



Evaluation of Saving Lives through Safe Surgery (SaLTS) initiative implementation in Public Hospitals of Kambata Tembaro Zone, Southern Ethiopia

An Evaluation Thesis Submitted to Jimma University Institute of Health, Public Health Faculty, Department of Health Management and Policy, Health Monitoring and Evaluation Post Graduate Unit for Partial Fulfillment of the Requirements for the Degree of Master of Science in Health Monitoring and Evaluation.

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Evaluation of Saving Lives through Safe Surgery (SaLTS) initiative implementation
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Abstract

Background: The Safe Surgery Saves Lives initiative is designed to implement safe surgical procedures and patient safety best practices to reduce the incidence of adverse events both in the operating room and in the ward. There was inadequate use of surgical safety checklists; inadequate implementation of anesthesia safety; poor communication between care provider and client; and scarcity of resources. Those things lead to patients' dissatisfaction. The aim of this study was to assess the level of implementation of the SaLTS initiative by identifying gaps in resource availability and healthcare providers' compliance with standards.

Objective: To assess saving lives through safe surgery initiative implementation and patient satisfaction in public hospitals of Kambata Tembaro zone, southern Ethiopia 2022.

Methods: The facility-based single Case study design with mixed-method was used. A formative evaluation approach was employed. The focus was process evaluation with the intermediate outcome, dimensions of availability, compliance, and satisfaction employed. Five hospitals' resource inventories were conducted. 120 client-provider interactions, 120 clients' charts, one year selected documents and 19 key informants were included. A total of 312 surgically admitted clients were included by consecutive sampling technique. Simple and multivariable linear regression analysis techniques were used. Qualitative data analyzed manually and presented as triangulation with the quantitative results. The overall implementation of the service was determined based on judgmental criteria.

Results: The evaluation finding shows that the overall implementation service of the SaLTS initiative was partially implemented (68.0%) based on judgment parameter. The availability of resources was poorly available (60.33%) and compliance of health care providers was partially implemented (71.62%). Besides of that, the overall patient satisfaction mean score with SaLTS services among patients who were admitted and had surgery was partially satisfied (72.06%). In this study educational status, admission ward, patient status during discharge, and service payment were independent predictors of patient satisfaction with SaLTS service.

Conclusion and Recommendation: The overall level of implementation of the SaLTS service was partially implemented in Kambata Tembaro zone hospitals. Surgical healthcare providers should be trained. Guidelines, medical supply support and regular supportive supervision is needed.

Keywords: safe surgery, implementation evaluation, client satisfaction.

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Abbreviations and Acronyms

CCO	Chief clinical officer
CEO	Chief Executive officer
DPH	Doyegena primary hospital
DRBGMG	Doctor Bogalech Gebre Memorial Hospital
EA	Evaluability Assessment
EESC	Essential and Emergency surgical care
FMOH	Federal Ministry of Health
HMIS	Health management information system
HPH	Hangecha primary hospital
HSTP	Health Sector Transformation Plan
HSTQ	Hospital Service Transformation in Quality
IESO	Integrated Emergency Surgical Officer
KPI	Key Performance Indicators
MPH	Mudula primary hospital
M&E	Monitoring and evaluation
LMICs	Lower and Middle Income Countries
OR	Operating room
RHB	Regional health bureau
SaLTS	Saving Lives through Safe Surgery
SARA	Service Availability and Readiness Assessment
SPH	Shinshicho primary hospital
SSI	Surgical site infection
SSCL	Safe Surgical Check List
WHO	World Health Organization

Operational definitions

Surgical care: For this evaluation it includes the provision of perioperative, operative, postoperative and non-operative management and anesthesia care in operation room and wards for all surgical conditions.

Surgical care provider: Implies any health worker providing surgical care, including nurses, health officers, physicians that give general surgery, orthopedics, obstetric and gynecological surgical care, irrespective of level of training.

Availability: It refers to the availability and preparedness of the resources needed to perform safe surgical procedures (human resources, basic infrastructures, supplies, surgical documents, guidelines and surgical services by itself).

Medical supplies: In this study surgical items that are consumable, expendable, disposable or non-durable and that are used for the treatment or diagnosis that of a patient's illness, injury, or condition comprise medical equipment and medications.

Surgical service availability: It refers to the procedures performed in hospital surgical departments and is defined as a type of basic and comprehensive surgical care based on national service availability and readiness assessment guideline.

Basic surgical services: services include; 1)Incision and drainage of abscesses, 2)Suturing, 3)Acute burn management, 4)Male circumcision, 5)Closed repair of fracture, 6)Hydrocele reduction, 8)Biopsy of lymph node or mass or other, 8)Chest tube insertion, 9)Closed repair of dislocated joint, 10)Removal of foreign body, and 11)Cricothyroidotomy.

Comprehensive surgical service: services include; 1)Appendectomy, 2)Congenital hernia repair, 3)Hernia repair (elective), 4)Hernia repair (strangulated), 5)Laparotomy, 6)Tubal ligation, 7)Urethral stricture dilatation, 8)Amputation, Cataract surgery, 9)Club foot repair, 10)Cystostomy, 11)drainage of osteomyelitis-septic arthritis, 12)Episiotomy, 13)Obstetric fistula repair, 14)Open reduction and fixation for fracture, 15)Vasectomy, 16)Neonatal surgery Cleft palate, 17)Dilatation & Curettage, 18)Skin grafting and contracture release and 19)Tracheostomy.

Compliance: This implies providing safe surgical care adhering to technical and procedural guidelines.

Surgical Safety checklist use: In this evaluation WHO/ institutionally modified safety checklist correctly fulfilled per protocol.

Comprehensive assessment: For this evaluation client assessment include patient history, physical examination, lab investigation and results, diagnosis and proposed surgery identified.

Complete patient records: In this study the completeness of the content of surgical patient chart records in terms of history sheet, laboratory investigation form, safe surgical checklist format, operation sheet, anesthesia sheet (pre and intra-operation), vital sign sheet, medication administration sheet, progress note, discharge summary sheet, and nursing care plan.

Minimum laboratory investigation: The investigations that done for surgical patient to inter operation room per hospitals' protocol.

Perioperative mortality: Show any death occurring within the total length of hospital stay within the same admission of a surgical, gynecological and orthopedic procedure performed under general or regional anesthesia including death in operation theatre before induction of anesthesia.

Surgical site infection: For this evaluation an infection occurring at the site of the surgical wound prior to discharge patient.

Anesthetic adverse effect: Surgical patients who developed any one of the following: cardio-respiratory arrest, inability to secure airway and high spinal anesthesia.

Satisfaction: It refers to how clients perceive and accept actions. Their reactions and perceptions of the care they received from surgery department staff. It was measured with 5 point Likert score which means from 1(completely dissatisfied), 2 (dissatisfied), 3 (not sure)/ (neither satisfied nor dissatisfied), 4 (satisfied), and 5 (completely satisfied).

$$PMSS = \frac{(\text{Actual score} - \text{potential minimum score})}{\text{Potential Maximum score} - \text{potential minimum score}} \times 100$$

Chapter One: Introduction

1.1: Background

Surgical care refers to operative and non-operative interventions aimed at minimizing disability or death from surgically treatable conditions. Preoperative patient evaluation, intra-operative treatment, including anesthesia, and postoperative care are all part of surgical care. Suturing, incision, excision, or manipulation of tissue are parts of surgical operations, and other invasive procedures that normally require local, regional, or general anesthesia (1,2).

The World Health Organization (WHO) Safe Surgery Saves Lives campaign designed to implement safe surgical procedures and patient safety best practices to reduce the incidence of adverse events both in the operating room and in the ward. The WHO second patient safety challenge is to improve the safety of surgical care around the world by defining a core set of safety standards that can be applied in all countries and settings. Saving life through Safe Surgery (SaLTS) initiative aims to improve surgical safety and reduce the number of surgical deaths and complication (3,4).

The burden of surgical intervention on public health systems is rising as the prevalence of serious injuries, malignancies, and the cardiovascular disease continues to rise. General anesthesia or strong sedation, as well as major or minor surgery, are among the procedures that put the patient in danger, therefore careful planning is required. Even though surgical procedures are intended to save lives, inadequate surgical care can result in serious damage (5–7).

Lack of access to high quality surgical care remains a significant problem in much of the world despite the fact that surgical interventions can be cost effective in terms of lives saved and disability averted. Surgery is often the only therapy that can alleviate disabilities and reduce the risk of death from common surgical conditions. The provision of essential surgical procedures ranks among the most cost effective of all health interventions. The service would avert about 1.5 million deaths a year, or 6%–7% of all avertable deaths in low-income and middle-income countries. Even though the service is with great value and low concern at the different level of administrations (8) (6).

An estimated 234 million major operations are performed around the world each year, corresponding to one operation for every 25 people alive. Yet surgical services are unevenly distributed with 30% of the world's population receiving 75% of major operations. Each year an estimated 63 million people undergo surgical treatment due to traumatic injuries, another 10 million operations are performed for pregnancy-related complications, and 31 million more are undertaken to treat malignancies (6,9).

In Ethiopia each year, over five million surgical interventions are needed to adequately serve the needs of the population, but estimates show that no more than 200 000 surgeries (4%) are actually performed annually. To address these challenges and respond to the WHA resolution, the Ethiopian FMOH has developed and begun implementation of the SaLTS initiative. A national surgical planning effort aimed at improving equitable access to safe and high-quality surgical and anesthesia care in facilities at all levels of the health-care system (10,11).

Patients seeking surgical care in Ethiopia may experience waiting times as long as one or two years. The lack of access to quality care is further exacerbated by a shortage of qualified surgical and anesthesia providers. Additional issues such as poor infrastructure, a weak management system for the supply chain of surgical equipment and consumables, limited coordination and leadership of surgical services, and a lack of data and monitoring and evaluation also inhibit the provision of safe, affordable, and quality surgical care (12,13).

This SaLTS initiative implementation evaluation aims to identify issues that take place during surgical service delivery. The study will look at the availability of human and medical resources, as well as health workers' adherence to SaLTS guidelines. Finally, evaluate the level of clients' satisfaction with the service they obtained. This study enables us to identify the gaps in surgical services and helps to develop service-improving strategies based on those gaps.

1.2: Statement of the problem

There are 5 billion individuals in the world who do not have access to safe and affordable surgical and anesthetic care when they need it. Only 6% of the world's 313 million procedures are performed in the poorest countries. In LMICs, an additional 143 million surgical procedures are required each year to save lives and prevent disability. In Africa only 212 operations (IQR 65–

578) were done per 100000 catchment populations. These numbers are 20 times lower than the crucial surgical volume required to meet a country's essential surgical needs each year (defined as 5000 operations per 100000 people). Ethiopia had the lowest surgical volume rate at 148 per 100000. Low operating volumes are linked to a high case-fatality rate due to common, curable surgical complications (2,14,15).

Lack of continuous training and education, a history of tolerating unsafe practices, a lack of regulations/rules, gaps in communication among healthcare providers, gaps in communication between healthcare providers and patients, and resource issues are all barriers to implementing the SaLTS initiative. However, WHO's second Global Patient Safety Challenge promotes improved surgical safety and reduces deaths and complications through constant revision of processes and guidelines. Also, developing a culture of safety encourages communication, trust, and honesty between health care providers and clients (16,17).

In the developing world, the poor state of infrastructure and equipment, unreliable supplies, and quality of medications is a great challenge. Also, organizational management problems, infection control, inadequate capacity-building training of professionals, and severe under-financing all contribute to the difficulties in surgical service implementation. Considering the individual items, guidelines and staff were the least available across all the countries (17,18).

In Africa, the great majority of facilities that reported offering surgical services did not have all the basic items for offering the services. There were wide disparities between countries in the readiness scores, i.e., the mean availability of the basic items for surgical services. The readiness score for basic surgery was found to have an average of 27% and 53% of surgical services. The readiness score for comprehensive surgery was the highest (83%) and the lowest (56%). Approximately one in 5 surgical patients in the Africa develop a surgical complication, and one in 10 can die. Several of these deaths are probably preventable (18,19).

In Ethiopian 72% of surgical facilities lacked consistent running water, 59% of facilities had interrupted electricity, and 33% of facilities did not have a continuous oxygen supply. 61% of facilities had only one or no functional operating rooms. Also audits show 29% of hospitals had a reliably functional X-ray machine and 25% a functional ultrasound. This broken or unreliable equipment frequently contributes to service interruptions. Running water, drugs, power, oxygen,

and blood banking are frequently unavailable in hospitals. For the large population covered, the average hospital had only two operating rooms (15,20,21).

The health workers in hospital like surgeons were overwhelmed by patient volume and frustrated by lack of material resources and equipment. Numerous surgeons commented on the inadequacy of training and felt that medical education is not a government priority. They reported an insufficient number of anesthesiologists, nurses, and support staff. Perceived inadequate financial compensation and high workload led to low morale among surgeons (13).

There is poor utilization of surgical safety checklist (25.22%), poor implementation of anesthesia safety i.e. (62.1%) hospitals have met the minimum requirements, high elective case cancellation (21.41%), and high surgical site infection (21.41%); that leads to poor health outcome and patient dissatisfaction. At the time of program implementation there is difficulties in communication, limited strategies for addressing adaptive (as opposed to technical) and resource scarcity (12,22–24).

The last year Kambata Tembaro zone health department HMIS report on surgical service show; peri-operative mortality is 0.26 and anesthetic adverse outcome 0.39. The surgical site infection rate 0.11, SSCL utilization rate 88% and delay for elective surgical admission 5.7 (25).

To the best of the researcher's knowledge, there has been no study done on the availability of resources, compliance, and patient satisfaction levels in public hospitals of study area related to surgical services. As a result, the purpose of this study has been to determine the surgical service implementation evaluation for the aforementioned gaps at public hospitals, and at the end of the investigation, the result is used to fill the gaps identified during the implementation evaluation.

1.3: Significance of the study

The study helps to generate relevant information about the SaLTS initiative in terms of resource availability, and compliance of health care providers towards national guidelines. And also examine the surgical patients' satisfaction level with the services they receive.

The findings of this study will help hospital managers to improve at the hospital level by identifying gaps in resource allocation, training, and skills. The findings will also be helpful for

surgical staff to know gaps in patient care practice and improve it according to the guideline as well as contribute to improving patient care. For the population, it will contribute to receiving safe surgical service. Also the finding of this study helps program coordinators to identify areas that need special attention and further follow up for program improvement. For researchers, it will be baseline data on safe surgical service overall implementation status.

Chapter Two: Description of the program

2.1: Stakeholders of the program

Stakeholders of the Saving Lives through Safe Surgery (SaLTS) initiative were identified during Evaluability Assessment (EA). During identification utility, feasibility, propriety, and accuracy standards of evaluation were considered and priority was given to those stakeholders who can provide credible data for the evaluation and are responsible for the day-to-day implementation of the activities.

Table 1: Stakeholder Analysis for Evaluation of SaLTS initiative in Public Hospitals of Kambata Tembaro Zone, Southern Ethiopia, 2022

Stakeholder	Role in the program	Interest in the evaluation	Role in the evaluation	Communication strategies	Level of importance
SNNPR Regional Health Bureau (Quality unit SaLTS initiative focal person)	Planning Resources allocation Supportive supervision M&E	Use results for planning, Use findings to support the initiative	Describing the program Involve in developing evaluation question and indicators	Tele phone/ Email	High
Kembata Tembaro Zonal health Department (Department head and Medical service unit coordinator)	Planning Resource allocation Supportive Supervision M&E	For planning To support the program To learn from experience	Involved in developing evaluation question, Indicators and judgment parameter Sources of data Facilitation	Face to face interviewee	Medium
Dr. Bogalech Gebre memorial Hospital Primary hospitals - Shinshicho - Doyegen	Planning Availing equipment's for care M&E	Use results for planning To know and fill skill gaps	Source of data Involved in developing evaluation question and indicators	Face to face interviewee,	High

- Mudula - Hangecha		To develop new strategy To learn from experience	Setting judgment parameter Facilitation		
Service providers (surgeons, anesthetist and nurses)	Planning Providing the services	Knowing their patient caring behavior To update their knowledge based on guide line	Involved in developing evaluation question Setting Judgment parameter As sources of data	Face to face interviewee	High
Beneficiaries	Utilization of the service	Receiving quality services Receiving information	Sources of data	Face to face interviewee	Medium

Hint

Low: The stakeholders cannot affect the outcome of the evaluation heavily and have no/little implementation influence and importance. (Little affect).

Medium: The stakeholders can have impact on outcome of evaluation, somewhat influential and they have some importance. (Some effect).

High: The Stakeholders a have significant impact on the outcome of evaluation, implementation influence and importance. (Highly affect the evaluation) (26).

2.2: Program Goal and Objective

Program Goal

- ✚ To contribute to the reduction of morbidity, disability, and mortality and to improve the health status of the community through safe surgical service.

General objective of the program

- ✚ To provide saving life through safe surgery service for all patients attending the surgery department of the hospitals in 2022.

Specific objective of the program

- ✚ To increase implementation of safe surgery from 70% to 85% by the end of 2022
- ✚ To increase the availability of functional medical equipment's to more than 90% by the end of 2022.
- ✚ To increase safe surgery check list use from 88% to 95% by the end of 2022
- ✚ To increase patient satisfaction with surgical service from 7.1 to 8.5 by the end of 2022

2.3: Major strategies

The national safe surgery strategic plan and implementation manual of the SaLTS initiative use the following strategies to overcome surgical service constraints:(27,28).

Awareness creation: - Build awareness through a campaign to target health care professionals both directly working in surgery as well as more broadly working on maternal issues (i.e., health service managers, surgeons, health workers, health trainees, and professional associations).

Improving community participation:- public forum, availing suggestion boxes in service delivery areas, establishing compliant handler committee, involving community representative in staff meeting.

Utilizing national saving life through safe surgery initiative standards: - regular monitoring and supervision by using national standards tools.

Improve patient involvement on their care: - involve patients and families during surgical care.

Improving human resource development and leadership skills: - provide long term and short term training, availing reference materials and guidelines.

Strong monitoring and evaluation system: - regular surgical audit and utilize the finding for service quality improvement.

2.4: Program resource and activities

2.4.1 Program resources

According to national guideline, the resources needed for giving surgical care are (29):

Infrastructure: well-equipped operating room (contains; shelf, telephone personal lockable locker, water, electricity), rooms (separate close exchange room for male and female, instrument processing room)

Medical supplies for surgical procedures: Functional OR table, anesthesia machine, Major set, monitoring machine, LP set (lumbar puncture set), BP apparatus, stethoscopes, thermometer, stretcher, wheel chair, weight and height scale, measuring tape, Steam or dry sterilizer, Oral and

naso gastric (NG) tub, ambu bag, suction machine and tub, light source, tourniquet, minor set, pulse oximeter.

Surgical care guidelines, recording and reporting tools: history sheet, Safe surgical check list format, vital sign sheet, medication administration sheet, discharge summary sheet, national safe surgical standard guidelines. Registers include operation register, scheduling register, admission/discharge register, inpatient ward register, referral register and including the logbook of anesthesia and surgical site infection.

Human resource: surgeons, anesthetist, nurses and other supportive staff.

2.4.2: Program activities

- Providing training
- Availing medical equipment
- Documentation
- Assessing clients per standard
- Doing surgery per protocol
- Providing post-operative care
- Keeping patient privacy
- Taking informed consent
- Conducting supportive supervisions
- Conducting clinical audit

2.4.3: Program outputs

- ❖ Number of surgery department professionals received SaLTS initiative service training
- ❖ Number of clients received pre anesthesia assessment
- ❖ Number of patients who had correct diagnosis
- ❖ Number of patients who had correct pre-operative care
- ❖ Number of patients who had surgery
- ❖ Number of patients who had correct post-operative care
- ❖ Number of procedures with privacy of the patient maintained
- ❖ Number of procedures with informed consent taken
- ❖ Number of supervision done by respective bodies

- ❖ Number of clinical auditing

2.4.4: Program outcome

- ✚ Improved knowledge and skill of surgical team
- ✚ Improved surgical team patient caring behavior
- ✚ Using guideline and check list
- ✚ Improved surgical service utilization
- ✚ Increased patient satisfaction

2.4.5: Program impact

- ❖ Reduce morbidity, disability and mortality related to poor surgical service provision

Program logic mode

A logic model is a realistic and logical representation of how a program would operate under specific environmental variables to solve problems. It establishes a shared understanding of the program and establishes expectations for resources, consumers served, and outcomes. As a result, it's useful for exchanging ideas, detecting assumptions, forming teams, and communicating (30).

