



**ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE
DEPARTMENT OF ANESTHESIA**

**DETERMINING THE OUTCOME OF SURGICAL INTERVENTION AND ITS
ASSOCIATED FACTORS AMONG OVARIAN CANCER PATIENTS AT
SELECTED PUBLIC HOSPITALS IN ADDIS ABABA, ETHIOPIA (2024/2025).**

BY

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DETERMINING THE OUTCOME OF SURGICAL INTERVENTION AND ITS ASSOCIATED FACTORS AMONG OVARIAN CANCER PATIENTS AT SELECTED PUBLIC HOSPITALS IN ADDIS ABABA, ETHIOPIA.

I agree, as the person signing this, to take on all responsibilities for the scientific and ethical conduct of this research project and declare that this thesis is my original work in partial fulfillment of the requirement for the Masters of Science in Anesthesia.

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ACRONYMS AND ABBREVIATIONS

AAU	Addis Ababa University
AOR	Adjusted odds ratio
ASA	American society of Anesthesiology
FIGO	International Federation of Gynecology and Obstetrics
EOC	Epithelial ovarian cancer
FIGO	International Federation of Gynecology and Obstetrics
HR	Hazard Ratio
OC	Ovarian Cancer
PRBCT	Perioperative red blood cell transfusion
PDS	Primary debulking surgery
SD	Standard deviation
SPHMMC	Saint Paul's Hospital Millennium Medical College
TASH	Tikur Anbesa Specialized Hospital
UK	United Kingdom
USA	United states of America
WHO	World Health Organization

ABSTRACT

Introduction: Ovarian cancer is the seventh main cause of cancer related death among women globally, and it is the leading cause of cancer related death among gynecological cancers. Healthcare professionals continue to face challenges in improving surgical intervention practices. Furthermore, there is a lack of sufficient research to clearly determine the outcomes of surgical intervention and the factors influencing them. Therefore, this study aimed to determine the surgical intervention outcomes and identify factors associated with these outcomes in patients underwent ovarian cancer surgery.

Objective: To determine the outcomes of surgical interventions and their associated factors among ovarian cancer patients in selected public hospitals in Addis Ababa, Ethiopia, 2024/2025.

Methods: A retrospective chart review study was conducted among 252 ovarian cancer patients who underwent surgical intervention at Tikur Anbesa specialized hospital and Saint Paul's hospital millennium medical college in Addis Ababa, Ethiopia from November 2021 to November 2024. A simple random sampling was used to selected participants. Data were collected using EpiData 4.6 and analyzed STATA 17. Descriptive statistics were summarized using graphs and tables, Bivariate and multivariable logistic regression analyses were performed. In multivariable logistic regression, a statistically significant connection was defined as a P-value <0.05 . the odds ratio along with 95%CI was estimated to measure the strength of the association.

Result: 181(72%) patients had Good surgical intervention outcome for ovarian cancer, whereas the rest patients have poor outcomes. Age ≥ 55 years (AOR = 3.28, 95% CI: 1.37, 7.84), advanced FIGO stage (AOR = 3.84, 95% CI: 1.48, 9.97), higher ASA classification III–IV (AOR = 3.18, 95% CI: 1.46, 6.92), presence of comorbidity (AOR = 1.94, 95% CI: 0.95, 3.95), and perioperative blood transfusion (AOR = 3.08; 95% CI: 1.49–6.36) and not receiving chemotherapy (AOR = 2.77, 95% CI: 1.34, 5.71) were the significantly associated factors of the good surgical intervention outcome for ovarian cancer. On the other hand, having parity ≥ 2 was associated with a decreased likelihood of poor surgical outcomes (AOR = 0.64, 95% CI: 0.27, 1.48).

Conclusion: the good surgical intervention outcomes of patients with ovarian cancer who were treated surgically in this study was low. Factors like, advanced stage, Poor ASA physical status, comorbid medical conditions, lack of access to chemotherapy and perioperative blood transfusions were found to influence the surgical intervention outcome. Having parity ≥ 2 is associated with a decreased likelihood of poor surgical outcome.

Keywords: Ovarian Cancer, Mortality status, Surgical interventions, Addis Ababa

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Ovarian cancer is one of the leading causes of cancer related death among woman worldwide, ranked as the eighth most common cancer diagnosed and the seventh main cause of cancer deaths among women globally. Represents about 1.7% of the 19.3 million total Cancer diagnosis and 2.1% of the 10 million total cancer deaths globally. Among the gynecological malignancies, ovarian cancer is the first leading cause of cancer related death worldwide, followed by cervical and uterine cancers(1)

Ovarian cancer has a lower incidence rate than others. However, the death rate is substantially higher. The mortality rate from ovarian cancer is expected to rise dramatically by 2030. Epithelial tumors is the most common histological type account for more than 90% of ovarian cancers, with sex-cord stromal and germ cell tumors leading for the remaining 10% (2,3). Ovarian cancer, widely known as the "silent killer," is one of the most lethal gynecological malignancies in women because of its gradual development and unknown symptoms. As a result, over 75% of patients are diagnosed at an advanced stage, when the disease has already spread beyond the ovaries significantly limiting treatment options (4).

Surgical outcome in ovarian cancer is traditionally classified according to the amount of postoperative residual tumor. Complete resection is Reflected if there is no macroscopically visible tumor. If any visible tumor remains after surgery, it is measured according to its largest diameter. Surgery that left residuals of up to 1 cm maximum diameter had been referred to as optimal debulking and that which left any larger residual tumor had been called suboptimal debulking (5).

Surgical treatment for ovarian cancer has significantly advanced, with a growing focus on more aggressive procedures. These aim to remove as much of the tumor as possible, even in patients with advanced-stage disease, to improve survival outcomes (6). The gold standard in the treatment of ovarian cancer, with the aim of removing the tumor and improving survival status. However, the optimal surgical approach and its impact on patient prognosis vary depending on several factors, including the stage of the cancer, the patient's health and the surgeon's preference (7)

In Ethiopia, the treatment of ovarian cancer encounters major challenges in achieving the best possible surgical outcomes. Poor availability of trained surgical teams, late presentation, suboptimal diagnostic facilities, and a shortage of resources all translate to suboptimal management. For instance, research in Ethiopia have shown that most ovarian cancer is diagnosed at late stages, and about half of the surgical cases had residual disease after surgery, which has a significant impact on survival (8)

As a result, the purpose of this study is to examine the results of surgical procedures and identify the important factors influencing those outcomes in ovarian cancer patients getting care at selected public hospitals in Addis Abeba. The findings look for to support clinical decision-making, guide national cancer care policies, and, eventually, improve the quality of surgical oncology services for Ethiopian women suffering by this life-threatening disease in Ethiopia.

1.2 Statement of the problem

In 2020, ovarian cancer accounted for more than 313,000 new cases and 207,000 deaths overall the world, making the leading cause of death from gynecologic malignancies (9). due to a lack of standardized treatment protocols, delayed detected, and restricted access to specialized care, the incidence and mortality rates are increasing in Sub-Saharan Africa, including Ethiopia. according to hospital-based studies, ovarian cancer accounts for about 27.67% of all gynecological cancers in Ethiopia (10). even though surgery is the main form of treatment, little is known about patient outcomes, specifically survival rates and postoperative complications. This knowledge gap limits the ability of clinicians, policymakers to optimize treatment solutions.

No thorough study has looked at the results of ovarian cancer surgeries performed in public hospitals in Addis Ababa, such as Tikur Anbessa Specialized Hospital, and Saint Paul millennium medical college (SPMMC) which act as referral centers for advanced gynecologic oncology care. Numerous variables, such as FIGO Stage, patient comorbidities, and perioperative management, can affect postoperative results. However, there is not enough data to inform risk stratification and enhance perioperative care in Ethiopia, where late-stage presentation and health system limitations are prevalent (11). locally relevant clinical guidelines and raising the standard of care require knowing the percentage of patients who had good versus poor surgical outcomes as well as the underlying predictors. Therefore, determining the results of surgical procedures and identifying the contributing factors among patients with ovarian cancer in public hospitals in Addis Ababa, Ethiopia, was the goal of this study in order to produce data that can direct advancements in clinical treatment and health policy.

