (31.0) | 53 (21.9) | 5.21 | 1.596 |
| • Fostering a cohesive team atmosphere | 9 (3.7) | 11 (4.5) | 16 (6.6) | 28 (11.6) | 45 (18.6) | 92 (38.0) | 41 (16.9) | 5.19 | 1.555 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| • Treating each other with courtesy. | 5 (2.1) | 14 (5.8) | 19 (7.9) | 19 (7.9) | 50 (20.7) | 71 (29.3) | 64 (26.4) | 5.33 | 1.580 |

### 4.2.2 Work engagement scale

In this scale three items were used to measure vigor, absorption and dedication among participants. Vigor and absorption were each measured by 6 items while 5 items were used to measure dedication.

In the Vigor dimension, the highest-rated item was "When I get up in the morning, I feel like going to work" with a mean score of 5.00, indicating that employees generally feel motivated to start their workday. The lowest-rated item was "At my job, I feel strong and vigorous" with a mean score of 4.30.

In the Dedication dimension, the highest-rated item was "I am proud of the work that I do" with a mean score of 5.25, indicating that employees take pride in their work. The lowest-rated item was "To me, my job is challenging" with a mean score of 4.60, suggesting that employees may not perceive their work as highly challenging.

In the Absorption dimension, the highest-rated item was "I feel happy when I am working intensely" with a mean score of 4.95, indicating that employees experience positive emotions when fully engaged in their work. The lowest-rated items were "When I am working, I forget everything else around me" and "It is difficult to detach myself from my job," both with mean scores of 4.32, suggesting that employees may find it challenging to detach from work at times. (Table 5)

*Table 5 Work engagement scale description*

| Construct and items | Strongly disagree (%) | Disagree (%) | Somewhat disagree (%) | Neutral (%) | Somewhat agree (%) | Agree (%) | Strongly agree (%) | Mean | (SD) |
|---|---|---|---|---|---|---|---|---|---|
| Vigor | | | | | | | | | |
| • At my work, I feel that I am bursting with energy | 5 (2.1) | 17 (7.0) | 36 (14.9) | 45 (18.6) | 48 (19.8) | 66 (27.3) | 25 (10.3) | 4.70 | 1.533 |
| • At my job, I feel strong and vigorous | 13 (5.4) | 21 (8.7) | 29 (12.0) | 59 (24.4) | 62 (25.6) | 53 (21.9) | 5 (2.1) | 4.30 | 1.479 |
| • When I get up in the morning, I feel like going to work | 9 (3.7) | 14 (5.8) | 23 (9.5) | 35 (14.5) | 54 (22.3) | 55 (22.7) | 52 (21.5) | 5.00 | 1.655 |
| • I can continue working for very long periods at a time | 14 (5.8) | 27 (11.2) | 33 (13.6) | 27 (11.2) | 43 (17.8) | 61 (25.2) | 37 (15.3) | 4.61 | 1.819 |
| • At my job, I am very resilient, mentally | 8 (3.3) | 13 (5.4) | 26 (10.7) | 33 (13.6) | 60 (24.8) | 64 (26.4) | 38 (15.7) | 4.93 | 1.574 |
| • At my work I always persevere, even when things do not go well | 8 (3.3) | 24 (9.9) | 28 (11.6) | 28 (11.6) | 59 (24.4) | 68 (28.1) | 27 (11.2) | 4.73 | 1.632 |
| Dedication | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| • I find the work that I do full of meaning and purpose | 5 (2.1) | 13 (5.4) | 23 (9.5) | 32 (13.2) | 48 (19.8) | 82 (33.9) | 39 (16.1) | 5.10 | 1.520 |
| • I am enthusiastic about my job | 4 (1.7) | 10 (4.1) | 32 (13.2) | 30 (12.4) | 53 (21.9) | 71 (29.3) | 42 (17.4) | 5.06 | 1.511 |
| • I am proud of the work that I do | 7 (2.9) | 14 (5.8) | 25 (10.3) | 21 (8.7) | 36 (14.9) | 77 (31.8) | 62 (25.6) | 5.25 | 1.666 |
| • My job inspires me | 12 (5.0) | 19 (7.9) | 17 (7.0) | 24 (9.9) | 43 (17.8) | 87 (36.0) | 40 (16.5) | 5.02 | 1.707 |
| • To me, my job is challenging | 18 (7.4) | 21 (8.7) | 31 (12.8) | 26 (10.7) | 55 (22.7) | 57 (23.6) | 34 (14.0) | 4.60 | 1.799 |
| Absorption | | | | | | | | | |
| • Time flies when I'm working | 10 (4.1) | 14 (5.8) | 33 (13.6) | 36 (14.9) | 54 (22.3) | 61 (25.2) | 34 (14.0) | 4.77 | 1.628 |
| • When I am working, I forget everything else around me | 20 (8.3) | 30 (12.4) | 27 (11.2) | 40 (16.5) | 49 (20.2) | 53 (21.9) | 23 (9.5) | 4.32 | 1.788 |
| • I feel happy when I am working intensely | 4 (1.7) | 20 (8.3) | 29 (12.0) | 30 (12.4) | 47 (19.4) | 71 (29.3) | 41 (16.9) | 4.95 | 1.610 |
| • I am immersed in my work | 6 (2.5) | 22 (9.1) | 28 (11.6) | 41 (16.9) | 64 (26.4) | 50 (20.7) | 31 (12.8) | 4.69 | 1.575 |
| • I get carried away when I’m working | 9 (3.7) | 21 (8.7) | 29 (12.0) | 39 (16.1) | 68 (28.1) | 54 (22.3) | 22 (9.1) | 4.60 | 1.565 |
| • It is difficult to detach myself from my job | 13 (5.4) | 39 (16.1) | 28 (11.6) | 37 (15.3) | 52 (21.5) | 49 (20.2) | 24 (9.9) | 4.32 | 1.753 |

### 4.2.3 Psychological safety scale

In this scale, the psychological safety of participants as measured from the team leader, peers and the whole team perspective. The team leader aspect was measured by 9 items, the peers aspect was measured by 7 items and the whole team aspect took 3 items.

