College of Business and Economics

School of Commerce

MA Program in Project Management

Assessment of Healthcare Quality Improvement projects sustainability in regional hospitals in Addis Ababa, Ethiopia

By Abemelek Zegeye Hailemariam (MD.)

A Project Work Report to be submitted to Addis Ababa University, College of Business and Economics, School of Commerce in Partial Fulfilment of the Requirement for the Degree of Master of Arts in Project Management

September 2023

Addis Ababa, Ethiopia

Addis Ababa University

College of Business and Economics

School of Commerce

MA Program in Project Management

Assessment of Healthcare Quality Improvement projects sustainability in regional hospitals in Addis Ababa, Ethiopia

By Abemelek Zegeye Hailemariam (MD.)

Advisor: Bahran Asrat (Ph.D.)

September 2023

Addis Ababa, Ethiopia

Declaration

I, the undersigned, declare that this study entitled “Assessment of Healthcare Quality Improvement projects sustainability in Regional hospitals in Addis Ababa, Ethiopia” is my own work. I have undertaken the research work independently with the guidance and support of my research advisor Dr. Bahran Asrat. I also declare that it is not submitted before for any institution for any purpose & all the resources used in the thesis are duly acknowledged & referenced.

Name: **Abemelek Zegeye Hailemariam**

Signature: ----------

Date: ----------

Statement of Certificate

This is to certify that the project work prepared by Abemelek Zegeye, titled: Assessment of Healthcare quality improvement project sustainability in regional hospitals in Addis Ababa, Ethiopia: submitted in partial fulfilment 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.

Advisor: **Bahran Asrat (Ph.D.)**

Signature: ----------

Date: ----------

Addis Ababa University

College of Business and Economics

School of Commerce

MA Program in Project Management

Assessment of Healthcare Quality Improvement projects sustainability in regional hospitals in Addis Ababa, Ethiopia

By: Abemelek Zegeye Hailemariam (MD.)

Board of Examiners approvals

External examiner name	Signature	Date
…….	……..	……..
Internal examiner name	Signature	Date
…….	……	……
Chairperson's name	Signature	Date
…….	……	……

Acknowledgments

To the College of Business and Economics at Addis Ababa University, School of Commerce, MA Program in Project Management, I would like to express my heartfelt gratitude for the educational opportunity I have received and the opportunity to execute this project work proposal. I would like to extend my deep gratitude to my advisor, Dr Bahran Asrat for being willing to continuously mentor, educate, and provide helpful feedback during the course of this project work.

Table of Contents

Lists of Tables

Lists of Figures

Lists of Acronyms

AACH: Addis Ababa City administration Hospital

AARHB: Addis Ababa Regional Health Bureau

AAU: Addis Ababa University

DMIIH: Dagimawi Minilik Hospital

GMH: Gandhi Memorial Hospital

IOM: Institute Of Medicine

NHS: National Health Service

NQSS: National Quality and Safety Strategy

MOH: Minister of Health

QI: Quality Improvement

RDDH: Ras Desta Damtew Hospital

SDG: Sustainable Development Goals

SPC: Statistical Process Control

TBGH: Tirunesh Beijing Hospital

WHO: World Health Organization

Y12HMC: Yekatit 12 Hospital Medical College

ZMH: Zewditu Memorial Hospital

Abstract

Sustainability of Healthcare quality improvement projects refers to the ability of healthcare initiatives to maintain and build upon their positive changes over time, ensuring that improvement becomes ingrained in organizational practice. However, many of these projects fail to achieve long-term sustainability, wasting resources and suboptimal patient outcomes. Understanding the factors contributing to the sustainability of quality improvement projects is crucial for healthcare organizations to achieve lasting improvements in patient outcomes, safety, and experience. The main purpose of this project work was to assess the sustainability of healthcare quality improvement projects and identify factors that influence their sustainability in regional hospitals in Addis Ababa, Ethiopia. Institution-based cross-sectional study descriptive type, with a quantitative approach, was conducted among 63 participants who fulfilled the inclusion criteria; Census was adopted. Participants were selected using a purposive sampling technique. A structured and standard questionnaire was used to collect data. The sustainability of quality improvement teams was assessed using the National Health Service Institute for Innovation and Improvement Sustainability Model self-assessment tool. The data was entered into SPSS version 25 for analysis. Mean, standard deviation, frequency, percentage and independent sample t test were used to present the result. The main findings revealed that the mean sustainability scores for all six hospitals were 55.815 (95% CI: 52.579-52.579). Three main factors that were perceived to negatively affect the sustainability of hospital QI teams across all six hospitals were), inadequate engagement of senior hospital leadership 6.047 (95% CI: 5.041-7.052), inadequate involvement of clinical leadership 7.013 (95% CI: 5.960-8.067) and weak infrastructures for sustainability 2.858 (95% CI: 2.261-3.456). Moderate-level mean sustainability scores for all six regional hospitals indicate some sustainability in place and ample room for improvement. In assessing domain-level sustainability scores, several factors were identified as promoting sustainability; however, three significant factors negatively affected sustainability: Inadequate engagement of senior hospital leadership, insufficient involvement of clinical leadership, and weak infrastructures for sustainability. By addressing process, staff, and organization domains, such as: enhancing leadership engagement, clinical leadership involvement and investing in infrastructure healthcare organizations can create a holistic approach to quality improvement that leads to long-lasting positive outcomes for patients and the healthcare system.

Key Words: *Quality, Quality improvement, quality improvement projects and sustainability.*

Chapter one

1. Introduction

This study's first chapter includes an overview of the study's and organization's background, a problem statement, a research question, and objectives. It also discusses the study's significance, rationale, scope, and organizational structure and defines key terms of the study.

1.1. Background of the study

The Institute of Medicine (IOM) defines health service quality as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." This definition is currently used as the gold standard by the World Health Organization. ('https://www.who.int/health-topics/quality-of-care#tab=tab_1', 2022).

Quality is defined as care that is "comprehensive and integrated," "measurably safe, effective, people-centered, uniformly delivered in a timely manner, affordable to the Ethiopian population, and appropriately utilizes resources and services efficiently (MOH, 2021). "Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Healthcare quality improvement projects can only be sustained through effective project management. By applying project management principles, healthcare organizations can ensure that the project is designed and implemented in a way that promotes sustainability. This includes identifying potential barriers to sustainability, developing a plan for ongoing monitoring and evaluation, and engaging stakeholders to ensure the project remains relevant and effective over time ('Project Management Institute. A Guide to the Project Management Body of Knowledge':, 2004).

Projects to increase the quality of healthcare services are crucial in developing nations like Ethiopia to build up the healthcare system there. To improve overall healthcare service quality and promote access to quality care, Ethiopia heavily emphasizes regional hospitals.

Projects to enhance healthcare quality are crucial for delivering care that meets the highest efficacy, efficiency, safety, and individualization standards (Tomás-Jiménez *et al.*, 2022).

Sustainability can be viewed as a component of healthcare quality, extending the obligation of healthcare providers to patients not just in the present but also in the future. Achieving long-term sustainability in healthcare quality improvement projects entails preserving the advantages and results of these initiatives over time and incorporating them into the organization's established culture, procedures, and policies. This necessitates continuous

monitoring, active involvement of stakeholders, allocation of resources, backing from leadership, and the assimilation of modifications into routine practices (Mortimer *et al.*, 2018).

The variables that contribute to the success or failure of a healthcare quality improvement project can be gleaned through an analysis of the project's sustainability and determining factors. In addition to directing future quality improvement initiatives, it can reveal the most sustainable methodologies and solutions (Hibbert *et al.*, 2021).

Results from global, regional, and local perspectives show several essential aspects that affect the sustainability of attempts to improve the quality of healthcare. Strong leadership, stakeholder support, continual monitoring, a positive company culture, and enabling laws are just a few of the factors that contribute to sustainability on a global scale (Moon, Hogden and Eljiz, 2022). Regional difficulties arise when clinical leadership, senior hospital engagement, and appropriate infrastructure are lacking (Kacholi and Mahomed, 2020). Locally, personnel satisfaction, learning opportunities, and leadership openness are crucial for conducting continuous quality improvement at the level of healthcare facilities (Wendwessen, Dereje and Gize, 2020).

Primary and secondary data sources, such as interviews and employee questionnaires, were used to complement each other in this research. The hospital personnel, from nursing to medicine to operations management, participated in the data collection vital to the success of healthcare service improvement projects in the country's regional hospitals.

1.2. Background of the organization

Since more than a century ago, Addis Ababa City Administration Hospitals (AACH) in Ethiopia has offered the city of Addis Ababa and its neighbouring territories the best possible medical care. With 13 hospitals delivering services in a wide range of medical specialties, There are 11 public hospitals in Addis Ababa, six under the administration of Addis Ababa Regional Health Bureau (AARHB) (Beginnings, 2021).

The Ministry of Health provides technical support and financial aid to ensure services are appropriately delivered. This sector is essential in ensuring that Addis Ababa's fast-rising population can access medical care. As a result, AACH is committed to ensuring that everyone in Addis Ababa and the neighbourhood has access to high-quality medical care (Magge *et al.*, 2019).

1.3. Statements of the problem

Projects to improve the quality of healthcare have a significant impact on both patient outcomes and the efficiency with which healthcare resources are used. To guarantee that the gains made via quality improvement programs are maintained over the long term, it is essential to understand the variables that contribute to sustainability.

The effectiveness of healthcare quality improvement projects depends critically on project quality management. It entails systematically planning, overseeing, and managing project activities to satisfy quality standards and goals. It raises the possibility of delivering sustainable results by maintaining high standards throughout the project's lifecycle. Long after the project are completed, good quality management guarantees that the advancements made benefit patient care and healthcare procedures and are sustainable and integrated into the organization's culture.

Ideal healthcare quality improvement project sustainability in the NHS involves well-aligned project objectives, strong leadership commitment, data-driven decision-making, and active involvement of healthcare professionals. Sustainability hinges on resource allocation, regulatory compliance, and long-term planning. Effective communication, scalability, risk management, and a culture of continuous improvement are essential, alongside cultural alignment, evaluation, and reporting for on-going success. Although many of healthcare quality improvement initiatives succeed initially, they often fail to become self-sustaining. This can lead to resource waste and a decrease in the quality of care provided.

Like the rest of the world, Ethiopia is working to raise the standard of its healthcare. The regional hospitals in Addis Ababa are crucial because they also provide care for millions of people, and most are pioneers in implementing healthcare quality improvement projects. However, these regional hospitals need more oversight of the sustainability of healthcare development efforts. The review's findings also revealed a lack of studies supporting continuous quality improvement sustainability in hospital settings in Ethiopia.

This research project aimed to assess the sustainability of the current quality improvement project and identify factors that contribute to the sustainability of quality improvement projects in Regional Hospitals in Addis Ababa, ensuring that the gains achieved through these projects are maintained over the long term.

1.4. Research Questions

Research Question 1: What is the overall level of sustainability achieved by different healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia?

Research Question 2: What are the key factors that influence the sustainability of healthcare quality improvement projects?

Research Question 3: To what extent do processes play a role in determining the sustainability of healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia?

Research Question 4: To what extent do staffs play a role in determining the sustainability of healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia?

Research Question 5: To what extent does organization play a role in determining the sustainability of healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia?

1.5. Research objectives

1.5.1. General Objective

This study aims to assess the sustainability of healthcare quality improvement projects and identify the determinant factors influencing their sustainability in Regional hospitals in Addis Ababa, Ethiopia.

1.5.2. Specific Objectives

- To comprehensively evaluate the level of sustainability of healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia.
- To determine the factors that influence sustainability healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia.
- To determine the level process plays a role in determining sustainability of healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia.
- To determine the level staff plays a role in determining sustainability of healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia.
- To determine the level organization plays a role in determining sustainability of healthcare quality improvement projects in regional hospitals in Addis Ababa, Ethiopia.

1.6. Rationale of the study

Healthcare quality improvement projects ensure that patients receive safe, effective, and efficient care. However, many of these projects fail to achieve long-term sustainability, wasting resources and suboptimal patient outcomes. Understanding the factors that contribute to the sustainability of quality improvement projects is crucial for healthcare organizations to achieve lasting improvements in patient outcomes, safety, and experience.

The importance of enhancing the standard of care offered by regional hospitals in Ethiopia was the driving force behind this study. Sustainability in healthcare quality improvement projects is vital to ensure these initiatives accomplish their intended long-term outcomes.