1.3 Justification of the study

Evaluating surgical outcomes in Ethiopia is essential for both clinical and public health reasons, since over 70% of ovarian cancer patients in low- and middle-income nations arrive with advanced-stage disease and have limited access to multidisciplinary care (12). By offering context-specific data on postoperative outcomes and their determinants among ovarian cancer patients in Addis Ababa's public hospitals, this study will close a significant evidence gap. strategies to improve surgical outcome, minimize complications, and facilitate earlier treatment and customized interventions will be informed by the findings. furthermore, in order to lower the death rate from ovarian cancer and increase long-term patient survival in Ethiopia, the results will be important for the development of infrastructure, workforce training, and policy (1).

Even though some studies have been conducted internationally, no prior study has been conducted in our country regarding the surgical intervention outcomes of ovarian cancer patients and its associated factors, the result of this study could help clinical practitioners to evaluate the quality of their surgical procedures and work to improve the service quality.

This study will be playing an essential role in helping health professionals by giving clearly understand about determining the outcome of surgical intervention and its associated factors among ovarian cancer patients. It will also serve as a foundational for future study while filling an important gap in baseline surgical outcome information and associated factors among ovarian cancer Ethiopia and the surrounding region. the findings will contribute meaningfully to the existing literature. Additionally, the results can help the government for more targeted allocation of resources by focusing the key factors that influence the mortality, leading to improve good surgical outcome.

CHAPTER TWO: LITURATURE REVIEW

To determining the outcome of surgical intervention and its associated factors among ovarian cancer patients, key socio demographic determinants, type of surgical procedure, perioperative care, severity of disease, and histological type of ovarian cancer should be analyzed. identification of these predictors may lead to improved treatment plan. Enhance general outcome, and reduced mortality rates among patients who have underwent surgical producers (8,13)

2.1 Surgical Management outcome

ovarian cancer remains one of the most lethal gynecologic malignancies, largely due to its late-stage diagnosis and complex management. despite advances in surgical techniques and chemotherapy, surgical outcomes vary significantly across regions and health systems. according to retrospective study conducted in Indonesia, 65.2% of surgically managed patients are died. This finding aligns with previous studies that have shown poor survival rates in low-resource settings due to delays in diagnosis and limited access to specialized care (14).

The major morbidity, defined as serious perioperative complications such as hemorrhage, sepsis, or organ injury, should be kept below 33% to ensure a balance between surgical aggressiveness and patient safety. centers that achieve optimal cytoreduction without exceeding this morbidity threshold often benefit from specialized surgical teams, high-volume settings, and robust perioperative support services (15).

According to retrospective cohort study conducted in New York, good surgical outcome was significantly higher in patients with stage I and II disease at 86% versus 42% in stage III and 26% in stage IV. However, the study has many limitations, including a lack of discussion on potential biases which can weaken the validity of its results. In order to perform better studies in the future, it is essential these biases are tackled so that more precise conclusions (16).

According to a retrospective study in Indian, good surgical outcome is high in optimal debulking at 60% compare to suboptimal debulking at 31%. strengths of the study include clearly defined inclusion and exclusion criteria and appropriate statistical analysis. The finding is only focus on the epithelial ovarian cancer only. These limitations highlight the need for further research to confirm these outcomes and identify additional factors that influencing surgical outcomes(17).

surgical outcomes for ovarian cancer in Ethiopia are faced by late-stage presentation, incomplete tumor resection, and systemic resource constraints. prioritizing early diagnosis, standardized surgical training and equitable chemotherapy access could significantly improve survival in this young, high-risk population. additionally, Incomplete cytoreduction rates were high, linked to limited access to specialized oncology centers and advanced surgical techniques (8)

2.2 Factors associated with surgical intervention outcome of Ovarian cancer

2.2.1 Socio demographic

The mean age of patients with epithelial ovarian cancer was 54.4 ± 11.5 years, according to a retrospective cohort study conducted in Lagos, Nigeria. in Kenya, the majority of the ovarian cancers were occurring among patients who were less than 60 years old (65%), with a mean age of 51.28 ± 14.24 years in Ethiopia, patients' median age was 47 years old. these studies are limited by the incomplete data because of the single-center study emphasis, small sample size, and poor documentation processes at their respective centers, these limitations will be addressed by employing sound data collection methods and following good record-keeping practices (2,8,18).

2.2.2 Clinical related factors

Among ovarian cancer patients who underwent surgery, the majority of the patients are presented with stage III disease 46.6%. epithelial ovarian cancer was the most common tumor type with 85.2%. disease recurrence was seen in 33.1% of the patients who received the surgical management (19). epithelial ovarian cancer the common histological subtype accounted for 65% (19). According to a retrospective study conducted in Kenya revealed that epithelial ovarian cancer (EOC) was found in 82.1% of patients, followed by sex cord-stromal ovarian cancer (12.5%) and germ cell cancer (5.4%). most patients (50.9%) were diagnosed at stage IV, and hypertension was the most common comorbidity, affecting 29.5 (2). Also, another study done in Romania hypertension was the common comorbidities followed by diabetes mellitus (20).

Based on a retrospective cohort study conducted by Piszczan et al, (2019) conducted at Addis Ababa, Ethiopia, 73.0% of patients had epithelial cancers, followed by germ cell tumors (8.2%), and sex cord-stromal tumors (3%). Surprisingly, 48.2% of patients were stage III or IV at

presentation. The most significant prognostic factor for poor outcome was found to be residual tumor after surgery, with a measured median survival period of 32.5 months(8).

2.2.3 Surgical Treatment and Related Factors in Ovarian Cancer

According to a study conducted in UK, found there is no significant surgical outcome difference among patients received neoadjuvant chemotherapy (NAC-IDS) and patients receiving primary debulking surgery (PDS) (21). additionally, overall good surgical outcome was 46.7% for patients who received neoadjuvant chemotherapy (NAC-IDS) and 31.3% for patients receiving primary debulking surgery (PDS) furthermore, those who received adjuvant chemotherapy had 56% good surgical outcome compare to those who did not receive chemotherapy 40%. limitations, there are restrictions with the small sample size and unavoidable biases which means that further studies need to account for these and have a greater understanding of ovarian cancer outcomes (14).

Perioperative blood transfusion was given to 37.3% of patients, out of those the risk of death is increased by 28% among those receiving perioperative blood transfusion compared to those who didn't receive. with overall 3 years survival in the perioperative transfusion group and non-transfusion group 49%, 58%, respectively (22).

A study conducted in France, Spain, Poland the overall prevalence of post operative complications was around 22.4%. among them Patients who underwent Primary debulking surgery had a higher rate of complications (28.6%) than patients who underwent interval debulking surgery and postoperative complications were not statical significantly associated with overall survival (23).

2.3 Research Question

2.3.1 Primary Research Question

1. What are the overall outcomes of surgical interventions and the associated factors among ovarian cancer patients at selected public hospitals in Addis Ababa, Ethiopia?

2.3.2 Secondary Research Questions:

2. What is the proportion of good vs. poor surgical outcomes among ovarian cancer?
3. What patient, clinical, and surgical factors are associated with postoperative outcomes?

2.4 Conceptual formwork

The following conceptual framework is constructed by the reading of various works of literature that have been conducted on determining the outcome of surgical intervention and its associated factors among ovarian cancer patients at selected public hospitals in Addis Ababa, Ethiopia.

The framework consists of demographic, clinical, and treatment-related factors concerning patient survival. By realizing the interaction among the factors, the study aims at presenting a consistent account of their influence towards surgical outcome (16,24–26).