In the Relation to Team Leader dimension, team members generally feel comfortable communicating with their team leader about work-related issues and asking questions. The Highest-rated item was "I can communicate my opinions about work issues with my team leader" with a mean score of 5.35. and lowest-rated item was "I can speak up about personal problems or disagreements to my team leader" with a mean score of 4.40.

In the Relation to Peers/Other Team Members dimension, team members generally feel comfortable communicating with their peers, sharing opinions about work, and providing recommendations for improvement. The Highest-rated item was "I can communicate my opinions about work issues with my peers" with a mean score of 5.53. "If I saw a colleague making a mistake, I would feel safe speaking up to this colleague" was the lowest-rated item with a mean score of 4.79.

In the Relation to Your Team as a Whole dimension, team members generally perceive that it is easy to seek help from their colleagues, and there is an effort to keep each other informed and share information within the team. The Highest-rated item was "There are real attempts to share information throughout the team" with a mean score of 5.33. (Table 6)

*Table 6 Psychological safety scale description*

| Construct and items | Strongly disagree (%) | Disagree (%) | Somewhat disagree (%) | Neutral (%) | Somewhat agree (%) | Agree (%) | Strongly agree (%) | Mean | (SD) |
|---|---|---|---|---|---|---|---|---|---|
| **Relation to your team leader** | | | | | | | | | |
| • If I had a question or was unsure of something in relation to my role at work, I could ask my team leader | 6 (2.5) | 13 (5.4) | 17 (7.0) | 23 (9.5) | 46 (19.0) | 77 (31.8) | 60 (24.8) | 5.32 | 1.573 |
| • I can communicate my opinions about work issues with my team leader | 5 (2.1) | 14 (5.8) | 13 (5.4) | 22 (9.1) | 47 (19.4) | 87 (36.0) | 54 (22.3) | 5.35 | 1.515 |
| • I can speak up about personal problems or disagreements to my team leader | 22 (9.1) | 20 (8.3) | 31 (12.8) | 34 (14.0) | 54 (22.3) | 62 (25.6) | 19 (7.9) | 4.40 | 1.755 |
| • I can speak up with recommendations/ideas for new projects or changes in procedures to my team leader | 3 (1.2) | 20 (8.3) | 31 (12.8) | 30 (12.4) | 48 (19.8) | 64 (26.4) | 46 (19.0) | 4.97 | 1.616 |
| • If I made a mistake on this team, I would feel safe speaking up to my team leader | 9 (3.7) | 11 (4.5) | 27 (11.2) | 39 (16.1) | 62 (25.6) | 64 (26.4) | 30 (12.4) | 4.84 | 1.535 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| • If I saw a colleague making a mistake, I would feel safe speaking up to my team leader | 13 (5.4) | 25 (10.3) | 24 (9.9) | 46 (19.0) | 51 (21.1) | 58 (24.0) | 25 (10.3) | 4.53 | 1.680 |
| • If I speak up/voice my opinion, I know that my input is valued by my team leader | 5 (2.1) | 22 (9.1) | 27 (11.2) | 44 (18.2) | 49 (20.2) | 59 (24.4) | 36 (14.9) | 4.78 | 1.606 |
| • My team leader encourages and supports me to take on new tasks or to learn how to do things I have never done before. | 6 (2.5) | 22 (9.1) | 33 (13.6) | 35 (14.5) | 51 (21.1) | 64 (26.4) | 31 (12.8) | 4.73 | 1.619 |
| • If I had a problem in this company, I could depend on my team leader to be my advocate | 11 (4.5) | 31 (12.8) | 27 (11.2) | 21 (8.7) | 50 (20.7) | 60 (24.8) | 42 (17.4) | 4.72 | 1.814 |
| **In relation to peers/the other members of your team** | | | | | | | | | |
| • If I had a question or was unsure of something in relation to my role at work, I could ask my peers | 5 (2.1) | 7 (2.9) | 16 (6.6) | 26 (10.7) | 53 (21.9) | 84 (34.7) | 51 (21.1) | 5.36 | 1.425 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| • I can communicate my opinions about work issues with my peers | 3 (1.2) | 11 (4.5) | 13 (5.4) | 25 (10.3) | 40 (16.5) | 75 (31.0) | 75 (31.0) | 5.53 | 1.483 |
| • I can speak up about personal issues to my peers | 5 (2.1) | 21 (8.7) | 17 (7.0) | 35 (14.5) | 49 (20.2) | 75 (31.0) | 40 (16.5) | 5.01 | 1.587 |
| • I can speak up with recommendations/ideas for new projects or changes in procedures to my peers | 3 (1.2) | 9 (3.7) | 11 (4.5) | 31 (12.8) | 63 (26.0) | 75 (31.0) | 50 (20.7) | 5.34 | 1.367 |
| | | | | | | | | | |
| • If I made a mistake on this team, I would feel safe speaking up to my peers | 5 (2.1) | 14 (5.8) | 28 (11.6) | 29 (12.0) | 57 (23.6) | 75 (31.0) | 34 (14.0) | 4.98 | 1.522 |
| • If I saw a colleague making a mistake, I would feel safe speaking up to this colleague | 11 (4.5) | 21 (8.7) | 20 (8.3) | 32 (13.2) | 63 (26.0) | 63 (26.0) | 32 (13.2) | 4.79 | 1.651 |
| • If I speak up/voice my opinion, I know that my input is valued by my peers | 2 (0.8) | 16 (6.6) | 20 (8.3) | 26 (10.7) | 63 (26.0) | 70 (28.9) | 45 (18.6) | 5.16 | 1.477 |
| **In relation to your team as a whole** | | | | | | | | | |
| • It is easy to ask other members of this team for help | 8 (3.3) | 12 (5.0) | 13 (5.4) | 28 (11.6) | 47 (19.4) | 85 (35.1) | 49 (20.2) | 5.25 | 1.554 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| • People keep each other informed about work related issues in the team | 5 (2.1) | 14 (5.8) | 15 (6.2) | 23 (9.5) | 57 (23.6) | 74 (30.6) | 54 (22.3) | 5.28 | 1.525 |
| • There are real attempts to share information throughout the team | 4 (1.7) | 13 (5.4) | 16 (6.6) | 24 (9.9) | 48 (19.8) | 84 (34.7) | 53 (21.9) | 5.33 | 1.496 |