This logic model summarizes the key elements of the SaLTS initiative by showing the logical relationships among the resources that are invested, the activities that take place and the benefits or changes that result. All of the links reveal a significant relationship between input and impact.

Statement of the problem In Ethiopia, Safe surgical service implementation is a long-time problem. There is poor implementation of anesthesia safety, high elective case cancellation, poor utilization of surgical safety checklist, and high surgical site infection; which leads to poor health outcomes and patient dissatisfaction (22–24).

Goal: To contribute for reduction of morbidity, disability, mortality and to improve health status of community by safe surgical service.

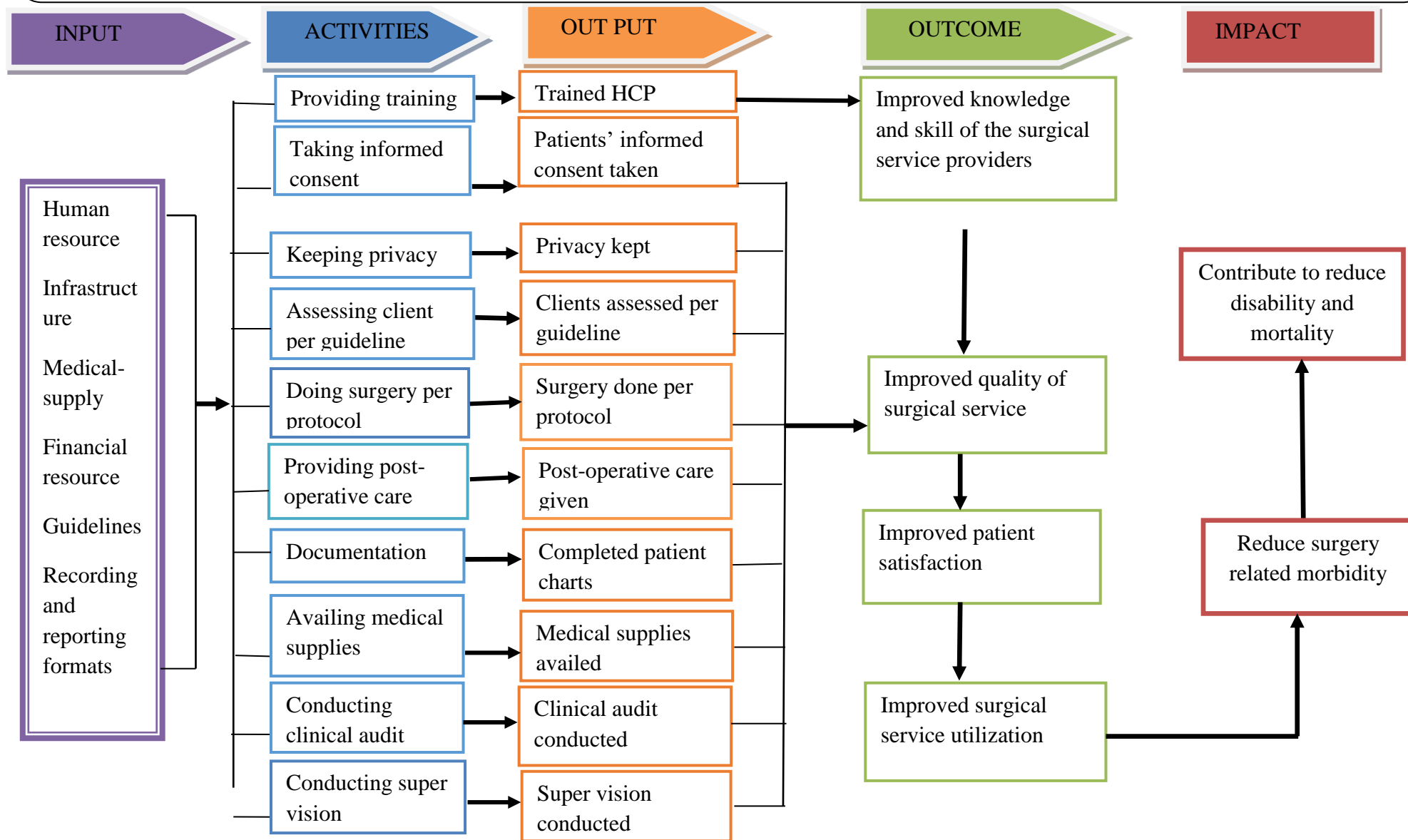


Figure 1: Logic model of saving life through safe surgery initiative of public hospitals in Kambata Tembaro zone, South Ethiopia 2022 (developed from program document)

2.4.6: Program development

The SaLTS initiative was the second Global Patient Safety Challenge that was launched in 2007 to improve the safety of surgical care around the world. The goal of this Challenge is to improve the safety of surgical care around the world by defining a core set of safety standards that can be applied in all WHO Member States. To this end, working groups of international experts were convened to review the literature and the experiences of clinicians around the world. They reached consensus on four areas in which dramatic improvements could be made in the safety of surgical care. These are: surgical site infection prevention, safe anesthesia, safe surgical teams and measurement of surgical services (17,31).

The 2015 World Health Assembly (WHA) Resolution 68/15 was introduced as a result of understanding the importance of surgical care in a country's health and economic development. The Resolution recognizes surgical care as an essential part of universal health coverage. With this shared aim, the Ethiopian FMOH launched the Saving Lives through Safe Surgery (SaLTS) initiative in 2015. In October 2015, the Ministry launched the fifth strategic plan titled Health Sector Transformation Plan (HSTP) 2015/16 - 2019/20 which is aligned with country's second growth and transformation plan (GTP-2). The HSTP identifies quality and equity as cornerstones of the health care transformation agenda that focuses on essential and emergency surgical and anesthesia care in addition to maternal, neonatal and child health, nutrition, chronic non-communicable diseases, and infectious diseases(28).

In line with the quality and equity transformation agenda and as part of recognizing the key roles in essential and emergency surgical care plays in achieving universal health coverage, the FMOH has prioritized surgical and anesthesia care by launching the national flagship initiative SaLTS. Recognizing Ethiopia's limitations in providing safe and essential surgery, the Federal Ministry of Health (FMOH) launched the (SaLTS) initiative in 2015 (11,32).

Major achievements under this initiative include: National SaLTS project team established under the health service quality directorate (HSQD) and SaLTS plan prepared and being implemented. Functional National SaLTS technical working group established, SaLTS leadership/advisory committee is being established at regional and hospital level (11).

National anesthesia roadmap, list of national essential surgical procedures; national perioperative guidelines developed and approved for monitoring and evaluation. . The safe surgery check list (SSCL) is proven to decrease peri-operative complications, including SSI, and has been adapted for the Ethiopian context and implemented nationally. At the level of service there was improvement like Peri-operative mortality decreased from 1.1 to 0.8, surgical volume in public hospitals improved from 26,975 to 187,249, and reduced a national surgical backlog of 11,880 to 7299 (39% reduction) and Innovative oxygen production system has been implemented in some hospitals (33).

During the implementation of the program, there was some confusion about the objectives and the roles and responsibilities of the partners. Logistical issues with communication difficulties, and authority gaps between what team members had and what they needed. Limited solutions for overcoming adaptive rather than technical difficulties, the consequences of hierarchy, and resource limits were among the primary challenges encountered during the initiative implementation (1).

In 2016, Safe Surgery 2020 launched its programs in Ethiopia by establishing partnerships with the FMOH and other local partners including the Surgical Society of Ethiopia, Ethiopian Society of Anesthesiologists, Ayder University Hospital (Mekelle), Felege Hiwot Hospital in association with Bahir Dar University, Addis Ababa University School of Medicine, and others. Safe Surgery 2020 programs are designed to support implementation of the SaLTS strategy. Saving Lives through Safe Surgery II (SaLTS II) (2021–2025), is a continuation of the previous national surgical care strategy (2016–2020). Based on the lessons gathered from the previous national surgical care strategy evaluation now on implementation with involving various directorates in the Ministry of Health (MoH) and agencies, professional associations, partners, and health facilities (32,34).

Chapter Three: Literature review

3.1: Availability dimension

In a study conducted on the provision of emergency and surgical care in sub-Saharan Africa using aggregate data from the Service Provision Assessments and Demographic and Health Surveys of five countries, only 19–50% of hospitals had the ability to provide 24-hour surgical care. Lack of basic infrastructure and surgical supply problems were the significant challenges to providing surgical services (16).

3.1.1: Basic infrastructure availability

The Essential Surgery and Anesthesia in eight Low and Middle-Income Countries study found that, no country had 100% of facilities reporting continuous supply of uninterrupted water, electricity, or oxygen, and that most had less than 50% availability; the overall averages were 50%, 36%, and 21%, respectively. Assessment of capacity for surgery, obstetrics and anesthesia in studied in 17 Ghanaian hospitals using a WHO assessment tool show operating room 100% (17/17), running water 94% (16/17) and electricity 82% (14/17). In a survey on surgical capacity in rural Nigeria, it was discovered that primary and secondary hospitals had flowing water (82.3%) and just 50.3% of the hospitals had electricity from the grid (35–37).

An assessment of 29 facilities in multiple regions of Ethiopia showed that 72% of surgical facilities lacked consistent running water, 59% of facilities had interrupted electricity, and 33% of facilities did not have a continuous oxygen supply. Other study done in Tigray and Amhara hospitals reported varying availability of basic infrastructure, including constant availability of electricity (9 of 15) and running water (5 of 15). Ethiopian SaLTS tool assessment in 14 hospitals in the SNNP Region of Ethiopia show two (18%) reported consistent running water, zero had uninterrupted electricity, and seven (64%) had a continuous OR oxygen supply (32,38,39).

The SaLTS national strategic target planned to increase the proportion of health facilities with electricity from 76% to 100%. At the same time to increase the proportion of health facilities with an improved water supply from 59% to 90% (34).

3.1.2: Medical supplies availability

Study conducted in Central Africa on providing surgical care and handling surgical needs 15.7% cited lack of specialized equipment as a major problem and 3.9% cited the lack of drugs required to conduct a successful operation. Only nine of the 67 pieces of equipment were available at all hospitals for all patients all of the time(21,40).

In a survey on surgical capacity in Nigeria, it was discovered that primary and secondary hospitals had medical records (95.9%). Additionally, just 37.5% of all facilities had a blood bank, while 43.8 % had X-ray equipment. Only about half of the facilities offered general anesthesia, and only 20% had an anesthesia machine. Only 44.5% of the facilities had a pulse oximeter (37).

Ethiopian 2018 SARA report show the most available surgical equipment was needle holders (95 percent), surgical scissors (87 percent) and tourniquet (87 percent) whereas oxygen (12 percent) and suction apparatus (20 percent) were the least available. Among medicines and commodities, skin disinfectant (98 percent), Lidocaine (1% or 2% injectable) (98 percent), and sutures (100 percent) were the most available items. Splints for extremities were least available (4 percent) (41).

3.1.3: Human resource availability

Institutional base cross sectional study done in central Africa, each hospital had an average of one qualified surgeon. 3.65 qualified surgeons per million people were reported by district hospitals. In addition, among public facilities, district hospitals had the largest number of general doctors performing surgery and anesthesia combined, with 13.86 per million people. The general hospitals had the most qualified surgeons on hand, with a median of 11.5 available. Similarly, general hospitals reported having a median of four qualified anesthesiologist physicians on hand, whilst other facilities reported having none. (21) .

In a study of hospitals in five Sub-Saharan African nations, 14% to 76% of those polled had training and supervision. According to a study of Zambian hospital staff, they may perform better if they had more frequent briefings, which would allow them to share the knowledge needed to provide good surgical services. Insufficient surgical offerings were attributed to a lack of training by employees involved by 11.7 % of respondents, while low staffing levels were cited by 9.1% (16,42).

A study conducted in two Ethiopian regions found that thirteen of the fifteen hospitals lacked any form of specialty surgical physician, including surgeons, obstetricians, or anesthesiologists. Non-physician clinicians, such as Integrated Emergency Surgical Officers, a mid-level surgical provider in Ethiopia's health system, were apparently accessible 24 hours a day, seven days a week to perform surgical treatments in eight of nine Amhara hospitals. Three out of five hospitals in Tigray indicated that non-physician providers were available 24 hours a day, 76–100% of the time. (38).

3.1.4: Surgical Service availability

According to a study conducted in Tanzania, surgical volume is high, with 54.6% of planned operating days performed over the five-month subset analysis period. There were 238 cancellations (20.8%) of planned procedures, the most common reason being time constraints 31.1%; however, unpaid patients contributed for just as many cancellations as unavailable equipment 6.3% (42).

Retrospective study done in Africa, only 0.1–0.3 facilities per 100,000 populations had all three bellwether procedures available, namely Laparotomy, open fracture management and caesarean section. In all the countries, the facilities that reported offering surgical services generally had a shortage of the necessary items for offering the services and this varied greatly between the countries, with the facilities having on average 27–53% of the basic surgery, 56–83% for comprehensive surgery, 49–72% for comprehensive obstetric care and 54–80% for blood transfusion. Furthermore, few facilities had all the necessary items present. However, facilities that reported offering surgical services had on average most of the necessary items for the prevention of infection (16,18).

According to the findings of Ethiopia's service availability and readiness assessment (SARA), basic surgical services were supplied by 43% of institutions (excluding health posts). SNNPR basic surgical service coverage was 40%. Hernia repair, appendectomy, episiotomy, and dilatation and curettage all had significant rates for comprehensive surgical services and Laparotomy (97%). Cleft palate repair (39%) was less common, as were club foot repair (58%) and obstetric fistula repair (61%). This report also show 97% of facilities were doing blood typing and 34 % were doing cross match testing (41).

3.2: Compliance of surgical care providers

According to a WHO survey of eight hospitals, 80.2% of respondents said the surgical safety checklist was simple to use, while just 19.8% thought it took a long time to complete. The majority of respondents felt that the checklist improved OR safety and communication (80.2 % and 84.8%, respectively), and that the checklist helped prevent errors in the OR (78.6%). Only four respondents (1.6%) disagreed with this statement (6).

The national data management system, the HMIS/DHIS2 platform shows that the overall average rate of SSCL use for major surgeries was (81 percent) in public health facilities and private (26 percent) health facilities. The second SaLTS initiative target planned to reach the utilization of SSCL to 100% (34,43).

According to research conducted at Gonder Hospital, a total of 282 procedures were performed, with checklists being used in 39.7% of cases. The majority of these checklists (61.6%) were utilized during emergency procedures requiring general anesthesia (75.9%). The overall compliance and completion percentages were 39.7% and 63.4% respectively. The missed sign-in, time-out, and sign-out were (30.5%), (35.4%), and (45.7%), respectively. Non-users mentioned a lack of previous training (45.1%) and a lack of coordination among surgical team members as the main reasons (21.6%). Study done at two region of Ethiopia (SNNPR and Amhara) indicators reported included compliance with the WHO Surgical Safety Checklist in (92.1%) cases (44,45).

In a hospital-based cross-sectional study conducted at Hawassa University Comprehensive Specialized, more than two-thirds of women (70.4%) reported receiving surgical informed consent (SIC) counseling immediately prior to their surgery (before the client was placed on the operation table), while 8.8% (2% among elective surgical clients and 14.8% among emergency surgical clients) reported receiving counseling on the operation table. Meanwhile, 13% of women said they had counseling the day before surgery, and 8.8% said it was the same day. Clients who had elective surgery had a reduced chance of acquiring SIC on the operating table rather than 1 day before surgery. Study done in public hospitals of Gamo & Gofa zones more than one third, (42.4%) of the surgical patients were consented by a nurse with majority of the consenting (52.2%) done immediately before the surgery (46–48).

3.3: Clients satisfaction level and associated factors to surgical service

Hospitals with high patient satisfaction provided more efficient care with shorter lengths of stay for surgical patients. These hospitals also had higher surgical process quality, lower surgical readmission rates, and lower surgical mortality rates. Patient satisfaction scores varied widely across different hospitals. Patient overall satisfaction scores ranged from 47% to 83%, with a mean of 67.5% (49).

Provider related factors: Hospitals in Eritrea conducted a study, and only half of the patients said they were provided enough information regarding anesthesia, and 85% said the anesthetists didn't introduce themselves to them. The majority of patients were satisfied with the anesthetist's ability to listen (84%) and act (89.8%) in response to their demands. The entire median professional competence score was 75%. The average level of satisfaction increased with age ($p = 0.033$). Males (70.9% vs. 67.8%, $p = 0.001$) were more satisfied than females (70.9 percent vs. 67.8%, $p = 0.001$). Patients from urban areas were more satisfied than those from rural areas (70.36% vs. 68.28%, $p = 0.033$) (50).

In Gonder's referral and teaching hospital, patient satisfaction with operation theatre staff consideration of patient privacy was very satisfied at 27.9%, satisfied at 60.6%, neutral at 6.3%, dissatisfied at 4.8%, and very dissatisfied at 0.4%. Patient satisfaction with operation theatre staff's open attitude towards patients was very high at 27.5%, satisfied at 63.6%, neutral at 5.9%, dissatisfied at 3%, and very dissatisfied at 0% (51).

Study done at Debre Tabor Comprehensive Specialized Hospital, in North Central Ethiopia the overall mean satisfaction score of patients with peri-operative anesthesia service was 62.62% [95% CI¼ (61.31–64.03)]. About 53.7% [95% CI¼ (48.6–58.4)] patients were satisfied with the peri-operative anesthesia service. Among the three dimensions, fear and concern showed the highest mean satisfaction level (72.06%), while information provision was showed the lowest mean satisfaction level 60.32%. Also other than peri-operative domains, the mean satisfaction score of fear and concern related to anesthesia was 69.17%, professional competence 70.71%, and service provision 65.49% (52).

Study done on quality of peri operative information provided adult surgical patients at Arba Minch General, Chenchu District and Sawla General Hospitals, Southern Ethiopia, 78.5% patients receive adequate information by the OR nurses, 87.3% OR nurses attentive to their questions, 51.2% nurses give explanation to their complaints like pain or nausea. Also 86.3% ward nurses communicate respectfully to patients, 80.2% nurses' provide prompt response for patient call and 78.3% the ward nurses respond appropriately to their health progress. According to this study, the proportion of adult surgical patients who received good quality perioperative information are only 36.6% (48).

Organization related factors: Study done at north showa zone public hospitals, facility-related satisfaction 64.6% were fell comfort for examination rooms and 58.1% were interested regarding to cleanliness of the wards. Service appropriateness related satisfaction, most respondents 71.5% were satisfied with the diagnostic service. Likewise, high level of satisfaction was reported on the progress of the treatment 69.9%, by the availability of prescribed drugs 73.4%, by the payment condition 73.0%, and by access to laboratory and x-ray diagnosis were 70.5% (53).

In a study done at Debra Tabor hospital for perioperative care of surgical clients, more than half (56%) of the respondents were not satisfied with the cleanliness of the toilet. The majority (98.2%), (97.9%), and (97.3%) of the respondents were satisfied with the quietness of the room for rest, access to requested laboratory tests, and room light and ventilation, respectively. More than three-fourths (76.6%) of the respondents were satisfied with the availability of drinking water. Only 3.6% of the study participants were dissatisfied with the accommodation in the room. More than three-fourths (76.6%) of the respondents were satisfied with the cleanliness and comfortableness of the room (52).

Patient related factors

Study conducted on patient factors has discovered that younger patients (18–29 years old) have a lesser probability of being entirely satisfied than older patients (> 80 years old, OR 0.54; 95 % CI 0.43-0.69). Patients aged 40–60 years old reported a mean level of satisfaction that was at least 5% higher than those under 40 years old. Unmarried patients had a lesser odds of being entirely satisfied than married patients (OR 0.91; 95% CI 0.84-0.99). Patients' satisfaction with surgical

care was examined in terms of their satisfaction with the financial aspects of their care (52 %, CI: 50.0–54.1%) in a study conducted in low and middle-income nations (54,55).