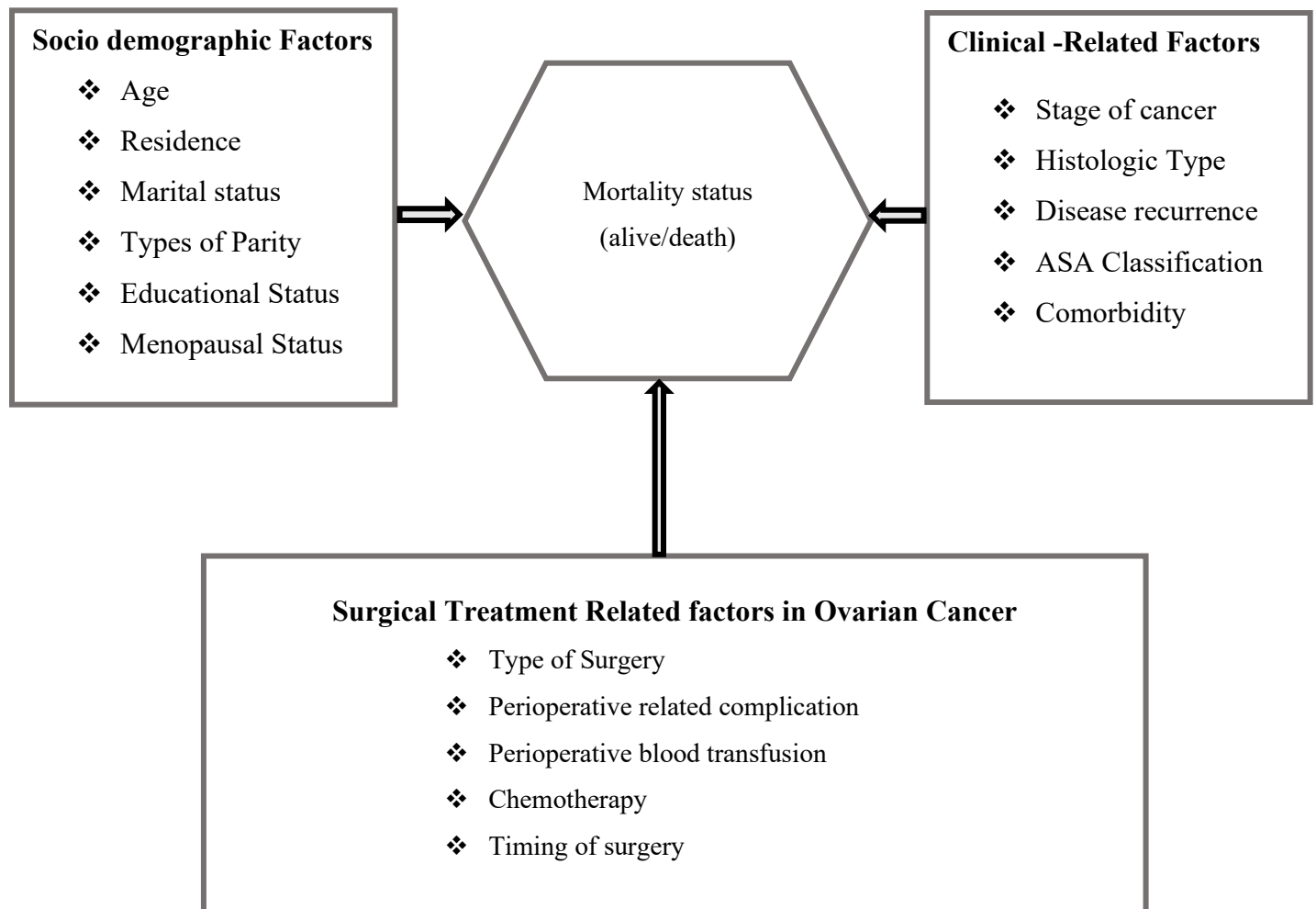


Figure 1. Conceptual framework of the study to determine the outcomes of surgical interventions and their associated factors among ovarian cancer patients in selected public hospitals in Addis Ababa, Ethiopia 2024/25.

CHAPTER THREE: OBJECTIVE

3.1 General objective

- ✓ To determine the outcomes of surgical interventions and their associated factors among ovarian cancer patients in selected public hospitals in Addis Ababa, Ethiopia, 2024/2025

3.2 Specific Objectives

1. To assess the proportion of ovarian cancer patients with good and poor postoperative outcomes following surgical intervention in selected public hospitals in Addis Ababa.
2. To identify the predictors of postoperative outcomes among ovarian cancer patients in selected public hospitals in Addis Ababa, Ethiopia.

CHAPTER FOUR: METHODS

4.1 Study Design

A retrospective chart review was conducted from patients admitted and surgically treated between November 30, 2021, to November 30, 2024, at Tikur Anbessa Specialized Hospital and St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia.

4.2 Study Area

The study was conducted in Addis Ababa, is the capital city of Ethiopia. the world population Review estimate the population of the city in 2024 it was approximately 5.7 million. the city has more than 52 hospitals, twelve public and above forty private hospitals, among them, almost only TASH and SPHMMC given a service.

TASH was established in 1972 in Addis Ababa, it is one of the biggest public specialized hospital and the hospital equipped with more than 600 beds, and handling different kinds of surgical cases. As a 24/7 hospital, TASH oncology center diagnosed and treated over 60,000 patients every year, and therefore, it is among the busiest hospitals in the country. It has 9 operating room and 8 post-anesthesia care unit beds in order to facilitate extensive treatment like gynecologic oncology.

St. Paul's Hospital Millennium Medical College was founded in 1968 by Emperor Haile Selassie. The hospital started in 2007 under Federal Ministry of Health. SPHMMC equipped with over 700 inpatient beds, and admitted around 1,200 emergency and outpatients per day.

Tikur Anbessa Specialized Hospital (TASH) and St. Paul's Hospital Millennium Medical College (SPHMMC) were selected due to their ability in the surgical management of advanced gynecologic oncology cases, diverse patient populations, collection of large-scale data, specialty services, and well-established research units. both hospitals had complete cancer care including diagnosis, surgical intervention, chemotherapy, and palliative care with specific emphasis on gynecologic oncology patients. moreover, the hospitals were the sole cancer referral centers in the country.

4.3 Source of Population

The source populations were all cases surgically managed for ovarian cancer at TASH and SPHMMC from November 30, 2021 to November 30, 2024 in Addis Ababa, Ethiopia

4.4 Study population

All ovarian cancer patients who were admitted to the selected hospitals and underwent surgical intervention from November 30, 2021 to November 30, 2024 and who met the established inclusion criteria, were included.

4.5 Study Period

The study period was from November 30, 2021 G.C. to November 30, 2024 G.C.

4.6 Sample Size Calculation and Sampling Procedure

4.6.1 Sample Size Determination

This study aimed to estimate the sample size based on previous research conducted on ovarian cancer survival in Ethiopia, as published on April 25, 2019, by Piszczan et al (8). To determine the sample size the single population proportion formula was applied. This approach was guided by the following key assumption:

- The estimated population proportion (PP) is 22%.
- The desired margin of error (W) is set at 5%.
- The confidence level is 95%, corresponding to a Z-score of approximately 1.96.

$$n = \frac{(Z\alpha/2)^2 P(1-P)}{w^2}$$

$$n = \frac{(1.96)^2 \times 0.22(1-0.22)}{(0.05)^2} = 264$$

Therefore, the sample size calculation required 264 participants.

4.6.2 Sampling technique and procedure

A simple random sampling method was used to select representative data for ovarian cancer patients who underwent surgical intervention at selected governmental hospitals in Addis Ababa. The sampling frame consisted of 427 unique medical record numbers (MRNs) of eligible ovarian cancer patients who met the inclusion criteria during the study period 236 from SPHMMC and 191 from TASH. The MRN were compiled into a Microsoft Excel spreadsheet. using computer generated random techniques, a total 264 participants was randomly selected from the sampling frame. This help in providing an equal chance for each patient to be included in the study, minimizing selection bias and enhance the generalizability of the findings.