### 4.2.4 Organisational Citizenship Behaviour Scale

Organizational citizenship was measured in three constructs. The first one was altruism which has 5 items. Courtesy also has five items. The last one, civic virtue consists of 4 items.

In the Altruism dimension, employees generally perceive a high level of willingness to help and support their colleagues. The highest-rated item is "Willingly helps others who have work-related problems," indicating a strong inclination among employees to assist their coworkers.

In the Courtesy dimension, employees exhibit a high level of consideration and respect for their coworkers. The highest-rated item is "Does not abuse the rights of others," indicating a strong commitment to ethical behavior within the organization.

In the Civic Virtue dimension, employees exhibit moderate levels of engagement in organizational activities beyond their regular duties. While employees generally keep up with organizational announcements, attending meetings that are not mandatory was the lowest ranked item with a mean score of 4.31. (Table 7)

*Table 7 Organizational citizenship behavior scale description*

| Construct and items | Strongly disagree (%) | Disagree (%) | Somewhat disagree (%) | Neutral (%) | Somewhat agree (%) | Agree (%) | Strongly agree (%) | Mean | (SD) |
|---|---|---|---|---|---|---|---|---|---|
| Altruism | | | | | | | | | |
| • Is always ready to lend a helping hand to those around him/her. | 4 (1.7) | 9 (3.7) | 11 (4.5) | 27 (11.2) | 52 (21.5) | 83 (34.3) | 56 (23.1) | 5.43 | 1.410 |
| • Willingly helps others who have work related problems. | 4 (1.7) | 6 (2.5) | 8 (3.3) | 26 (10.7) | 44 (18.2) | 92 (38.0) | 62 (25.6) | 5.58 | 1.344 |
| • Helps orient new people even though it is not required. | 6 (2.5) | 9 (3.7) | 11 (4.5) | 30 (12.4) | 59 (24.4) | 74 (30.6) | 53 (21.9) | 5.32 | 1.458 |
| • Helps others who have heavy work loads. | 5 (2.1) | 12 (5.0) | 19 (7.9) | 23 (9.5) | 62 (25.6) | 72 (29.8) | 49 (20.2) | 5.22 | 1.502 |
| • Helps others who have been absent | 6 (2.5) | 15 (6.2) | 15 (6.2) | 32 (13.2) | 48 (19.8) | 85 (35.1) | 41 (16.9) | 5.15 | 1.533 |
| Courtesy | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| • Considers the impact of his/her actions on coworkers. | 8 (3.3) | 11 (4.5) | 17 (7.0) | 36 (14.9) | 59 (24.4) | 67 (27.7) | 44 (18.2) | 5.08 | 1.541 |
| • Tries to avoid creating problems for coworkers. | 6 (2.5) | 8 (3.3) | 19 (7.9) | 28 (11.6) | 54 (22.3) | 73 (30.2) | 54 (22.3) | 5.28 | 1.500 |
| • Does not abuse the rights of others. | 6 (2.5) | 7 (2.9) | 15 (6.2) | 20 (8.3) | 48 (19.8) | 80 (33.1) | 66 (27.3) | 5.48 | 1.478 |
| • Is mindful of how his/her behavior affects other people's jobs. | 5 (2.1) | 17 (7.0) | 16 (6.6) | 26 (10.7) | 46 (19.0) | 80 (33.1) | 52 (21.5) | 5.23 | 1.576 |
| • Takes steps to try to prevent problems with other workers. | 3 (1.2) | 9 (3.7) | 19 (7.9) | 22 (9.1) | 52 (21.5) | 80 (33.1) | 57 (23.6) | 5.39 | 1.437 |
| Civic virtue | | | | | | | | | |
| • Reads and keeps up with organization announcements, memos, and so on | 6 (2.5) | 14 (5.8) | 29 (12.0) | 27 (11.2) | 65 (26.9) | 70 (28.9) | 31 (12.8) | 4.92 | 1.521 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| • Keeps abreast of changes in the organization. | 5 (2.1) | 20 (8.3) | 27 (11.2) | 39 (16.1) | 70 (28.9) | 61 (25.2) | 20 (8.3) | 4.70 | 1.478 |
| • Attends functions that are not required, but help the company image | 14 (5.8) | 29 (12.0) | 27 (11.2) | 42 (17.4) | 58 (24.0) | 55 (22.7) | 17 (7.0) | 4.38 | 1.661 |
| • Attends meetings that are not mandatory, but are considered important. | 16 (6.6) | 32 (13.2) | 31 (12.8) | 40 (16.5) | 47 (19.4) | 56 (23.1) | 20 (8.3) | 4.31 | 1.741 |

## 4.3 Correlation Analysis (Tests)

Hypothesis 1: There is correlation between collective leadership and work engagement.

Spearman's coefficient was used to test for any correlation between collective leadership and work engagement among participants. There was statistically significant moderate positive relationship between collective leadership and work engagement, according to this study (p= 0.667, p= 0.000). (Table 8)

Hypothesis 2: There is correlation between collective leadership and psychological safety.