Conceptual Framework

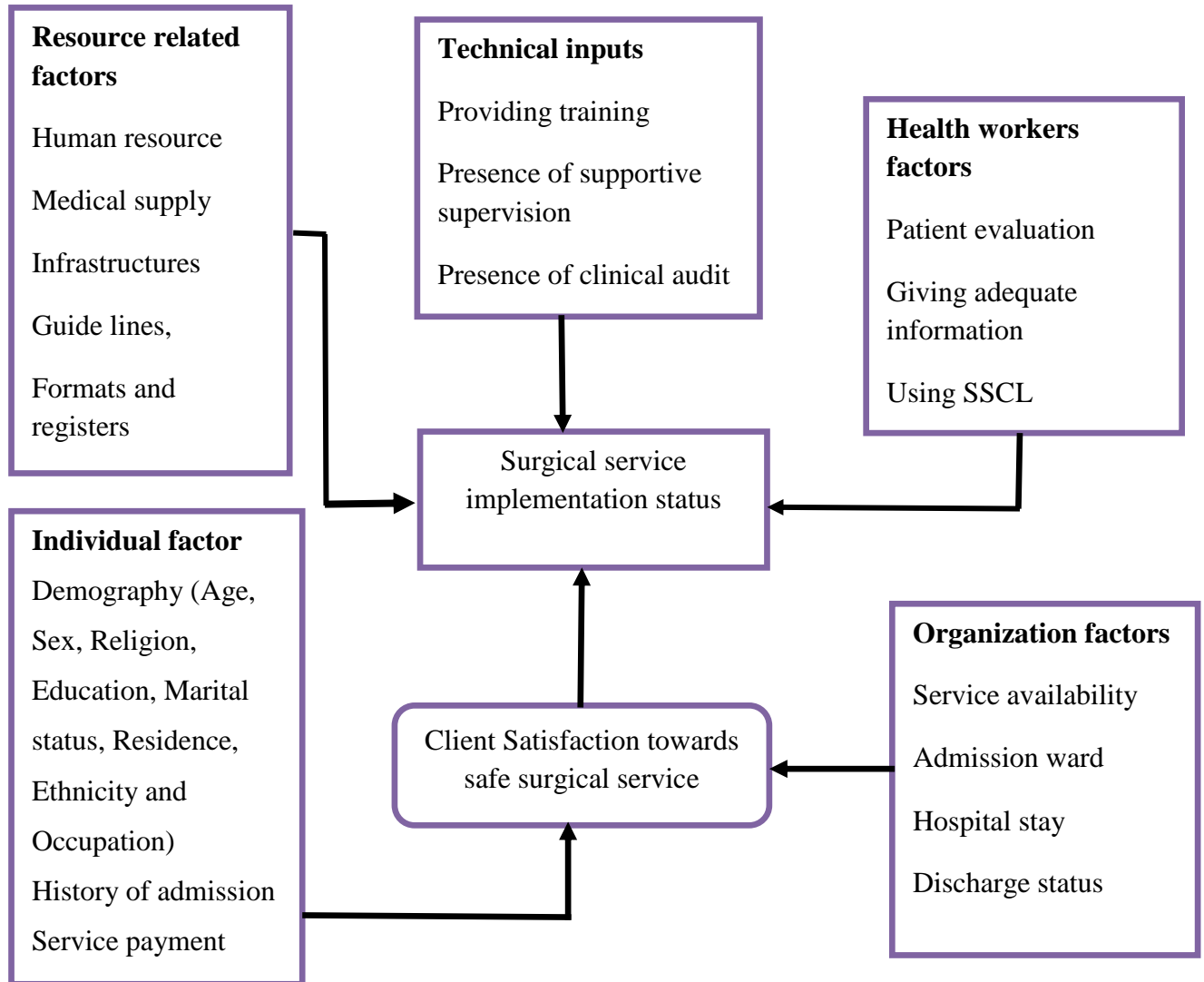


Figure 2: Conceptual framework of SaLTS initiative of Kambata Tembaro zone public hospitals 2022. (Developed from different literatures) (16,21,35,48,49,54–56)

Chapter Four: Evaluation Questions and Objectives

4.1: Evaluation Questions

- ❖ Are the resources needed to provide surgical service available? If yes how? If not why?
- ❖ Does the surgical team deliver services in line with the SaLTS guidelines? If yes how? If not, why?
- ❖ What is the satisfaction status of clients with surgical services?
- ❖ What are the factors associated with patients' satisfaction towards surgical services?

4.2: Evaluation Objectives

General Objective

- ❖ To evaluate saving lives through safe surgery implementation status in public hospitals in Kembata, Tembaro zone, southern Ethiopia, 2022.

Specific Objectives

- ❖ To assess the availability of resources required to provide surgical services in the Kembata Tembaro zone public hospital in 2022.
- ❖ To assess surgical team compliance in line with the SaLTS guidelines in the public hospital of Kembata Tembaro zone in 2022.
- ❖ To determine the level of client satisfaction with the surgical services provided by the public hospital in the Kembata Tembaro zone in 2022.
- ❖ To identify factors associated with clients' satisfaction with surgical services in public hospital Kembata Tembaro zone in 2022.

Chapter Five: Evaluation Methods and Materials

5.1: Study area

Kambata Tembaro zone is one of the zones in SNNPR with a total population of 984428, male 487883 (49.56%), female 496545 (50.44%), rural 830562 (84.37%) and urban 153866 (15.63%). The zone is bordered on the south by Wolayita, on the southwest by Dawro, on the northwest by Hadiya, on the north by Gurage, on the east by the Halaba zone, and on the southeast by an exclave of the Hadiya Zone. The administrative center is in Durame. The health institutions in the zone are five hospitals: one general and four primaries. Also, there are 33 health centers, 137 functional health posts, and 133 private health facilities. There are 74 full-time surgical care professionals and 1808 surgeries done in Kambata Tembaro zone public hospitals (57).

5.2: Study Period

The evaluability was assessment conducted from February 16 – March 3 /2022. This evaluation data collection was conducted from May 10 – June 25/2022.

5.3: Evaluation approach

The primary purpose of this evaluation is for program improvement. So, a formative evaluation approach was used. A formative approach looks into how the program is implemented. It also gives clues to examine whether or not the assumed operational logic corresponds to actual operations and identifies the immediate consequences with the primary purpose of improving the day-to-day operations of the programs (58).

5.4: Evaluation design

Facility based single-case study design with mixed method was used. Case study design is the preferred study design for answering "why" study questions and when the study needs to focus on contemporary phenomena. Hence, a "why" question is being asked about a contemporary set of events over which the investigator has little or no control (59,60).

The case of this evaluation is the safe surgical services implementation in public hospitals in Kambata, Tembaro zone. To get a more complete understanding of the safe surgery and to have

more confidence in the findings, the evaluation had different evaluation questions that required different data collection methods, and also, each evaluation question requires more than one method to measure its indicators. Because of this, a mixed method of data collection (quantitative and qualitative data collection methods) by a sequential exploratory strategy was used.

5.5: Focus of evaluation and dimensions

This evaluation focuses on the process of the SaLTS service to explore the extent to which the program is operating as intended and meeting clients' expectations. And it also considers intermediate outcomes of surgical services including patient satisfaction with surgical services.

The evaluation dimension includes:

Availability/structure: The resources that must be supplied for the activities to be carried out, like the physical structure, people, equipment, and materials (61). In this evaluation, this dimension measures the availability of human infrastructure, resources, medical supplies, guidelines, reporting formats and surgical services.

Compliance/process: This refers to whether the program has been delivered to clients or program users according to standards and/or guidelines. It measures how the program has been working toward achieving the objective of the program (61,62). In this evaluation, this dimension measures the level of safe surgical activities in line with SaLTS guidelines.

Satisfaction/outcome: Patient satisfaction is the perception of care received compared with the care expected, and patients evaluate the health-care services as well as the providers from their own subjective point of view (70). In this evaluation, this dimension measures the overall satisfaction of patients towards surgical services received at ward and operation room.

5.6: Indicators/Variables

5.6.1: Indicators

For indicator development, national safe surgery KPI manual 2018, Ethiopian HMIS indicator guide 2021 and SARA manual were used as a reference (56,65,66). Majority of indicators were adapted from these sources, and some of them were developed based on the local situation by

considering the implementation status of the program. However, due to a lack of resources for data collection and analysis, a multi-voting technique was used to select the indicators.

Eleven purposively selected stakeholders; General hospitals quality unit leader, one primary hospital Chief Executive Officer (CEO) ,one chief clinical officer(CCO), two surgeons, one anesthetist, two primary hospital quality unit heads, two scrub nurses and one nurse director were included to develop indicators. In this way priorities was given to national KPIs then local KPIs included. Totally, seven availability, seven compliance, and sixteen satisfaction indicators were selected.

Availability dimension indicators

- Surgeon to patient ratio from May 21 – June 20/2022
- Proportion of basic surgical services availability
- Proportion of comprehensive surgical services availability
- Proportion of medical supplies available in the hospital's surgical department
- Number of hospitals having SaLTS standard guideline on the day of assessment
- Number of hospitals having all standardized surgical documentation formats
- Proportion of surgical teams that received at least one SaLTS initiative training session between April 2021 and May 2022

Compliance dimension indicators

- Proportion of clients received comprehensive assessment based on the guideline of SaLTS initiative
- Rate of surgical safety checklist utilization
- Proportion of patient charts with completed formats
- Proportion of patients privacy maintained
- Proportion of patients informed consent taken
- Number of surgical auditing conducted with written feedback July 2021–June /2022
- Number of supportive supervision conducted in past one year July 2021–June /2022

Acceptability/satisfaction

- Percentage of patient satisfaction mean score with the way nurses treat them with politeness and respect.
- Percentage of patient satisfaction mean score with the way nurses listen attentively.
- Percentage of patient satisfaction mean score with the way nurses explain things to them in a way they can understand.
- Percentage of patient satisfaction mean score with the way doctors treat with politeness and respect.
- Percentage of patient satisfaction mean score with the way doctors listen attentively.
- Percentage of patient satisfaction mean score with the way doctors explain things to them in a way they can understand.
- Percentage of patient satisfaction mean score with pain control.
- Percentage of patient satisfaction mean score with the call and received assistance as soon as possible.
- Percentage of patient satisfaction mean score with the cleanliness and comfortableness of the ward.
- Percentages of patient satisfaction mean score with the staff taking into account their privacy.
- Percentage of patient satisfaction mean score with the operation theatre staff's respect.
- Percentage of patient satisfaction mean score with the professionalism of the operating room staff.
- Percentages of patient satisfaction mean score with the operation theatre staff's attention to their questions.
- Percentage of patient satisfaction mean score with the operation theatre staff's attention to complaints like pain, nausea, and others
- Percentage of patient satisfaction mean score with the operation theatre staff take into account your personnel preferences

- Percentage of patient satisfaction mean score with the patient's confidence in the operating theatre staff

5.6.2: *Variables*

Dependent variable: Patient satisfaction toward safe surgery service

Independent variables:

Patient related factors

- Demographic and socio economic factors (Age, Sex, Religion, Educational status, Marital status, Income, Residency and Occupation)
- History of admission
- Payment of the service

Hospital related factors

- Functional medical supplies
- Admission ward
- Length of hospital stay
- Discharge status

5.7: Population Sampling

5.7.1: *Source population*

For quantitative data: All patients had surgery at surgical, obstetric, gynecologic, and orthopedic departments/units. All service document reviews from (July 1/2021–June 30/2022), like service registers, patient charts, log books, monthly and quarterly reports, feedback reports and all service provision infrastructure and medical equipment in Kambata Tembaro zone public hospitals.

For qualitative data: Zone health department and all program managers in public hospitals of Kambata Tembaro zone public hospitals were included.

5.7.2: Study population

For quantitative data: Selected patients attend the surgical, obstetric, gynecologic, and orthopedic departments/units. Selected the last one year document reviews from (July 1/2021– June 30/2022), like service registers, patient charts, log books, monthly and quarterly reports, feedback reports and other selected service provision infrastructure and medical equipment in Kambata Tembaro zone public hospitals.

For qualitative data: Selected zone health department unit and program managers in public hospitals of Kambata Tembaro zone public hospitals will be included.

5.7.3: Study unit and unit of analysis

Study unit:

For quantitative data: sampled surgical, obstetric, gynecologic, and orthopedic department/units patients, sampled patient charts; feedback reports from zone/lead hospitals; and surgical, obstetric, gynecologic, and orthopedic case audit reports, which fulfill the inclusion criteria.

For Qualitative study: Kambata Tembaro zone health department head, zonal health department quality focal person, hospital CEOs, hospitals CCOs, hospital quality unite heads, infection prevention and patient safety focal/coordinator, Surgical department head/coordinator, OR head, incident officers and scrub nurses who fulfill the inclusion criteria.

Unit of analysis:

Primary Unite of analysis: Admitted patients of the surgical, obstetric, gynecologic, and orthopedic department/units, surgical service registers, medical equipment's, and observation sessions.

Secondary unit analysis: Surgical departments

Final unit analysis: Kambata Tembaro zone public hospitals surgical service

5.7.4: Sample size determination and sampling procedure

There are five hospitals in the Kambata Tembaro Zone (one general and four primary hospitals). All five hospitals are involved in this study. Hence, the district has fewer than seven.

For quantitative study

Patient exit interview:

The sample size was calculated by using a single population proportion formula, considering the following assumptions: The overall rating of surgical services based on patient satisfaction is 64%. (Perioperative patient satisfaction and its predictors following surgery and anesthesia services in North Shewa public hospitals (67). These parameters were substituted in single population proportion formula.

$$\text{Where, } n = \frac{\left(z \frac{\alpha}{2}\right)^2 (p)(1-p)}{d^2}$$

$$n = (1.96)^2(0.64) (0.36) / (0.05)^2 = \sim 354$$

Assumptions

n= Sample size estimation of single population proportion

α = critical value at 95% CI (1.96)

p= Percentage of patients satisfied with surgical care by using (64%)

d = Marginal error/Degree of precision= 5 % (0.05)

Since the source population is less than 10,000 which is last year's third quarter SaLTS program achievement was 1727 taken as source population, it should be reduced by correction formula

$$n_f = \frac{n_o}{1 + (n_o - 1)/N}$$

$$n_f = 354/1 + (354 - 1)/ 1727$$

$$n_f = \sim 295$$

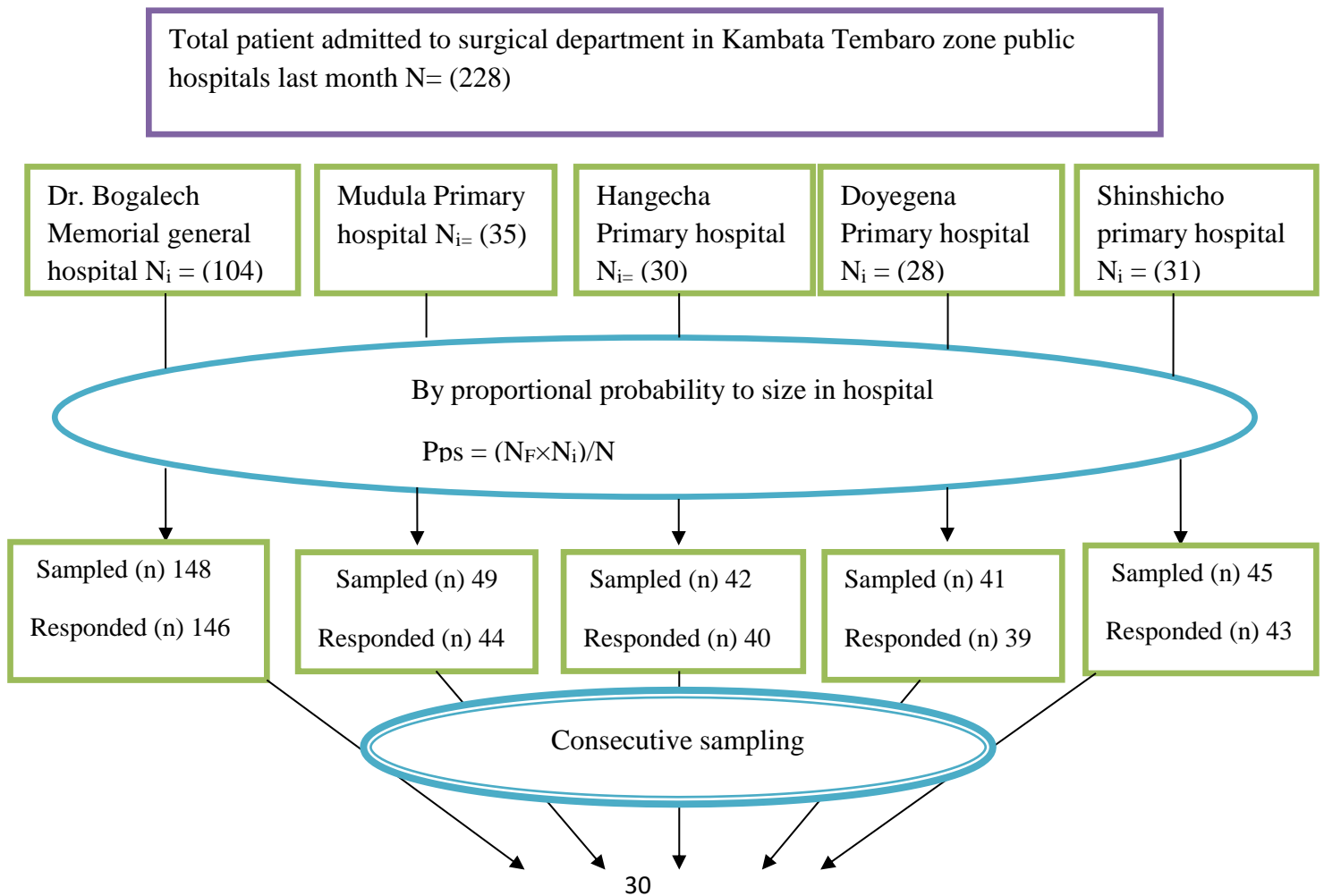
The calculated sample size was 295. Finally, by adding an expected 10% non-response rate, the final sample size is 325. Study participants are proportionally allocated to each hospital based on the last one-month HMIS report. The consecutive sampling technique (also known as total enumerative sampling, consecutive sampling is the process of conducting research including all the people who meet the inclusion criteria) was used to select study participants from each hospital(68). The index participant was the patients they admitted surgical, obstetric, gynecologic and orthopedic department/units for at least 24hrs after surgical procedures.

By using proportional probability to size (pps) = $(N_f \times N_i)/N$

Where, N_f =final sample size,

N_i =one month report of prior to study in each health facilities

N =total of one month report from each health facilities.



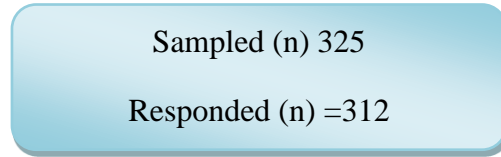


Figure 3: Summary of schematic presentation of sampling procedure of patient exit interviewee for evaluation of SaLTS initiative in public hospitals of Kambata Tembaro zone in 2022.

Document review:

Patients Chart: All patients' charts that was included in the observation 30 (40%) provider-patient interactions from a total of 74 full time surgical care providers along with one year of surgical service related documents was reviewed.

Resource Inventory: A total of five hospital resources i.e. human resources, medical supply, standard guidelines, recording and reporting tools, and admission rooms in the surgery was counted.

Direct observation (health workers to patient interactions)

The Agency for Health Care Research and Quality (AHRQ) for assessing patient safety and quality of clinical practices recommends that the sample sizes of clinical care providers to be included in the study be 30% to 50%. According to the standardized USAID observation guideline (it recommends 3-5 observation sessions per health care provider) (69,70). In order to observe an average of 40%, that means 30 providers per patient interaction from total of 74 surgical care providers in five hospitals. The average proportion of professionals in each hospital was considered.

When we see proportional surgical care givers in each hospital, Dr. Bogalech Gebre Memorial General Hospital includes 12 professionals, Shinshicho and Hangecha primary hospitals each include 5 professionals. Mudula and Doyegen primary hospitals include 4 professionals in observation based on the total number of surgical team members.

A total of 120 observations for reaction with surgical care givers in five hospital, i.e., a total of 120 observations were conducted. To minimize the Hawthorn effect, we excluded the first observations.

For qualitative study:

KII: A key informant interview was undertaken to obtain comprehensive information about surgical service management, service quality constraints, and possible solutions. Depending on the defined level of stake in surgical services, 19 key informants were purposefully included.

5.7.5: Inclusion and Exclusion criteria

Inclusion Criteria:

Patients admitted to surgical department and whose age is greater than 18 year

Admitted patients who spend at list 24 hours in the surgical department (Inpatient)

Non-psychiatric (principal diagnosis at discharge)

Key informants working at least for six month

Exclusion Criteria:

Patients who are critically sick and discharged as referral

5.8 Data collection

5.8.1: Data collection tools

Resource Inventory checklist: This tool help to assess the availability of program resources for the delivery of surgical services. The checklist was adapted from the national SaLTS strategic plan assessment tool. It includes questions that assess surgical services, medical supplies, infrastructure, human resources, guidelines, recording and reporting tools (27,71).