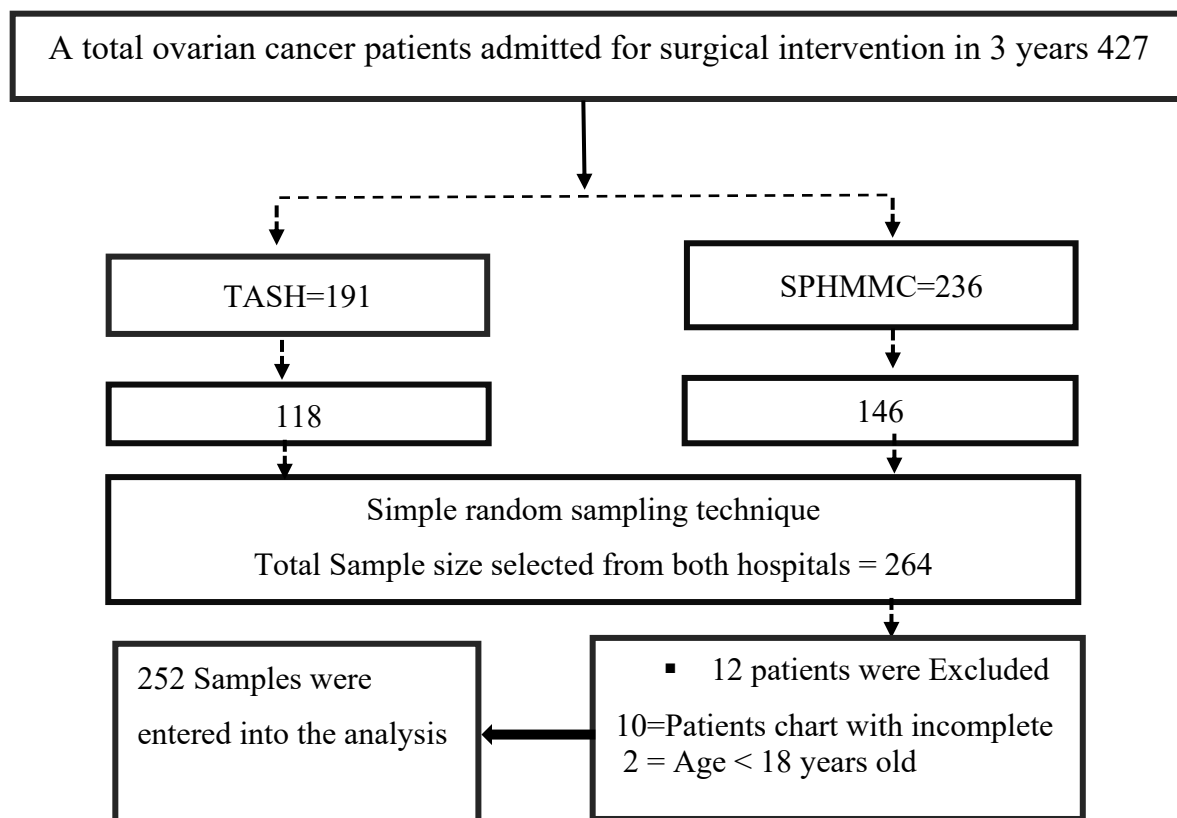


Figure 2. Schematic presentation of the sampling procedure among ovarian cancer who underwent surgical intervention at selected government hospitals in Addis Ababa, Ethiopia, 2024/2025.

4.7 Inclusion and exclusion criteria

4.7.1 Inclusion criteria

- ✓ All ovarian Cancer Patients who underwent gynecologic oncology surgery, such as debulking surgery, total abdominal hysterectomy, Salpingo-oophorectomy, oophorectomy

and staging Surgery who were admitted and treated at Tikur Anbessa Specialized Hospital or St. Paul's Hospital Millennium Medical College during the study period; from November 30, 2021, to November 30, 2024.

4.7.2 Exclusion Criteria

- ✓ Age < 18 year at the time of surgery.
- ✓ Patients with tumors that were not primarily ovarian cancer.
- ✓ Patients chart with incomplete record.

4.8 Variables

4.8.1 Dependent variables

- ✓ Surgical Outcome status

4.8.2 Independent variables

- ✓ **Socio demographic** factors such as the age of the patient at the time of surgery, Parity, marital status, residence, educational status, and Menopausal Status.
- ✓ **Disease-related factors** such as the stage of cancer, histologic type, Disease recurrence, comorbidities. types of comorbidities and ASA classification
- ✓ **Surgical treatment Related factors** such as Type of Surgery, Timing of surgery, Perioperative blood transfusion, Chemotherapy, perioperative related complication.

4.9 Data collection analysis and quality control

4.9.1 Data collection instrument

The data collection instrument of this research Included an English version data extraction checklist drawn up in accordance with pertinent literature (14,23,27,28). This will contain an exhaustive list of variables, e.g., demographic, disease-related and associated factors to surgical treatment, Treatment outcomes will comprise postoperative outcome.

4.9.2 Data Collection Procedures

After their training, data were collected by two trained healthcare provider's one anesthetist and one obstetrics and gynecology resident under the supervision of a senior anesthetist collected data. Data were determined from registers, patient cards, electronic databases, phone interview and operation notes.

4.9.3 Data quality control

To assure data quality, a clear data collection protocol was developed. pre-testing was performed on 5% or 13 patients of the estimated sample size at TASH just before starting the main data collection to assess the feasibility, reliability, and validity of the data collection instruments. Data collectors and supervisors received training on data collection procedures to ensure data accuracy and completeness. A random sample of completed data collection forms was reviewed by the principal investigator or a designated supervisor for accuracy and completeness. Data were entered into a secure electronic database and double-checked for errors.

4.9.4 Data processing

Data collection was conducted using Epi data entry 4.6. data were carefully checked for completeness and consistency and then cleaning and coded extensively. any errors identified during this process were addressed by referencing the original source documents. finally, after the data were cleaned, they were checked for completeness, consistency, missing values, and variables on the final day of collection before all validated data were exported to STATA statistical software version 17 for comprehensive analysis.

4.9.5 Data analysis

Data quality was checked using exploratory data analysis to identify missing values and outliers, ensuring reliable results. the results were summarized using frequency tables, percentages, and graphical representations. a purposeful selection approach was applied to develop the Multivariable model, taking into account both the clinical relevance and statistical significance of categorical independent variables. Initially, bivariable logistic regression was conducted to explore the relationship between each independent variable and the outcome variable. Variables with a p-value below 0.25 in the bivariable analysis were included in the multivariable logistic regression

model. The Hosmer–Lemeshow goodness-of-fit test was used for assessing the model's adequacy, and the outcome showed an appropriate fit ($p\text{-value} > 0.05$). multicollinearity among the independent variables was evaluated using the variance inflation factor (VIF), and no multicollinearity issues were detected (all VIF values < 10). Finally, To identify independent variables that influence surgical outcomes, multivariable binary logistic regression was performed. associations were considered statistically significant at a $p\text{-value} < 0.05$, and results were reported using adjusted odds ratios (AORs) with 95% confidence intervals.

4.10 Operational Definition

Surgical outcome status: was defined as the outcome of a patient, classified as “Good outcome” and “Poor outcome” of the patient condition after surgery done for ovarian cancer (27).

- (i) Poor outcome: if the patient dies after surgery for ovarian cancer during the study period.
- (ii) Good outcome: if the patient is alive after surgery for ovarian cancer during the study period.

Surgical management: Is defined as the operative intervention aimed at confirming diagnosis, determining disease stage, and achieving optimal cytoreduction (debulking) by removing visible tumor masses (28).

Types of ovarian cancer; Classification of the tumor-based World Health Organization (WHO).

Stage of ovarian cancer: Classification of the ovarian cancer stage on the International Federation of Gynecology and Obstetrics (FIGO) staging system (29).

CHAPTER FIVE: RESULTS

5.1. Socio Demographic Characteristics

A total of 427 ovarian cancer patients who were admitted for surgical intervention in a 3 years period were included in this study. Among them, 264 study participants were randomly selected, out of these 12 studies participants were excluded due to exclusion criteria, 10 patients due to incomplete medical chart and 2 patients were exclude due to less than 18 years of age. complete data were available for 252 patients for the final analysis.

The mean age of the participants was 52.5 years ($SD \pm 12.88$). most of them were less than 55 years ($n = 138, 58.1\%$) and ($n = 114, 41.9\%$) were aged 55 years and beyond. there was a slightly greater number of participants were lived in rural areas ($n = 130, 51.6\%$). More than half of the participants ($58.7\%, n = 148$) were not receive formal education, detailed distributions of these variables according to survival status are show in Table 1.