There was statistically significant moderate positive relationship between collective leadership and work engagement, according to this study (p= 0.688, p= 0.000). (Table 8)

*Table 8 Correlation analysis for between collective leadership and work engagement & psychological safety*

**Correlations**

| | | | COLE_M | WOEN_M | PSSA_M |
|---|---|---|---|---|---|
| Spearman's rho | COLE_M | Correlation Coefficient | 1.000 | .605** | .626** |
| | | Sig. (2-tailed) | . | .000 | .000 |
| | | N | 242 | 242 | 242 |

Hypotesis 3: There is correlation between organizational citizenship behavior and work engagement.

The relationship between organizational citizenship behavior and work engagement was also statistically significant, positive and moderate (p= 0.605, p= 0.00) (Table 9)

Hypotesis 4: There is correlation between organizational citizenship behavior and psychological safety.

There was also a statistically significant, moderate positive relationship between organizational citizenship behavior and psychological safety (p= 0.626, p= 0.00). (Table 9)

*Table 9 Correlation analysis for between OCB and work engagement & psychological safety*

**Correlations**

| | | | OCB_M | WOEN_M | PSSA_M |
|---|---|---|---|---|---|
| Spearman's rho | OCB_M | Correlation Coefficient | 1.000 | .667** | .688** |
| | | Sig. (2-tailed) | . | .000 | .000 |
| | | N | 242 | 242 | 242 |

## 4.4 Regression Analysis (Tests)

### 4.4.1 Diagnosis Tests

4.4.1.1 Normality Test

Shapiro- wilk test was preferred to test the normality of the numerical data, because the sample size is small (< 2000). The p value of 0.05 was taken as a cut point to determine the significance with the null hypothesis being there is normaly ditribution among the variables. Since the p value of the variables was less than 0.05, we reject the null hypothesis and conclude that there is no normal distrubition among the data. (Table 10)

*Table 10 Normality test for regression analysis*

**Tests of Normality**

| | Shapiro-Wilk | | |
|---|---|---|---|
| | Statistic | df | Sig. |
| Age | .837 | 242 | .000 |
| Experience | .845 | 242 | .000 |
| Collective Leadership | .948 | 242 | .000 |
| Work Engagement | .951 | 242 | .000 |
| Psychological Safety | .930 | 242 | .000 |
| Organisational Citizenship Behaviour | .934 | 242 | .000 |

4.4.1.2 MultiCollinearity Test

In multicollinearility test, collective leadership and organisational citizenship behavior were taken separately as a dependent variable, while age, gender, year of experience, profession, psychological safety and work engagement were entered as independent variable. For both cases, the VIF was below 10 (Table). Based on this, the assumption of no multicollinearity is satisfied.

*Table 11Multicollinearity test for OCB*

| Model | Collinearity Statistics | |
|---|---|---|
| | Tolerance | VIF |
| (Constant) | | |
| Work Engagement | .541 | 1.848 |
| Psychological Safety | .539 | 1.855 |
| Age | .680 | 1.471 |
| Gender | .907 | 1.102 |
| Profession | .931 | 1.075 |
| Experience | .732 | 1.366 |

Dependent Variable: OCB

*Table 12Multicollinearity test for Collective Leadership*

| Model | Collinearity Statistics | |
|---|---|---|
| | Tolerance | VIF |
| (Constant) | | |
| Work Engagement | .541 | 1.848 |
| Psychological Safety | .539 | 1.855 |
| Age | .680 | 1.471 |
| Gender: | .907 | 1.102 |
| Profession | .931 | 1.075 |
| Experience | .732 | 1.366 |

Dependent Variable: Collective Leadership

### 4.4.2 Linear Regressions Analysis

#### 4.4.2.1 Univariate analysis

In univariate analysis, a p value of less than 0.25 was taken to be significant value to continue to the multivariate analysis. Collective leadership scale was taken as the first dependent variable and the two scales taken as an independent variable, the psychological safetyand work

engagement scale were analyzed. Additionally, age, gender, year of experience and profession were also analyzed as an independent variable. All the p values of the variables were less than 0.25 and consequently considered for the multivariate analysis.

For the second dependent variable, which was the organizational citizenship behavior, age, gender, profession, year of experience, psychological safety and work engagement scale were analyzed and passed for multivariate analysis.

4.4.2.2 Multivariate analysis

For the first dependent variable, which is collective leadership, Age, Gender, Experience, work engagement, and psychological safety were statistically significant predictors of collective leadership in this study. Age had a negative relationship with collective leadership. For each unit increase in years of age, collective leadership is estimated to decrease by 0.038 units.Male gender also has a negative relationship with collective leadership. Male gender category is associated with an estimated decrease of 0.292 units in collective leadership compared to the female gender. Experience has a positive relationship with collective leadership. For each year increase in work experience, collective leadership is estimated to increase by 0.067 units. Work engagement has a strong positive relationship with collective leadership. Each unit increase in work engagement is associated with an estimated increase of 0.470 units in collective leadership.Psychological safety also has a strong positive relationship with collective leadership. Each unit increase in psychological safety is associated with an estimated increase of 0.421 units in collective leadership.

*Table 13Multivariate Analysis for Collective leadership*

| Variables | B | 95% CI | P value |
|---|---|---|---|
| Age | -0.038 | (-0.068,-0.008) | .013* |
| Gender: | -0.292 | (-0.503,-0.080) | .007* |
| Profession | 0.033 | (-0.022,0.087) | .238 |

| | | | |
|---|---|---|---|
| Experience | 0.067 | (0.022,0.111) | .003* |
| Work engagement | 0.470 | (0.355,0.586) | .000* |
| Psychological safety | 0.421 | (0.301,0.540) | .000* |

Dependent Variable: Collective leadership

OCB was taken as a second dependent variable and age, gender, profession, years of experience, psychological safety and work engagement were analyzed for possible association. Age, work engagement, and Psychological safety were statistically significant predictors of OCB, while Gender, Experience, and Profession were not statistically significant.