Observation checklist: The client-care provider interaction observational checklist was adapted from a cross-sectional research study of direct observation of hospitals care in five countries in East and Southern Africa, including Ethiopia (72).

Patient exit interviewee questionnaire: A structured questionnaire for patient exit interviews has been adapted from the Leiden Perioperative Care Patient Satisfaction questionnaire and the

Hospital Consumer Assessment of Healthcare Providers and Systems Survey (HCAHPS) (6)(75). The questioner had two sections and this modified questionnaire was used to assess patient satisfaction when they leave the facility.

Section one: contains patients' socio-demographic status; age, sex, religion, ethnicity, marital status, occupational status, place of residence, and average monthly income; patient health status; admission history; average hospital length of stay; and hospital conditions such as admission ward and payment for patients.

Section two: Patient opinion (satisfaction) towards the saving of lives through the safe surgery initiative service they received during their hospital stay: It contains 16 five-point Likert scale items, from completely dissatisfied to completely satisfied.

The reliability scale was determined and Cronbach's alpha coefficients calculated to assess the reliability of factors. The values of Cronbach's alpha coefficients show that it was within the range of recommended alpha value (>0.7) that means (0.94).

Key informant interview: It includes general questions about how the service has been going on; questions related to the availability of resources; compliance of healthcare providers; and questions related to opinions about barriers to service and possible solutions. The guide was prepared in parts based on the key informant's level of stake.

5.8.2: Data collectors

Data collection was conducted by three BSc. nurses and two health officers other than selected health facilities and experienced at least once in data collection. The overall supervision was carried out by one MSc holder from the academic staff of public health. Data collectors were to collect data from observation, resource inventory, document review, and client exit interviews while the principal evaluator conducted KII.

5.8.3: Data collection field work

For Quantitative:

Resources inventory: This tool assessed the availability of program resources for the delivery of

SaLTS initiative service that include inventory of medical supply, infrastructures, human resource and guide lines and formats as per standard.

Observation: Direct observations were conducted while surgical care providers assess the patient and provided care. The time of observation was at day time both morning and afternoon. The observer should have followed health provider protocol during observation both in ward and operation room.

Document review: During document reviews, permission from the relevant body at each health facility was obtained.

Client exit interview: For the privacy of the clients, an appropriate place (separate place was set for interview to protect the privacy of the client). Patients were interviewed about their socio-demographic history, their previous surgical admission, and surgical ward, operation room, and physician's service during hospital stay and their satisfaction status through face-to-face interview. The number of clients interviewed per day should be proportional to the number of patients discharged from surgical wards at each health facility. The index participants were the patients who have been admitted for at least 24hrs in the surgical admission room.

For qualitative data:

Key informant interview: Key informants were interviewed after conducting resource inventory, observation, and document review. A field note for each question and response was taken in Amharic, and an audio recorder was used. An interview guide with probes was used to clarify and expand on the key informant's response. The place of the interview was at the office of the respective key informant and a separate room for other experts. It was conducted by the principal evaluator himself.

5.8.4: Data Quality Control

For quantitative: Health professionals with BSc degree holders were recruited for data collection. In order to check the accuracy of data collection tools, 5% of the total sample size was pretested on a similar target group at Halaba general and shone primary hospitals. Two-days training were given for data collectors and supervisors on evaluation objectives, data collection tools, mobile-based data collection and ethical issues. Trained data collectors participated in pretested to adapt

themselves to the tools for the next work. During data collection, the whole procedure was supervised and checked frequently.

Based on the findings, necessary amendments like unclear and incomplete questions were made clear and complete in the data collection tools. To ensure adherence to data collection protocol and validity of data collection technique, supervisors and principal evaluators reviewed the collected data at the end of the data collection day for completeness. The data collection process was supervised closely and daily performance was checked overnight and planned for the next day. Any problems encountered were solved during data collection.

For qualitative (to ensure trustworthiness): A semi-structured interview guide was used for key informant interviews after translation into the Amharic language. During data collection, the whole procedure was supervised and checked frequently. An appointment time was set to ensure prolonged contact between the investigator and key informants. Detailed information about the circumstances was taken (both audio recordings and notes were used with probes). Triangulation via the use of different types of key informants at different sites was achieved.

5.9: Data management and analysis

5.9.1: Data cleaning and entry

For quantitative data collection, the mobile open data kite (ODK) tool was used for data collection. The completeness of the collected data was checked by the principal investigator and supervisor on a daily basis. Finally, the data was exported to SPSS version 25 for analysis. Regarding qualitative data, detailed data on the circumstances was collected by note-taking and audio recording with probing questions.

5.9.2: Data Analysis

Quantitative data analysis

The quantitative data were exported into SPSS version 25 software for analysis. Outliers and missing values were checked by frequency analysis. Recoding, categorizing, computing, counting, and other statistical analysis were done. Descriptive statistics, including frequencies, percentages,

means, and standard deviations, were calculated for resource and demographic variables. And also, other variables were presented using text, charts, and graphs.

Data on patient satisfaction was analyzed by converting it to percentages of the scale mean score. This algorithm provides an individual percentage mean score for each indicator, and the average of these scores were used to determine the overall degree of satisfaction of the study population. The mean of the percentage of maximum scale score (PMSS), as determined by the formula below, is used to determine the actual degree of patient satisfaction (76).

$$\text{PMSS} = \frac{(\text{Actual score} - \text{potential minimum score})}{\text{Potential Maximum score} - \text{potential minimum score}} \times 100$$

All the assumptions of linear regression were checked. The normality of the distribution was examined using a histogram and a p-p plot. The scatter plot was used to test linearity, and the residual versus fitted scatter plots were used to test homoscedasticity. The result showed all were fitted.

First, simple linear regression was conducted to identify candidate variables for multiple linear regressions; a significance level of p-value less than 0.25 was taken as a cut-off point for identifying candidates for multivariable regression. Multivariable linear regression analysis was conducted to identify independent factors associated with patient satisfaction; a significance level of p-value less than 0.05 and a 95% confidence interval as the criteria for significance association were taken and unstandardized β was used for interpretation (77,78).

Qualitative data analysis

For qualitative data, field notes and audio records were transcribed and translated to English for further analysis. Translated data was coded and classified into themes. The themes were reasons for the unavailability of program resources and a response to the poor compliance of health care professionals to the SaLTS initiative service. Then it was analyzed manually by thematic analysis, and the results were narrated and triangulated with respect to their respective dimensions.

5.10: Analysis matrix and judgment parameter

Judgment criteria: The criteria were agreed upon with the interest of stakeholders. The cut-off point was set by considering the implementation situation of the facilities and stakeholders. The cutoff point for the level of SaLTS initiative service implementation was decided to be $\geq 80\%$ implemented, 65–79% partially implemented, 50–64% poorly implemented, and $< 50\%$ not implemented. The overall level of implementation of the SaLTS initiative service was judged based on these criteria.

Weighting of dimensions and indicators: weight was given to each dimension in terms of its relative importance in the evaluation. By stakeholder agreement, it was decided as 35% for availability, 35% for compliance, and 30% for patient satisfaction by stakeholder agreement.

5.11: Ethical consideration

Ethical clearance was obtained from Institutional Review Board (IRB) of Jimma University's. A formal letter from the Kambata Tembaro zone health department was sent to the respective hospitals, and authorization from the facility management was sought. Each key informant and patient gave their informed agreement verbally to be interviewed and have their records kept. To protect the respondents' physical privacy, a separate location was set up for the interview. Participants were guaranteed the right to leave the interview at any time. Names and other personal information that would compromise the respondents' privacy were not taken or recorded. In addition, face masks and sanitizers were available for data collectors and interviewees, i.e., clients and key informants, for COVID-19 prevention.

5.12: Dissemination plan

The result will be reported to Jimma University's Institute of Health and the department of Health Policy and Management, Health Monitoring and Evaluation Unit. After the department approves it, a paper copy of the report will be distributed to each stakeholder, along with a detailed explanation of the findings. Within 30 days of the final defense, a one-day face-to-face conference with zonal health department and hospital administrators will be arranged to ensure that the findings are used.

Chapter Six: Results

Descriptions of study participants

A resource inventory of five hospitals having surgeries, which included general surgery, orthopedics, obstetrics, gynecology, and operating rooms, was conducted. Surgical service documents like surgical registration books, anesthesia registration books, supportive supervision minutes, quality improvement projects, and action plans were reviewed. Three hundred and twelve surgically admitted patients were included in the study.

Thirty surgical care providers participated in this study for observations. At Dr. Bogalech Gebre Memorial General Hospital, twelve professionals were involved, while Shinshicho and Hangecha primary hospitals each involved five surgical care providers. At Mudula and Doyegen primary hospitals, each hospital involves four professionals in observation. A total of 120 observations were made. Additionally, 120 patient charts were reviewed. This is done in accordance with their proportionate professional number. Nineteen Key informants were involved in this study.

6.1: Availability

6.1.1: Basic infrastructures availability

Basic infrastructures for SaLTS service provision include electricity with a backup generator, and consistent running water in the procedure room, sterile supply stores, recovery room, functional toilet, telephone and patient waiting area near the operation room. This study revealed that the overall infrastructure availability was (82%). Out of five, two (40%) lacked consistent running water and one (20%) lacked electricity with a backup generator. However, separate changing rooms for males and females are unavailable for staff and patients. At Mudula and Shinshicho primary hospitals, telephones in the liaison department are non-functional.

“.....We attempted to fully fill basic infrastructure in our hospital in order to keep our surgical department operational for 24 hours a day and to support our clients as much as possible. Some of our staff, especially electrical and water technicians are not following through on minor problems in a timely manner. That results in some interruptions in service delivery.”

[29 years old male medical doctor, CEO]

“.....Before six month we have a great challenge to provide surgical service 24hr because we have not fully functional generator. So that, by communicating with NGOs, with the woreda and city administrators and also by the help of our hospital board we bought new generator and now we provide uninterrupted service in all areas”.

[35 years old male KI, CEO]

“.....There is a lot of problems with the infrastructures around OR here in our hospital the number of rooms is not enough and no comfortable patient waiting area to fulfill the standards because the building was built before without plan of now day standard and now we have great budget shortage to build and rearrange rooms.”

[32 years old male quality unit officer]

6.1.2: Availability of Medical Supplies

This study revealed that SaLTS initiative's functional medical equipment and supply availability average was 70.66% and each hospital inventory demonstrated as.

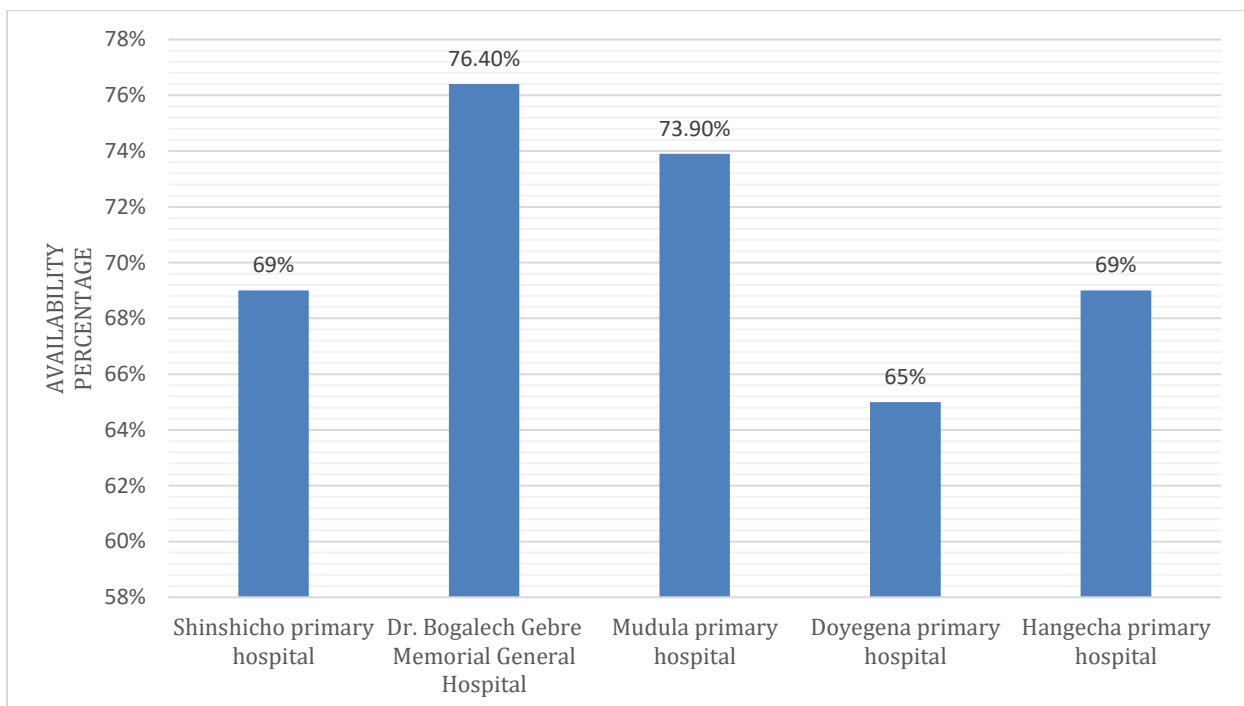


Figure 4: the functional medical equipment and supply availability in Kambata Tembaro zone surgical departments in public hospitals, SNNPR 2022

The majority of key informants agreed on the shortage of medical supplies that included medical equipment and medications in each ward, and they responded that this was the major challenge for providing surgical and other services. Low support of supply from regional health Bureau, poor management of equipment's in work place and shortage of budgets were the main reasons for shortage of medical supplies.

“...The percentage of working medical equipment and supplies is below an average. Preventive maintenance issues with each unit are the cause of this, and general maintenance is not carried out in accordance with medical equipment protocol. For instance, if there is a lot of broken medical equipment in the service area but no one maintains or is accountable for the equipment”.

[35 years old female nursing director of primary hospital]

One of the KI raise the issue related to shortage of medications and consumable supplies.

“...there is a great challenge related to medical supplies mainly medications for anesthesia and other consumables like glove and regent. Those essential medications were absent/stock out at Ethiopian pharmaceutical supply agency (EPSA). And we cannot afford those medications from private whole sales. That is the reason for low availability of medical supplies in surgical department.”

[27 years old KI CCO]

The infection prevention equipment in each hospital have been filled per SaLTS standard but only Hangecha and Doyegen primary hospitals lost dry autoclave and use stem autoclaves for both surgical materials and drapes.

“....in our hospital there is no infection prevention material shortage because our CASH focal person follow each and every service point and ask annually for necessary equipment purchase. The department of biomedical strictly follow the maintenance problem so that we have no problem related to infection prevention equipment problem.”

[28 years old KI CCO]

One of KI raise the issue related to infection prevention equipment

“..... the regional health bureau and some NGOs support hospitals and other health facilities by different medical supplies before but now days they stop most of their support related to equipment with unknown reason. For that matter our facilities face same challenges so that we will try to communicate with respective bodies to support those facilities lack basic supplies.”

[40 years old KI medical service coordinator]

Other KI raise about medical equipment maintenance and end users problem as like this.

“.... Really this hospital have great opportunity than other primary hospital because here two biomedical engineers including me. However we cannot serve the hospital with full potential because the hospital did not purchase necessary maintenance equipment and spare parts to some machines. Even though we have a plan to train users on preventive maintenance and how they use from different departments like laboratory, operation room and others but we cannot train because of poor coordination from administrative area.”

[26 year old KI Biomedical engineer]

6.1.3: Guidelines, recording and reporting material availability

Regarding the availability of surgical service guidelines, recording and reporting formats, all formats were available in five hospitals for the last three months. It is also estimated based on current patient flow and recording tools that enough recording tools will be available for the next three months. All recording and reporting formats were in line with SaLTS's recommended national standard. However, National saving life through safe surgery practice guideline was available only in Dr. Bogalech Gebre memorial general hospital.

Table 2: Availability of guidelines and recording material checklist in Kambata Tembaro zone surgical departments in public hospitals, SNNPR 2022

s. no	Guidelines and recording material	SPH (n=2)	DRBGMGH(n=3)	MPH(n=2)	DPH(n=2)	HPH(n=2)
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1	History sheet	2	3	2	2	2
2	Safe surgical checklist	2	3	2	2	2
3	Operation sheet	2	3	2		
4	Anesthesia sheet	2	3	1	1	1
5	Vital sheet	2	3	2	2	2
6	Medication sheet	2	3	2	2	2
7	Progress sheet	2	3	2	2	2
8	Discharge sheet	2	3	2	2	2
9	Consent sheet	2	3	2	2	2
10	Operation register	2	3	2	2	2
11	Scheduling register	1	3	1	1	2
12	Admission and discharge register	2	3	2	2	2
13	Referral register	1	2	1	1	1
14	Inpatient ward register	2	3	2	2	2
15	logbook of anesthesia	1	3	2	2	2
16	surgical site infection log book	1	3	1	1	2
17	National/institutional safe surgical standard guidelines at service room	2	3	1	1	1
18	Standard procedure of hand-overing	2	3	1	2	1
19	Protocol for consultation mechanisms	0	2	0	0	0

n stands for number of surgery wards (general surgery, obstetric/gynecologic and orthopedics).

6.1.4: Human resource availability

In public hospitals of Kambata Tembaro zone total of 74 fulltime surgical care providers were available at the time of evaluation. Out of that only 25.7% of surgical care providers got training on SaLTS initiative implementation.

Table 3: human resource availability at Kambata Tembaro zone public hospitals for SaLTS service

S. No	Types of professionals	Hospitals name				
		DRBG MGH ¹	SPH ²	MPH ³	DPH ⁴	HPH ⁵
1	Specialist (General surgeon, Gynecologist, Orthopedician) and IESO	9	4	3	2	2
2	General practitioners	3	0	1	1	1
3	Anesthetists	7	3	3	2	2
4	All type nurses	13	7	7	6	5
5	Trained for SaLTS initiative	11	0	3	3	2

¹DRBGMG - Doctor Bogalech Gebre Memorial Hospital

²SPH – Shinshicho primary hospital

³MPH – Mudula primary hospital

⁴DPH – Doyegen primary hospital

⁵HPH – Hangecha primary hospital

6.1.5: Surgical service availability

The availability of basic surgical services was 81.6% in the studied hospitals, with 100% at Dr. Bogalech Gebre Memorial General Hospital and 63% at Doyegen and Hangecha primary hospitals. Closed fracture repair, hydrocele reduction, and biopsy of lymph node services are unavailable at two of the primary hospitals (Hangecha and Doyegen primary hospitals). On the other hand, comprehensive surgical service availability was 57% with minimum 25% and maximum 85%. This showed that 85% of comprehensive surgical services were available at Dr. Bogalech Gebre Memorial General Hospital, while the remaining primary hospitals' comprehensive surgical services were 50%.

“...The problem of service availability is highly related to low diagnostic evaluation materials, trained human resources, and high turnover of specialists. Most of the specialists leave our hospital in six months, so we couldn't serve our population in all surgical services per SaLTS initiative standards. ”

[32 years old medical doctor, CCO at primary hospital]

One of key informant responds,

“There are a lot of available services in our hospitals, but due to a lack of infrastructure and the “... In fact that there is a huge problem with maintenance in diagnostic equipment, we can't provide some services. As you can see, there are a lot of medical supplies in the store, some of which are not installed from the beginning and others which are not functional with minimal crash.”

[30 year old male medical doctor, quality unit head of primary hospital]

Another KI said

".....now there is a great challenge to giving different services due to a lack of anesthesia medication, especially long-acting. Not only that, lack of blood, laboratory investigations, and diagnostic materials insufficiencies are the reasons for the failure of providing available services.
"

[27 year old female anesthetist of primary hospital]

Table 4: Judgment Matrix of availability Dimension in the evaluation of saving life through safe surgery implementation evaluation in public hospitals of Kambata Tembaro zone 2022

S. no	Indicators	Weight(a)	Expected(b)	Observed(c)	Ach't (e) (c/b)	Score (e*a/100)	Judgment parameter
1	Surgeon to patient ratio from May 21 – June 20/2022	20	20 to 1	13 to 1	65	13	Poorly available
2	Proportion of basic surgical services availability from May 21 – June 20/2022	15	11*5(100%)	43	78.2	11.73	
3	Proportion of comprehensive surgical services availability from May 21 – June 20/2022	15	19*5(100%)	55	56	8.4	
4	Proportion of medical supplies available in the hospital's surgical department	25	123*5(100%)	435	70.73	17.68	
5	Number of hospitals having SaLTS standard guideline on the day of assessment	7.5	11(100%)	7	20	1.5	
6	Number of hospitals having all standardized surgical documentation formats	7.5	11(100%)	8	72.72	5.45	
7	Proportion of surgical teams that received at least one training session between January 2022 and June 2022	10	74(100%)	19	25.7	2.57	
	Overall implementation	100%				60.33%	

Note: $\geq 80\%$ available, 65–79% partially available, 50–64% poorly available, and $< 50\%$ not available.