Table 1. Socio-demographic characteristics of the ovarian cancer patients by surgical outcome at TASH and SPHMMC, Addis Ababa, Ethiopia from 2021 to 2024 (N= 252)

Variables	Category	Good Outcome		Poor Outcome		Total	
		Frequency	%	Frequency	%	Frequency	%
Age (Years)	mean (SD)	49.7 ± 12.98		59.7 ± 9.42		52.5 ± 12.88	
	<55	118	85.5%	20	14.5%	138	58.1%
	≥55	63	55.3%	51	44.7%	114	41.9%
Residence	Urban	94	77%	28	23%	122	48.4%
	Rural	87	66.9%	43	33.1%	130	51.6%
Marital Status	Single	19	90.5%	2	9.52%	21	8.33%
	Married	119	73%	44	26.9%	163	64.8%
	Widowed	29	69 %	13	30.9%	42	16.7%
	Divorced	14	53.8%	12	46.1%	26	10.3%
Parity	Nulliparous	30	81.1%	7	18.9%	37	14.7%
	Primiparous	38	74.5%	13	25.5%	51	20.2%
	Multiparous	69	72.6%	26	27.4%	95	37.7%
	Grand Multiparous	44	63.8%	25	36.2%	69	27.4%
Educational Status	No formal education	98	66.2%	50	33.8%	148	58.7%
	Primary school	38	76%	12	24%	50	19.8%
	Secondary school	29	80.6%	7	19.4%	36	14.3%
	College and above	116	88.9%	2	11.1%	18	7.2%
Menopausal Status	Premenopausal	97	86.6%	15	13.4%	112	44.4%
	Postmenopausal	84	60%	56	40%	140	55.6%

5.2 Clinical characteristics

the majority of the patients were diagnosed at advanced stage, with the FIGO stage III (n=90, 35.7%), stage IV (n=86, 34.1%), whereas early stage consisted of stage I (n=15, 5.95%) as well as stage II (n = 61, 24.21%). most common histologic type was epithelial ovarian cancer, accounted for 229 patients (90.8%) followed by sex cord-stromal tumor (n=11, 4.4%). 89 patients (35.3%) had comorbid health issues. in terms of ASA physical status, 58 patients (23%) were classified as ASA III–IV. Further categorized distributions are presented in Table 2.

Table 2. Clinical characteristics of ovarian cancer patients by surgical outcome at TASH and SPHMMC, Addis Ababa, Ethiopia from 2021 to 2024 (N= 252)

Variables	Category	Good Outcome		Poor Outcome		Total	
		Frequency	%	Frequency	%	Frequency	%
Type of Cancer	Epithelial	164	71.6%	65	28.4%	229	90.8%
	Germ cell tumors	5	62.5%	3	37.5%	8	3.2%
	Sex cord -stromal	10	90.9%	1	9.1%	11	4.4%
	Borderline	2	50%	2	50%	4	1.6%
FIGO Stage	Stage I	14	93.3%	1	6.7%	15	5.95%
	Stage II	54	88.5%	7	11.5%	61	24.2%
	Stage III	65	72.2%	25	27.8%	90	35.7%
	Stage IV	48	55.8%	38	44.2%	86	34.2%
Comorbidity	Yes	47	52.8%	42	47.2%	89	35.3%
	No	134	82.2%	29	17.8%	163	64.7%
Type of	HTN	22	52.4%	20	47.6%	42	47.2%
Comorbidities	DM	6	40%	9	60%	15	16.8%
	CHF	5	62.5%	3	37.5	8	8.9%
	RVI	10	55.6%	8	44.4%	18	20.2%
	Others	4	66.7%	2	33.3%	6	6.74%
ASA	ASA I-II	156	80.4%	38	19.6%	194	77%
	ASA III-IV	25	71.8%	33	56.9%	58	23%
Recurrence	Yes	86	61.9%	53	38.1%	139	55.2%
	No	95	84.1%	18	15.9%	113	44.8%
	Total	181	71.8%	71	28.2	252	100%

Footnote: FIGO; International Federation of Gynecology and Obstetrics, **HTN;** hypertension, **DM;** Diabetes Mellitus, **ASA;** American society of Anesthesiologists.

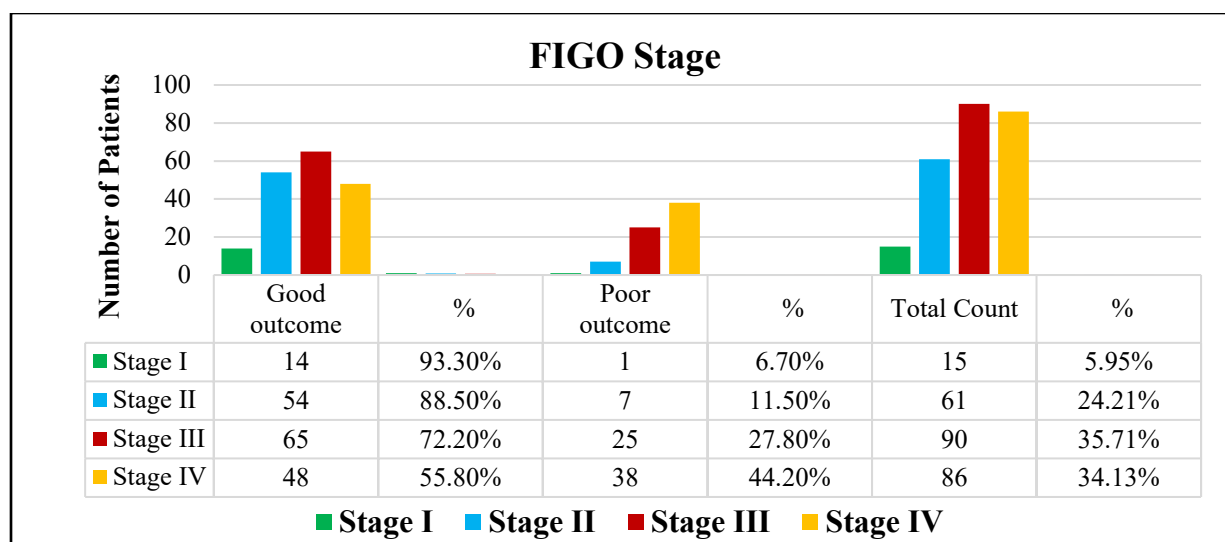


Figure 3. Bar chart FIGO stage among ovarian cancer patients by surgical outcome at TASH and SPHMMC, Addis Ababa, Ethiopia from 2021 – 2024.

5.3 Surgical treatment characteristics of Ovarian Cancer

Surgical treatment for ovarian cancer involved different surgical and perioperative management strategies in the study participants. debulking surgery was the most common surgical procedure, which was performed in 125 patients (49.6%), followed by staging surgery 78 patients (30.95%). Among those patients who had debulking surgery 66 (52.8%) had underwent primary debulking and 59 (47.2%) had under interval debulking following neoadjuvant chemotherapy. Optimal debulking surgery was in 52 patients (41.6%) and suboptimal debulking was performed in 73 patients (58.4%). Perioperative complications were noticed in 20.6% of the total patients. among them bleeding was most common complications 26.9% followed by delayed awakening 19.2% and Postoperative nausea and vomiting 7.7%.

transfusions were administered perioperatively to 64 patients (25.4%). Additionally, Chemotherapy was given to 132 patients (52.4%). Among those who received chemotherapy, 132 Patients (54.5%) received adjuvant chemotherapy and 60 (45.4%) were received neoadjuvant chemotherapy. As well, the Majority of the patients 86.1% were transferred to the PACU after surgery (in Table 3)

Table 3. Surgical intervention characteristics of ovarian cancer patients by surgical outcome at TASH and SPHMMC, Addis Ababa, Ethiopia from 2021 – 2024.

Variables	Category	Good Outcome		Poor Outcome		Total	
		Frequency	%	Frequency	%	Frequency	%
Types of Surgery	Debulking Surgery	75	60%	50	40%	125	49.6%
	Staging Surgery	64	82%	14	18%	78	30.9%
	TAH	12	75%	4	25%	16	6.4%
	Salpingo	23	88.5%	3	11.5%	26	10.3%
	Oophorectomy						
	Others	7	100%	0	0.0%	7	2.8%
Timing of Surgery	Primary debulking	37	56%	29	44%	66	52.8%
	Interval debulking	38	64.4%	21	35.6%	59	47.2%
Surgical debulking	Optimal	38	73%	14	27%	52	41.6%
	Suboptimal	37	50.7%	36	49.3%	73	58.4%
Perioperative Complications	Yes	37	71.2%	15	28.8%	52	20.6%
Blood Transfusion	No	144	72%	56	28%	200	79.4%
	Yes	33	51.6%	31	48.4%	64	25.4%
Chemotherapy	No	148	78.7%	40	21.3%	188	74.6%
	Yes	104	78.8%	28	21.2%	132	52.4%
	No	77	64.2%	43	28.2%	120	47.6%
Types of Chemotherapy	Adjuvant	60	83.3%	12	16.7%	72	54.55%
	Neoadjuvant	44	73.3%	16	26.7%	60	45.45%
	Total	104	78.8%	28	28.2	132	100%
Post operative	PACU	162	74.6%	55	25.30%	217	86.10%
Transfer to	HCU	4	50.0%	4	44.40%	8	3.20%
	ICU	15	55.6%	12	50.00%	27	10.70%

Footnote: **TAH**; Total Abdominal Hysterectomy, **PACU**; Post Anesthesia Care Unit, **HCU**; High Dependency Unit, **ICU**; Intensive Care Unit.