This study aimed to assess the sustainability of healthcare quality improvement projects and identify the determinant factors that influence their sustainability. By examining the organizational support, stakeholder engagement, project design and implementation, resource availability and utilization, and strategies and interventions used to promote sustainability, this study provided insights into the key factors that influenced the sustainability of quality improvement projects.

The findings of this study help healthcare organizations develop effective and sustainable quality improvement initiatives that can improve patient outcomes, reduce medical errors, and enhance patient satisfaction. The study will contribute to the existing knowledge on healthcare quality improvement project sustainability and inform policy and practice in the healthcare industry.

1.7. Significance of the study

This study examined quality improvement project sustainability in healthcare service quality improvement projects in regional hospitals in Addis Ababa, Ethiopia. Many healthcare organizations invest much in quality initiatives. However, the long-term sustainability of these programs is typically disregarded, resulting in quality improvement gaps. This study seeks to help healthcare facilities sustain and maximize quality improvement programs by analysing project sustainability.

Second, the study examined healthcare quality improvement project sustainability determinants. Understanding the complex dynamics that affect long-term project performance requires identifying these components. The study illuminated sustainability drivers and constraints by studying these crucial elements. This insight would help hospital leaders,

policymakers, and quality improvement teams make sustainable decisions and implement targeted treatments.

This study would also add to healthcare quality improvement expertise as fewer researchers have examined quality improvement project sustainability than execution and short-term results. The study would improve long-term project outcomes by filling this research gap.

The study's findings and recommendations would also assist healthcare workers. Quality improvement initiatives affect their work, patient care, and job satisfaction. Healthcare personnel can actively participate in quality improvement and make educated decisions to enhance long-term sustainability by understanding what makes initiatives sustainable.

The healthcare industry would benefit from the research project on healthcare quality improvement project sustainability and determinants. Its findings can help healthcare organizations, policymakers, and quality improvement teams create sustainable strategies, improve long-term project outcomes, and optimize budget allocation. The study's addition to knowledge and consequences for healthcare practitioners makes it significant and potentially transformative for healthcare quality improvement.

1.8. Scope of the study

The study involved healthcare organizations that have implemented quality improvement projects. It was done in regional hospitals' projects in Addis Ababa, Ethiopia. The study evaluated the effects of several variables on the durability of quality improvement projects, including organizational support, stakeholder engagement, project design and implementation, resource availability and utilization, and sustainability-promoting policies and interventions. It is vital to emphasize that this study did not assess the efficacy of particular quality improvement initiatives but concentrated on how long they lasted. The report did not address the financial or economic implications of sustainability and other types of projects or other hospitals outside of Addis Ababa city administration, as these were outside the scope of this study.

1.9. Limitation of the study

The study had limitation as self-administered sustainability assessment tool was used to collect the data which is susceptible to reporting bias and in assessing sustainability of healthcare quality improvement the projects the study did not measure other factors that could facilitate or inhibit sustainability of the hospital quality improvement projects.

1.10. Organization of the study

This study was organized into five consequent chapters. The first chapter introduced the background of the study, the statement of the problem, basic research questions, background of the organization, objectives, rationale of the study, significance, scope of the study, organization of the study, and operational definition of key terms. The second chapter discussed a literature review with descriptions of different research topics. The third chapter dealt with the research methodology, design, sources of data, target population, sampling technique and sample size, validity and reliability of the instrument, and research ethics throughout the data collection and analysis. The fourth chapter presented the data analysis, presentation, and discussion. The fifth chapter, the final chapter of the study, was about the summary of significant findings, conclusions, and recommendations.

1.11. Operational definition of key terms

- **Quality improvement:** refers to the continuous efforts made by healthcare professionals to improve and enhance the quality of patient care, safety, and outcomes within a healthcare system. It involves identifying areas for improvement, developing strategies, and implementing changes based on evidence-based practices to enhance patient experience and achieve better health outcomes. The ultimate goal of quality improvement is to ensure that patients receive the proper care at the right time, place, and provider.
- **Quality improvement projects**: refer to systematic and structured initiatives undertaken within a healthcare organization or system to enhance the quality of care delivery, patient outcomes, and operational efficiency.
- **Sustainability of healthcare quality improvement projects**: refers to the ability of a project to maintain the desired level of quality improvement over time, even after the initial implementation phase has ended. It involves the project's long-term impact on patient outcomes and the ability of the healthcare organization to maintain the changes made during the project.
- **Monitoring practice**: is the process of measuring and assessing the progress and outcomes of quality improvement projects involving regularly reviewing project data and performance metrics to identify areas of improvement, refine project objectives, and adapt intervention strategies to better achieve desired results.

- **Leadership:** The commitment of top leadership to quality improvement initiatives and their ability to inspire and motivate staff to adopt a quality improvement mind-set.
- **Communication:** Effective communication among staff and external stakeholders ensures that everyone is aware of quality improvement initiatives and their importance.
- **Learning culture**: A culture that encourages learning from mistakes and continuous improvement.
- **Staff engagement:** The involvement of all staff in quality improvement initiatives and their ability to work collaboratively towards common goals.
- **Regular feedback:** Regular feedback to stakeholders to ensure that they are aware of quality improvement initiatives and their progress.
- **Performance management:** The use of performance indicators and other metrics to track progress and identify areas for improvement.
- **Continuous improvement:** A commitment to continuous improvement and the ability to adapt project plans and strategies based on feedback and results.

Chapter Two

2. Literature Review

2.1. Introduction

This chapter included the study of theoretical review on Project sustainability in healthcare quality improvement projects including overview, importance, key elements, and effective strategies to enhance project sustainability as well as the NHS Sustainability Model. Empirical literature reviews were also supported by objective consideration of the work done by other researchers that is relevant to this research. The review examined previous studies on the sustainability of quality improvement projects in healthcare organizations and identified the key determinant factors that impact sustainability.

2.2. Theoretical Review

2.2.1. Overview of project sustainability in health care quality improvement projects

Project sustainability in healthcare quality improvement projects involves ensuring that the benefits and outcomes of initiatives are maintained over time and integrated into the organization's culture, processes, and policies. This requires on-going monitoring, stakeholder engagement, resource allocation, leadership support, and the integration of changes into standard practices. By prioritizing project sustainability, healthcare organizations can maximize the long-term impact of quality improvement initiatives and foster a culture of continuous improvement in healthcare delivery. Continuous project monitoring, stakeholder involvement, resource allocation, leadership support, and systems development for continuous improvement are requirements for sustainable programs in healthcare quality improvement. Healthcare businesses can optimize the benefits of quality improvement programs' long-term effects by putting sustainability first. (Mortimer et al., 2018, Weekes and Hill, 2018)

2.2.2. Importance of Project sustainability in healthcare

Project sustainability in the healthcare industry is crucial because it guarantees the persistence and long-lasting effects of quality improvement initiatives in healthcare settings. In order to enhance patient outcomes over time, raise the standard of care overall, and boost organizational effectiveness, sustainable projects are essential. They assist healthcare institutions in creating a culture of innovation and constant improvement.

Healthcare providers should manage resources wisely, involve stakeholders, and adopt long-term successful strategies by concentrating on project sustainability. (Hibbert *et al.*, 2021)

It is crucial to ensure that healthcare quality improvement projects are sustainable in order for them to have a lasting impact on patient care and healthcare organizations. Sustainability involves various factors, including process standardization, staff engagement, and organizational commitment, and is based on various theoretical frameworks, such as ecological, systems, and organizational theories. Sustainability in processes involves adapting to new evidence and maintaining effectiveness over time, while staff engagement, empowerment, and leadership commitment are central to sustainability in the staff domain. ((Harris, Green and Elshaug, 2017).

Prioritizing sustainability can lead to long-term improvements in patient care and organizational outcomes and promote a culture of continuous improvement in healthcare delivery.

The NHS Sustainability Model offers a comprehensive framework for understanding sustainability in healthcare settings, which includes three domains:

1. Process Domain: This domain underscores the sustainability of standardized processes and guidelines. Key components include continuous monitoring, patient-centered care, interdisciplinary collaboration, and quality improvement training. Process sustainability involves adapting to emerging evidence and maintaining effectiveness over time (Elizabeth H. Bradley, Sarah Pallas, Chhitij Bashyal, Peter Berman, 2010).

2. Staff Domain: Staff engagement, empowerment, and leadership commitment are central to sustainability. Recognition, rewards, professional development, effective communication, and feedback mechanisms are crucial in fostering staff domain sustainability (Lukas *et al.*, 2007).

3. Organization Domain: Sustainability within the organization domain hinges on aligning quality improvement initiatives with strategic goals and allocating adequate resources. Infrastructure enhancement, clinical governance, measurement and evaluation systems, and cultivating a sustainability culture are vital elements (Glasgow, Scott-Caziewell and Kaboli, 2010).

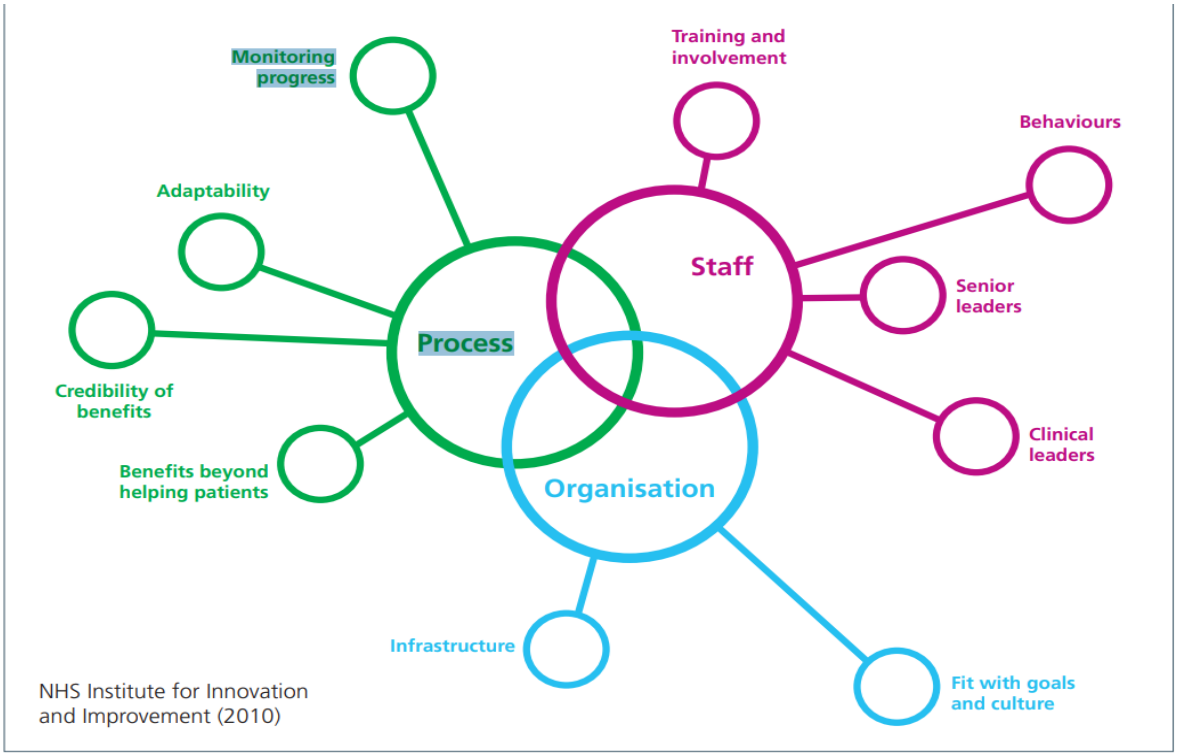

Figure 2.1 Sustainability model ('Sustainability Model Online library of Quality, Service Improvement and Redesign tools', 2010)

2.1.3. Key Elements of Project sustainability in Healthcare Quality Improvement

The components of sustainability in healthcare quality improvement encompass various aspects that contribute to the long-term viability and effectiveness of initiatives. These components include:

Table 2.1 components of project sustainability in healthcare quality improvement

Leadership and Governance	Strong leadership and governance provide direction, support, and accountability for quality improvement efforts. It involves clear roles and responsibilities, effective communication, and establishing structures to ensure sustained commitment to improvement.	(NHS Improvement, 2017)
Stakeholder Engagement:	Engaging stakeholders, including healthcare professionals, patients, and administrators, is vital for sustainability. Involving these key	(Centre and Gibbons, 2009).