6.2: Compliance of surgical care providers

From 120 charts included in this study, patient chart review results show that 111(92.5%) patients were get comprehensive assessment. At the same time, 113(94.2%) patients had a minimum laboratory investigation. On the other hand, 57(47.5%) of patient charts have no cross-match blood investigation sheet. Furthermore, 10(8.3%) of patient charts had no preoperative anesthetic evaluation. Additionally, the overall surgical safety checklist utilization as per standard is 77.7%, and when we illustrate in a graph in each hospital SSCL use.

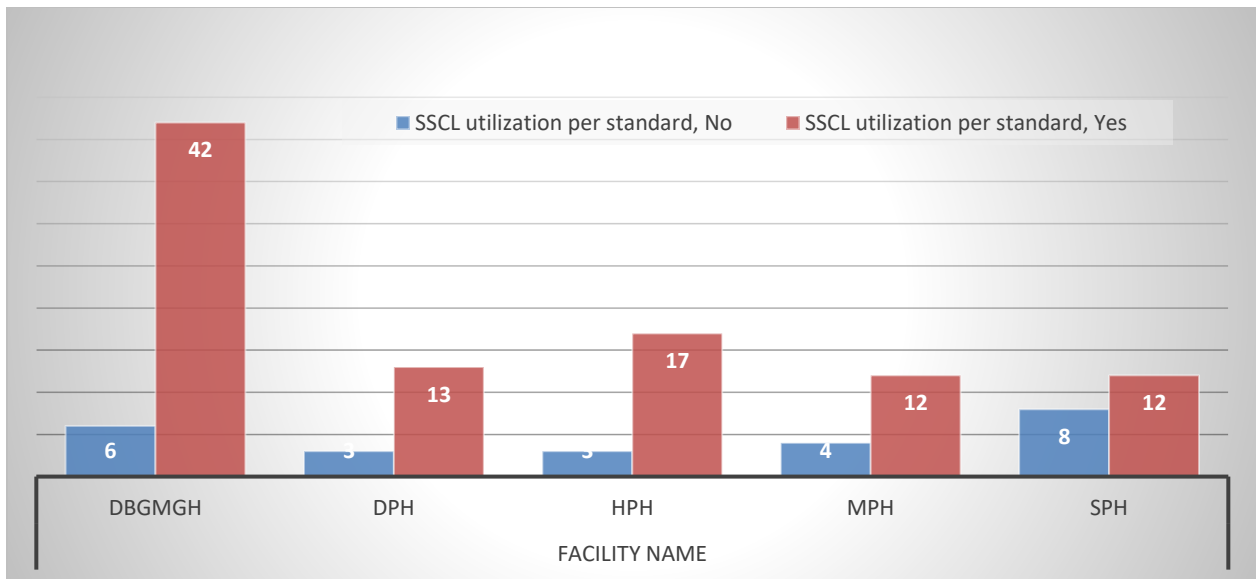


Figure 5: Safe surgery check list utilization proportion at Kambata Tembaro zone public hospitals 2022

Majority of key informant response to low compliance of SaLTS initiative implementation in their hospitals were:

“....For different reasons, there are many challenges to doing as per standard, like resource limitations. For example, we do not get checklists all time i.e. lack of stationeries’ and our staff are not trained for new initiatives like SaLTS. Most of the time, professional negligence takes up more part than the others because some professional not use the checklist with unknown reason. Additionally, absence of refreshment training and weak supportive supervisions are another problems.”

[31 years old male surgical department coordinator]

Other KI raise

“...The use of SSCL is very essential to patients and care providers; however, there is no specific person responsible from the surgery team, i.e., when you ask me about the responsible person, I don't know who is responsible. Anesthetists or nursing staff have the responsibility to fill out the checklist.”

[25 year old female scrub nurse]

The completeness of surgical patient chart records was assessed in terms of history sheet, laboratory investigation form, safe surgical check list format, operation sheet, anesthesia sheet (pre and intra-operation), vital sign sheet, medication administration sheet, progress note, discharge summary sheet, and nursing care plan. Accordingly, the result showed 16.67% (8/48) at DRBGMGH, 30% (6/20) at HPH, 44% (7/16) at MPH, 19% (3/16) at DPH and SPH patients' chart formats was not completed for all the listed recordings. That means 74.3% patient charts were completed with necessary formats.

“....as I know before, in performance monitoring time the implementation of the SaLTS standard was low from expected/plan due to work load (shortage of time during emergency procedures), inadequate knowledge of SaLTS initiative implementation guidelines, lack of experience in using different checklists, mainly SSCL, shortage of reference materials, inadequate supplies, and inadequate staffing results in low performance.....”

[29 years old female quality unit officer]

One KII support this idea from another hospital

“.....In our hospital, like surgical, orthopedic, obstetric, and gynecologic ward nurses and others who give priority to patient care, significant numbers of them give less weight to recording patients' information....In my view, staff carelessness, poor monitoring and supervision follow-up, and low awareness about medico-legal issues were the reasons for poor recording practice. For all these gaps, it is better to train and/ or refresh surgical care providers on schedule at least yearly”.

[43 years old male nursing director]

Also other additional supportive idea given by KI

“As I know, during the project designed for surgical ward medical record completeness, there were a lot of problem assessed. Some of them are healthcare providers’ negligence and losses of standard formats in the service area are the main problems. However; we try to attain a maximum standard of SaLTS initiative by training our professionals on site.”

[27 year old male quality unit leader]

During the period of observation, healthcare providers took histories and did physical examinations for all patients, but 32.5% of surgical care providers did not wear a badges and gown while assessing clients. 14.2% of professionals start their assessment without greeting the patients. On the other hand, 95% of patients take oral or written consent for procedures, and 92.5% assure confidentiality of clients' information. For 37.5% of participants, healthcare providers did not explain the procedure steps.

The last one-year document review shows only DRBGMGH and HPH hospitals have a surgical service quality management team; others have no formal surgical service management team. The number of surgical service quality management team meetings conducted in the last one year is three at DRBGMGH and one at HPH. The minutes of DRBGMGH focus on SaLTS program improvement on the gaps in the surgical department and the designing of implementation improvement projects based on plan-do-study and act (PDSA). The minutes of HPH show how to audit surgical-related deaths and near-misses.

Surgical practice auditing was conducted in the hospital in the last year, five times at DRBGMGH and three times at DPH. Surgical auditing was performed once at HPH and twice at SPH. Surgical practice audit PDSA reports available from the last year are three and two reports at DRBGMGH and HPH, respectively. All hospitals receive supportive supervision from a higher level of management or co-lead hospital. Each hospital got two supportive supervisors from a higher level. In this study, hospitals got only 50% supportive supervision from higher institutions.

“...The supportive supervision is planned every quarter, but we cannot do as planned for different reasons, like more burdens in the quality department the at regional level and only one

focal person assigned for the SaLTS initiative so that I and my colleagues have other duties in addition to these duties. We also do supportive supervision with other programs like EHAQ, CASH, and CACH-IT..... The surgical practice auditing team is not functional in hospitals and they do not report the problems of their hospital”.

[35 years old male SaLTS initiative focal person]

From hospitals other KI said

“The lead hospital and regional supportive supervision team came to our hospital before five months. I don’t think so. The program is like this, and the supervision by itself is not teaching in some aspects because they see themselves as auditors or evaluators. So the professionals were not comfortable with their supervision and there is no specific supportive supervision only for the SaLTS initiative....”

[28 year old KI, CCO]

During the document review, the hospitals got only 50% supportive supervision from the plan of a year i.e. from the expected four-time supervisions they got only two each.

“...yes, as plan we have four and more time supervisions was planned but due to different reasons like additional duties due to COVID-19 and other campaigns like CBHI, trachoma other activities come-up and all those things distort our plan. Additionally there are problems in supervision team related to budget. In other side, some hospital administrators are not cooperative”.

[35 year old male, medical service coordinator]

One of KI raise the general problem to service compliance of surgical providers

“... As my point of view the main problem related to SaLTS initiative low provider compliance is lack of training and specific supportive supervision on this initiative from region and respective bodies.”

[29 years old male KI, quality unit leader]

Table 5: Judgment Matrix of compliance dimension in the evaluation of saving life through safe surgery implementation evaluation in public hospitals of Kambata Tembaro zone 2022

S. no	Indicators	Weight(a)	Expected(b)	Observed(c)	Ach't (e) (c/b)	Score (e*a/100)	Judgment parameter
1	Proportion of clients received comprehensive assessment based on the guideline	20	120	111	92.5	18.5	Partially implemented
2	Rate of surgical safety checklist utilization	20	120	96	80	14.3	
3	Proportion of patient charts with complete patient formats	10	120	96	80	8	
4	Proportion of observation sessions with privacy of the patient was maintained	10	120	101	84.2	8.42	
5	Proportion of observation sessions with informed consent was taken	10	120	114	95	9.5	
6	Number of surgical auditing conducted with written feedback	15	30	11	36	5.4	
7	Number of supportive supervision conducted in past one year	15	4*5	10	50	7.5	
	Overall implementation	100%				71.62	

Note: $\geq 80\%$ implemented, 65–79% partially implemented, 50–64% poorly implemented, and $< 50\%$ not implemented.

6.3: Patient satisfaction and associated factors

Socio demographic characteristics of patients

Out of 325 sampled surgical admitted patients, 312 patients gave responses to our study. That means a 96% response rate. A total of 146 DRBGMGH patients, 43 SPH patients, 44 MPH patients, 40 HPH patients, and 39 DPH patients were involved. Among 312 patients 178(57.1%) of patients were female. The mean age of respondents were 36.1% (SD = 13.8).

Table 6: Socio-demographic characteristics of surgical patients who have undergone surgery in Kambata Tembaro zone public hospitals 2022 (N=312)

Characteristics	Categories	Frequency	Percent
Religion	Protestant	231	74
	Orthodox	47	15.1
	Catholic	23	7.4
	Muslim	10	3.2
	Others	1	0.3
Ethnicity	Kambata	172	55.1
	Tembaro	63	20.2
	Hadiya	46	14.7
	Halaba	27	8.7
	Muslim	3	1
	Other	1	0.3
Marital-status	Married	247	79.2
	Never married	51	16.3
	Divorced	5	1.6
	Widowed	9	2.9
Educational status	Unable to read and write	76	24.4
	Primary school 1_8	32	10.3
	Secondary school 9-12	119	38.1
	Certificate	12	3.8
	Diploma and above	73	23.4
Service payment	Out pocket	122	39.1
	CBHI	90	28.8
	Free	100	32.1
Occupation	Government employee	71	22.8
	Farmer	63	20.2
	Marchant	69	22.1
	Student	57	18.3
	No-job	52	16.7
Residence	Urban	159	51
	Rural	153	49

The mean (average) monthly patient income of respondents was 1594ETB (30\$). Of the studied patients, 39(12.5%) had a history of previous surgery and 9(2.9%) had two-time surgery. The mean length of stay is 8.3 days (SD 4.6). Study participants included from different wards who had surgical services.

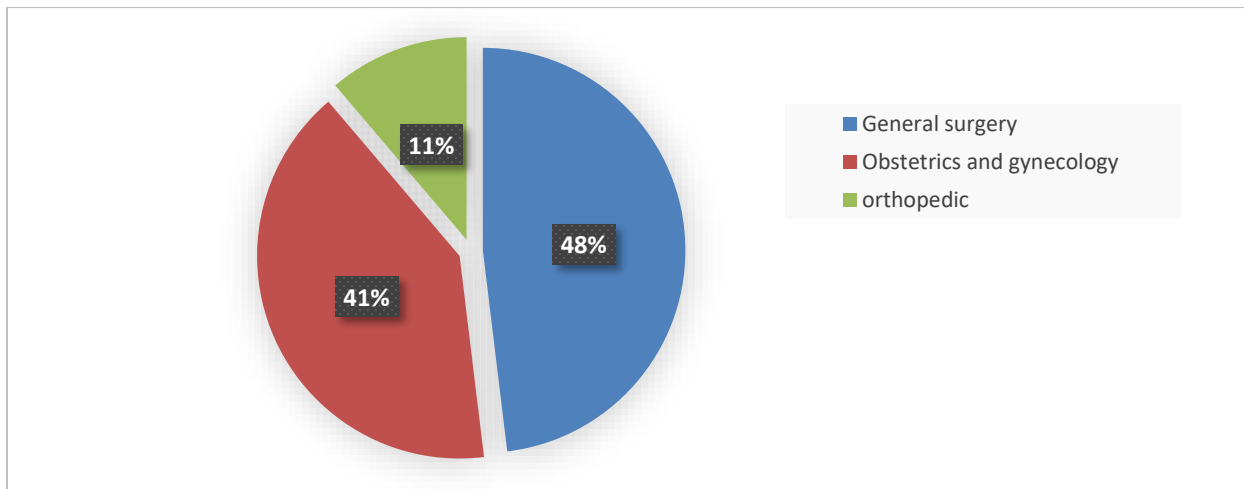


Figure 6: Study participants had surgery from each wards at Kambata Tembaro zone public hospitals 2022

Patient satisfaction towards SaLTS initiative service

The overall percentage patient satisfaction mean score with saving life through safe surgery services among patients who had surgery and were admitted to Kambata Tembaro zone public hospitals was 72.36%. The way nurses, doctors and operation theatre staff treated them with respect and politeness were assessed.

The way nurses treated them with respect and politeness 70.5% of patients were satisfied. 53.2% were satisfied with nurses listening attentively, and satisfaction with explaining things in a way they could understand 0.3% completely dissatisfied, 9% dissatisfied, 9.9% not-sure, 66.7% satisfied and 14.1% completely satisfied. On the other hand, satisfaction with explaining things in a way they could understand by doctors’ show 5.1% dissatisfied, 4.5% not-sure, 58.7% satisfied and 31.7% completely satisfied.

Patient satisfaction in the operating room is marked and the satisfaction with the operation theatre staff’s attention to complaints like pain, nausea, and others. Out of studied clients 0.3% completely

dissatisfied, 9% dissatisfied, 9% not-sure, 76% satisfied and 14.7% completely satisfied to their complaints.

Table 7: Patient satisfaction level at ward and operation room service in Kambata Tembaro zone public hospitals 2022

Patient feeling at ward service	Completely dissatisfied	Dissatisfied	Not-sure	Satisfied	Completely satisfied
Way nurses treat you with respect and politeness	0	27(8.7%)	30(9.6%)	220(70.5%)	35(11.5%)
Nurses listen attentively to you	0	27(8.7%)	28(9%)	166(53.2%)	91(29.2%)
Nurses explain things in a way you could understand	1(0.3%)	28(9%)	31(9.9%)	208(66.7%)	44(14.1%)
Way doctors treat you with respect and politeness	1(0.3%)	12(3.8%)	20(6.4%)	189(60.6%)	90(28.8%)
Doctors listen attentively to you	0	13(4.2%)	18(5.8%)	186(59.6%)	95(30.4%)
Doctors explain things in a way you could understand	0	16(5.1%)	14(4.5%)	183(58.7%)	99(31.7%)
Pain control	3(1%)	12(3.8%)	33(10.6%)	182(58.3%)	82(26.3%)
Get help as soon as they wanted	7(2.2%)	31(9.9%)	33(10.6%)	153(49%)	88(28.2%)
Staff take into account patient privacy	0	20(6.4%)	37(11.9%)	165(52.9)	90(28.8%)
Patient feeling at OR service					
Operation theatre staff is respectful and politeness	1(0.3%)	11(3.5%)	17(5.4%)	222(71.2%)	61(19.6%)
Operation theatre staff show understanding for your situation	11(3.5%)	16(5.1%)	16(5.1%)	206(66%)	79(25.3%)
Operation theatre staff pay attention to your questions	0	8(2.6%)	22(7.1%)	210(67.3%)	72(23.1%)
Operation theatre staff take into account your personnel preferences	0	10(3.2%)	20(6.4%)	209(67%)	73(23.4%)
Operation theatre staff attention to complaints like pain, nausea, and others	1(0.3%)	28(9%)	28(9%)	237(76%)	46(14.7%)

Note Statements: Completely satisfied = 5, Satisfied = 4, Not-sure (neither satisfied nor dissatisfied) = 3, Dissatisfied = 2, completely dissatisfied = 1.

Table 8: Judgment Matrix for Acceptability/satisfaction dimension on evaluation of saving life through safe surgery implementation service in public hospitals of Kambata Tembaro zone 2022

S. no	Indicators	Weight (a)	Observed (b)	Score (a*b/100)	Judgment parameter
1	Percentage satisfaction mean scale of patient with the way nurses treat them with politeness and respect	6.25	72	4.5	Partially Satisfied
2	Percentage satisfaction mean scale of patient with the way nurses listen attentively	6.25	77	4.81	
3	Percentage satisfaction mean scale of patient with the way nurses explain things to them in a way they can understand	6.25	72.25	4.52	
4	Percentage satisfaction mean scale of patient with the way doctors treat with politeness and respect	6.25	78.75	4.92	
5	Percentage of patient satisfaction mean score with the way doctors listen attentively	6.25	79.25	4.95	
6	Percentage satisfaction mean scale of patient with the way doctors explain things them to in a way they can understand	6.25	79.5	4.7	
7	Percentage satisfaction mean scale of patient with pain control	6.25	79.5	4.7	
8	Percentage satisfaction mean scale of patient with received assistance as soon as they wanted	6.25	74.25	4.64	
9	Percentage satisfaction mean scale of patient with the staff taking into account their privacy	6.25	76.25	4.76	

S. no	Indicators	Weight (a)	Observed (b)	Score (a*b/100)	Judgment parameter
10	Percentage satisfaction mean scale of patient with the operation theatre staff's respect	6.25	76.5	4.75	Partially Satisfied
11	Proportion of clients who are satisfied with the professionalism of the operating room staff	6.25	78.25	4.89	
12	The percentage satisfaction mean scale of patient with the operation theatre staff's attention to their questions	6.25	81.75	5.1	
13	Percentage satisfaction mean scale of patient with the operation theatre staff's attention to complaints like pain, nausea, and others	6.25	77.75	4.86	
14	Percentage satisfaction mean scale of patient with the operation theatre staff take into account your personnel preferences	6.25	76.25	4.76	
15	Percentage satisfaction mean scale of patient with the patient's confidence in the operating theatre staff	6.25	77.75	4.86	
16	Percentage satisfaction mean scale of patient with the overall surgical service of the hospital	6.25	85.5	5.34	
	Overall implementation	100%		72.06%	

Note: $\geq 80\%$ implemented, 65–79% partially implemented, 50–64% poorly implemented, and $< 50\%$ not implemented.

Factors associated with patient satisfaction

Bi-Variable linear Regression Analysis

Patient related factors of patient satisfaction

Patient-related factors; socio-demographic factors (residence, marital status, occupation, income, and educational status, became candidate variables associated with patient satisfaction ($P < 0.25$).

Sex, previous admission history and age were not significant predictors for patient satisfaction.