Among postoperative complications, bleeding (26.9%) and delayed awakening (19.2%) were most common, while a concerning mortality rate of 28.8% underscores the need for improved patient management.

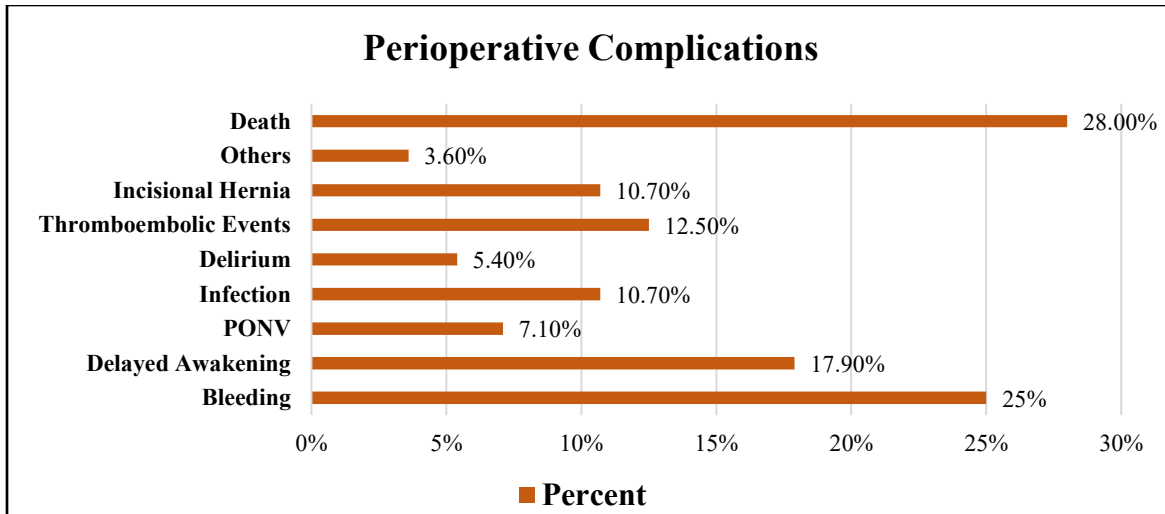


Figure 4. Bar chart perioperative complications among ovarian cancer patients by surgical outcome at TASH and SPHMMC, Addis Ababa, Ethiopia from 2021 – 2024

5.4 Surgical Management Outcome.

From a total of 252 ovarian cancer patients who underwent surgery, 181(72%) of patients in this study had good surgical management outcome whereas 71 (28.2%) had poor surgical management outcome.

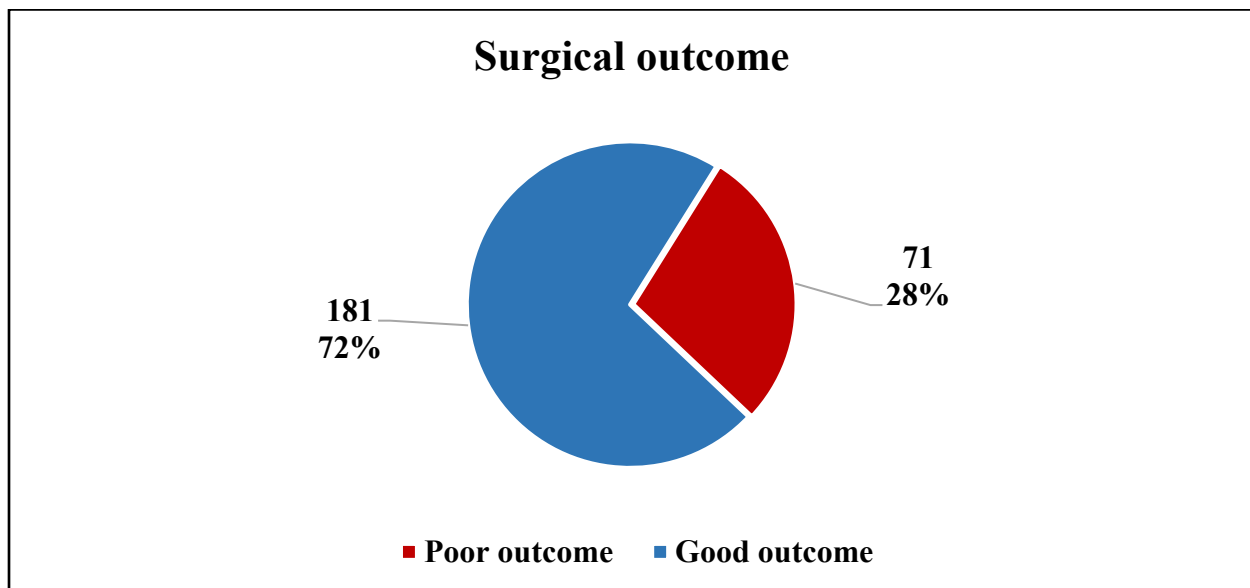


Figure. 5 Distribution of surgical management outcomes (poor vs. good) among ovarian cancer patients at TASH and SPHMMC, Addis Ababa, Ethiopia from 2021 to 2024.

Factors associated with surgical intervention outcome of ovarian cancer

In the bivariable logistic regression model, several variables were significantly associated with poor surgical outcomes. These included age, parity, menopausal status, FIGO staging, comorbidity, ASA classification, blood transfusion status, and chemotherapy. However, five variables were found to be significantly associated with poor outcomes after adjusting for confounding variables in the multivariable logistic regression model.

Patients aged ≥ 55 years had 3.28 times higher odds of having a poor surgical outcome compared to those aged < 55 years (AOR = 3.28, 95% CI 1.37, 7.84). Similarly, patients diagnosed at an advanced FIGO stage (Stage III-IV) had 3.84 times higher odds of a poor outcome compared to patients diagnosed at an early stage (Stage I-II) (AOR = 3.84, 95% CI: 1.48, 9.97).

Participants classified as ASA III - IV had significantly increased odds of poor outcomes compared to those classified as ASA I - II (AOR = 3.18, 95% CI: 1.46, 6.92). Moreover, patients who received a blood transfusion had 3.08 times higher odds of poor surgical outcomes compared to those who did not receive a transfusion (AOR = 3.08, 95% CI: 1.49, 6.36). Finally, patients who did not receive chemotherapy had 2.77 times higher odds of a poor outcome compared to those who received chemotherapy (AOR = 2.77, 95% CI: 1.34, 5.71).

Table 4. Multivariable logistic regression analysis of factors associated with surgical management outcomes among ovarian cancer patients at TASH and SPHMMC, Addis Ababa, Ethiopia (N= 252)

Predictor Variable	Category	Bivariable OR (95% CI)	p-value	Multivariable AOR (95% CI)	p-value
Age (Years)	<55	1.00	-	1.00	-
	≥55	4.78 (2.62, 8.71)	< 0.001	3.28 (1.37, 7.84)	0.007
Parity	< 2	1.00	-	1.00	-
	≥ 2	0.79 (0.44, 1.41)	0.422	0.64 (0.27, 1.48)	0.292
Menopausal status	Premenopausal	1.00	-	1.00	-
	Postmenopausal	4.31 (2.27, 8.18)	< 0.001	1.67 (0.65, 4.30)	0.284
FIGO Staging	Early (I and II)	1.00	-	1.00	-
	Advanced (I and II)	3.25 (1.77, 5.98)	< 0.001	3.84 (1.48, 9.97)	0.006
Comorbidity	Yes	4.13 (2.32, 7.36)	< 0.001	1.94 (0.95, 3.95)	0.067
	No	1.00	-	1.00	-
ASA	ASA I-II	1.00	-	1.00	-
Classification	ASA III-IV	4.12 (2.24, 7.57)	< 0.001	3.18 (1.46, 6.92)	0.004
Blood	Yes	3.45 (1.96, 6.07)	< 0.001	3.08 (1.49, 6.36)	0.002
Transfusion	No	1.00	-	1.00	-
Chemotherapy	Received	1.00	-	1.00	-
	Not Received	2.92 (1.63, 5.22)	< 0.001	2.77 (1.34, 5.71)	0.006

Footnote: FIGO; International Federation of Gynecology and Obstetrics, ASA; American society of Anesthesiologists, OR = Odds Ratio; AOR = Adjusted Odds Ratio; CI = Confidence Interval, significant at p-value <0.05.