	stakeholders fosters ownership, collaboration, and shared decision-making, ensuring that improvement efforts align with their needs and priorities.	
Resource Allocation	Adequate allocation of resources, including financial, human, and technological resources, is essential for sustaining quality improvement initiatives. It involves securing ongoing funding, allocating staff, and ensuring access to necessary tools and technologies.	(Harris, Green and Elshaug, 2017).
Organizational Culture	A supportive organizational culture that values and promotes a culture of quality improvement is crucial for sustainability. This includes fostering a learning environment, encouraging innovation, and recognizing and celebrating achievements in quality improvement.	(Henrique *et al.*, 2023)
Continuous Monitoring and Evaluation	Regular monitoring and evaluation of improvement initiatives enable organizations to assess progress, identify areas for improvement, and make necessary adjustments. It involves collecting and analyzing data, measuring outcomes, and using feedback to drive continuous improvement.	(Hughes Ronda, 2008)
Integration into Standard Practices	Sustained improvement requires integrating successful changes into standard practices and processes. This involves updating policies, protocols, and workflows to embed improvements and ensure they become the new standard of care.	(Hughes Ronda, 2008).
Knowledge	Promoting knowledge sharing and learning	(Rakov and De Ridder,

Sharing and Learning	across the organization helps spread successful practices and lessons learned. It involves capturing and disseminating best practices, fostering a culture of learning from failures, and promoting collaboration and knowledge exchange among teams.	2022)

2.1.4. Effective Strategies for Project Monitoring Practices in Ethiopia

Effective strategies for healthcare quality improvement project sustainability are crucial for ensuring that the positive changes made within healthcare organizations endure over time, ultimately leading to improved patient care and outcomes. Here are several strategies to enhance sustainability:

Table 2.2 Effective strategies to enhance project sustainability in healthcare quality improvement

Strategy	**Description**	**Reference**
Strong Leadership and Governance	Engage Leadership: Secure commitment from top-level leadership to champion quality improvement initiatives. Leaders should visibly support, advocate for, and participate in improvement projects. Clinical Governance: Implement robust clinical governance structures that promote accountability, clinical leadership, and data-driven decision-making.	(Dückers *et al.*, 2009)
Engagement and empowerment	Encourage healthcare staff at all levels to actively identify improvement areas and implement changes. Staff involvement fosters a sense of ownership and responsibility for sustainability. Interdisciplinary Collaboration: Promote collaboration among healthcare professionals	(Øvretveit, 2011)

	from different disciplines to share knowledge and contribute to process improvements.	
Standardization and Process Improvement	Standardized Processes: Implement standardized processes and guidelines across healthcare facilities. Ensure that these processes are regularly reviewed and updated to align with best practices and emerging evidence. Continuous Monitoring: Establish a robust system for continuously monitoring healthcare processes using data analytics and performance metrics to identify areas requiring improvement and track progress over time.	(Perla, Provost and Murray, 2011)
Strategic Alignment and Resource Allocation	Strategic Integration: Align quality improvement initiatives with the organization's strategic goals and mission. Ensure that sustainability efforts are integrated into the overall strategic plan. Resource Allocation: Allocate sufficient to support resources, including financial, human, and technological resources and ongoing quality improvement efforts. Adequate resourcing is crucial for sustainability.	(Bate, Mendel and Berwick, 2007)
Technology and Infrastructure Enhancement:	Information Systems: Invest in healthcare information systems, electronic health record systems, data analytics tools, and performance measurement systems that facilitate quality improvement and data-driven decision-making. Infrastructure Improvement: Enhance physical infrastructure and facilities to support quality improvement efforts, ensuring that they meet the needs of both patients and healthcare providers.	(Goldzweig *et al.*, 2013)
Outcome	Develop a comprehensive system for measuring	(Batalden and

Measurement:	and evaluating the impact of quality improvement efforts on patient outcomes, safety, and satisfaction. Use these metrics to guide decision-making and demonstrate value. Process Evaluation: Continuously evaluate the effectiveness and efficiency of quality improvement processes, making adjustments as needed.	Davidoff, 2007)
Cultural Transformation:	Foster a culture of sustainability within the organization by engaging all stakeholders in discussions about the importance of sustainability and their roles in achieving it. Celebrate Successes: Recognize and celebrate the successes and achievements of quality improvement projects. Acknowledging and rewarding contributions to sustainability motivates staff and reinforces the improvement culture.	(Øvretveit *et al.*, 2002)

By implementing these strategies, healthcare organizations can enhance the sustainability of their quality improvement projects, leading to long-lasting positive impacts on patient care and overall healthcare quality.

2.3. Empirical Review

2.3.1. Global Perspective

A comprehensive empirical study was done to understand better the elements that contribute to the success or failure of quality improvement projects worldwide. Projects in the healthcare, manufacturing, and service industries were among those reviewed in the study. The research showed that although many quality improvement projects initially showed promising results, maintaining these improvements over time proved difficult. Sustainability depends on several interrelated aspects, including

strong leadership and governance, stakeholder buy-in, on-going monitoring and assessment, a conducive corporate culture, and enabling legislation. The importance of all of these aspects to the long-term viability of quality improvement projects is highlighted in this review (Ament *et al.*, 2017).

A review of 17 hospital-wide improvement initiatives across 55 hospitals found that evidence-based practice implementation was the most common intervention type, followed by performance/efficiency improvement, patient safety, and consumer engagement models. Implementation science and quality improvement were frequently used approaches, with various frameworks/models used as guides. The review identified 62 factors for sustained improvement, which fell into three themes: People, Process, and Organizational Environment. The change implementation team was seen as an enabling facilitator, while leadership and staff turnover were impairing factors for sustainability. Embedding and integrating change with existing structures and functions, collaborative approaches, and adopting a framework for communication were essential for process sustainability. Perceived openness to change, adequate resources, and an established organization-wide quality management system were conducive to improvement sustainability in the organizational environment (Moon, Hogden and Eljiz, 2022)

2.3.2. Regional Perspective

Healthcare service quality improvement programs in Africa, including Ethiopia, confront specific obstacles due to resource restrictions, a lack of infrastructure, and a lack of access to healthcare services.

A study conducted in Tanzania using the Sustainability Model self-assessment tool found that Tanga Regional Referral Hospital had the highest mean sustainability score of 66.15 (95% CI: 55.12–77.18), while Mbeya Regional Referral Hospital had the lowest mean sustainability score of 52.49 (95% CI: 42.96–62.01). The process domain had the highest proportionate mean sustainability score of 22.46 (95% CI: 20.58–24.33) across four hospitals, while the staff domain recorded the lowest proportionate sustainability score of 27.28 (95% CI: 24.76–29.80). The study revealed that the most substantial factors promoting sustainability were hospital QI teams providing benefits beyond helping patients and improving evidence credibility adaptability of improved processes, staff involvement and training, and staff

behaviors towards sustaining. The main factors negatively affecting sustainability were inadequate clinical and senior hospital leadership involvement and weak infrastructures for sustainability. (Kacholi and Mahomed, 2020)

Twenty-nine of 33 successfully implemented initiatives in Kenyan health facilities reported sustainability 24–60 months after training. Seven sustainability drivers emerged: program design, stakeholder buy-in, board members, communication, coaching, change champion, devolution, and political goodwill. Human resources constraints, policy implementation, project misalignment with daily operations, devolution, and political interference were four sustainability inhibitors (Chelagat et al., 2021).

A qualitative study conducted in Zimbabwe, Zambia, and Malawi by interviewing different stakeholders, including employees at government ministries, clinical and data/clerical staff at health facilities, and those involved "upstream" in the EHIS, showed the challenges in program/project specific factors: it was a challenge to establish and communicate goals due to diverse user bias; development and deployment was another challenge in low resource setting; burden of donor dependence as the project is highly dependent on external financing; organizational factors: there were some challenges in regards to system adaptability, timing, integration or building synergies with already existing systems, and institutional strength/ capacities. However, training and the presence of a project champion were identified to be essential for sustainability. The results emphasize the significance of establishing a supportive atmosphere for sustaining programs, which involves promoting collaboration among stakeholders to ensure shared understanding and objectives, involving users in designing and executing the program and adopting a comprehensive approach to sustainability that considers factors beyond financial aspects. (Moucheraud *et al.*, 2017)

A study conducted in South Africa utilized the National Health Service Institute for Innovation and Improvement Sustainability Model (SM) self-assessment tool to evaluate the sustainability of three health districts: Bushbuckridge (BBR), West Rand (WRH), and Dr Kenneth Kanuda (DKK). The results showed that BBR had the highest mean sustainability score of 71.79 (95% CI: 63.70–79.89), followed by WRH with a score of 70.25 (95% CI: 63.96–76.53) and DKK with a score of 66.50 (95% CI: 55.17–77.83). The process component had the highest mean score in BBR with

25.82 (95% CI: 23.81–28.43), followed by DKK with 24.09 (95% CI: 20.88–27.29) and WRH with 24.02 (95% CI: 20.90–27.13). The organizational component had the highest mean score in BBR with 13.04 (95% CI: 10.61–15.46), followed by WRH with 11.96 (95% CI: 8.98–14.94) and DKK with 10.98 (95% CI: 7.37–14.59). The staff component had the lowest proportionate sustainability score, with WRH achieving the highest mean score of 34.27 (95% CI: 30.76–37.77), followed by BBR with a score of 32.94 (95% CI: 27.03–38.84) and DKK with a score of 31.44 (95% CI: 22.13–40.75) (Mahomed, Asmall and Voce, 2021).

2.3.3. Local Perspective

The Ethiopian government has prioritized healthcare service quality development initiatives in an effort to enhance the quality of healthcare services provided to the population. However, research on the sustainability of healthcare service quality development initiatives in regional hospitals in Addis Ababa is limited.

In Ethiopia, the Ministry of Health (MoH) is responsible for developing and implementing healthcare policies and strategies, including quality improvement initiatives. The MoH has introduced several initiatives to improve healthcare quality, including the Ethiopian Hospital Reform Implementation Guideline, which aims to standardize hospital management and improve quality of care (Beginnings, 2021).

Furthermore, the Ethiopian Health Sector Transformation Plan (HSTP) 2015-2020 strives to raise the calibre of healthcare through a number of efforts, such as enhancing health information systems and enhancing healthcare professionals' abilities to track and assess healthcare calibre (FMOH. Federal Democratic Republic of Ethiopia, 2015).

One study on the sustainability of surgical quality improvement projects at hospitals in Ethiopia found that the long-term success of most improvement interventions needs to be measured (Starr *et al.*, 2022).

A systemic review and synthesis of 49 peer-reviewed publications on health extension programs in Ethiopia from 2007 to 2018 showed that medical equipment and drugs, limited supportive supervision; absence of a well-established referral system; high turnover of HEWs, absence of clear career structure for HEWs; unattractive salary scale; and, inadequate delivery and curative services were some of the gaps to ward

universal coverage of primary healthcare services. The study depicts that the readiness of the program, the promptness of the systems, and the availability of services are crucial for the success of the HEP. Working on the three domains, process, staff, and organization, plays a significant role in implementing and improving HEP. (Assefa *et al.*, 2019)

According to a study done at health facilities serving southern countries and nationalities, adopting continuous quality improvement is correlated with factors including leadership receptivity, leadership encouragement for learning, and the level of job satisfaction of health workers (Wendwessen, Dereje and Gize, 2020).

2.4. Research gaps

In conclusion, almost all the literatures reviewed show few evidence on the level of healthcare quality improvement project sustainability in Ethiopia. Furthermore, the literature is scant in showing the factors related to project sustainability as well as their impact on the healthcare system. Hence, this study will try to address these points.