Table 9: Patient related factors of patient satisfaction in public hospitals of Kambata Tembaro zone, 2022 (n=312)

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	*Female	4.085	0.041		99.538	1	4.004	4.166
	Male	-0.034	0.063	-0.031	-0.545	0.586	-0.157	0.089
2	*Married	4.041	0.035		116.358	1	3.973	4.11
	Never married	0.107	0.084	0.072	1.272	0.204	-0.058	0.272
	Divorced	0.196	0.247	0.045	0.795	0.427	-0.289	0.681
	Widowed	0.285	0.185	0.087	1.538	0.125	-0.08	0.649
3	*Urban	3.995	0.043		92.883	1	3.91	4.08
	Rural	0.154	0.061	0.141	2.504	0.013	0.033	0.275
4	*Secondary school 9-12	4.003	0.047		85.709	1	3.911	4.095
	Unable to read and write	0.415	0.066	0.356	6.271	0	0.285	0.546

	primary school 1-8	0.115	0.093	0.065	1.227	0.221	-0.069	0.298
	Certificate	-0.367	0.124	-0.153	-2.97	0.003	-0.61	- 0.124
	Diploma and above	-0.321	0.078	-0.229	-4.137	0	-0.474	- 0.168
5	*Government employee	3.939	0.063		62.987	1	3.816	4.062
	Farmer	0.184	0.093	0.134	1.977	0.049	0.001	0.367
	Merchant	0.16	0.091	0.121	1.765	0.079	-0.018	0.339
	Student	0.22	0.096	0.153	2.287	0.023	0.031	0.409
	No job	0.172	0.1	0.113	1.713	0.088	-0.025	0.369
	Other	-0.424	0.278	-0.087	-1.524	0.129	-0.97	0.123
7	Previous admission yes	4.156	.137		30.369	.000	3.887	4.426
	*Previous admission no	-.091	.141	-.037	-.645	.520	-.367	.186
8	*Age Group= 25-44	4.081	0.045		90.515	1	3.993	4.17
	Age Group=18- 24	0.083	0.08	0.062	1.03	0.304	-0.075	0.241
	Age Group=45- 64	-0.116	0.075	-0.094	-1.559	0.12	-0.263	0.031
	Age Group=65 and older	0.052	0.148	0.02	0.352	0.725	-0.239	0.343

*Reference category (the highest frequency taken as reference categories).

Hospital related factors of patient satisfaction

Hospital related factors service payment, admission ward, frequencies of surgery and health status during discharge became candidate variables associated with patient satisfaction ($P < 0.25$). Length of stay was not significant predictor for patient satisfaction

Table 10: Hospital related factors of patient satisfaction in public hospitals of Kambata Tembaro zone, 2022 (n=312)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	*General surgery ward	3.874	0.043		89.438	0	3.789	3.959
	obstetric and gynecologic ward	0.445	0.06	0.405	7.364	0	0.326	0.563
	orthopedics ward	-0.039	0.092	-0.023	-0.419	0.675	-0.219	0.142
2	*Well	4.036	0.034		119.817	0	3.97	4.102
	Very well	0.263	0.055	0.231	4.809	0	0.155	0.37
	No change	-1.275	0.141	-0.431	-9.011	0	-1.553	-0.996
	Complicated	-0.797	0.189	-0.2	-4.213	0	-1.169	-0.425
3	*Surgery once	4.079	0.031		130.206	0	4.018	4.141
	Surgery twice	-0.308	0.184	-0.095	-1.672	0.096	-0.671	0.055
4	*Stay 5-10 days	4.09	0.042		96.989	0	4.007	4.173
	Stay less than 5 days	-0.012	0.066	-0.011	-0.181	0.857	-0.143	0.119
	Stay greater than 11 days	-0.163	0.108	-0.088	-1.507	0.133	-0.377	0.05
5	*Free	4.249	0.046		92.695	0	4.159	4.339
	Out pocket	-0.304	0.067	-0.268	-4.521	0	-0.437	-0.172
	CBHI	-0.319	0.079	-0.239	-4.019	0	-0.475	-0.163

*Reference category (the highest frequency taken as reference categories).

Multi-variable linear regression analysis

Eight variables were candidates for multi-variable linear regression and ran in a multi-variable linear regression and four variables had a statistically significant relationship with the mean patient satisfaction score ($p < 0.05$). The variables in this model explained 58.9% ($R = 0.767$, R Square = 0.589, adjusted R Square = 0.556) of the variability in the patient satisfaction mean score.

Table 11: Independent factors associated with patient satisfaction in public hospitals of Kambata Tembaro zone, 2022 (n=312)

Characteristics	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant	3.749	0.122		30.849	0.000	3.510	3.988
Rural	0.084	0.044	0.077	1.918	0.056	-0.002	0.171
Age Group (45-64)	-0.044	0.055	-0.036	-0.804	0.422	-0.153	0.064
Unable to read and write	0.333	0.065	0.286	5.147	0.000	0.206	0.461
Primary school (1-8)	0.115	0.076	0.066	1.506	0.133	-0.035	0.265
Certificate	-0.202	0.103	-0.084	-1.968	0.050	-0.404	0.000
Diploma and above	-0.187	0.082	-0.133	-2.273	0.024	-0.349	-0.025
Farmer	0.042	0.097	0.031	0.436	0.663	-0.149	0.234
Merchant	0.054	0.080	0.041	0.677	0.499	-0.103	0.211
Student	0.096	0.111	0.067	0.866	0.387	-0.123	0.316
No job	-0.119	0.106	-0.079	-1.123	0.263	-0.327	0.090
Other	-0.195	0.202	-0.040	-0.967	0.334	-0.592	0.202
Obstetric and gynecologic ward	0.350	0.075	0.319	4.671	0.000	0.202	0.497
Orthopedics ward	0.035	0.076	0.021	0.458	0.647	-0.114	0.184

Very well	0.209	0.046	0.184	4.526	0.000	0.118	0.300
No change	-0.964	0.121	-0.325	-7.972	0.000	-1.202	-0.726
Complicated	-0.601	0.159	-0.151	-3.770	0.000	-0.914	-0.287
Stay greater than 11 days	-0.017	0.078	-0.009	-0.225	0.822	-0.170	0.135
Out pocket	-0.319	0.079	-0.239	-4.019	0.000	-0.475	-0.163
CBHI	-0.304	0.067	-0.268	-4.521	0.000	-0.437	-0.172

Dependent variable: satisfaction mean score

In this study educational status, admission wards, health status during discharge and service payment were statistical association with patient satisfaction mean scale score.

As compared to participants who were Unable to read and write in educational status, having increment of patient satisfaction score by 0.333 (95%CI= 0.206, 0.461, P<0.001). Diploma and above in educational status participants show decrement of patient satisfaction score by -0.187 (95%CI= -0.349, -0.025, P<0.024).

Result of admission ward i.e. As compared to participants, who were admitted at obstetric and gynecologic surgical cases show having increment of patient satisfaction score by 0.350 (95%CI= 0.206, 0.497, P<0.001).

The result showed that, as compared to participants who were discharged status with very well show having increment of patient satisfaction score by 0.209 (95%CI= 0.118, 0.300 , P<0.001). However, complicated participants show decrement of patient satisfaction score by -0.601 (95%CI= -0.914, -0.287, P<0.001).

The result of service payment of out-pocket show decrement of patient satisfaction score by -0.319 (95%CI= -0.475, -0.163, P<0.000) and at same time CBHI participant show decrement of patient satisfaction score by 0.304 (95%CI= -0.437, -0.172, P<0.001).

Overall Judgment Matrix

Based on the weight given for each dimension of implementation status, the overall implementation status of SaLTS initiative implementation service in the Kambata Tembaro zone public hospitals had a 68.00%, which was partially implemented.

Table 12: the overall judgement matrix for SaLTS initiative implementation service in the Kambata Tembaro zone public hospitals 2022.

Dimension	Value given	Value achieved	Percentage achieved	Over all judgment
Availability	35	19.92	60.33	Poorly available
Compliance	35	25.32	71.62	Partial compliance
Acceptability/satisfaction	30	21.62	72.06	Partially satisfied
Total	100%	66.86	68.00	Partially implemented

Note: Judgment criteria $\geq 80\%$ implemented, 65–79% partially implemented, 50–64% poorly implemented, and $< 50\%$ not implemented.

Chapter Seven: Discussion

The evaluation finding shows that the overall implementation of service the SaLTS initiative in Kambata Tembaro zone public hospitals was partially implemented (68%) based on judgment parameters. The availability of resources was poorly available (60.33%) and the compliance of health care providers was partially implemented (71.62%). Besides that, the percentage mean score of patient satisfaction with SaLTS services among patients who had surgery and were admitted to surgical, obstetric, gynecologic, and orthopedic wards were partially satisfied (72.06%).

7.1: Availability dimension

Among the surveyed hospitals, overall availability of basic infrastructure was (82%). Out of five, two (40%) lacked consistent running water and one (20%) lacked electricity with a backup generator. Study conducted on Essential Surgery and Anesthesia in eight Low and Middle-Income Countries found that no country had 100% of facilities reporting continuous supply of surgical infrastructure and that most had less than 50% availability of supply; the overall averages were 21-50%. An assessment of 29 facilities in multiple regions of Ethiopia showed that 72% of surgical facilities lacked consistent running water and 59% of facilities had interrupted electricity (32,35).

The SaLTS national strategic target planned to increase health facilities with 100% and 90% for electricity and water supply respectively. The result is higher than study conducted in LMIC, this might be due to study time gap and presence of new initiatives that support hospitals to provide better services now days. However, lower than national target, this might be due to lack of budget.

The functional medical equipment and supply availability in Kambata Tembaro zone public hospitals to SaLTS service was 70.66%. Study done at Ghana 17 hospitals more than 75% had the basic supplies needed for general patient care and basic intra-operative care (36). The gap may be due to absence of strong bio-medical unit and preventive maintenance in studied hospitals and this also supported by qualitative investigation.

In this study, the availability of surgical specialists was three of five, two hospitals have integrated emergency surgical officer (IESO) and non-of anesthesia specialist in Kambata Tembaro public hospitals. A study conducted in two Ethiopian regions found that thirteen of the fifteen hospitals

lacked any form of specialty surgical physician, including surgeons, obstetricians, or anesthesiologists. Another study that done in Ethiopia on perioperative capacity show only 30 (37.9%) facilities reported having specialist surgical workforce and 22.2% of facilities have a physician anesthesiologist (38,79). This difference is due to the time gap between study times and studies conducted at national level respectively.

This study revealed that 25.7% of surgical care providers got training on SaLTS initiative service implementation. In a study conducted in five Sub-Saharan African nations' hospitals, 14% to 76% of those polled had training (19).

Saving life through safe surgery practice guideline was available only in one (Dr. Bogalech Gebre memorial general hospital) out of five studied hospitals. The five year SaLTS evaluation report show that, availability of case management guidelines for surgery, obstetrics, and anesthesia were reported in the health care facilities in which only 99 (57.55%) of the 172 evaluated health care facilities (43).

According to this study basic surgical services availability were 81.6%. Basic surgical services at Dr. Bogalech Gebre Memorial General Hospital was 100% and at Doyegena and Hangecha primary hospitals 63% each. According to the findings of Ethiopia's SaLTS, demonstrated an average SaLTS basic procedure availability of 68% and 83%, at primary and general hospitals respectively. On the other hand, the comprehensive surgical service availability in this study was 25–85%. A retrospective study done in Africa shows that 56–83% of comprehensive surgeries done in eight African countries (18,39). The basic surgical services are comparable however; the comprehensive surgical services difference may be due to the study conducted at the national levels that include referral and specialized hospitals but this study includes general and primary hospitals only.

7.2: Compliance of surgical care providers

This study show the surgical safety checklist utilization as per standard is (77.7%). According to a WHO survey of eight hospitals, (80.2%) use the surgical safety checklist However, according to research conducted at Gonder Hospital, a total of 282 procedures were performed, with checklists being used in (39.7%) of cases. The overall compliance and completion percentages were (39.7%)

and (63.4%) respectively. Study done at two region of Ethiopia (SNNPR and Amhara) indicators reported included compliance with the WHO Surgical Safety Checklist in (92.1%) cases (6,44,45).

The national data management system, the HMIS/DHIS2 platform shows that the overall average rate of SSCL use for major surgeries was 81% in public health facilities. The second SaLTS initiative target planned to reach the utilization of SSCL to 100% (34,43). The finding of WHO and national report were comparable. However; this study finding is higher than Gonder university hospital result this might be due to difference in study period. And lower than study conducted at SNNPR and Amhara region this might be due to involvement of different level of hospitals in the study.

Medical record completeness was 74.3% with necessary formats. And according to the result showed (16.67%) at DRBGRH, (27%) at HPH, (33%) at MPH, (13%) at DPH, and SPH patients' chart content was not completed against standard. A study conducted at Menelik II referral hospital the completeness of medical records content completed were (83.8%) (80). This difference may be due to referral hospitals having better follow up on professional medical record work and also better resources to train and avail documentation materials.

7.3: Acceptability/Satisfaction Dimension

The overall patient satisfaction mean score with SaLTS services among patients who had surgery and admitted to Kambata Tembaro zone public hospitals' wards was (72.06%). The study conducted at US hospitals surgical patient satisfaction scores ranged from 33.5% to 98.5% and the median patient satisfaction score was 69.5%. However; North Showa Zone Ethiopia three general public hospitals perioperative patient satisfaction was (64.6%). Study conducted at Gonder teaching and referral hospital the level of patient satisfaction with the perioperative surgical services was 98.1% (49,51,67). This result was in line with the study conducted at US hospitals surgical patient satisfaction scores. Higher than north shewa public hospitals this might be due to study area variation and population perception to the surgical service. Lower than Gonder referral and teaching hospital, this discrepancy could be due to the difference in patient perception of the services received and study design dissimilarity.

In present study staff maintenance to patient privacy show 20(6.4%) dissatisfied, 37(11.9%) not-sure, (165)52.9% satisfied and 90(28.8%) completely satisfied. Study at Gonder referral and specialized hospital show patient satisfaction with health provider maintenance of privacy was very satisfied 118 (43.9%), satisfied 143 (53.2%), neutral 2 (0.7%), dissatisfied 5 (1.9%) and very dissatisfied 1(0.4%). The difference is more at completely satisfied patient number i.e. high at Gonder referral and specialized hospital this might be due to presence of senior expertise there (51).

This study operation room healthcare provider respectfulness show completely dissatisfied 1(0.3%), dissatisfied 11(3.5%), not-sure 17(5.4%), satisfied 222(71.2%) and completely satisfied 61(19.6%). Other study show respectfulness of operation theatre staff for patients were very satisfied 94 (34.9%), satisfied 150(55.8%), neutral 16(5.9%), dissatisfied 8 (3%) and very dissatisfied 1 (0.4%) The present study patient satisfaction with operation theatre staff's open attitude towards patients questions were completely satisfied 72(23.1%), satisfied 210(67.3%), not-sure 22(7.1%), dissatisfied 8(2.6%), and 0% completely dissatisfied. Other study done in Eretria show with operation theatre staff's open attitude towards patients questions 27.5% very satisfied, 63.6% satisfied, 5.9% neutral, 3% dissatisfied and 0% very dissatisfied (51)(50). The difference in patient characteristics that attributed to perceived satisfaction variation.

Factors affecting patient satisfaction with surgical service

The findings of this study revealed that, there was statistical significant association between educational status, health status during discharge, admission ward, and service payment with patient satisfaction with surgical services.

This study show patients that were unable to read and write in educational status, having increment of patient satisfaction score by 0.333 (95%CI= 0.206, 0.461, $P<0.001$). Diploma and above in educational status participants show decrement of patient satisfaction score by -0.187 (95%CI= -0.349, -0.025, $P<0.024$). Those with limited education level have low information about responsibilities of health care providers and tend to be satisfied with given service, since they have nothing to compare with. Study conducted by Sohag University showed that, the secondary school graduate were significantly higher mean satisfaction than other groups (81). This might be due to the difference in study group.

The present study also showed a significant positive association between admission ward of obstetric and gynecologic cases having increment of patient satisfaction score by 0.350 (95%CI= 0.206, 0.497, $P<0.001$). This might be due to health care providers in obstetric and gynecologic ward give better care than other wards.

Limitations of evaluation

This evaluation might be susceptible to social desirability bias in which Key Informants and patients might underreport or undesirable attitudes or behaviors and over report more desirable attributes. To minimize this bias, detail explanation on purpose of the evaluation was given for the patients and key informants. Data collectors were trained on how to create rapport with care providers and customers as a solution to these limitations. The first set of observational checklists was left out of the study to reduce the hawthorn effect. However, the effect may still happen.

Chapter Eight: Conclusion and Recommendation

8.1: Conclusion

Based on judgment parameter the availability of resources for providing SaLTS service was poor implementation level. There was no shortage of human resources for surgical specialists against the national guideline. The numbers of rooms were also limited in all hospitals. In addition, the SaLTS standard guidelines were unavailability in primary hospitals.

Based on judgment parameters, the compliance of health care providers with national guidelines during the provision of SaLTS service implementation was partially implemented. The compliance of health care providers in hospitals with national guidelines was partially implemented based on judgment parameters during providers' taking surgical, obstetric/gynecologic and orthopedic history of clients(patient evaluation), explaining the steps of the procedures to the clients, assuring confidentiality of clients' information, maintaining patient physical privacy, and surgical documentation. Also, the required number of SaLTS practice audits, supportive supervision, and provision of training for surgical health care providers were not practiced per the standard.

Furthermore, according to the findings of our evaluation, the level of patient satisfaction towards SaLTS service in Kambata Tembaro zone public hospitals was partially implemented based on the judgment parameter. Educational status, admission ward, patient status during discharge, and service payment were independent predictors of patient satisfaction with SaLTS service.

8.2: Recommendations

For SNNPR regional health Bureau:

- Medical equipment and supplies like sterilizers (autoclaves), suction machines, orthopedic splints, oxygen concentrators, and anesthetic medications should be supplied to public hospitals.
- Trainings and supportive supervision with standard guidelines to health care providers should be supported

Zonal Health Department

- In collaboration with SNNPR, medical supply support needed
- Uninterrupted supportive supervision and training should be provided to the hospitals that focus on program improvement.

For Hospitals

- Additional surgical care providers should receive in-services training on the practical implementation of SaLTS initiative.
- Standard guidelines, reference books, recording and reporting forms should be fulfilled.
- Hospitals should conduct regular monitoring activities like auditing and utilize the findings for improving implementation of SaLTS service.

For surgical care providers

- Surgical care providers should use standard guide line to assess, diagnose and treat patients.
- The providers should take consent, explain procedural steps and maintain privacy of patients.
- The surgical care providers should conduct regular preventive maintenance for medical equipment in working area to maximize the durability of medical equipment's.

Chapter Nine: Meta Evaluation

This study used Summative Meta-Evaluation. The evaluation was conducted by using four program evaluation standards (utility, feasibility, propriety, and accuracy). The tool was adapted by Daniel L., Stufflebeam, and Social Impact. The tool contains 30 sub-standards and 85 items (checkpoints) in four standards (82). The Judgment parameter was decided t if >85% excellent, if 75-85% V. Good, if 60-74% Good, if 45-60% Fair, if <45% Poor. The overall status of the evaluation was measured 85%.

Utility: This standard was measured by 21 check pointes among this 18 of them were scored yes/met, which was scored 85.7% based on judgment parameter. Among activities, stakeholder analysis was made, clear value judgments was set, report was prepared based on evaluation question, and conclusion and recommendation was set.

Feasibility: The evaluation was conducted in efficient manner and produce information that worth the expenditure. In terms of cost, the evaluation is set up to use the bare minimum of resources in order to avoid waste. This standard was measured by 10 check pointes among this 8 of them were scored met, which was scored 70% based on judgment parameter.

Propriety: The usual step toward the evaluation is clarified by clear communication with key program stakeholders, as well as the fact that the evaluation must keep and safeguard the rights of human subjects and the intended use of assessment. This standard was measured by 24 check pointes among this 21 of them were scored met, which was scored 87.5 % based on judgment parameter. Among activities, the study was approved by Institutional Review Board (IRB) of Jimma University, informed consent was taken for participation, and an activity for insuring confidentiality of collected data was practiced.

Accuracy: In terms of correctness, the program under review thoroughly documented using data obtained from various sources. This standard was measured by 30 check pointes among this 29 of them were scored met, which was scored 96.67% based on judgment parameter. The tool was pre-tested, translated and commented; data collectors trained and reliability measures were unacceptable range. Mixed method data collection was employed.

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Annex 1: English version of the tool

Jimma University Institute of Health Science

Department of Health policy and Management, Health Monitoring and Evaluation Unit

Data collection tool for evaluating the implementation of the Kambata Tembaro zone public hospitals' Saving Life through Safe Surgery initiative in 2022

Hello, how are you? My name is _____. I am working as a data collector for the study conducted by Jimma University health monitoring and evaluation post-graduate student Muluken Markos on **"Evaluation of Saving Life through Safe Surgery (SaLTS) initiative Implementation in Public Hospitals of Kambata Tembaro Zone."**

I would like to interview you a few questions about the surgical service providing resources and their functionality. 1. Yes 2. No (if yes continue. If no END)

This checklist will be used to conduct service availability tests at hospitals' surgical departments. And it will be answered by interviewing the ward representatives.