CHAPTER SIX: DISCUSSION

This study examined the management outcomes and identified factors associated with good or poor outcomes among ovarian cancer patients who underwent surgical intervention at selected public hospitals in Addis Ababa, Ethiopia.

Our study found that 181(72%) of patients managed for ovarian cancer had good surgical management outcome. this good outcome rate is notably higher than the 43.1% good outcome study in Turkey(30). this study reported a mortality rate of 28.2% among ovarian cancer patients undergoing surgical intervention. the finding on this poor outcome rate is in line with a study conducted in India, which reported a mortality rate of 24.2% (17), as well as studies from Nigeria with mortality rates of 34.9% (18) and 33.3% (24). these comparable mortality rates highlight persistent challenges in surgical management of ovarian cancer across different settings and underscore the importance of improving perioperative care and access to comprehensive treatment to enhance patient outcomes.

The majority of participants (58%) were under 55 years old, and their mean age was 52.5 years (SD $\pm$ 12.88). The outcome is in line with studies conducted in Kenya (51.28 years) and Nigeria (51.1 $\pm$ 13.3 year) (2,18), Based on our findings, the odds of a poor surgical outcome were 3.28 times higher for patients aged $\geq$ 55 years compared to those aged $<$ 55 years (AOR = 3.28; 95% CI: 1.37, 7.84; p = 0.007). It matches finding from another research done in Nigeria (24). this strong relationship between advanced age and poor surgical outcomes likely reflects the increased burden of age-related comorbidities and diminished physiological reserve in older patients.

The multivariable analysis in this study showed that postmenopausal women had 1.67 times the odds of a poor surgical outcome compared to premenopausal women; however, this difference was not statistically significant (AOR = 1.67, 95% CI: 0.65, 4.30; p = 0.284). Similar with a study conducted in Nigeria (18). These results show menopausal status, maybe as an effect of hormonal changes, may affect surgical outcomes. In order to clarify this association, further study needs to be conducted.

Patients diagnosed at an advanced FIGO stage (Stage III–IV) had significantly increased odds of poor surgical outcomes compared to those diagnosed at an early stage (Stage I–II), with an adjusted odds ratio (AOR) of 3.84 (95% CI: 1.48, 9.97; $p = 0.006$). This finding indicates that advanced-stage disease is a strong predictor of unfavorable surgical outcomes. This result is consistent with a study conducted in China (31).

Comorbid patients also had 1.94 times higher odds of poor surgical outcomes compared to non-comorbid patients but this was not found to be statistically significant (AOR = 1.94; 95% CI: 0.95, 3.95; $p = 0.067$). this borderline finding suggests that the presence of comorbid conditions may poorly impact on surgical outcomes, possibly due to tolerance for advanced surgical interventions, complications during or after surgery. the most common comorbidity (47.2%) was hypertension, followed by diabetes (16.75%), as in 42.7% for hypertension and 8% for diabetes in Kenyan and Romanian studies (2,20).

A higher ASA physical status (III–IV) had 3.18 times higher odds of experiencing poor surgical outcomes compared to those classified as ASA I–II (AOR = 3.18; 95% CI: 1.46, 6.92; $p = 0.004$). this significant association indicates that higher ASA physical status, which reflects greater systemic illness and reduced physiological reserve, is an important predictor of adverse surgical outcomes. these findings align with previous studies from China and Germany (23,32). These findings also improve thorough preoperative assessment and optimization of patient conditions to improve surgical and patient outcome.

Surgical intervention remains central to ovarian cancer treatment. in our study, 49.6% of patients underwent debulking surgery from those 52.8% had primary and 47.2% interval debulking and the overall good outcome of interval debulking 50.5%, compared to 36.3% for those undergoing primary debulking surgery (PDS). Although this not statistically significant in multivariable analysis, this is almost similar with previous literature conducted in Indonesia and UK (14,20).

Patients who received perioperative blood transfusions had 3.08 times higher odds of poor surgical outcomes compared to those who did not receive transfusions (AOR = 3.08, 95% CI: 1.49, 6.36; $p = 0.002$). This significant association suggests that blood transfusion is an important predictor of adverse surgical outcomes. Similar findings have been reported in studies from China, Canada, and the USA (22,26,33). according to our study, 25.4% of patients required transfusion, they

needed transfusion due to the surgical complexity and intraoperative challenges specifically in advanced ovarian cancer cases. these findings indicating the importance of optimizing perioperative management to minimize transfusion requirements.

Poor surgical outcomes were most strongly predicted by not receiving chemotherapy. In the multivariable analysis, patients who did not receive chemotherapy were 2.77 times more likely to experience poor outcomes compared to those who did not receive (AOR = 2.77; 95% CI: 1.34, 5.71; $p = 0.006$). the study points out the significance of systemic chemotherapy is for enhancing surgical outcome, specifically for patients with advanced-stage ovarian cancer. 52.4% of patients in our study had chemotherapy in addition to surgery. the patients who were subjected to chemotherapy were better surgical outcome. this is consistent with other studies done in Nigeria, Indonesia, Pakistan, and India (14,17–19) highlighting the importance of access chemotherapy in improving patient outcomes.

The findings of this study show that poor surgical outcome in public hospitals in Addis Ababa among patients with ovarian cancer is significantly associated with late stage of disease, higher ASA classification, comorbidities and lack of chemotherapy. These observations underscore the need for systemic improvement in early diagnosis, access to full and timely chemotherapy, standardized preoperative assessment, and using a multidisciplinary care strategy for high-risk patients would greatly reduce postoperative complications and improve overall surgical outcomes. These findings have clinical practice guideline implications and resource allocation to centralize surgical oncology services within Ethiopia's public health facilities.

CHAPTER SEVEN: STRENGTH AND LIMITATION

7.1 Strength of the study

The strength of this study is its comprehensive approach to understanding surgical outcomes for ovarian cancer in a low-resource setting. By drawing on patient data from two major tertiary hospitals in Addis Ababa, Ethiopia, the study includes a large and representative sample of the population. This adequate sample size allowed for statistical analysis. In addition, this research more attention on the surgical treatment patterns like the types of surgery performed, ASA status, types of chemotherapy and the use of blood transfusions. These findings underscore the existing gaps and challenges that healthcare care providers and patients are facing on the ground.

7.2 Limitation of the study

This study has some limitations. First, due to its retrospective design, there is a potential for selection and information bias. Secondly, the nature of the study design limits the ability to confidently establish causal relationships between the associated factors and the outcomes. Lastly, some sociodemographic and clinical characteristics were not included in this study due to incomplete documentation in the charts.

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATION

8.1 Conclusion

This study focused more on the outcome of surgical intervention and the variables that influence it in patients with ovarian cancer at TASH and SPHMMC in Addis Abeba Ethiopia. The proportion of good surgical outcomes among ovarian cancer patients treated surgically in this study was still low. Factors such as advanced FIGO stage, older age (≥ 55 years), higher ASA classification (III–IV), presence of comorbidities, perioperative blood transfusion, and lack of chemotherapy were significantly associated with poor surgical intervention outcomes among ovarian cancer patients. therefore, designing a strategy addressing these factors it would be helpful to further enhance the likelihood of a good surgical intervention outcome for the patients attending and treated in the hospital with ovarian cancer.