2.5. NHS Institute for Innovation and Sustainability Model Conceptual framework for health care quality improvement project sustainability

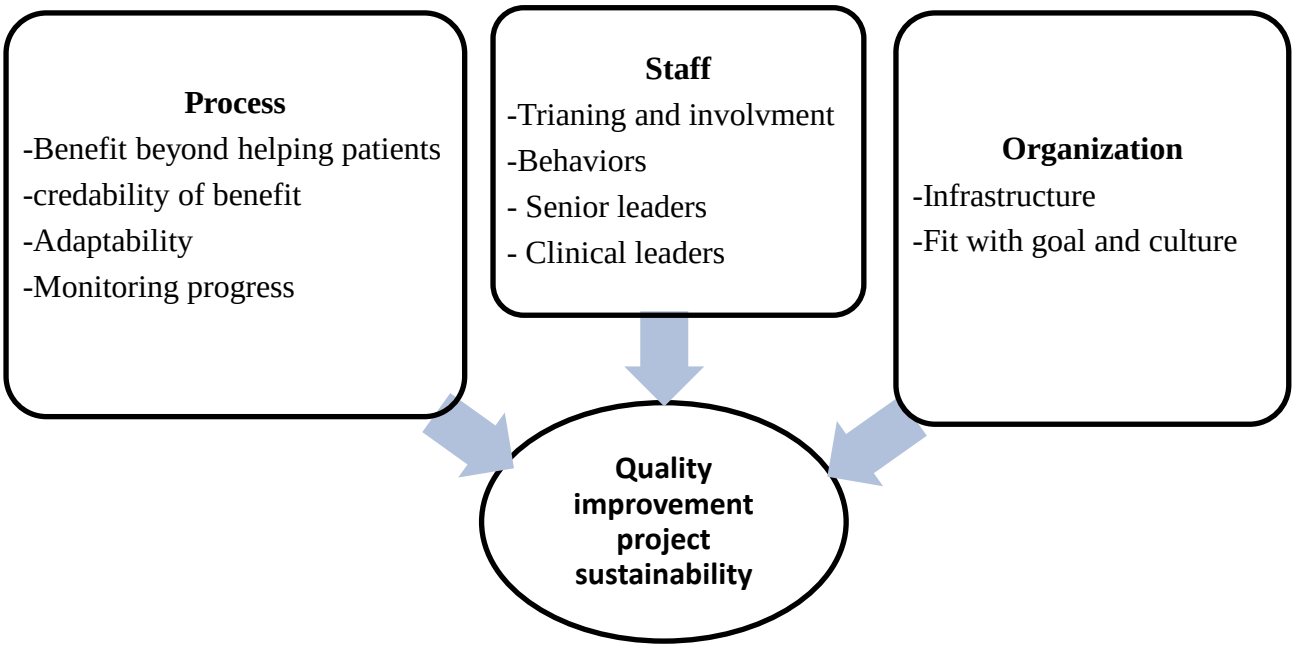

Figure 2.1: Framework for health care quality improvement project sustainability('Model and Guide', no date; Kacholi and Mahomed, 2020).

Chapter Three

3. Methodology

3.1. Introduction

The overall methodology used to conduct this research study is outlined in this chapter. This chapter discusses the research design, population under consideration, Sampling technique and sample size, description of study variables, study area, the data collection methods, data analysis, reliability analysis, and ethical considerations that the researcher employed in the study.

3.2. Research design

A cross-sectional and descriptive study design was used to assess the project sustainability in Health care service quality improvement projects in regional hospitals in Addis Ababa, Ethiopia. Cross-sectional research was chosen for the project because it provided a practical and efficient way to assess healthcare quality improvement project sustainability at a specific moment, making it suitable for timely decision-making and resource considerations within the context of a quality improvement project. A descriptive study design as it was focused on providing a comprehensive overview of the current state of healthcare quality, identifying areas for improvement, and assessing the sustainability of changes.

3.3. Research approach

A Quantitative research design was used to assess sustainability in healthcare service quality improvement projects in regional hospitals in Addis Ababa, Ethiopia. This design involved quantitative methods to provide a more comprehensive understanding of the research problem. The quantitative component involved the use of the Likert-scale questionnaire that gathered numerical data on the process, staff, and organization. Applying the quantitative approach facilitated the acquisition of adequate, relevant, and reliable data used to assess project sustainability in healthcare service quality improvement projects.

3.4. Population

3.4.1. Target population

- All health care providers who were members of QI teams working in regional public hospitals of Addis Ababa and all health care service quality improvement projects in the region. The target population included project managers, project team members, stakeholders, and other personnel involved in the past year's planning, implementation, and monitoring of these projects.

3.4.2. Study population

- This study's population was members of QI teams who participated in quality improvement projects for the past year in regional hospitals in Addis Ababa, Ethiopia.

3.5. Eligibility criteria

3.5.1. Inclusion criteria

- ❖ Personnel involved in healthcare service quality improvement projects in Addis Ababa, Ethiopia, regional hospitals.
- ❖ Personnel involved in planning, implementation, and monitoring of healthcare service quality improvement projects in the selected hospitals.
- ❖ Personnel who have worked on these projects for a specific period (at least three months)
- ❖ Personnel with adequate knowledge about the project sustainability and the quality improvement projects being undertaken.

3.5.2. Exclusion criteria

- ❖ Personnel who are not involved in healthcare service quality improvement projects.
- ❖ Personnel involved in quality improvement projects in other settings outside of the selected regional hospitals.
- ❖ Personnel who have worked on the projects for less than three months.
- ❖ Personnel who need more knowledge about the project sustainability practices and the quality improvement projects being undertaken.

3.6. Sampling techniques and sample size

3.6.1. Sampling Technique and procedure for the projects

All healthcare quality improvement projects in the past year were be included in the study.

Total Number of health care quality improvement projects in the past one year = 18					
TBGH=3	**DMIIH=3**	**GMH=4**	**ZMH=3**	**Y12HMC=3**	**RDDH=2**
Using lottery method one quality improvement project selected from each hospital					
TBGH=1	**DMIIH=1**	**GMH=1**	**ZMH=1**	**Y12HMC=1**	**RDDH=1**
Total Number of health care Quality improvement project =**6**					

Figure 3.1. Sampling procedure for the quality improvement projects

3.6.2. Sample size calculation for the study participants

For this research project, a census approach was employed to collect data from the entire population (Health professionals who fulfil the inclusion criteria) from the selected six healthcare Quality improvement projects. That is the taking N = n = 70

Where N = Population size, n = sample size.

3.6.3. Sampling Technique and procedure for the study participants

TBGH=11	**DMIIH=10**	**GMH=15**	**ZMH=14**	**Y12HMC=10**	**RDDH=10**
Total sample size = **70**					

Figure 3.2. Sampling procedure for selecting study participants.

3.7. Study variables

3.7.1. Independent variables

- Items under Process domain
- Items under Staff domain
- Items under the Organization domain

3.7.2. Dependent variables

- Overall Project sustainability score

3.8. Data sources

3.8.1. Primary data sources

- Adopted the National Health Service (NHS) Institute for Innovation and Improvement Sustainability Model will be used to assess process, staff, and organization domain.

3.8.2. Secondary data sources

- Hospital records for information on the type of healthcare service quality Improvement projects, hospital size, and location.
- The primary data sources will provide the detailed information needed to analyze the relationships between the independent and dependent variables. The secondary data sources will provide contextual information about the healthcare service quality improvement projects and hospitals, which can help understand the findings from the primary data sources.

3.9. Data collection methods, tools, and process

3.9.1. Data collection methods

The Likert scale questionnaire adopted from the National Health Service (NHS) Institute for Innovation and Improvement, the Sustainability Model (table 3.1), and the NHS-SM self-assessment tool were used to collect data from the study participants. The questionnaire was self-administered to the participants to minimize any potential bias from the presence of a researcher.

Table 3.1. Sustainability model criteria for sustainability

Description of variable	Maximum score
Process	31.1
• Benefits beyond helping patients—Does the change reduce waste, duplication and added effort?	8.5
• Credibility of evidence—Are the benefits to staff, patients and organization visible?	9.1
• Adaptability of improved process—Does the change rely on an individual, group of people or finances to keep it going?	7
• Effectiveness of system to monitor progress—Is special monitoring required?	6.5
Staff	52.4
• Staff involvement and training to sustain the change—Play a part in implementation and design	11.4
• Staff behavior to sustaining change—Staff inputs 11	11
• Senior leadership engagement—Are they involved and promote it?	15
• Clinical leadership engagement—Are they involved and promote it?	15
Organization	16.5
• Fit with organization strategic aims and culture—Is the change aligned to organization strategic aims?	7
• Infrastructure for sustain ability—Staff facilities and equipment to sustain change	9.5
Maximum score	**100**
Minimum sustainability score	**55**

Source: NHS Institute for Innovation and Sustainability Model (2010)

3.9.2. The data collection process

The self-administered questionnaires and interviews were conducted with the selected participants. Overall, the data collection methods and processes were designed to ensure the validity and reliability of the study findings.

3.10. Data analysis and processing

The data collected for the study were analysed using SPSS version 25. The data analysis involved cleaning, coding, and transforming the data as needed. Data from the NHS-SM self-assessment-based questioner were cleaned and imported into SPSS. The overall sustainability score was determined using the sustainability master score system. Total sustainability for each hospital was calculated by adding the domain scores for process, staff, and organization. Descriptive statistics such as mean, standard deviation, frequency, percentage and independent sample t test were used to summarize the data.

The results of the data analysis were presented in tables, graphs, and charts. The findings were discussed in the context of the study objectives and research questions. The study's limitations were discussed, and recommendations for future research were made. The data analysis process was conducted rigorously and transparently to ensure the findings' validity and reliability.

3.11. Data quality assurance

Data quality assurance is critical to any research study as it ensures that the data collected is accurate, reliable, and valid. The research team was trained on how to collect data consistently and accurately. This included training on approaching respondents, asking questions, and recording responses. Data collection activities were closely monitored and supervised to ensure the data was collected appropriately.

After data collection, the data was cleaned to identify and correct any errors, inconsistencies, or missing values. The data were analysed using appropriate statistical software to ensure the accuracy and validity of the findings. The findings were cross-checked with the research objectives and questions to ensure they were consistent with the study objectives. Experts in the field reviewed the research findings to ensure that the research methods, analysis, and results are accurate and valid.

3.12. Validity and Reliability Analysis

The research measurement questionnaire used in this study underwent face and content validity assessment by two healthcare quality improvement experts. The understandability index, clarity index, and readability index were also measured, with scores of 1, 1, and 0.93, respectively. These results imply that the questionnaire items were clear, understandable, and easily readable, making them suitable for this study. These experts reviewed the questionnaires to ensure the questions were relevant and appropriate for the intended study. The overall expert consensus suggested that the questionnaire had sufficient content validity to be helpful for the purposes of this study.

The internal consistency of the questionnaire used in this study was assessed using Cronbach's alpha. The scale's overall Cronbach's alpha value was 0.81, indicating high internal consistency. In addition, the value ranges for the questionnaire domains were 0.711 for the process domain, 0.82 for the staff domain, and 0.856 for the organization domain. These results demonstrated that the questionnaire used in this study has high reliability for measuring the study's constructs.

Table 3.2: Reliability test result for each domain

Domains	Cronbach's alpha coefficient	Number of items
Process domain	0.711	4
Staff domain	0.82	4
Organization domain	0.856	2
Total sustainability	0.81	10

3.13. Ethical Consideration

Ethical approval was sought from the Institutional Research Review Boards (IRBs) of AAU School of Commerce and Addis Ababa public health research and emergency management directorate. Then, permission to carry out the study was sought from GMH, ZMH, TGBH, RDDH, Y12HMC, and DMIIH hospitals" administrations. Participation in the study was voluntary. After a detailed explanation of the study's purpose, written informed consent was sought from participants. Confidentiality and privacy of the participant was maintained throughout data collection.

3.14. Plan for dissemination of findings

The study's result will be presented for research defence, and a formal report will be submitted to the school of commerce and the regions. Furthermore, the findings of this study will be disseminated for publication in national or international peer-reviewed reputable journals. The study will also be presented during research symposiums, conferences, or seminars.

Chapter Four

4. Data Analysis, Presentation, and Interpretation

4.1. Introduction

This chapter comprises data analysis, presentation, and interpretation of the findings. The data presented includes response rate, Socio-demographic information of the respondent and background information of the regional hospitals, Health care Quality improvement project information, and presentation of findings based on each study objective. The data was analysed based on responses to the items in the questionnaires. Results are shown in tables showing frequencies, percentages, Mean, and standard deviation.

4.2. Socio demographic characteristics of participants

From the 70 sample size, a total of 63 (90%) participants currently working in regional hospitals of Addis Ababa participated in the research project. Their age ranged from 23-45 years (mean age 31.35 years, SD: 5.181). This age difference can foster Collaborative efforts among healthcare professionals in knowledge exchange and innovation. Of the total screened, 36 were males (60%). The mean years of experience for the overall population were found to be 5.17 years with ± 2.38 standard deviations (SD) years. The experience of healthcare professionals in a quality improvement project influences project dynamics, leadership, innovation, and resource allocation. The participants constituted 13 (21.7%) from the Gandhi Memorial Hospital, 12 (20%) from Zewditu Memorial Hospital, and 10 (16.7%) from both the Tirunesh Beijing Hospital and Dagmawi Minilik Hospital. Details of Socio-demographic characteristics are shown in Table 1 and Table 2 below.