Name of Hospital _____

Date of Assessment _____

Part one: Service availability checklist

S.no.	Basic surgical service availability	Present	Absent	Remark
1.1	Incision and drainage of abscesses			
1.2	Suturing			
1.3	Acute burn management			
1.4	Male circumcision			
1.5	Closed repair of fracture			
1.6	Hydrocele reduction			

1.7	Biopsy of lymph node or mass or other			
1.8	Chest tube insertion			
1.9	Closed repair of dislocated joint			
1.10	Removal of foreign body			
1.11	Cricothyroidotomy.			
Comprehensive surgical service availability				
1.12	Appendectomy			
1.13	Congenital hernia repair			
1.14	Hernia repair (elective)			
1.15	Hernia repair (strangulated)			
1.16	Laparotomy			
1.17	Tubal ligation			
1.17	Urethral stricture dilatation			
1.18	Amputation			
1.19	Cataract surgery			
1.20	Club foot repair			
1.21	Cystostomy			
1.22	drainage of osteomyelitis-septic arthritis			
1.23	Episiotomy			
1.24	Obstetric fistula repair			
1.25	Open reduction and fixation for fracture			
1.26	Vasectomy			
1.27	Neonatal surgery Cleft palate			
1.28	Dilatation & Curettage			

1.29	Skin grafting and contracture release			
1.30	Tracheostomy			

Part two: Resource Inventory Checklist

This checklist is designed to inventory the infrastructure and program resources available in each hospital's surgical department. And it will be answered by interviewing representatives from each ward and evaluating the functionality of medical equipment.

2.1. Checklist for Surgical supply inventory

S.No.	Supply for surgery	Present	Absent	Remarks
2.1	Suction pump (manual or electric) with catheter			
2.2	Blood pressure measuring equipment			
2.3	Scalpel with blades			
2.4	Retractors			
2.5	Scissors			
2.6	Tissue forceps			
2.7	Gloves (sterile)			
2.8	Surgical glove			
2.9	Gloves (examination)			
2.10	Needle holder			
2.11	Sterilizing skin prep Renewable Items			
2.12	Nasogastric tubes			
2.13	Intravenous fluid infusion set			
2.14	Intravenous cannulas/scalp vein infusion set			
2.15	Syringes with needles (disposable)			
2.16	Sharps disposal container			
2.17	Tourniquet			

2.18	Needles & sutures			
2.19	Splints for arm, leg			
2.20	Electrocautery			
2.21	Adult McGill forceps			
2.22	Pediatric McGill forceps			
2.23	Chest tubes insertion equipment			
2.24	Tracheostomy set			
	Supply for anesthesia			
2.25	Resuscitator bag valve & mask (adult)			
2.26	Resuscitator bag valve & mask (pediatric)			
2.27	Stethoscope			
2.28	Thermometer			
2.29	Oropharyngeal airway (adult size)			
2.30	Oropharyngeal airway (pediatric size)			
2.31	Endotracheal tubes (adult)			
2.32	Endotracheal tubes (pediatric)			
2.33	IV infuser bags			
2.34	Laryngoscope Macintosh blades with bulbs & batteries (adult)			
2.35	Laryngoscope Macintosh blades with bulbs & batteries (pediatric)			
2.36	Functional Anesthesia Machine			
2.37	Ambu bag			
2.38	Oral airways			

2.39	Nasal airways			
2.40	Perfuser			
2.41	Patient monitor			
2.42	Patient monitor for transport			
2.43	Esophageal stethoscope			
2.44	Blood or Fluid pumper			
2.45	Warming blanket			
2.46	Mechanical ventilator for transport			
2.47	Suction machine			
2.48	Capnogram			
2.49	Portable pulse oximeter			
2.50	Blood warmer			
2.51	Manual BP apparatus			
2.53	Oxygen gauge			
2.53	Oxygen cylinder			
2.54	Bougie (Adult)			
2.55	Bougie (Pediatric)			
2.56	Stylet (Adult)			
2.57	Stylet (Pediatric)			
2.58	Anesthesia trolley			
2.59	Oxygen concentrator			
2.60	Double lumen tube 35- 42			
2.61	Suction tip			
2.62	Urinary catheter			

2.63	Spinal needle 22-26			
2.64	Epidural set			
2.65	Tegaderm			
2.66	Insulated nerve block needles			
2.67	Central venous catheterization set			
2.68	Arterial line set with module			
2.69	Defibrillator			

Local Anesthetics				
2.70	Lidocaine 1% with adrenaline			
2.71	Lidocaine 2% with adrenaline			
2.72	Lidocaine 1% without adrenaline			
2.73	Lidocaine 2% without adrenaline			
2.74	Bupivacaine 0.5%			
General Anesthetics				
2.76	Halothane			
2.77	Isoflurane			
2.78	Sevoflurane			
Paralytics				
2.75	Succinylcholine			
2.76	Rocuronium			
2.77	Vecuronium			
2.78	Pancuronium			
2.79	Atracurium			
2.80.	Cisatracurium			
Sedatives				
2.81	Thiopental			

2.82	Ketamine			
2.83	Propofol			
2.84	Etomidate			
Analgesics				
2.85	Pethidine			
2.86	Fentanyl			
2.87	Sufentanil			
2.88	Morphine			
2.89	Alfentanil			
Benzodiazepines				
2.90. Diazepam				
2.91. Midazolam				
Diuretics				
2.92. Furosemide IV				
Vasopressors				
2.93. Noradrenalin				
2.94. Dopamine				
2.95. Dobutamine				
2.96. Phenylephrine				
2.97. Adrenaline				
2.98. Ephedrine				
Beta-blockers				
2.99 Labetolol				
2.101. Metoprolol				
2.102. Propranolol				
2.103. Esmolol				
Steroids				
2.104. Hydrocortisone				
2.105. Dexamethasone				
Anti-emetics				

2.106.	Ondansetron			
2.107	Metaclopramide			
IV Fluids				
2.108.	Normal Saline			
2.109.	Dextrose in Normal Saline			
2.110.	5% Dextrose			
2.111.	Ringer's Lactate			
Miscellaneous				
2.112.	Naloxone			
2.113.	Salbutamol inhaler			
2.114.	Dantrolene			
2.115.	Atropine			
2.116.	Glycopyrrolate			
2.117.	Neostigmine			
2.118.	Aminophylline			
2.119.	Lidocaine IV			
2.120.	Hydralazine			
2.121.	Amiodarone			
2.122.	Intralipid			
2.123.	40% glucose			

2.2 Checklist for infrastructure

No.	Items	Available	Not available	Remark
2.1	Sterile supply store			
2.2	Electric power with back up within 5 minute			
2.3	Running water in procedure room			
2.4	Changing Rooms with lockers (separated for male and female, a minimum of 10 persons). For staff			
2.5	Waiting area			

2.6	Functional telephone is available in Liaison office			
2.7	Close exchange room with visual privacy separate for male and female (patient)			
2.8	Functioning toilet			
2.9	Recovery room			
2.10	Ambulance			

2.3 Guidelines and Recording material checklist

No.	Item	Available	Not available	Remark
	Formats			
3.1	History sheet			
3.2	Safe surgical check list format			
3.3	Operation sheet			
3.4	Anesthesia sheet (pre and intera-operation)			
3.5	Vital sign sheet			
3.6	Medication administration sheet			
3.7	Progress note			
3.8	Discharge summary sheet			
3.9	Signed consent			
3.10	Nursing care plan			
	Registers and Log forms			
3.11	Operation register			
3.12	Scheduling register			
3.13	Admission/discharge register			
3.14	Referral register			
3.15	Inpatient ward register			
3.16	logbook of anesthesia			
3.17	surgical site infection log book			

	Guidelines and SOPs			
3.18	National/institutional safe surgical standard guidelines at service room			
3.19	Standard procedure of hand-overing			
3.20	Protocol for consultation mechanisms			

2.4 Checklist for infection prevention material

S. No.	Infection prevention supply	present	Not present	Remark
4.1	Eye goggle in operation room			
4.2	Mask in the operation room			
4.3	Functioning autoclave			
4.4	Aprons in service provision room			
4.5	Prepared mixed decontaminant solution			
4.6	Sharp waste material storage in the room			
4.7	Solid waste storage bin in each room			
4.8	Gown			
4.9	Soap			
4.10	CSR present with a minimum of 2 functional autoclaves (dry and stem sterilizer)			

2.5 Checklist for human resources

No.	Health worker	sex	No. of health care worker available	No. trained	Remark
5.1	Specialist (surgeon, gynecologist) and IESO				
5.2	General practitioners				

5.3	Anesthetist				
5.4	Nurses				
5.5	Other (specify)				

Part three

**Jimma University, Institute of Health, Department of Health Policy and Management,
Monitoring and evaluation unit**

Observation Checklist of the clients to provider’s interaction

Consent form for Surgeons/Gynecologists/IESO/anesthetist or Nurses:

I want to thank you for taking the time to meet with me today. My name is _____ from Jimma University. I am here to observe the clinical sessions in this ward/department. This is part of the overall evaluation, and it will help to improve the quality of surgical service in this hospital. The observation will be conducted while the **surgeons, gynecologists, IESO, anesthetists, and nurses** provide surgical care, and all findings from the observation will be kept confidential. Furthermore, we will ensure that any information we include in our report does not identify you as the respondent. Are you willing to participate in this observation?

1. Yes 2. No (if yes continue. If no END)

Name of hospital _____ Name of ward _____

Date of observation _____ Time of observation _____

Observed professional _____

S. No.	Activities under observation	Yes	No	Remarks
6.1	Did the service provider wear a uniform and identification badge?			
6.2	Did providers greet clients respectfully?			
6.3	Did the service provider get informed consent for the procedure? (oral or written)			

6.4	Did provides assure confidentiality of clients' information?			
6.5	Did care providers communicate with clients by language they understood?			
6.6	Did care providers explain the steps of the procedures to the clients?			
6.7	Did care providers take surgical/obstetric/gynecologic history of clients?			
6.8	Did care providers have done physical examination?			
6.9	Did care providers, assesses client's vital sign?			

Part Four: Documents Review checklist

Information sheet for hospital CEO/CCO and Case team coordinator

My name is _____ from Jimma University, and as part of an overall evaluation, we will review patient charts, SaLTS management minutes, quality improvement projects action plans (quality improvement project), supportive supervision documents, and feedback in order to capture information related to the process of quality of surgical care services. This will help to improve the quality of life in the future. During the review, the confidentiality of the information will be kept in that the reviewed information will not specify names and other personal information, and the information will be utilized for evaluation purposes only.

May I continue to review the documents? 1. Yes 2. No (IF NO, END) If yes continue

Section one: Surgical service related reports and feedbacks; this checklist will be used to conduct document review surgical management related to assess the implementation of surgical service for those admitted in surgical ward.

Name of hospital _____

Quality state ment	Measurement	Score and verification criteria (quantitative)	Verified by	Skip
--------------------	-------------	--	-------------	------

7.1	Did the hospital have surgical quality management team?	1 Yes 2 No	Confirm TOR	If No skip to Q 7.4
7.2	If yes for Q 7.1 How many surgical service quality management team meeting conducted from last one year	Number of meeting.....	Verify from surgical quality management minute book /PDSA action plan	
7.3	How many PDSA reports available for the last one year	-----		
7.4	Did the hospital practice saving life through safe surgery practice auditing	1 Yes 2. No	1 if yes Verify from surgical quality management minute book/Hospital Quality Unite PDSA reports	If No skip to Q. 7.6
7.5	If yes for Q 7.4 How many surgical practice auditing conducted in the hospital from the last year	-----		
7.6	If yes for Q 7.5 how many surgical practice audit PDSA reports available from last year	-----		

7.7	Did the hospital receives supportive supervision system from higher level management/co-lead hospital	1. Yes 2. No	1 if yes Verify on supportive supervision minute	
7.8	If yes for Q 7.7 how many supportive supervision were conducted from higher level management from last year	-----		
7.9	How many PDSA reports/projects available for the last year on surgical service	-----		
7.10	How many referral cases at the last one year	-----		
7.11	List reason of referrals	-----		

Data collector name: _____ date ___/___/___ signature_____

Checked by _____ date ___/___/___ signature_____

Section two: Checklist of data extraction from patient chart

S. No.	Verification criteria	Score	
8.1	Pre-Operative Assessment is done for surgical patients (P/E , results of lab investigation, diagnosis and proposed surgery identified)	1. Yes 2. No	Yes, If all component present? No, If misses at least one
8.2	Cross matched Blood prepared	1. Yes 2. No	
8.3	Written consent taken	1. Yes 2. No	

8.4	Anesthetic evaluation was done(pre and intera- operation)	1. Yes 2. No	(verify in format)
8.5	Minimum preoperatively needed lab tests are done	1. Yes 2. No	
8.6	All lab tests were done in the same facility	1. Yes 2. No	
8.7	Surgical safety checklist is used	1. Yes 2. No	
8.8	Prophylactic anti-biotic given within one hour of incision	1. Yes 2. No	
8.8	Patient out come	1. Well 2. Complicated 3. Died	
8.9	History sheet, Safe surgical check list format, Operation sheet, Anesthesia sheet (pre and intera-operation), Vital sign sheet, Medication administration sheet, Progress note, Discharge summary sheet, consent sheet and nursing care plan in patient chart.	1. Yes 2. No	

Part five: Client Demography and Satisfaction questionnaires

Jimma University Institute of Health Science Department of Health policy and Management

Hello, how are you? My name is _____. I am working as a data collector for the study conducted by Jimma University health monitoring and evaluation post-graduate student Muluken Markos on **"Evaluation of Saving Life through Safe Surgery (SaLTS) initiative Implementation in Public Hospitals of Kambata Tembaro Zone."**

I would like to interview you a few questions about the surgical service of this hospital. The objective of the study is to assess the level of patient satisfaction with the surgical care services of the hospital and to identify the factors affecting adult patient satisfaction with nursing care in public hospitals in the Kambata-Tembaro zone, which will be important to improve the health

service delivery of the hospitals. Your cooperation and willingness for the interview is very helpful in identifying the problems related to the issue. Your name will not be written on the form, and I assure you that all the information that you give will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any question you do not wish to answer. If you are not comfortable with the interview, please feel free to stop it any time you like. Do I have your permission to continue?

If yes, continue to the next page and if no, skip to the other participant

I interviewer's name _____ signature _____

Code _____ Facility _____

Date if interview _____ Time started _____, Time finished _____

Supervisor's name _____, Signature _____

Section one: Demographic, socio economic related variables and patient conditions

S. No.	Variable	Answer
8.1	What is your age?	-----
8.2	Gender	1) Male 2. Female
8.3	What is your religion?	1)Protestant 2) Orthodox 3)Catholic 4) Others
8.4	What is your Ethnicity	1)Kambata 2)Halaba 3)Hadiya 4)Others
8.5	What is your residence?	1) Urban 2) Rural
8.6	What is your marital status?	1) Never married 2) Married 3) Divorced 4) Widowed
8.7	What is your educational status?	1) Unable to read and write 2) Primary school (1-8) 3) Secondary school (9-12) 4) Certificate 5) Diploma and above
8.8	What is your occupation?	1)Government employee 2) Farmer 3) Merchant 4) Student 5) No job 6) other

8.9	Income (in birr)
8.10	Payment for the service	1)Out pocket 2)CBHI 3) Free
8.11	History of previous admission for surgery	1) Yes 2) No
8.12	Frequency of operation	1)once 2)twice 3) more
8.13	Length of stay (in days)	_____
8.14	Admission ward	1) Surgical 2)Obstetric/ Gynecology 3) Orthopedics
8.15	Health status	1)very well 2) well 3) no change 4)Complicated

Section two: Client’s satisfaction related questioner

What were your surgical service expectations? Tell me how many points each phrase or statement gets on the scale below.

Key: Scale; 1= completely dissatisfied, 2= dissatisfied, 3= not sure (neither satisfied nor satisfied), 4= satisfied and 5= completely satisfied

S.N	Items	completely dissatisfied	dissatisfied	not sure	satisfied	completel y satisfied
	ward care					
8.16	Way nurses treat you with respect and politeness					
8.17	Nurses listen attentively to you					
8.18	Nurses explain things in a way you could understand					
8.19	The way doctors treat you with politeness and respect					
8.20	The way doctors listen attentively to you					

8.21	The way doctors explain things in a way you could understand					
8.22	Pain control					
8.23	Get help as soon as they wanted					
8.24	Staff take into account your privacy					
	In operation theatre					
8.25	Operation theatre staff respectful and polite					
8.26	Operation theatre staff show understanding for your situation					
8.27	Operation theatre staff professional					
8.28	Operation theatre staff pay attention to your questions					
8.29	Operation theatre staff pay attention to complaints like pain, nausea and others					
8.30	Operation theatre staff take into account your personnel preferences					
8.31	Confidence in the theatre staff					
Overall rate of surgical service						
8.32	Overall rating of this hospital surgical service	1-10				
8.33	Recommend this hospital surgical service to your friends and family	1. Yes 2. No				

Part six: KII Guide

Instruction: This guide will be used to assess the surgical service process, barriers to its service provision, and measures taken to alleviate the problems.

Greetings thank you for taking the time to meet with me today. My name is _____ from Jimma University, and I would like to talk to you about your experiences participating in the SaLTS program. Specifically, as one component of our overall program evaluation, we are assessing the quality of surgical service in order to capture lessons that can be used in the future to improve the quality of the service.

All responses will be kept confidential. Remember, you don't have to talk about anything you don't want to, and you may stop the interview at any time. Are there any questions about what I have explained? Are you willing to participate in this interview?

Name of hospital _____

Interviewee

Interviewer

Date

One: KII Guide for zone health department leader and medical service unit coordinator

Position of respondent _____ Sex of respondent _____ Age of respondent _____

Profession of respondent _____ How long you have been in this position (in years) _____

Date of interviewee _____ time (start) _____ time(end) _____ place of discussion _____

- 1) How do you see the service quality of health facilities in this zone/ of this hospital?
- 2) How do you explain the surgical services implementation in governmental hospitals?
- 3) Is there a system of monitoring, supervision and evaluation hospitals surgical service quality?
If yes, How?

(Prob: Could you please describe how frequently conducted, the feedback system, who conducted supportive supervision?) _____

If No, why? _____

4) Is there continuous Quality improvement system in the hospitals on surgical service? If yes, please describe how it is conducted

(prob: capacity building programs, review meeting)_____

If No, why? _____

5) what are the challenges (constraints) to the provision of quality SaLTS service in hospitals of Kambata Tembaro zone/this hospital?

(Probe: Related to work load, number of trained human power, resources to providing the service...).

Why it happen? In your opinion what are possible solutions?

6) What efforts being made to solve these problems and improve quality of SaLTS program in hospitals

thank you!!!

Two: KII Guide for Hospital CEO, CCO and quality unit head

Position of respondent _____ Sex of respondent _____ Age of respondent _____

Profession of respondent _____ How long you have been in this position (in years) _____

Date of interviewee _____ time (start) _____ time(end) _____ place of discussion _____

1) Do you see the service quality of this hospital?

2) Could you please briefly describe me what and how surgical care service provided for those patients admitted in this hospital?

3) Did you ever receive supportive supervision and evaluation related to surgical service provision from higher level officials?

If yes, how do you see the frequently? _____

Who provide the support? _____

What things supported from higher supportive supervisors? _____how feedbacks provided? _____

If no, Why? _____

4) Are there program resources in place to deliver quality SALTS service? If yes do these list resources are available? (*Probe: read medical equipment's, guidelines, staffing*).

If there is shortage, why?

5) How do you see surgical department professionals' involvement in hospital management system? (*Probe: surgical department organizational structure, and about frequency meetings?*)--

If not, why? -----

6) How this hospital conducted SaLTS service quality assessment and improvement? Is there continuous quality improvement system in the hospitals? If yes, please describe how it is conducted (*probe: capacity building, surgical practice auditing, PRT meeting quality improvement plan* _____

If No, why? _____

7) what look like monitoring and evaluation system of surgical service provision? (*Probe: about reporting relationship, implementation of evaluation findings*)

8. What are the barriers to the provision of quality surgical service in this hospital? Why it happen? In your opinion what are possible solutions?

9. What efforts being made to solve this problem and improve quality of surgical care services in hospitals

Thank you!!

Three: KII Guide for Surgery department case manager and head nurse (ward and OR)

Position of respondent _____ Sex of respondent _____ Age of respondent _____

Profession of respondent _____ How long you have been in this position (in years) _____

Date of interviewee _____ time (start) _____ time(end) _____ place of discussion _____

- 1) How surgical services are provided in this hospital/ward? *(prob medication administration, history taking; counseling, physical examination) at pre and post operation.*
- 2) How do you see the surgical service quality in this hospital/ward?
- 3) How do you see the working environment where you are working in provision of quality surgical care service? *(Prob: Does medical equipment's available (the list)*
- 4) Is there standard surgical service guideline, registers and records in this hospital?
- 5) How do you think about implementation of national surgical service quality standards on improving quality surgical care to patients?
- 6) In your experience what gaps on implementation of surgical standards did occur?
- 7) What are some of the common complaints forwarded by your clients on quality of surgical service provision?
- 8) What other obstacles has for the application of surgical standards?
- 9) What efforts being made to improve quality of surgical care services in hospitals ward and operation room.