Age has a negative relationship with OCB. For each year increase in age, OCB is estimated to decrease by 0.029 units. Work engagement had a strong positive relationship with OCB. Each unit increase in Work Engagement is associated with an estimated increase of 0.390 units in OCB. Psychological Safety also had a strong positive relationship with OCB. Each unit increase in Psychological Safety is associated with an estimated increase of 0.470 units in OCB.

*Table 14 Multivariate Analysis for OCB*

| **Variables** | **B** | **95% CI** | **P value** |
|---|---|---|---|
| Age | -0.029 | (-0.055, -0.004) | .024* |
| Gender: | -0.025 | (-0.204, 0.153) | .779 |
| Experience | 0.000 | (-0.038, 0.038) | .990 |
| Profession | 0.069 | (-0.045, 0.183) | .236 |
| Work engagement | 0.390 | (0.292, 0.488) | .000* |
| Psychological safety | 0.470 | (0.368, 0.571) | .000* |

### 4.5 Qualitative study

Semi-structured interviews were conducted with three key informants: the Medical Director, HR Director, and Task Force Manager. The interviews focused on their observations, perceptions, and experiences related to the changes in healthcare professionals' work during the COVID-19

response. The study aimed to gain insights into the impact of these changes, the factors enabling them, and the potential for sustaining these new ways of working beyond the pandemic.

Thematic Areas:

The analysis of the interviews revealed several thematic areas that provide valuable insights into the changes and their implications.

1**. Positive Changes in Work Habits:**

All key informants noted significant positive changes in healthcare colleagues' work habits during the COVID-19 response. This included ‘increased determination, endurance, efficiency, effectiveness, innovativeness, and a heightened sense of team spirit’ as the medical director puts it.

2. **Impact on Service Delivery:**

The impact of these changes on service delivery was unanimously positive. Patients and caregivers appreciated the quality of care provided during the pandemic, which was attributed to the dedication and collective effort of healthcare professionals.

3**. Transformation in Mindset:**

The interviews suggested that a transformation in mindset played a pivotal role in enabling the observed changes in work habits. Healthcare professionals embraced teamwork and recognized its importance, fostering perseverance during patient hospital stays. The Task Force Manager puts it like this "Teamwork and recognizing its importance played a significant role. We realized that working as a team was crucial."

4. **Sustainability of Changes:**

Key informants expressed optimism regarding the sustainability of these changes post-COVID-19. They believed that the experience gained during the pandemic, coupled with the emotional

resilience developed, would enable healthcare professionals to continue working effectively as a team.

5**. Challenges and Discomforts:**

While the overall response was positive, the Medical Director expressed initial discomfort with the haphazard nature of activities and the limited availability of protocols. "I was uncomfortable performing activities haphazardly in the beginning with few protocols in hand. Adherence to existing protocols was disappointing."

6. **Aspects to Continue:**

All informants emphasized the importance of continuing several aspects of the newfound teamwork and work habits. These included team spirit, swift response to challenges, systematic thinking, self-sacrifice, adaptability to intense environments, research, evidence generation, and continuous professional development.

7. **Factors Enabling Sustainability:**

The HR Director highlighted that to sustain these changes, addressing compensation issues, providing ongoing training and experience-sharing sessions, and offering mental rehabilitation and support would be essential. "To sustain these changes, we need to address compensation issues, provide ongoing training and experience-sharing sessions", the HR director mentions.

# CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Summary of findings

In the Collective Leadership Assessment, the health care professionals' responses indicate that the team is generally effective in planning and organizing tasks. This is a positive sign for the team's ability to set goals, allocate resources, and structure their work efficiently. The team excels in problem-solving, indicating a strong capacity to address challenges and find solutions promptly. However, there is a slight gap in identifying problems before they arise, which suggests that the team may benefit from proactive problem identification and prevention strategies. In terms of support and consideration, participants rate the team highly. They feel that their colleagues provide support when needed and foster a cohesive team atmosphere, which is vital for team cohesion and performance, especially in crisis situations like COVID-19 pandemic.

Work engagement levels appear generally positive among employees. They feel motivated to start their workday (vigor) and exhibit dedication and enthusiasm for their jobs. These are crucial indicators of job satisfaction and commitment. However, employees may benefit from interventions to improve their perception of physical strength and vitality at work (vigor). Encouraging healthy work habits and well-being initiatives could be considered. While employees are emotionally engaged in their work (absorption), some may find it challenging to detach from work. This can be attributed to the nature of the pandemic and the patients they generally treat.

The assessment of psychological safety in relation to team leaders shows that employees generally feel safe to ask questions, communicate opinions, and make recommendations to their leaders. This is vital for open communication and feedback within the organization. In interactions with peers, employees also perceive a high level of psychological safety, except when it comes to speaking up about colleagues' mistakes. Addressing this gap could enhance overall team communication and problem-solving. Regarding the team as a whole, psychological safety remains high, with employees feeling comfortable asking for help and sharing information. This fosters a collaborative and supportive team environment.

Employees exhibit positive OCBs such as altruism (willingness to help colleagues) and courtesy (respectful behavior). This reflects a culture of cooperation and mutual respect. Civic virtue, while rated moderately, indicates that employees engage in organizational activities beyond their job requirements. Encouraging more active participation in non-mandatory functions and meetings can boost organizational awareness and image.

The regression analysis suggests that several factors influence OCB, including age, gender, experience, and psychological safety. These variables play a role in shaping employees' willingness to engage in OCBs. Notably, work engagement positively predicts OCB. This implies that when a team engages more on the work, it leads to higher levels of OCB. This may be due to a sense of shared responsibility and cooperation within the team. Psychological safety also positively predicts OCB. When employees feel safe to voice their opinions and take risks without fear of repercussions, they are more likely to engage in OCBs that benefit the organization.

In conclusion, the assessments collectively provide a comprehensive view of the organization's strengths and areas for improvement. By fostering a culture of psychological safety, encouraging collective leadership, and addressing specific areas for growth, the organization can enhance team dynamics, work engagement, and organizational citizenship behavior, contributing to a more productive and harmonious work environment.