Table 4.1: Socio-demographic characteristics

Variable	**Mean ± SD**
Age in years (N=60)	31.35 ± 5.181
Years of Experience(N=60)	5.17 ± 2.38
Variable	**Number (Percentage)**

Sex (N=60)	
Male	36 (60)
Female	24 (40)
Profession (N=60)	
Medical Doctor	23 (38.3)
Nurse	11 (18.3)
Midwives	7 (11.7)
Pharmacy	5 (8.3)
Health officers	10 (16.7)
Laboratory technician	4 (6.7)
Place of working (N=60)	
Gandhi Memorial Hospital	13 (21.6)
Zeweditu Memorial Hospital	12 (20)
Ras Desta Dametew Memorial Hospital	7 (11.7)
Tirunesh Beijing General Hospital	10 (16.7)
Yekatit 12 Hospital Medical College	8 (13.3)
Dagmawi Minilik II Hospital	10 (16.7)

Source: Researcher's survey data, 2023

4.3. General Information about the Healthcare Quality Improvement projects

Six healthcare quality improvement projects, each focusing on a unique aspect of healthcare delivery, were selected from the six regional hospitals. The participant length of service in the QI team exhibited varied durations, with 73.3% spanning 3-6 months and 26.7% 3-6 months, illustrating the diverse scopes and complexities of the initiatives. Participants assumed different roles, with 66.7% as team members, 16.7% as facilitators, and 11.7% as team leaders, contributing to project success. 87.3% of the participants are working as full-time members of the QI team while executing their primary professional roles and responsibilities that appeared to affect team performance and sustainability. The primary methods for identifying improvement sustainability measures were employee suggestions, accounting for 55%, and benchmarking, comprising 35%. The method of prioritizing employee suggestions followed by benchmarking for improvement sustainability measures in a healthcare quality improvement project in regional hospitals signifies a commitment to

employee engagement and a culture of continuous improvement. This combined approach also encourages stakeholder involvement, data-driven decision-making, and long-term commitment to sustainability, fostering a holistic and informed strategy for lasting quality improvement in healthcare delivery. Monitoring activities occurred at different frequencies, with 43.3% conducted quarterly, 38.3% irregularly, and 16.7% monthly, reflecting adaptability in oversight. Inconsistency in monitoring may lead to missed opportunities to identify and address issues promptly, potentially allowing problems to persist. It can also hinder accountability and create uncertainty among project stakeholders.

On the other hand, more frequent monitoring can be needed to maintain resources. Data collection and analysis, used by 20%, and regular progress meetings and reporting, used by 15%, served as the predominant methods for project monitoring, ensuring continuous quality enhancement in these regional healthcare settings. Overreliance on a single method may lead to overlooking critical aspects and hinder the project's adaptability, potentially impacting the long-term sustainability of quality improvements.

Table 4.2: General information about healthcare quality improvement project initiatives

Variable	**Number (Percentage)**
Length of service (N=60)	
3– 6 months	44 (73.3)
6 – 9 months	16 (26.7)
9 + months	0
Mode of membership QI team	
Full time	55(87.3)
Not full time	8 (12.6)
Role in the project (N=60)	
Team member	40 (66.7)
Project sponsor	3 (5)
Facilitator	10 (16.7)
Team leader	7 (11.7)
Identify sustainability measures (N=60)	
Employee suggestion	33 (55)
Benchmarking	21 (35)
Customer suggestion	6 (10)

Frequency of project monitoring (N=60)	
Daily	1 (1.7)
Monthly	10 (16.7)
Quarterly	26 (43.3)
Irregularly	23 (38.3)
Methods of project monitoring (N=60)	
Regular progress meeting and reporting	8 (13.3)
Data collection and analysis	12 (20)
Site visit and observation	5 (8.3)
Documentation review	5 (8.3)
Both Regular progress meeting and reporting and Data collection and analysis	9 (15)
Both Regular progress meeting and reporting and Site visit and observation	7 (11.7)
Both Regular progress meeting and reporting and Documentation review	3 (5)
Both Data collection and analysis and Site visit and observation	2 (3.3)
Both Data collection and analysis and Documentation review	4 (6.7)
Combination of multiple methods	5 (8.3)

Source: Researcher's survey data, 2023

4.4 Domain sustainability score

The domain sustainability score was calculated using the Sustainability Model, which consists of 10 factors relating to process, staff, and organizational issues, which play a vital role in sustaining change in healthcare.

4.4.1 Process domain

Table 4.3: process domain score for all six hospitals

Process domain score for Gandhi Memorial Hospital		
Variable	**Score**	**Maximum**
Benefit	7.623 (95% CI: 6.616-8.630)	8.5

Credibility	6.615 (95% CI: 4.820-8.411)	9.1
Adaptability	3.000 (95% CI: 1.838-4.162)	7.0
Effectiveness	4.323 (95% CI: 3.219-5.427)	6.5
Process	**21.561 (95% CI: 19.43-23.690)**	**31.1**
Process domain score for Yekatit 12 Hospital Medical College		
Benefit	6.513 (95% CI: 4.76-8.299)	8.5
Credibility	6.200 (95% CI: 4.302-8.098)	9.1
Adaptability	4.375 (95% CI: 2.525-6.225)	7.0
Effectiveness	5.075 (95% CI: 3.414-6.736)	6.5
Process	**22.162 (95% CI: 16.558-27.766)**	**31.1**
Process domain score for Tirunesh Beijing Hospital		
Benefit	7.670 (95% CI: 6.413-8.927)	8.5
Credibility	7.380 (95% CI: 5.914-8.846)	9.1
Adaptability	4.000 (95% CI: 2.080-5.920)	7.0
Effectiveness	2.600 (95% CI: 1.286-3.914)	6.5
Process	**21.650 (95% CI: 18.368-24.931)**	**31.1**
Process domain score for Dagmawi Minilink II		
Benefit	6.530 (95% CI: 5.037-8.023)	8.5
Credibility	6.740 (95% CI: 4.774-8.706)	9.1
Adaptability	2.800 (95% CI: 0.953-4.647)	7.0
Effectiveness	3.990 (95% CI: 2.719-5.261)	6.5
Process	**20.060 (95% CI: 16.436-23.683)**	**31.1**
Process domain score for Ras Desta Damtew Hospital		

Benefit	6.771 (95% CI: 4.766-8.777)	8.5
Credibility	6.100 (95% CI: 2.132-10.068)	9.1
Adaptability	4.000 (95% CI: 2.060-5.940)	7.0
Effectiveness	3.157 (95% CI: 1.394-4.920)	6.5
Process	**20.028 (95% CI: 15.962-24.094)**	**31.1**
Process domain score for Zewditu Memorial Hospital		
Benefit	7.175 (95% CI: 5.926-8.424)	8.5
Credibility	7.408 (95% CI: 5.697-9.120)	9.1
Adaptability	4.150 (95% CI: 2.683-5.617)	7.0
Effectiveness	3.517 (95% CI: 1.967-5.066)	6.5
Process	**22.250 (95% CI: 19.186-25.313)**	**31.1**

Source: Researcher's analysis data, 2023

Zewditu Memorial Hospital obtained the highest process domain mean sustainability score of 22.250 (95% CI: 19.186-25.313), followed by Yekatit 12 Hospital medical college with a mean sustainability score of 22.162 (95% CI: 16.558-27.766), Tirunesh Beijing hospital with mean sustainability score of 21.650 (95% CI: 18.368-24.931), Gandhi memorial Hospital with mean sustainability score of 21.561 (95% CI: 19.43-23.690) then Dagmawi Minilik II Hospital with mean sustainability score of 20.060 (95% CI: 16.436-23.683). Ras Desta Damtew Hospital obtained the lowest mean process domain score of 20.028 (95% CI: 15.962-24.094), showing the most significant improvement potential.

The process domain attained the highest proportionate mean sustainability score of 21.365 (95% CI: 20.152-22.577) across the six hospitals. This finding is similar to the study conducted in Tanzania were process domain attained highest proportionate mean sustainability score. The process domain is essential to influence the sustainability of healthcare quality improvement projects, thus suggesting early detection of sustainability challenges and addressing them through process monitoring.

4.4.2 Staff domain

Table 4.4: staff domain score for all six hospitals

Staff domain score for Gandhi Memorial Hospital		
Variable	**Score**	**Maximum**
Staff involvement	7.754 (95% CI: 5.052-10.455)	11.4
Staff behavior	5.738 (95% CI: 3.199-8.278)	11.0
Senior leadership	6.569 (95% CI: 5.032-8.107)	15.0
Clinical leadership	8.246 (95% CI: 5.897-10.595)	15.0
Staff	**28.307 (95% CI: 23.503-33.111)**	**52.4**
Staff domain score for Yekatit 12 Hospital Medical College		
Staff involvement	9.138 (95% CI: 6.502-11.773)	11.4
Staff behavior	6.675 (95% CI: 3.352-9.998)	11.0
Senior leadership	7.313 (95% CI: 3.018-11.607)	15.0
Clinical leadership	6.950 (95% CI: 2.173-11.727)	15.0
Staff	**30.075 (95% CI: 21.195-38.954)**	**52.4**
Staff domain score for Tirunesh Beijing Hospital		
Staff involvement	7.570 (95% CI: 4.856-10.284)	11.4
Staff behavior	6.650 (95% CI: 4.221-9.679)	11.0
Senior leadership	4.710 (95% CI: 2.927-6.493)	15.0
Clinical leadership	4.880 (95% CI: 2.996-6.764)	15.0
Staff	**24.110 (95% CI: 18.525-29.694)**	**52.4**
Staff domain score for Dagmawi Minilink II		
Staff involvement	5.640 (95% CI: 2.891-8.389)	11.4
Staff behavior	6.440 (95% CI: 3.301-9.579)	11.0
Senior leadership	5.020 (95% CI: 1.822-8.218)	15.0
Clinical leadership	8.040 (95% CI: 4.351-11.729)	15.0

Staff	**25.140 (95% CI: 17.091-33.188)**	**52.4**
Staff domain score for Ras Desta Damtew Hospital		
Staff involvement	5.557 (95% CI: 1.228-9.886)	11.4
Staff behavior	2.214 (95% CI: 2.272-8.157)	11.0
Senior leadership	6.943 (95% CI: 1.243-12.643)	15.0
Clinical leadership	7.200 (95% CI: 3.976-10.424)	15.0
Staff	**24.914 (95% CI: 14.808-35.020)**	**52.4**
Staff domain score for Zewditu Memorial Hospital		
Staff involvement	8.075 (95% CI: 6.177-9.973)	11.4
Staff behavior	6.575 (95% CI: 4.880-8.270)	11.0
Senior leadership	6.083 (95% CI: 4.005-8.162)	15.0
Clinical leadership	6.533 (95% CI: 4.454-8.612)	15.0
Staff	**27.266 (95% CI: 22.701-31.831)**	**52.4**

Source: Researcher's analysis data, 2023

Although all six hospitals showed a broader gap in staff score from the maximum score value, to further compare between each hospital. Yekatit 12 Hospital Medical College obtained the highest process domain mean sustainability score of 30.075 (95% CI: 21.195-38.954), followed by Gandhi Memorial Hospital with a mean sustainability score of 28.307 (95% CI: 23.503-33.111), Zewditu memorial Hospital with mean sustainability score of 27.266 (95% CI: 22.701-31.831) then Dagmawi minilik II Hospital with mean sustainability score of 25.140 (95% CI: 17.091-33.188) followed by Ras Desta damtew Hospital with mean sustainability score of 24.914 (95% CI: 14.808-35.020). Tirunesh Beijing Hospital obtained the lowest mean process domain score of 24.110 (95% CI: 18.525-29.694), showing the most significant improvement potential. The staff domain attained the lowest proportionate mean sustainability score of 26.711 (95% CI: 24.390-29.032) across the six hospitals. These results were consistent with the study conducted at primary clinics in South Africa and in selected

regional referral hospitals in Tanzania (Kacholi & Mahomed, 2020). Understaffing of the regional public hospitals with health professionals and overcrowding of patients, along with the added burden of QI teams to oversee the implementation of QI initiatives, could cause frustration and inconsistency in executing their primary professional role and responsibility of coordinating QI activities; these all play a significant role in the sustainability of QI projects