Thank you!!!

Four: KII Guide for Anesthesia coordinator

Position of respondent _____ Sex of respondent _____ Age of respondent _____

Profession of respondent _____ How long you have been in this position (in years) _____

Date of interviewee _____ time (start) _____ time(end) _____ place of discussion _____

- 1) How surgical services are provided in this hospital operation room? *(prob medication administration, history taking; counseling, physical examination) at pre and intra - operation.*
- 2) How do you see the anesthesia service quality in this hospital/ward?
- 3) How do you see the working environment where you are working in provision of quality anesthesia care? *(Prob: Does anesthetic medical equipment's available (the list)*

- 4) Is there standard anesthesia service guideline, registers and records in this hospital?
- 5) How do you think about implementation of national surgical and anesthesia service quality standards on improving quality surgical care to patients?
- 6) In your experience what gapes on implementation of anesthesia standards did occur?
- 7) What are some of the common complaints forwarded by your clients on quality of anesthesia service provision?
- 8) What other obstacles has for the application of anesthesia standards?
- 9) What efforts being made to improve quality of anesthesia care services in hospitals ward and operation room?

Thank you

Five: KII guideline for infection prevention and patient safety focal/coordinators and incident officers

Position of respondent _____ Sex of respondent _____ Age of respondent _____

Profession of respondent _____ How long you have been in this position (in years) _____

Date of interviewee _____ time (start) _____ time(end) _____ place of discussion _____

- 1) How patient safety can be kept in this hospital?
- 2) How surgical services patient safeties are provided in this hospital/ward?
Prob. at pre and post operation
- 3) How do you see the surgical service quality in this hospital?
- 4) How do you see the working environment where you are working in provision of quality surgical care service? (*Prob: Does medical equipment's available (the list of infection prevention)*)
- 5) How do you think about implementation of national surgical service quality standards on improving quality surgical care to patients?
- 6) In your experience what gapes on implementation of surgical standards did occur?
- 7) What are some of the common complaints forwarded by your clients on quality of surgical service provision?

8) What other obstacles has for the application of surgical standards?

9) What efforts being made to improve quality of surgical care services in hospitals ward and Operation Theater?

Thank you!!!

Annex 2: Questionnaire in Kambatigna (local language)

Mossan hecha hagaraha kalotosa gerdaba dagi xamakata

Jimm Universit fayimma institute Departmenti Fayima policena awanssi Kifila

Qaagishshatta:

Xu'mma fayya galten/hosen, Su'mmui _____ .Anni Jimmi unversiten rossano rossanchu Muluqaan Marqoose kanni hospitalan hujetano Qaado hikimin hujetanee mamatura hasawinami. Tessu kanchi zakin mamatita tewakata hospitals tane tammam. Hikan ekoda tamakata fanqash hasanuboda mirero woys birstine aguru gagita hasana. Tesu xa'mmakata taminam.

Aagumburu yooda te mahaa xa'mmiha haseenataru yooda woroodiin yoo silkiin xa'mmii danditeenanta.

Ekun yemada xammatuta jemenami.

Xammanchi su'mma _____ Furmu _____

Kuxuru _____ Hospital su'mmu _____

Baru _____ jemaramo jechut _____, Goffo jechut _____

Wonna xa'mmut: Hecha hagari xammakata

Wollut	Xammakat	Fankashut
8.1	Umuruk meot?	-----
8.2	Megut	1) Gonchu 2. Meataa
8.3	Amanatuki mani?	1)Phentita 2) Orthodoxa 3)Catholika 4) Wolot(kul)
8.4	Minadebuk mani?	1) Kambata 2)Halabicha 3)Hadiychu 4) wolot(kul)

8.5	Hecha manit?	1) Getera 2) Ketama
8.6	Gaabichchi duuhati?	1) Agisumbaa 2) Agishe 3) Hiramia 4) Manchu yobai
8.7	Roshsha duuhhat?	1) Anababu xaafu dendumba'a 2) Wonna gardeba (1-8) 3) Lanki gerdaba (9-12) 4) Certifketu yossi 5) Diplomu and aludin
8.8	Huje hageru?	1)Mangist hujita 2) Gebarchua 3) Nagadichua 4) Rosanchua 5) hujit yobaia 6) woloti
8.9	Aphut (birrn)
8.10	Gizza mikenata hanochet	1)Gagi kisichet 2)Maxema 3) Xalla
8.11	Kanchi biren kedo hokmn ossaen kassa	1) Osaem 2) Osauba'a
8.12	Meet kodata ossaenta	1)mate 2)lame 3) holama
8.13	Meu barri egertenta	_____barria
8.14	Hakane ossenta	1) kedo hikmina 2)Amaka hawin 3) Mikechi hawin
8.15	Fayyima dereju	1)Abish denamua 2) denamua 3) ananomat yooba 4)wonnachi aba keeme

Lanki gardabi Xammakata erkati xammuta

Akamano manu hatigona denammita kalatuta assendo kanchi worodin yoo xammaka 1-5 elan kaxxe wolluta assiye. Assitenata jechuta horomani macoccamogin assiye.

kulfakata;; 1= Abish farra, 2= farra, 3= Mahaniba, 4= danamua and 5= abish denamua

S.N	Xammakat	Abish				Abish
	Kititle kifilan	farra	Farra	Mahaniba	Danamua	denamua
8.16	Nursakat denamoga abise kalite					
8.17	Nursakat denamoga macocin kalite					
8.18	Nursakat tawakata agaanoga xawa kulita					
8.19	doctorat denamoga abise kalite					
8.20	doctorat denamoga macocin kalite					
8.21	doctorat tawakata agaanoga xawa kulita					
8.22	Xideta kamamus					
8.23	Kalatuta assano					
8.24	Hujatanu keneta qorabagu					
	Operashin Kedo hikmn/kifilan					
8.25	Kifils sertagnu abisusa					
8.26	Kifils sertagnu abisusa tawakata aganoga assitagu					

8.27	Kifils sertagnu muyinsa kibru yosagu					
8.28	Kifils sertagnu tamaka denamoga fankashita					
8.29	Opereshin kifil sertagnu xabayn kalita					
8.30	Operation kifil seratagu tufisishodana tejoda delit kalita					
8.31	Operation kifil seratagu hasananega assitagu					
8.32	Operation kifil seratagu amatagu					
Horoma hujit						
8.33	Hundit kedo hikmn hujit	1-10				
8.34	Kaa hospital mini manu woym jalakat kalatunt kane akunta kultenanido	1. kulam 2. Kulamba'a				

Galaxxaam!

Annex 3: Information matrix

Table 13: An information matrix of availability, compliance, and satisfaction indicators used in the evaluation of the SaLTS initiative at Kambata Tembaro zone public hospitals in 2022.

Evaluation question	Dimension	Indicators	Formula	Source of data	Data collection method	Data collection tool
Are the resources needed to provide surgical service available? If not why?	Availability	Surgeon to patient ratio	Total number of surgeons*5/total surgical procedures done at OR	Hospitals KPI data base	Human resource inventory	Human resource inventory checklist
		Proportion of basic surgical services availability	Available basic surgical services/total number of basic services	Hospital service list	Service list	Service availability check list
		Proportion of availability of comprehensive surgical services	Available comprehensive surgical services/total number of comprehensive service	Hospital service list	Service list	Service availability check list
		Proportion of medical supplies available in the	Medical supplies available/total expected surgical department supplies	Supply list	Supply inventory	Inventory checklist

		hospital's surgical department				
		Number of hospitals having SaLTS standard guideline on the day of assessment				Recording and formatting material check list
		Number of hospitals having all standardized surgical documentation formats				Recording and formatting material check list
		Proportion of surgical teams that received at least one training	Trained surgical care provider/total surgical care providers	Human resource training list	Human resource inventory	Human resource inventory checklist
Does the surgical team deliver services in line with the	Compliance	Proportion of clients received comprehensive assessment based on the guideline	Patient who receive comprehensive surgical assessment/total surgical patient included in this study	Patient chart	Chart review	Chart review check list

SaLTS guidelines? If not, why?	Rate of surgical safety checklist utilization	Number of clients surgical safety checklist used/total surgical patient*100	Patient chart	Chart review	Chart review check list
	Proportion of patient charts with complete patient records	Proportion of surgical patient charts with complete patient records/total surgical patient (from sampled patients charts)	Patient chart	Chart review	Chart review check list
	Proportion of observation sessions with privacy of the patient was maintained	Surgical patient privacy maintained/total surgical patient observed	Observations attended	Observation	Observation checklist
	Proportion of observation sessions with informed consent was taken	Surgical patient informed consent taken during procedure/total surgical patient sampled	Observations attended	Observation	Observation checklist
	Number of surgical auditing conducted with written feedback		Quality unit minute	Report review	Surgical service related reports and feedbacks checklist

		Number of supportive supervision conducted in past one year		Quality unit minute	Supportive supervision minute	Surgical service related reports and feedbacks checklist
What is the satisfaction status of clients with surgical services?	Satisfaction	Percentage of patient satisfaction mean score with the way nurses treat them with politeness and respect	Nurses treat them politeness and respect score -potential minimum score / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the way nurses listen attentively	Nurses listen attentively score -potential minimum score / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the way nurses explain things to them in a way they can understand	Nurses explain things to them in a way they can understand score -potential minimum score /	clients	Exit interview	Structured questionnaire

			Potential maximum score(5)-potential minimum score(1) *100			
		Percentage of patient satisfaction mean score with the way doctors treat with politeness and respect	Doctors treat with politeness and respect score -potential minimum score) / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the way doctors listen attentively	Doctors listen attentively score -potential minimum score / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the way doctors explain things to them in a way they can understand	Doctors explain things to them in a way they can understand score -potential minimum score / Potential maximum score(5)-potential minimum score(1)	clients	Exit interview	Structured questionnaire

			*100			
		Percentage of patient satisfaction mean score with pain control	Patient satisfaction mean score with pain control score -potential minimum score /Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the call and received assistance as soon as possible	Patient satisfaction mean score with the call and received assistance as soon as possible -potential minimum score /Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the cleanliness and comfortableness of the ward	Patient satisfaction mean score with the cleanliness and comfortableness of the ward - potential minimum score /	clients	Exit interview	Structured questionnaire

			Potential maximum score(5)-potential minimum score(1) *100			
		Percentage of patient satisfaction mean score with the staff taking into account their privacy	Patient satisfaction mean score with the staff taking into account - potential minimum score / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the operation theatre staff's respect	Patient satisfaction mean score with the staff taking into account -potential minimum score / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the professionalism of the operating room staff	Patient satisfaction mean score with the professionalism of the operating room staff - potential minimum score /	clients	Exit interview	Structured questionnaire

			Potential maximum score(5)-potential minimum score(1) * 100			
		Percentage of patient satisfaction mean score with the operation theatre staff's attention to their questions	Patient satisfaction mean score with the professionalism of the operating room staff - potential minimum score / Potential maximum score(5)-potential minimum score(1) * 100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the operation theatre staff's attention to complaints like pain, nausea, and others	Patient satisfaction mean score with the operation theatre staff's attention to complaints like pain, nausea, and others - potential minimum score / Potential maximum score(5)-potential minimum score(1)	clients	Exit interview	Structured questionnaire

			*100			
		Percentage of patient satisfaction mean score with the operation theatre staff take into account your personnel preferences	Patient satisfaction mean score with the operation theatre staff take into account your personnel preferences -potential minimum score / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire
		Percentage of patient satisfaction mean score with the patient's confidence in the operating theatre staff	Patient satisfaction mean score with the patient's confidence in the operating theatre staff -potential minimum score / Potential maximum score(5)-potential minimum score(1) *100	clients	Exit interview	Structured questionnaire

NB: Potential maximum score is 5 and potential minimum score is 1.

Annex 4: Relevance Matrix

Table: relevance matrix of indicators used for evaluation of saving life through safe surgery initiative service in public hospitals of Kambata Tembaro zone, 2022

	Indicators	Availability	Compliance	Acceptability
	Availability Indicators			
1	Surgeon to patient ratio from May 21 – June 20/2022	RRR	RR	RRR
2	Proportion of basic surgical services availability	RRR	RR	RRR
3	Proportion of comprehensive surgical services availability	RRR	RR	RR
4	Proportion of medical supplies available in the hospital's surgical department	RRR	R	RR
5	Number of hospitals having SaLTS standard guideline on the day of assessment	RRR	RR	R
6	Number of hospitals having all standardized surgical documentation formats	RRR	RR	R
7	Proportion of surgical teams that received at least one SaLTS initiative training session between April 2021 and May 2022	RRR	RRR	R
	Compliance indicators			
1	Proportion of clients received comprehensive assessment based on the guideline SaLTS initiative	RR	RRR	R
2	Rate of surgical safety checklist utilization	RR	RRR	R
3	Proportion of patient charts with complete patient records of surgical patients	RR	RRR	R

4	Proportion of observation sessions with privacy of the patient was maintained in surgical ward	RR	RRR	RRR
5	Proportion of observation sessions with informed consent was taken for surgical patient	RR	RRR	RR
6	Number of surgical auditing conducted with written feedback July 2021–June /2022	RR	RRR	RR
7	Number of supportive supervision conducted in past one year July 2021–June /2022	RR	RRR	RR
Acceptability/satisfaction indicator				
1	Percentage of patient satisfaction mean score with the way nurses treat them with politeness and respect	RR	RR	RRR
2	Percentage of patient satisfaction mean score with the way nurses listen attentively	RR	RR	RRR
3	Percentage of patient satisfaction mean score with the way nurses explain things to them in a way they can understand	RR	RR	RRR
4	Percentage of patient satisfaction mean score with the way doctors treat with politeness and respect	RR	RR	RRR
5	Percentage of patient satisfaction mean score with the way doctors listen attentively	RR	RR	RRR
6	Percentage of patient satisfaction mean score with the way doctors explain things to them in a way they can understand	RR	RR	RRR
7	Percentage of patient satisfaction mean score with pain control	RR	RR	RRR
8	Percentage of patient satisfaction mean score with the call button and received assistance as soon as possible	RR	RR	RRR
9	Percentage of patient satisfaction mean score with the cleanliness and comfortableness of the ward	RR	RR	RRR

10	Percentages of patient satisfaction mean score with the staff taking into account their privacy.	RR	RR	RRR
11	Percentage of patient satisfaction mean score with the operation theatre staff's respect	RR	RR	RRR
12	Percentage of patient satisfaction mean score with the professionalism of the operating room staff	RR	RR	RRR
13	Percentages of patient satisfaction mean score with the operation theatre staff's attention to their questions.	RR	RR	RRR
14	Percentage of patient satisfaction mean score with the operation theatre staff's attention to complaints like pain, nausea, and others	RR	RR	RRR
15	Percentage of patient satisfaction mean score with the operation theatre staff take into account your personnel preferences	RR	RR	RRR
16	Percentage of patient satisfaction mean score with the patient's confidence in the operating theatre staff	RR	RR	RRR

Key: RRR =Very Relevant RR = Relevant R = Poorly Relevant.

Annex 5: Meta-Evaluation Judgment checklist

Checklist for Judging Evaluation Designs and Reports

Title of Evaluation document: Implementation evaluation of saving life through safe surgery in public hospitals of Kambata Tembaro zone

Name of reviewer: program stakeholders

This judgment checklist contains the four Meta evaluation standards (Utility, feasibility, propriety and accuracy) with their total 30 sub-standards. Each sub-standard also has checkpoints and total points of 85 cheek pointes.

The Requirements for Utility Standard

Sub-Standards and checkpoints	Met criteria			Elaboration
	Yes (1)	No (0)	NA	
U1: Stakeholder Identification				
Does clearly identified the evaluation client	1			
Does consult potential stakeholders to identify their information needs	1			
Do arrange to involve stakeholders throughout the evaluation	1			
Are address stakeholders' evaluation needs	1			
Does the information to be provided allow necessary decisions about the Program to be made?	1			
U2: Evaluator credibility				
Does the evaluator can address stakeholders' concerns?	1			
Does the evaluation plan responds to key stakeholders' concerns?	1			
Do the given stakeholders information technical quality and practicality?	1			
Do appropriately attend stakeholders' criticisms and suggestions?	1			
U3: Information scope and selection				
Are the client's evaluation requirements understood?		0		
Assign priority to the most important stakeholders?	1			
Does the stakeholders' questions addressed?	1			
U4: Values identification				
Do alternative sources of values consider for interpreting findings	1			
Are a clear, defensible basis for value judgments provide	1			
Do identify pertinent customer needs	1			
Do the stakeholders' values take into account?	1			
U5: Report clarity				
Do reports focus on contracted questions?	1			
Are conclusions and recommendations have support?	1			
U6: Report timeliness and Dissemination				
Are make timely interim reports to intended users?	1			
Does the presentations appropriately briefed?		0		
U7: Evaluation Impact				
Do stakeholders' uses of findings encourage and support?	1			

The Requirements for Feasibility Standards

Sub-Standards and checkpoints	Met criteria			Elaboration
	Yes(1)	No(0)	NA	
F1: Practical Procedures				
Do data burden minimized?		0		
Does competent staff appoint?	1			
Did TOR developed?	1			

F2: Political Viability				
Do bias or misapply the findings counteract attempts?	1			
Do agree on editorial and dissemination authority	1			
Does any corrupted evaluation terminate	1			
F3: Cost Effectiveness				
Does program improvement foster?	1			
Does accountability information provide?	1			
Do new insights generate?	1			
Does an effective practice spread?		0		

The Requirements for Propriety Standards

Sub-Standards and checkpoints	Met criteria			Elaboration
	Yes(1)	No(0)	NA	
P1: Service Orientation				
Does excellent service promote?	1			
Does the evaluation's service orientation clear to stakeholders?	1			
Are program strengths to build on Identify?	1			
Are harmful practices exposing?	1			
P2: Formal Agreement				
Did the evaluation received ethical approval letter.	1			
Do confidentiality/anonymity of data formal was assured?	1			
P3: Rights of Human				
Do make clear to stakeholders that the evaluation will respect and Protect the rights of human subjects?	1			
Do stakeholders informed?	1			
Are participant values understood?	1			
P4: Human Interactions				
Are relate to stakeholders in a professional manner?	1			
Do effective communications with stakeholders maintain?	1			
Does the institution's protocol follow?				
Are sensitive to participants' diversity values and cultures?	1			
P5: Complete and Fair Assessment				
Do give account of the evaluation's process?	1			
Do have the draft report reviewed?	1			
Is acknowledge the final report's limitations?	1			

The Requirements for Accuracy Standards

Sub-Standards and checkpoints	Met criteria			Elaboration
	Yes(1)	No(0)	NA	
A1:Program Documentation				

Do collect the intended program descriptions	1			
Does describe how the program was intended to function	1			
Are discrepancies between the various descriptions analyses	1			
A2:ContextAnalysis				
Does multiple sources of information use to describe the program's Context?	1			
Do estimate context of program outcomes effects?	1			
A3:Described Purposes and Procedures				
Do identify points of agreement among stakeholders regarding the evaluation's purposes		0		
Does the actual evaluation procedures record	1			
A4:Defensible Information Sources				
Are variety sources of information obtained?	1			
Do employ a variety of data collection methods?	1			
Do define the population for each source?	1			
A5:Valid Information				
Do the evaluation focus on key questions	1			
Do the data collectors train and calibrate	1			
A6:Reliable Information				
Does the unit of analysis specify?	1			
Do levels of reliability of measuring devices acceptable?	1			
Are the consistency of scoring, categorization, and coding check And report?	1			
A7:SystematicInformation				
Do establish protocols for quality control of information?	1			

THESIS DECLARATION

I, the undersigned, hereby declare that this thesis is my original work. The work has not been presented for degree in any university and source of materials used for the project has been acknowledged.

Student's Name: Muluken Markos Signature: _____ Date: _____

Name and signature of internal examiner for approval.

Name: _____ Signature: _____ Date: _____

This thesis has been submitted with my approvals as university advisor.

Approval of 1st advisor

Name: _____ Signature: _____ Date: _____

Approval of 2nd advisor

Name: _____ Signature: _____ Date: _____

Name of the institution: **Jimma University** Date of submission: _____