The qualitative findings from the key informant interviews at EkaKotebe General Hospital indicate significant positive changes in healthcare professionals' work habits during the COVID-19 response. These changes were driven by a transformation in mindset, emphasizing the importance of teamwork and perseverance. While there were initial challenges and discomforts, the impact on service delivery was commendable.

The informants expressed optimism regarding the sustainability of these changes post-COVID-19, with a strong desire to continue the teamwork and work habits developed during the pandemic. To ensure sustainability, addressing compensation issues, providing ongoing training and support, and promoting mental well-being will be essential factors.

## 5.2.Conclusion

The results of this study highlight several strengths in teamwork among COVID-19 frontline healthcare professionals:

Effective Communication: One of the most significant strengths observed was the healthcare teams' ability to communicate effectively under challenging circumstances. Clear and timely communication was essential for the exchange of critical information, coordination of care, and decision-making.

Adaptability: Healthcare professionals demonstrated a remarkable capacity to adapt to rapidly changing situations and guidelines. Their ability to adjust their practices and protocols in response to emerging information was crucial in managing the crisis effectively.

Shared Commitment: Despite the immense challenges and personal risks involved, healthcare teams exhibited a shared commitment to patient care. This commitment was evident in their dedication, long hours of work, and willingness to go above and beyond to meet patient needs.

Interdisciplinary Collaboration: Collaboration across different healthcare disciplines was a notable strength. Professionals from various backgrounds worked together seamlessly, pooling their expertise to provide comprehensive care.

Resilience: The healthcare workforce demonstrated remarkable resilience in the face of unprecedented stress and workload. Their ability to persevere and maintain high levels of performance under such conditions was commendable.

While there were notable strengths in teamwork, this study also identified areas for improvement:

Mental Health Support: The mental health and well-being of frontline healthcare professionals require greater attention and support. Strategies for managing stress, trauma, and burnout should be prioritized to ensure the long-term resilience of the healthcare workforce.

Resource Allocation: There were instances of resource shortages and challenges in allocating resources optimally. Improved resource management and contingency planning are necessary to enhance preparedness for future crises.

Training for Crisis Response: Providing specialized training in crisis response and team dynamics can better prepare healthcare professionals for managing future crises effectively.

In conclusion, this study underscores the critical importance of teamwork among frontline healthcare professionals during crisis situations, such as the COVID-19 pandemic. While there were evident strengths in collaboration, addressing the identified areas for improvement is essential to ensure the resilience and effectiveness of healthcare teams in the face of future challenges. By investing in mental health support, training, resource management, and ongoing research, healthcare organizations can better equip their teams to navigate crisis situations and provide the highest quality care to their patients.

## 5.3 Recommendation

The findings of this study have significant implications for healthcare organizations and policymakers. Effective teamwork in crisis situations is not only essential for patient care but also for the well-being of healthcare professionals. Therefore, the following recommendations are suggested:

Investment in Mental Health Support: Healthcare organizations should prioritize mental health resources and support systems for their workforce, including counseling services and stress management programs.

Preparedness and Training: Comprehensive training programs and simulations should be developed to prepare healthcare teams for crisis situations, emphasizing communication, coordination, and adaptability.

Resource Management: Healthcare organizations should establish robust resource management systems and stockpile critical supplies to ensure a sufficient and timely response to future crises.

Research and Continuous Improvement: Further research is needed to continuously assess and improve teamwork in healthcare crisis scenarios. The lessons learned from the COVID-19 pandemic should inform ongoing efforts to enhance crisis preparedness and response.

## 5.4 Research Limitation and Areas of Further Research

### 5.4.1. Limitation of the study

This study was conducted at a single healthcare facility, which may limit the generalizability of the findings to a broader population of frontline healthcare professionals. Participants were asked to recall events and experiences from several months ago. This introduces the potential for recall bias, as memories may be influenced by the passage of time and other cognitive factors. The findings of this study may be influenced by the unique circumstances of the COVID-19 pandemic.

### 5.4.2. Suggestion for future research

For the future, conducting longitudinal studies to track the evolution of teamwork dynamics during extended crisis situations is recommended. This could provide insights into the long-term effects of crisis experiences on healthcare professionals. Additionally, future studies can investigate the role of technology, such as telemedicine or communication platforms, in facilitating teamwork among geographically dispersed healthcare teams during crises.

## References


1. Cohen, S.G. and D.E. Bailey, *What Makes Teams Work: Group Effectiveness Research from the Shop Floor to the Executive Suite.* Journal of Management, 1997. **23**(3): p. 239-290.
2. Katzenbach, J.R. and D.K. Smith, *The discipline of teams.*Harv Bus Rev, 1993. **71**(2): p. 111-20.
3. Wu, Q., K. Cormican, and G. Chen, *A Meta-Analysis of Shared Leadership: Antecedents, Consequences, and Moderators.* Journal of Leadership & Organizational Studies, 2018. **27**: p. 154805181882086.
4. Edmondson, A., *Psychological safety and learning behavior in teams.* Administrative Science Quarterly, 1999. **44**: p. 250-282.
5. Christian, M., A. Garza, and J. Slaughter, *Work Engagement: A Quantitative Review and Test of Its Relations with Task and Contextual Performance.* Personnel Psychology, 2011. **64**: p. 89-136.
6. Podsakoff, P., et al., *Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors.* The Leadership Quarterly, 1990. **1**: p. 107-142.
7. Sommer, S.A., J.M. Howell, and C.N. Hadley, *Keeping positive and building strength: The role of affect and team leadership in developing resilience during an organizational crisis.* Group & Organization Management, 2016. **41**(2): p. 172-202.
8. Conti, C., et al., *Burnout Status of Italian Healthcare Workers during the First COVID-19 Pandemic Peak Period.* Healthcare, 2021. **9**(5): p. 510.
9. Bednarz, A.L., M. Borkowska-Bierć, and M. Matejun, *Managerial Responses to the Onset of the COVID-19 Pandemic in Healthcare Organizations Project Management.*Int J Environ Res Public Health, 2021. **18**(22).
10. Dyer, J. L., 1984, Team research and team training: A state-of-the-art review. Human Factors Review, pp. 285-319
11. Salas E, Tannenbaum S, Cohen D, Latham G. Developing and Enhancing Teamwork in Organizations: Evidence-based Best Practices and Guidelines: Wiley; 2013.
12. What does the 2019 NHS Staff Survey truly tell us about how staff needs are being met? | The King's Fund (kingsfund.org.uk)
13. Learning from staff experiences of Covid-19: let the light come streaming in | The King's Fund (kingsfund.org.uk)
14. Pearce C, Sims H. Vertical versus shared leadership as predictors of the effectiveness of change management teams: An examination of aversive, directive, transactional, transformational, and empowering leader behaviors. Group Dynamics: Theory, Research, and Practice. 2002;6:172-97.