4.4.3 Organization domain

Table 4.5: Organization domain score for all six hospitals

Organization domain score for Gandhi Memorial Hospital		
Variable	**Score**	**Maximum**
Organizational aim	3.754 (95% CI: 2.146-5.362)	7.0
Infrastructure	2.031 (95% CI: .822-3.240)	9.50
Organization	**5.784 (95% CI: 3.658-7.911)**	**16.50**
Organization domain score for Yekatit 12 Hospital Medical College		
Organizational aim	6.100 (95% CI: 4.706-7.494)	7.0
Infrastructure	3.800 (95% CI: 1.291-6.309)	9.50
Organization	**9.900 (95% CI: 6.667-13.133)**	**16.50**
Organization domain score for Tirunesh Beijing Hospital		
Organizational aim	5.230 (95% CI: 3.895-6.565)	7.0
Infrastructure	2.640 (95% CI: 1.292-3.988)	9.50
Organization	**7.870 (95% CI: 6.371-9.368)**	**16.50**
Organization domain score for Dagmawi Minilink II		
Organizational aim	4.860 (95% CI: 3.541-6.179)	7.0
Infrastructure	3.080 (95% CI: 2.267-3.893)	9.50
Organization	**7.940 (95% CI: 6.262-9.61)**	**16.50**

Organization domain score for Ras Desta Damtew Hospital		
Organizational aim	4.471 (95% CI: 2.012-6.931)	7.0
Infrastructure	3.400 (95% CI: .442-6.358)	9.50
Organization	**7.871 (95% CI: 3.821-11.921)**	**16.50**
Organization domain score for Zewditu Memorial Hospital		
Organizational aim	5.250 (95% CI: 1.092-6.749)	7.0
Infrastructure	2.808 (95% CI: 1.092-4.525)	9.50
Organization	**8.058 (95% CI: 6.341-9.775)**	**16.50**

Source: Researcher's analysis data, 2023

Yekatit 12 Hospital Medical College obtained the highest organization domain mean sustainability score of 9.900 (95% CI: 6.667-13.133), followed by Zewditu Memorial Hospital with a mean sustainability score of 8.058 (95% CI: 6.341-9.775), Dagmawi Minilik II Hospital with mean sustainability score of 7.940 (95% CI: 6.262-9.61) then Ras Desta Damtew Hospital with mean sustainability score of 7.871 (95% CI: 3.821-11.921) followed by Tirunesh Beijing hospital with mean sustainability score of 7.870 (95% CI: 6.371-9.368). Gandhi Memorial Hospital obtained the lowest mean process domain score of 5.784 (95% CI: 3.658-7.911)**,** showing the most significant improvement potential.

4.4 Overall sustainability score

The overall sustainability score is obtained by adding process, staff, and organization total scores from the six hospitals in this study.

Table 4.6: Sustainability mean domain score across the six regional public hospitals

Variable	Gandhi memorial Hospital	Yekatit 12 Hospital medical	Tirunesh bejing Hospital	Dagmawi minilik II Hospital	Ras Desta damtew Hospital	Zewditu memorial Hospital	Overall domain score
Benefit	7.623 (95% CI: 6.616-8.630)	6.513 (95% CI: 4.76-8.299)	7.670 (95% CI: 6.413-8.927)	6.530 (95% CI: 5.037-8.023)	6.771 (95% CI: 4.766-8.777)	7.175 (95% CI: 5.926-8.424)	7.112 (95% CI: 6.617-7.607)
Credibility	6.615 (95% CI: 4.820-8.411)	6.200 (95% CI: 4.302-8.098)	7.380 (95% CI: 5.914-8.846)	6.740 (95% CI: 4.774-8.706)	6.100 (95% CI: 2.132-10.068)	7.408 (95% CI: 5.697-9.120)	6.807 (95% CI: 6.091-7.522)
Adaptability	3.000 (95% CI: 1.838-4.162)	4.375 (95% CI: 2.525-6.225)	4.000 (95% CI: 2.080-5.920)	2.800 (95% CI: 0.953-4.647)	4.000 (95% CI: 2.060-5.940)	4.150 (95% CI: 2.683-5.617)	3.663 (95% CI: 3.071-4.256)
Effectiveness	4.323 (95% CI: 3.219-5.427)	5.075 (95% CI: 3.414-6.736)	2.600 (95% CI: 1.286-3.914)	3.990 (95% CI: 2.719-5.261)	3.157 (95% CI: 1.294-4.920)	3.517 (95% CI: 1.967-5.066)	3.783 (95% CI: 3.253-4.314)
Process	**21.561 (95% CI:**	**22.162 (95% CI:**	**21.650 (95% CI:**	**20.060 (95% CI: 16.436-**	**20.028 (95% CI:**	**22.250 (95% CI:**	**21.365 (95% CI: 20.152-**
Staff involvement	7.754 (95% CI: 5.052-	9.138 (95% CI:	7.570 (95% CI: 4.856-	5.640 (95% CI: 2.891-	5.557 (95% CI:	8.075 (95% CI: 6.177-	7.363 (95% CI: 6.361-
Staff behavior	5.738 (95% CI: 3.199-	6.675 (95% CI:	6.650 (95% CI: 4.221-	6.440 (95% CI: 3.301-	2.214 (95% CI:	6.575 (95% CI: 4.880-	6.288 (95% CI: 5.346-
Senior leadership	6.569 (95% CI: 5.032-	7.313 (95% CI:	4.710 (95% CI: 2.927-	5.020 (95% CI: 1.822-	6.943 (95% CI:	6.083 (95% CI: 4.005-	6.047 (95% CI: 5.041-
Clinical leadership	8.246 (95% CI: 5.897-10.595)	6.950 (95% CI: 2.173-11.727)	4.880 (95% CI: 2.996-6.764)	8.040 (95% CI: 4.351-11.729)	7.200 (95% CI: 3.976-10.424)	6.533 (95% CI: 4.454-8.612)	7.013 (95% CI: 5.960-8.067)
Staff	**28.307 (95%**	**30.075 (95% CI:**	**24.110 (95% CI:**	**25.140 (95% CI: 17.091-**	**24.914 (95% CI:**	**27.266 (95% CI:**	**26.711(95% CI: 24.390-**
Organizational aim	3.754 (95% CI: 2.146-5.362)	6.100 (95% CI: 4.706-7.494)	5.230 (95% CI: 3.895-6.565)	4.860 (95% CI: 3.541-6.179)	4.471 (95% CI: 2.012-6.931)	5.250 (95% CI: 1.092-6.749)	4.880 (95% CI: 4.295-5.465)
Infrastructure	2.031 (95% CI: .822-	3.800 (95% CI:	2.640 (95% CI: 1.292-	3.080 (95% CI: 2.267-	3.400 (95% CI: .442-	2.808 (95% CI: 1.092-	2.858 (95% CI: 2.261-
Organization	**5.784** (95% CI: 3.658-	**9.900 (95% CI:**	**7.870 (95% CI: 6.371-**	**7.940 (95% CI: 6.262-**	**7.871 (95% CI:**	**8.058 (95% CI: 6.341-**	**7.738 (95% CI: 6.896-**
Total sustainability score	**55.653 (95% CI: 49.441-61.865)**	**62.137 (95% CI: 46.465-77.809)**	**53.630 (95% CI: 46.916-60.344)**	**53.140 (95% CI: 43.242-63.037)**	**52.814 (95% CI: 40.728-64.900)**	**57.575 (95% CI: 50.279-64.870)**	**55.815 (95% CI: 52.579-59.051)**

Source: Researcher's analysis data, 2023

The mean sustainability scores for all six hospitals were 55.815 (95% CI: 52.579-59.051) (Table 4.22), which indicates a moderate level of sustainability based on the NHS sustainability model and in the context of the regional hospitals' mission to improve healthcare quality. The mean sustainability score is slightly lower than a similar study conducted in a selected regional public hospital in Tanzania, with a mean sustainability of 59.49 (95% CI: 53.69-64.46).

The score falling within this range indicates that while some sustainability measures are in place, there is room for improvement. Tailored interventions may be required to boost sustainability features inside these facilities and ensure that quality improvements are not only started but also maintained successfully over time.

Yekatit 12 Hospital Medical College had the highest mean sustainability score of 62.137 (95% CI: 46.465-77.809) 66.15. Ras Desta Damtew Hospital obtained the lowest mean sustainability score of 52.814 (95% CI: 40.728-64.900).

Based on the results, independent sample t-test was done to see if there is a difference between the highest and the lowest overall mean sustainability score for regional hospital and the result showed that there are no statistically significant differences between the highest and the lowest overall mean sustainability score hospitals. Details of independent sample t-test are shown below table.

Table 4.7: Summary of independent sample t-test for healthcare quality improvement projects sustainability between the highest and the lowest overall mean sustainability score in regional hospital Addis Ababa, Ethiopia Sep 2023

Health Care Quality Improvement projects Monitoring level	**t-value**	**Mean difference**	**95%CI**		**p-value**
			Lower	upper	
Overall mean sustainability score	1.100	9.32321	-8.982	-27.623	0.291

Source: Researcher's analysis data, 2023

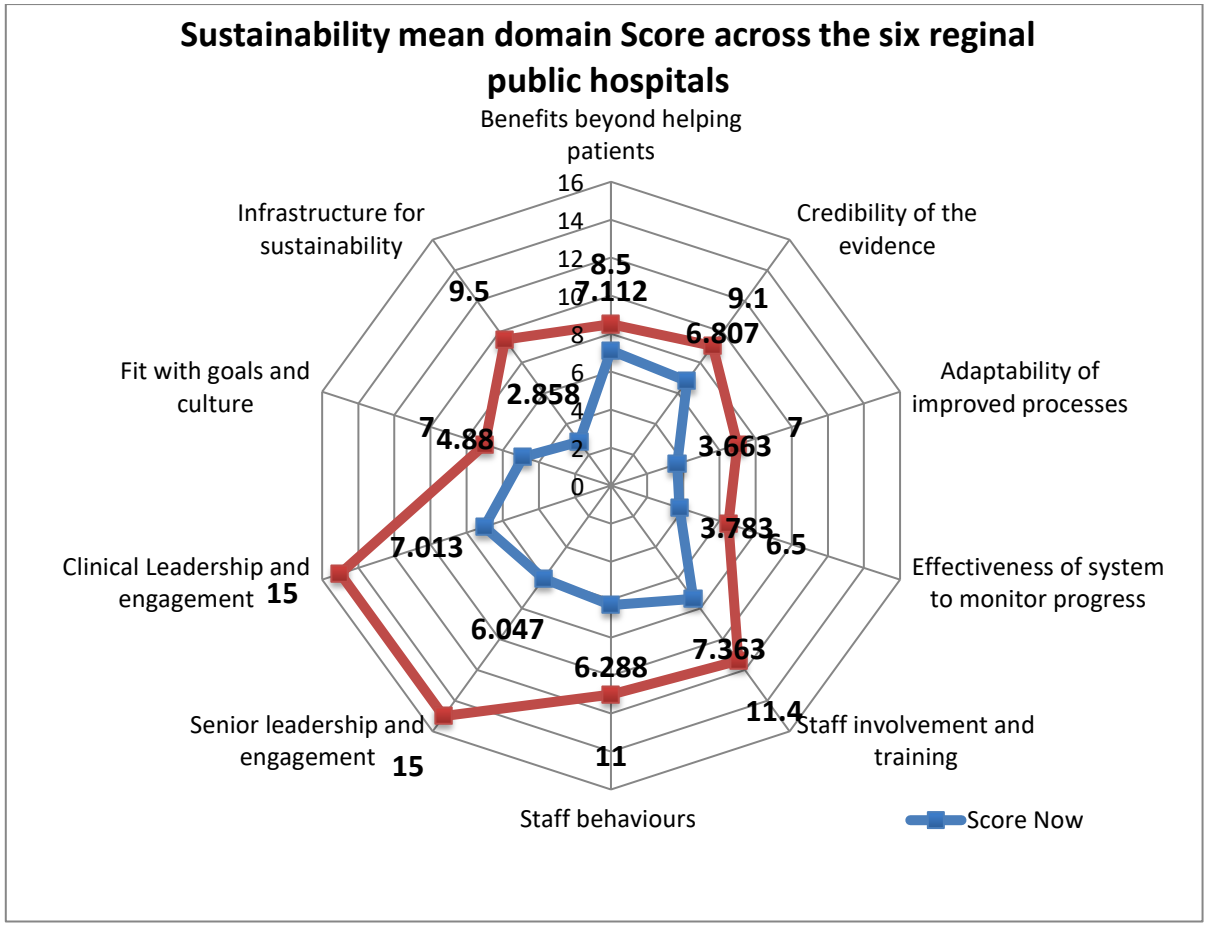

Figure 4.1 Sustainability mean domain score across the six regional public hospitals

4.5 Domain level sustainability scores

The most substantial factors that were recorded to promote sustainability across the six hospitals were benefits of the hospital QI teams beyond helping patients 7.112 (95% CI: 6.617-7.607), followed by Fit with the organization's strategic aims and culture 4.880 (95% CI: 4.295 5.465), the credibility of evidence 6.807 (95% CI: 6.091-7.522), the effectiveness of the system to monitors progress 3.783 (95% CI: 3.253-4.314) adaptability of improved process 3.663 (95% CI: 3.071-4.256), staff involvement and training to sustain the process 7.363 (95% CI: 6.361-8.365) and staff behaviours towards sustaining the 6.288 (95% CI: 5.346-7.230) (Fig. 2).