8.2. Recommendation

According to the findings of this study, a multi-level approach is essential to address the factors affecting surgical outcome among ovarian cancer patients in resource-limited settings. The following recommendations are suggested:

For the Ministry of Health: strengthen the capacity of tertiary care centers to improve perioperative outcome. additionally, strengthening national cancer control programs through enhancing screening, early detection, and referral systems of ovarian cancer in the primary health system is recommended. in parallel, ensure equitable access to essential cancer treatments, including chemotherapy and surgical care, across all regions.

For Policymakers: Efforts should be made to develop comprehensive cancer care policies that prioritize early diagnosis and surgical intervention of ovarian cancer has to be formulated. Priority in the budget for gynecologic oncology services, especially in resource-constrained situations, must be allocated. Policies for removing financial barriers, such as out-of-pocket payments for essential diagnostics and treatment modalities like chemotherapy, have to be implemented.

For Patients and Families: awareness plays a vital role. Patients should feel safe to ask concerns knowing risk and benefit about surgical procedures and be involving every stage of their care. Additional treatment may be necessary such as chemotherapy should be discussed when clinically

indicated with your doctor's. regular checkup such as imaging, laboratory works are essential for quality of life. caregivers must be respecting choice and values during the throughout treatment.

For Healthcare Practitioners: Health care professionals should also manage the patient timely with appropriate treatments guidelines. The routine use of standardized tools, such as the ASA Physical Status, minimize the tumor and comorbidity indices would be helpful to manage the patients appropriately that would lead to have good surgical intervention outcome for the ovarian cancer and reduce the risk of post operative complications. In addition, try to minimizing or avoid unnecessary blood transfusion and optimizing intraoperative management should be noted for optimal surgical outcome.

For Researchers: Further longitudinal and prospective studies are needed to establish causal relationships between clinical factors and surgical outcomes in ovarian cancer. Specifically, Studies are needed to evaluate strategies to reduce perioperative blood transfusions and their impact on surgical outcome.

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CHAPTER TEN: ANNEX

8.1 Annex I: Information sheet

The Title of the Research Project: Determining the outcome of surgical intervention and its associated factors among ovarian cancer patients at selected public hospitals in Addis Ababa, Ethiopia 2024/2025

Name of Investigator. Tesheme Hadush Gebrewahd

Name of Organization. Addis Ababa University, department of Anesthesia.

Name of Sponsor: Addis Ababa University

Introduction: This information sheet is designed for Tikur Anbessa Specialized Hospital and St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia. The purpose of this form is to make clear the research, about data collection procedures and receive ethical clearance to do the research.

Purpose of the study: The primary objective of this study is to fulfill the requirements for a master's degree in Anesthesia for the principal investigator. Furthermore, the findings will offer valuable insights to healthcare providers and policymakers concerning the management and treatment of ovarian cancer patients

Procedure: The data collectors will extract essential information from patient records using structured data extraction tools to gather relevant data for the study. The data collection process will be conducted over a period of 30 days.

Risk and /or Discomfort: As the study involves gathering information directly from medical charts, there is no risk of harm to the patients. No identifying information will be recorded on the questionnaires, and all data will be kept strictly confidential. Information will be securely stored in a locked file, accessible only to authorized personnel. The collected data will be used exclusively for research purposes.

Benefits. participants may not be direct benefit from this research, but important benefits over time. The findings will help to healthcare practitioners, filling literature and improving care for patients with life-threatening conditions. Ultimately, this research aims to enhance survival status for ovarian cancer patients.

Confidentiality, to make sure confidentiality, data will be collected by BSc anesthetists and medical resident working in hospitals. Information will be collected without including patient names and all information was securely stored.

Contact address. this study project was reviewed and approved by the Ethical Review Board at the Addis Ababa University College of Health Sciences, Department of Anesthesia. For any questions about the research and the way it works, feel free to reach out to the committee, you can use the following information.

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8.2 Annex II: Declaration of informed Voluntary consent

I have read and fully understand the purpose of the research, the procedures include, the risks and benefits and confidentiality concerns. I understand my rights participation and I have received contact information for any questions. I have had opportunity to ask questions about any point of the study that if I was not sure about. I know I have a right to withdraw from the study at any time.

Because of this, I declare my voluntary consent for this study to be conducted in this institution, as confirmed by my signature.

Signature of hospital Administrator _____

Name _____ Date _____

Signature of Principal Investigator: _____

Name _____ Date _____

Thank you for your contribution.

8.3 Annex III: Data Extraction Tool

This data extraction checklist is prepared to collect socio demographic, disease related and Treatment -related information that is important for a determining the outcome of surgical intervention and its associated factors among ovarian cancer patients at selected public hospitals in Addis Ababa, Ethiopia. All information will be collected from patient records, ensuring confidentiality is maintained. This information will be collected by healthcare providers (BSc anesthetist, MD Resident2).

Contact Information: +251 704743891

Part I: Socio demographic characteristics			
No	Variables	Response	Remark
001	Name of Hospital	_____	
101	Patient ID	_____	
102	Patient Age at time of surgery	_____	
103	Place of residence:	1. Rural 2. Urban	
104	Marital status:	1. Single 2. Married 3. Widowed 4. Divorced	
105	Types of Parity:	1 Nulliparous 2 Primiparous 3 Multiparous 4 Grand Multiparous	
106	Level of Education:	1. No formal Education 2. Primary school 3. Secondary education 4. College and above	
107	Menopausal Status:	1. Premenopausal 2. Postmenopausal	

Part II: Clinical Related Variables			
201	Date of Ovarian cancer diagnosis (DD/MM/YY):	____/____/____	
202	Types of ovarian Cancer:	1. Epithelial ovarian cancer 2. Germ cell tumors 3. Sex cord - Stromal tumors 4. Borderline tumors	
203	Stage of ovarian cancer (FIGO Stage):	1. I 2. II. 3. III 4. IV	
204	Tumor size in centimeter:	1. Less than 5cm 2. 5cm to 10 cm 3. Greater than 10 cm 4. Not documented	
205	Does the patient have any comorbid conditions:	1 Yes 2 No	If no go to Q 207
206	If yes, please indicate the following comorbid conditions (check all that apply):	1. Hypertension 2. RVI 3. Diabetes 4. Other: _____	
207	Clinical Symptoms at Diagnosis:	1. Abdominal pain / distension 2. Abdominal swelling 3. Weight loss 4. Ascites 5. Other_____	
208	Symptoms duration	1. < 2 months 2. 2- 4 months 3. > 4 months	

209	American Society of Anesthesiologists (ASA) Classification:	1. I 2. II 3. III 4. IV	
210	disease Recurrence:	1. Yes 2. No	
Part III: Surgical Related Variables			
301	Date of Surgery (DD/MM/YY):	____/____/____	
302	Type of Surgery Performed:	1. Debulking Surgery 2. Surgical Staging 3. Total Abdominal Hysterectomy 4. Salpingo-Oophorectomy 5. Other (please specify): ____	
303	Debulking Status	1. Optimal debulking 2. Suboptimal debulking	
304	Timing of surgery:	1. Primary Debulking Surgery 2. Interval Debulking Surgery	
305	Did the patient experience any Perioperative-Related Complications	1. Yes 2. No	If no go to Q 308
306	If yes, please specify the type(s) of complications experienced:	1. Bleeding 2. Delayed Awakening 3. Post op nausea & vomiting 4. Infection 5. Delirium 6. Thromboembolic events 7. Other (please specify): ____	

307	Did the patient receive a blood transfusion during the perioperative period:	1. Yes 2. No	If no go to Q 311
308	If yes, please specify the type and number of blood products transfused? (number of units):	1. pRBC: _____units 2. Other (please specify_____)	
309	If the patient is being transferred to ICU, please specify the duration of stay:	1. Less than 1 day 2. 1-3 day 3. 3-6 day 4. More than 6days	
310	Did the patient receive Chemotherapy?	1. Yes 2. No	If no go to Q 315
311	If yes, the Chemotherapy characteristics	1. Adjuvant chemotherapy 2. Neoadjuvant chemotherapy	
312	duration of hospitalization after surgery	1. 1-3 days 2. 4-7 days 3. > 7 days	
313	Status of the patient during last contact	1. Death 2. Alive 3. Lost to follow up 4. Transfer to another center 5. Against medical advice	
314	If dead, lost to follow up or alive when last date of contact DD/MM/YY:	_____/_____/_____	

Collected by: Name _____signature _____date _____

Supervised by: Name _____signature _____date _____