15. Carson J, Tesluk P, Marrone J. Shared Leadership in Teams: An Investigation of Antecedent Conditions and Performance. Academy of Management Journal. 2007;50:1217-34.
16. Wood M, Fields D. Exploring the impact of shared leadership on management team member job outcomes. Baltic Journal of Management. 2007;2:251-72.
17. Anjara S, Fox R, Rogers L, De Brún A, McAuliffe E. Teamworking in Healthcare during the COVID-19 Pandemic: A Mixed-Method Study. Int J Environ Res Public Health. 2021;18(19).
18. Seppälä P, Mauno S, Feldt T, Hakanen J, Kinnunen U, Tolvanen A, et al. The Construct Validity of the Utrecht Work Engagement Scale: Multisample and Longitudinal Evidence. Journal of Happiness Studies. 2008;10:459-81.
19. Hiller N, Day D, Vance R. Collective enactment of leadership roles and team effectiveness: A field study. The Leadership Quarterly. 2006;17:387-97.
20. O'Donovan R, Van Dun D, McAuliffe E. Measuring psychological safety in healthcare teams: developing an observational measure to complement survey methods. BMC Medical Research Methodology. 2020;20(1):203.
21. Leonard M, Graham S, Bonacum D. The human factor: the critical importance of effective teamwork and communication in providing safe care. Quality & safety in health care. 2004;13 Suppl 1(Suppl 1):i85-90.
22. Kinicki A, Kreitner R. Organizational behavior: Key concepts, skills & best practices: McGraw-Hill Irwin; 2009.
23. Salas E, Sims DE, Burke CS. Is there a "Big Five" in Teamwork? Small Group Research. 2005;36(5):555-99.
24. Foronda C, MacWilliams B, McArthur E. Interprofessional communication in healthcare: An integrative review. Nurse education in practice. 2016;19:36-40.
25. Reeves S, Perrier L, Goldman J, Freeth D, Zwarenstein M. Interprofessional education: effects on professional practice and healthcare outcomes (update). The Cochrane database of systematic reviews. 2013;2013(3):Cd002213.
26. Rosen MA, DiazGranados D, Dietz AS, Benishek LE, Thompson D, Pronovost PJ, et al. Teamwork in healthcare: Key discoveries enabling safer, high-quality care. The American psychologist. 2018;73(4):433-50.
27. Lingard L, Reznick R, Espin S, Regehr G, DeVito I. Team Communications in the Operating Room. Academic Medicine. 2002;77:232-7.
28. Blaauw D, Ditlopo P, Maseko F, Chirwa M, Mwisongo A, Bidwell P, et al. Comparing the job satisfaction and intention to leave of different categories of health workers in Tanzania, Malawi, and South Africa. Global health action. 2013;6(1):19287

# Annex

## Annex 1

QuantitativeData Collection tool

Dear Sir/ Madam,

My name is AbebawBekele and I am currently working on a research on Project teams teamwork during Crisis situations; The case of Eka Kotebe General Hospital; COVID-19 treatment center in Ethiopia as a partial fulfillment for my MA study in Project Management in Addis Ababa University, School of Commerce. This research is aimed to assess the practice of health care team work during crisis situations. This questionnaire is designed to collect relevant data for my research and the research outcome will be used to recommend on possible health care teams improvement solutions. In this respect, I believe you are among the one who can give the right information. Hence, I kindly request the utmost attention and collaboration to fill this questionnaire in providing reliable and genuine information that could help to reach the right research outcome and conclusion. As a matter of ethical research, I solemnly commit that your response would be kept confidential and it will be used only for research purpose. If you have any comment or questions, please feel free to contact me.

Email; abebawseyoum91@gmail.com

Phone: 0913678070

**Section 1; Socio-demographic**

1.1 Age:_____

**1.2** Gender: **Male**
**Female**

**1.3** Profession: **Physician**
**Nurse**
**Midwife**
**Psychiatry Nurse**
**Laboratory technician**
**Pharmacy**
**Msc in psychiatry**
**Radiology**

1.4 Year of experience: _____

**Section 2: Collective Leadership Scale**

From your experience in working as a COVID-19 frontline health professional, how much was your involvement in the following areas **in your team**?