The factors promoting sustainability of healthcare quality improvement projects, such as their benefits extending beyond patient care, alignment with organizational strategic goals and culture, credibility of evidence, and effective progress monitoring, underscore a comprehensive approach to long-term success. These factors indicate a broader positive impact on the hospital system, making the project's sustainability more appealing and beneficial. Their alignment with the organizational culture and strategic aims increases the

likelihood of continued commitment and resource allocation. Moreover, credible evidence ensures informed decision-making, while effective progress monitoring helps identify areas for improvement.

These factors in all six hospitals based on the NHS Sustainability Model signify a robust foundation for sustaining quality improvements, benefiting patients and the healthcare system.

Three main factors that were perceived to negatively affect the sustainability of hospital QI teams across all six hospitals were), inadequate engagement of senior hospital leadership (hospital management teams and hospital advisory boards) 6.047 (95% CI: 5.041-7.052), inadequate involvement of clinical leadership (heads of clinical departments and units) 7.013 (95% CI: 5.960-8.067) and weak infrastructures for sustainability 2.858 (95% CI: 2.261-3.456).

Inadequate engagement of senior leadership can hinder the allocation of resources and the creation of a supportive culture. Similarly, limited clinical leadership involvement may lead to insufficient buy-in and participation from frontline staff, which is critical for implementation success. Weak infrastructure for sustainability suggests limitations in monitoring, adapting, and sustaining improvements effectively. Addressing these factors is crucial to bolster the long-term sustainability of quality improvement initiatives in regional hospitals.

Chapter Five

5. Summary, Conclusion and Recommendations

5.1. Summary of findings

The study involved 63 (90%) participants from a total of 70, primarily aged 23-45 years, with a mean age of 31.35. The majority (60%) were male, and the participants had an average of 5.17 years of experience. These demographic characteristics can foster collaboration and knowledge exchange among healthcare professionals, influencing project dynamics and innovation.

Six healthcare quality improvement projects, each focusing on a unique aspect of healthcare delivery, were selected from the six regional hospitals. Participants assumed various roles, with most serving as team members (66.7%). Notably, 87.3% of participants worked full-time on the QI team while managing their primary roles, affecting team performance and sustainability. The primary methods for identifying improvement sustainability measures were employee suggestions (55%) and benchmarking (35%), reflecting a commitment to employee engagement and data-driven decision-making.

The participant length of service in the QI team exhibited varied durations, with 73.3% spanning 3-6 months and 26.7% 3-6 months, illustrating the diverse scopes and complexities of the initiatives. Monitoring occurred at different frequencies, with 43.3% conducted quarterly, 38.3% irregularly, and 16.7% monthly, demonstrating adaptability. The primary methods for the project monitoring included data collection, analysis (20%) and regular progress meetings and reporting (15%).

The process domain had the highest mean sustainability score with a score of 21.365 (95% CI: 20.152-22.577), with Zewditu Memorial Hospital obtaining the highest score of 22.250 (95% CI: 19.186-25.313). Staff domain scores showed variations among hospitals, with Yekatit 12 Hospital Medical College scoring the highest and Tirunesh Beijing Hospital obtaining the lowest mean process domain score of 24.110 (95% CI: 18.525-29.694), showing the most significant improvement potential.

The organization domain scores also varied, with Yekatit 12 Hospital Medical College leading in this domain with a mean sustainability score of 9.900 (95% CI: 6.667-13.133), and Gandhi Memorial Hospital obtained the lowest mean process domain score of 5.784 (95% CI: 3.658-7.911).

The overall sustainability score for all six hospitals was 55.815, indicating a moderate level of sustainability with potential for enhancement.

The study identified several factors promoting sustainability, including the broader benefits of QI teams beyond patient care, alignment with organizational strategic goals and culture, credibility of evidence, and effective progress monitoring. These factors collectively form a robust foundation for sustaining quality improvements in healthcare.

Factors negatively affecting sustainability included inadequate engagement of senior hospital leadership, insufficient clinical leadership involvement, and weak sustainability infrastructure. Addressing these challenges is crucial for ensuring the long-term success of quality improvement initiatives in regional hospitals.

The findings highlight the complex interplay of factors influencing healthcare quality improvement project sustainability in regional hospitals, including socio-demographic characteristics, project characteristics, monitoring practices, and domain-specific sustainability scores. The study underscores the importance of considering these factors to develop effective strategies for sustaining quality improvements in healthcare delivery.

5.2. Conclusion

In conclusion, this study investigated the sustainability of healthcare quality improvement projects within the framework of the NHS sustainability model across six regional hospitals in Addis Ababa, shedding light on critical aspects of their performance.

The mean sustainability scores for all six hospitals were 55.815 (95% CI: 52.579-59.051). This may demonstrate a moderate level of sustainability with the healthcare quality improvement project, indicating some sustainability in place and ample room for improvement in maintaining quality improvement success over time. No similar study was conducted in Ethiopia, but the mean sustainability score is nearly similar to the findings of a study conducted in Tanzania. Overall, the process domain demonstrated a proportionate mean sustainability score of 21.365 across all hospitals, highlighting the relatively balanced performance in this area. The process domain serves as the foundation for consistent and efficient delivery of care, ensuring that best practices are followed. Effective processes streamline workflows, reduce waste, and enhance patient experiences, ultimately improving Ethiopian healthcare quality.

Conversely, the staff domain revealed a broader gap between the maximum and minimum scores in the studied hospitals. This has a profound impact as Frontline staff, including nurses, technicians, and administrative personnel, are often closest to patient care and daily operations. Their engagement and adherence to new processes and practices are crucial for project success. If addressed or adequately supported, this domain can lead to resistance, inefficiency, and a failure to sustain improvements.

In the assessment of domain-level sustainability scores, several factors were identified as promoting sustainability, including the broader benefits of QI teams beyond patient care, alignment with the organization's strategic aims and culture, the credibility of evidence, effective progress monitoring systems, adaptable processes, staff involvement and training, and staff behaviors supportive of sustainability. However, three significant factors negatively affecting sustainability across all hospitals were the inadequate engagement of senior hospital leadership (hospital management teams), insufficient involvement of clinical leadership (heads of clinical departments and units), and weak infrastructures for sustainability. All three factors are essential as they can collectively undermine the sustainability of healthcare improvement projects. High involvement of

hospital management teams, leadership of clinical departments, and improvement of hospital infrastructure might eventually increase the performance and sustainability of QI teams. Addressing these challenges requires a concerted effort to foster leadership commitment, involve clinical experts, and invest in the necessary infrastructure to support on-going improvement efforts in healthcare settings. Without these elements in place, the long-term success of improvement projects is at risk, potentially compromising the quality of patient care and healthcare outcomes. The study underscores the importance of establishing a permanent and fully financially resourced Quality Improvement Unit with full-fledged responsibilities to oversee QI interventions.

These findings offer valuable insights for regional hospitals in Addis Ababa, highlighting areas of strength and opportunities for improvement in sustaining healthcare quality improvement projects, ultimately contributing to enhanced healthcare delivery and patient outcomes.

We expect the results of this study to have a policy impact, resulting in improved performance and sustainability of hospital QI teams in Ethiopia.

5.3. Recommendations

- Enhance Leadership Engagement: Actively involve senior hospital management teams in quality improvement initiatives to promote sustained support and commitment.
- Clinical Leadership Involvement: Ensure that heads of clinical departments and units are central in guiding and championing healthcare quality improvement projects.
- Invest in Infrastructure: Prioritize infrastructure improvements to provide a solid foundation for sustainable quality improvement efforts.
- Staff Training and Engagement: Invest in staff training and engagement programs to empower frontline staff and enhance their adherence to new processes and practices.
- Regular Progress Monitoring: Establish effective progress monitoring systems to track the sustainability of quality improvements over time.
- Promote Adaptable Processes: Encourage the development of adaptable processes that can evolve with changing healthcare needs and best practices.
- Cultivate a Culture of Sustainability: Foster staff behaviors and organizational culture supportive of sustainability, emphasizing the long-term benefits of quality improvement.
- Learn from Best Practices: Explore successful sustainability models from similar studies, such as the one conducted in Tanzania, to adapt effective strategies to the Ethiopian context.
- Establish a Dedicated Quality Improvement Unit: Create a permanent, well-funded Quality Improvement Unit with clear responsibilities for overseeing and supporting quality improvement interventions.
- Addressing these recommendations (process, staff, and organization domains) will help Ethiopian healthcare organizations strengthen sustainability in healthcare quality improvement projects, ultimately enhancing patient care and healthcare outcomes.

5.4. Recommendations for future studies

Generally based on this study's findings it can recommend for future studies: to further identify other factors that could facilitate or inhibit sustainability of hospitals Healthcare quality improvement projects.

5. References

Ament, S.M.C. *et al.* (2017) 'Factors associated with sustainability of 2 quality improvement programs after achieving early implementation success. A qualitative case study', *Journal of Evaluation in Clinical Practice*, 23(6), pp. 1135–1143. Available at: https://doi.org/10.1111/jep.12735.

Assefa, Y. *et al.* (2019) 'Community health extension program of Ethiopia, 2003-2018: Successes and challenges toward universal coverage for primary healthcare services', *Globalization and Health*, 15(1), pp. 1–11. Available at: https://doi.org/10.1186/s12992-019-0470-1.

Batalden, P.B. and Davidoff, F. (2007) 'What is "quality improvement" and how can it transform healthcare?', *Quality and Safety in Health Care*, 16(1), pp. 2–3. Available at: https://doi.org/10.1136/qshc.2006.022046.

Bate, P., Mendel, P. and Berwick, D.M. (2007) 'Organizing for quality: The improvement journeys of leading hospitals in Europe and the United States', *Organizing for Quality: The Improvement Journeys of Leading Hospitals in Europe and the United States*, 9(April), pp. 1–252. Available at: https://doi.org/10.1201/b20730.

Beginnings, N. (2021) 'PERFORMANCE Responsive Health System in the New Beginnings !', *BMC Public Health* [Preprint].

Centre, D. and Gibbons, J. (2009) 'Stakeholder Engagement : A Road Map to Meaningful Engagement We would like to thank the following for sharing their insight and experience ':, (July).

Chelagat, T. *et al.* (2021) 'Sustainability drivers and inhibitors for the health system performance improvement projects in selected health facilities in Kenya: A qualitative study', *BMJ Open*, 11(7). Available at: https://doi.org/10.1136/bmjopen-2019-035475.

Dückers, M.L.A. *et al.* (2009) 'Exploring the black box of quality improvement collaboratives: Modelling relations between conditions, applied changes and outcomes', *Implementation Science*, 4(1), pp. 1–12. Available at: https://doi.org/10.1186/1748-5908-4-74.

Elizabeth H. Bradley, Sarah Pallas, Chhitij Bashyal, Peter Berman, and L.C. (2010) *Developing Strategies for Improving*.

FMOH. Federal Democratic Republic of Ethiopia, F.M. of H. (2015) ‘Health Sector Transformation Plan (HSTP) 2015/16–2019/20. ETHIOPIA: Health FDRoEMo; 2015. p. 184’, p. 184.

Glasgow, J.M., Scott-Caziewell, J.R. and Kaboli, P.J. (2010) ‘Guiding inpatient quality improvement: A systematic review of Lean and Six Sigma’, *Joint Commission Journal on Quality and Patient Safety*, 36(12), pp. 533–540. Available at: https://doi.org/10.1016/s1553-7250(10)36081-8.

Goldzweig, C.L. *et al.* (2013) ‘Patient Portals : Evidence on Health Outcomes , Satisfaction, Efficiency and Attitudes’, *Annals of Internal Medicine*, 159(10), pp. 677–687.

Harris, C., Green, S. and Elshaug, A.G. (2017) ‘Sustainability in Health care by Allocating Resources Effectively (SHARE) 10 : operationalising disinvestment in a conceptual framework for resource allocation’. Available at: https://doi.org/10.1186/s12913-017-2506-7.

Henrique, B. *et al.* (2023) ‘The contribution of organizational culture , structure , and leadership factors in the digital transformation of SMEs : a mixed - methods approach’, *Cognition, Technology & Work*, 25(1), pp. 151–179. Available at: https://doi.org/10.1007/s10111-022-00714-2.

Hibbert, P.D. *et al.* (2021) ‘How to sustainably build capacity in quality improvement within a healthcare organisation: a deep-dive, focused qualitative analysis’, *BMC Health Services Research*, 21(1), pp. 1–13. Available at: https://doi.org/10.1186/s12913-021-06598-8.

‘https://www.who.int/health-topics/quality-of-care#tab=tab_1’ (2022).

Hughes Ronda (2008) ‘Section VI: Tools for Quality Improvement and Patient Safety’, *Patient Safety and Quality: An Evidence -Based Handbook for nurses*, pp. 1–39.

Kacholi, G. and Mahomed, O.H. (2020) ‘Sustainability of quality improvement teams in selected regional referral hospitals in Tanzania’, *International Journal for Quality in Health Care*, 32(4), pp. 259–265. Available at: https://doi.org/10.1093/intqhc/mzaa032.

Lukas, C.V.D. *et al.* (2007) ‘Transformational change in health care systems: An organizational model’, *Health Care Management Review*, 32(4), pp. 309–320. Available at: https://doi.org/10.1097/01.HMR.0000296785.29718.5d.

Magge, H. *et al.* (2019) ‘The Ethiopia healthcare quality initiative: Design and initial lessons learned’, *International Journal for Quality in Health Care*, 31(10), pp. G180–G186. Available at: https://doi.org/10.1093/intqhc/mzz127.

Mahomed, O.H., Asmall, S. and Voce, A. (2021) 'Sustainability Of The Integrated Chronic Disease Management Model At Primary Care Clinics In South Africa', *African Journal of Primary Health Care and Family Medicine*, 8(1), pp. 1–7. Available at: https://doi.org/10.4102/phcfm.v8i1.1248.

'Model and Guide' (no date).

MOH (2021) 'National Healthcare Quality and Safety Strategy (Nqss) Table of Contents', 2025, pp. 2021–2025.

Moon, S.E.J., Hogden, A. and Eljiz, K. (2022) 'Sustaining improvement of hospital-wide initiative for patient safety and quality: A systematic scoping review', *BMJ Open Quality*, 11(4). Available at: https://doi.org/10.1136/bmjoq-2022-002057.

Mortimer, F. *et al.* (2018) 'Sustainability in quality improvement: redefining value', *Future Healthcare Journal*, 5(2), pp. 88–93. Available at: https://doi.org/10.7861/futurehosp.5-2-88.

Moucheraud, C. *et al.* (2017) 'Sustainability of health information systems: A three-country qualitative study in southern Africa', *BMC Health Services Research*, 17(1), pp. 1–11. Available at: https://doi.org/10.1186/s12913-016-1971-8.

NHS Improvement (2017) 'Developmental Reviews of Leadership and Governance Using the Well-led Framework: Guidance for NHS Trusts and NHS Foundation Trusts', (June), p. 52.

Øvretveit, J. *et al.* (2002) 'Quality collaboratives: Lessons from research', *Quality and Safety in Health Care*, 11(4), pp. 345–351. Available at: https://doi.org/10.1136/qhc.11.4.345.

Øvretveit, J. (2011) 'Understanding the conditions for improvement: Research to discover which context influences affect improvement success', *BMJ Quality and Safety*, 20(SUPPL. 1), pp. 1–6. Available at: https://doi.org/10.1136/bmjqs.2010.045955.

Perla, R.J., Provost, L.P. and Murray, S.K. (2011) 'The run chart: A simple analytical tool for learning from variation in healthcare processes', *BMJ Quality and Safety*, 20(1), pp. 46–51. Available at: https://doi.org/10.1136/bmjqs.2009.037895.

'Project Management Institute. A Guide to the Project Management Body of Knowledge': (2004) *PMBOK® Guide, 3rd Edition. Newtown Square, Pennsylvania, Project Management Institute*, p. 37.

Rakov, M. and De Ridder, J. (2022) 'Knowledge sharing in organizations: A present and futures study', *International Journal of Managing Information Technology*, 51(11), pp. 1–

340.

Starr, N. *et al.* (2022) ‘Sustainability of a Surgical Quality Improvement Program at Hospitals in Ethiopia’, *JAMA Surgery*, 157(1), pp. 68–70. Available at: https://doi.org/10.1001/jamasurg.2021.5569.

‘Sustainability Model Online library of Quality, Service Improvement and Redesign tools’ (2010). Available at: https://www.england.nhs.uk/wp-content/uploads/2021/03/qsir-sustainability-model.pdf.

Tomás-Jiménez, M. *et al.* (2022) ‘Adaptation, psychometric properties and factor structure of the Spanish Quality in Psychiatric Care-Outpatient Staff (QPC-OPS) instrument’, *Scientific Reports*, 12(1), pp. 1–9. Available at: https://doi.org/10.1038/s41598-022-08039-w.

Weekes, T.L.L. and Hill, M. (2018) ‘Ensuring success and sustainability of a quality improvement project’, *BJA Education*, 18(5), pp. 147–152. Available at: https://doi.org/10.1016/j.bjae.2018.02.002.

Wendwessen, N., Dereje, T. and Gize, A. (2020) ‘Factors affecting the implementation of continuous quality improvement in health facilities in southern nation and nationalities peoples region (SNNPR), Ethiopia’, *Journal of Multidisciplinary Healthcare*, 13, pp. 855–862. Available at: https://doi.org/10.2147/JMDH.S260285.

6. Annexes

Annex I: Informed Consent form

Research Title: Assessment of Health care Quality Improvement projects sustainability in regional hospitals in Addis Ababa, Ethiopia.

Principal Investigator (PI): Abemelek Zegeye Hailemariam (MD.)

Part I: Information Sheet

1. Introduction

The objective of the study is to Assessment of Health care Quality Improvement projects sustainability and determinant factors in Regional hospitals in Addis Ababa, Ethiopia. This study will be helpful to improve the health care quality of services given to clients in health facilities. The interview takes between 10-20 minutes to complete.

2. Description

You have been asked to participate in a research study, which will assess Project Sustainability In health care service quality improvement Projects in Regional hospitals in Addis Ababa

3. Aim of the study

The information you provide will not only contribute to the success of the study, but will also contribute significantly to getting the right information to improve the service.

4. Procedure

This study will involve a questioner being filled by interviewer to study the Assessment of Health care Quality Improvement projects sustainability and determinant factors in Regional hospitals in Addis Ababa, Ethiopia. If you are willing to participate in the study, you have to understand before you are asked the questions. If there is anything unclear, you can ask. For the study, you are expected to answer the questions voluntarily. All the information you give will be kept private.

5. Participant selection

We are inviting all clients who fulfil the inclusion criteria for the study in public hospitals participate in the research on Assessment of Health care Quality Improvement projects sustainability and determinant factors in Regional hospitals in Addis Ababa, Ethiopia.

6. Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. You may change your mind later and stop participating even if you agreed earlier.

7. Risks and Benefits

There is no any risk in participating in the research. If you participate in the study, you may not get direct benefit, but you will have an opportunity to contribute for the improvement of quality of health care service in the country.

8. Rights

You do not have to take part in this research if you do not wish to do so and refusing to participate will not affect you in any way. You will still have all the benefits that you would otherwise. You may stop participating in the research at any time that you wish without losing any of your rights as a client here.

9. Confidentiality

The information collected from this research project will be kept confidential and all records and other information obtained will be kept strictly confidential and your health information will not be used without permission. All data collection tools will be identified by number or otherwise coded to protect any information that could be used to identify your child.

10. Number of Participants

Total of 70 clients who fulfils the inclusion criteria will be the participants of the study.

11. Whom to Contact

The participants have full right to ask information that is not clear about the research before they decide to participate. You can contact the principal investigator for any doubt that you want to clear. This research will be reviewed and approved

by Addis Ababa University School of Commerce institutional review board. If you want more information and check about this study, you can contact the following person.

Abemelek Zegeye: phone +251911963226

This Informed Consent form is for those who have been in GMH, ZMH, TBGH, RDDH, DMIIH andY12HMC. Who we are inviting you to participate in research project on Project sustainability in health care service quality improvement Projects in Regional hospitals in Addis Ababa, Ethiopia. The title of my research project is "Assessment of Healthcare Quality Improvement projects sustainability in Regional hospitals in Addis Ababa, Ethiopia".

My name is_____. I am here on behalf of Abemelek Zegeye, who is currently a Master of Arts in project management student in Addis Ababa university school of commerce who is now going to conduct a survey. I would like to interview you about Graduated health care quality improvement projects you participated on in the past on year. The objective of the study is assessing Project sustainability in health care service quality improvement Projects in Regional hospitals in Addis Ababa, Ethiopia. The interview takes between 10-20 minutes to complete.

Annex II: English version of data collection instrument.

Questionnaire No: _____ Date:_____Data collector's name:_____

Please answer the questions in this survey about your stay at the hospital named on the cover letter. Do not include any other hospital stays in your answers.

Socio Demographic variables		
001	Age	
002	Sex	1.Male 2.Female
003	Profession	----------
004	Years of experiences	----------
005	Facility name	----------
General project information		
101	Quality improvement Project title in which you were involved?	
102	How many months of service in the QI team?	
103	Are you a full time member of the QI team?	1.Yes 2. No
104	What role did you have in this project?	1.Team member 2.Projectsponsor 3. Facilitator or consultant 4. Team leader 5. Other, specify
105	How did the organization identify the improvement sustainability measures for this healthcare quality improvement	1.Employee suggestions 2. Benchmarking against peer organizations 3. Customer suggestions 4.Examining internal
106	How frequently are project monitoring activities conducted for this healthcare quality improvement projects in your hospitals?	1. Daily 2.Weekly 3. Monthly 4. Quarterly 5. Irregularly

107	What methods are primarily used for project monitoring in this healthcare quality improvement projects?(Multiple response is possible)	1. Regular progress meetings and reporting 2. Data collection and analysis 3. Site visits and observations 4. Documentation review 5. Combination of multiple methods			
Sustainability score					
Section 1: process					
	Benefits beyond helping patients	Agree with the whole statement	Agree with some of the statement	Disagree with most of the statement	Disagree with the whole statement
201.	This improvement initiative will produce benefit beyond helping patients or staff, for example reducing waste, creating efficiency or making people jobs easier.				
202.	Benefits of the change are immediately obvious, are believed by staff and have been achieved elsewhere. Staffs are able to fully describe the intended benefit of this initiative.				
203.	This change is sufficiently robust to cope with organizational change, will meet on going needs and would not be disrupted if specific individuals or groups left the project.				
204.	There is system in place to provide evidence of impact, including benefits analysis, to monitor progress and communicate these results more widely, and this will continue beyond the life of this improvement initiatives.				
Section 2 : Staff					
		Agree with the whole statement	Agree with some of the statement	Disagree with most of the statement	Disagree with the whole statement

301.	Staff have been involved from the beginning of this improvement initiative, have helped to identify any skill gaps and received the training and development to feel confident and competent in the new way of working.				
302.	Staff are able to share ideas regularly, some of which have been taken on board during this improvement initiative, have been empowered to run small scale tests to adapt the change and believe it is better way of doing things.				
303.	Organizational leaders are credible, highly involved and visible in their support of this improvement initiative and use their influence to communicate the impact of the work and break down barriers. Staff regularly shares information with and actively seek advice from organizational leaders.				
304.	Clinical leaders are credible, highly involved and visible in their support of this improvement initiative and use their influence to communicate the impact of the work and break down barriers. Staff regularly shares information with and actively seek advice from clinical leaders.				
Section 3 : Organization					
		Agree with the whole statement	Agree with some of the statement	Disagree with most of the statement	Disagree with the whole statement
401.	The goals of the change are clear and have been widely shared. They are consistent with and support the organization's strategy aims for improvement the organization has demonstrated successful sustainability of improvement before, and has a 'can do' attitude				

402.	There are enough staff trained in the new way of working with appropriate facilities and equipment to sustain the new process. Job description, policies and procedure reflect the new process and communication systems are in place to describe the benefit.				