'1'No involvement at all '7' Complete involvement

| Construct and items | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Planning and Organizing | | | | | | | |
| • Planning how the work gets done. | | | | | | | |
| • Allocating resources according to team's priorities | | | | | | | |
| • Setting our team's goals. | | | | | | | |
| • Organizing tasks so that work flows more smoothly. | | | | | | | |
| • Deciding how to go about our team's work. | | | | | | | |
| • Providing helpful input about team's work plans. | | | | | | | |
| Problem Solving | | | | | | | |
| • Deciding on best course of action when problems arise. | | | | | | | |
| • Diagnosing problems quickly. | | | | | | | |
| • Using our team's combined expertise to solve problems | | | | | | | |
| • Finding solutions to problems affecting team performance. | | | | | | | |
| • Identifying problems before they arise | | | | | | | |
| • Developing solutions to problems. | | | | | | | |
| • Solving problems as they arise. | | | | | | | |
| Support and Consideration | | | | | | | |
| • Providing support to team members who need help. | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| • Showing patience toward other team members. | | | | | | | |
| • Encouraging other team members when they're upset. | | | | | | | |
| • Listening to complaints and problems of team members. | | | | | | | |
| • Fostering a cohesive team atmosphere | | | | | | | |
| • Treating each other with courtesy. | | | | | | | |

**Section 3: UtrechtWork Engagement ScaleUWES**

**Regarding this, from your experience in working as a COVID-19 front-line health professional, please state your feelings in the following areas in your team?**

**'1' Strongly Disagree '7' Strongly Agree**

| Construct and items | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Vigor | | | | | | | |
| • At my work, I feel that I am bursting with energy | | | | | | | |
| • At my job, I feel strong and vigorous | | | | | | | |
| • When I get up in the morning, I feel like going to work | | | | | | | |
| • I can continue working for very long periods at a time | | | | | | | |
| • At my job, I am very resilient, mentally | | | | | | | |
| • At my work I always persevere, even when things do not go well | | | | | | | |
| Dedication | | | | | | | |
| • I find the work that I do full of meaning and purpose | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| • I am enthusiastic about my job | | | | | | | |
| • I am proud of the work that I do | | | | | | | |
| • My job inspires me | | | | | | | |
| • To me, my job is challenging | | | | | | | |
| Absorption | | | | | | | |
| • Time flies when I'm working | | | | | | | |
| • When I am working, I forget everything else around me | | | | | | | |
| • I feel happy when I am working intensely | | | | | | | |
| • I am immersed in my work | | | | | | | |
| • I get carried away when I'm working | | | | | | | |
| • It is difficult to detach myself from my job | | | | | | | |

**Section 4: Organisational Citizenship Behaviour Scale**

**Regarding this, from your experience in working as a COVID-19 front-line health professional, how do you describe yourself in the following areas?**

**'1' Strongly Disagree '7' Strongly Agree**

| Construct and items | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Altruism | | | | | | | |
| • Is always ready to lend a helping hand to those around him/her. | | | | | | | |
| • Willingly helps others who have work related problems. | | | | | | | |
| • Helps orient new people even though it is not required. | | | | | | | |
| • Helps others who have heavy work loads. | | | | | | | |
| • Helps others who have been absent | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Courtesy | | | | | | | |
| • Considers the impact of his/her actions on coworkers. | | | | | | | |
| • Tries to avoid creating problems for coworkers. | | | | | | | |
| • Does not abuse the rights of others. | | | | | | | |
| • Is mindful of how his/her behavior affects other people's jobs. | | | | | | | |
| • Takes steps to try to prevent problems with other workers. | | | | | | | |
| Civic virtue | | | | | | | |
| • Reads and keeps up with organization announcements, memos, and so on | | | | | | | |
| • Keeps abreast of changes in the organization. | | | | | | | |
| • Attends functions that are not required, but help the company image | | | | | | | |
| • Attends meetings that are not mandatory, but are considered important. | | | | | | | |

**Section 5: Psychological Safety Scale**

**Regarding this, from your experience in working as a COVID-19 front-line health professional, how do you describe yourself in the following areas?**

**'1' Strongly Disagree '7' Strongly Agree**

| Construct and items | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| **Relation to your team leader** | | | | | | | |
| • If I had a question or was unsure of something in relation to my role at work, I could ask my team leader | | | | | | | |
| • I can communicate my opinions about work issues with my team leader | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| • I can speak up about personal problems or disagreements to my team leader | | | | | | | |
| • I can speak up with recommendations/ideas for new projects or changes in procedures to my team leader | | | | | | | |
| • If I made a mistake on this team, I would feel safe speaking up to my team leader | | | | | | | |
| • If I saw a colleague making a mistake, I would feel safe speaking up to my team leader | | | | | | | |
| • If I speak up/voice my opinion, I know that my input is valued by my team leader | | | | | | | |
| • My team leader encourages and supports me to take on new tasks or to learn how to do things I have never done before. | | | | | | | |
| • If I had a problem in this company, I could depend on my team leader to be my advocate | | | | | | | |
| **In relation to peers/the other members of your team** | | | | | | | |
| • If I had a question or was unsure of something in relation to my role at work, I could ask my peers | | | | | | | |
| • I can communicate my opinions about work issues with my peers | | | | | | | |
| • I can speak up about personal issues to my peers | | | | | | | |
| • I can speak up with | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| recommendations/ideas for new projects or changes in procedures to my peers | | | | | | | |
| • If I made a mistake on this team, I would feel safe speaking up to my peers | | | | | | | |
| • If I saw a colleague making a mistake, I would feel safe speaking up to this colleague | | | | | | | |
| • If I speak up/voice my opinion, I know that my input is valued by my peers | | | | | | | |
| **In relation to your team as a whole** | | | | | | | |
| • It is easy to ask other members of this team for help | | | | | | | |
| • People keep each other informed about work related issues in the team | | | | | | | |
| • There are real attempts to share information throughout the team | | | | | | | |

## Annex 2

Qualitative data collection tool

1. What, if any, is the most significant change you've observed in how your healthcare colleagues are working during the COVID-19 response?
2. Has it been a positive change or a negative change?
3. What has been the impact of this change?
4. What do you think has changed in people's mind to enable this way of working?
5. Do you think this change will persist after COVID-19? What makes you say this?
6. Was there anything about how your team worked during COVID-19 that you felt unhappy about? Please describe.
7. What aspect/s of how your team worked during COVID-19 would you like to see continue?
8. What do you think would enable your team to sustain these ways of working?