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Prevalence, Associated Risk Factor Trend And Treatment Outcomes of Endometrial Cancer at A Nigerian Tertiary Hospital

Osita Samuel Umeononihu[1,2], Chioma Edeh[2], George Uchenna Eleje[1,2], Felix Emeka Menkiti[3], Charlotte Blanche Oguejiofor[2], Arinze Chidiebele Ikeotuonye[2], Chukwuemeka Chukwubuikem Okoro[2], Chukwudubem Chinagorom Onyejiaka[2], Chukwunonso Isaiah Enechukwu[3], Sylvester Onuegbunam Nweze[4], Ekene Agatha Emeka[5], Kingsley Emeka Ekwuazi[6], Onyeka Chukwudalu Ekwebene[7], Nnanyereugo Livinus Onah[4], Chidinma Theresa Ezidiegwu[2], Chukwuemeka Jude Ofojebe[1,2], Chijioke Ogomegbunam Ezeigwe[1,2], Onyecherelam Monday Ogelle[1,2], Chekwube Martin Obianyo[8], Chigozie Geoffrey Okafor[2], Chukwuemeka Chidindu Njoku[2], Kingsley Chidera Obetta[2], Gerald Okanandu Udigwe[1,2]

[1]Department of Obstetrics and Gynaecology, Nnamdi Azikwe University, Awka, Nigeria.
[2]Department of Obstetrics and Gynaecology, Nnamdi Azikwe University Teaching Hospital, Nnewi, Nigeria.
[3]Department of Anatomic Pathology and Forensic Medicine, Nnamdi Azikwe University, Awka, Nigeria.
[4]Department of Obstetrics and Gynecology, ESUT Teaching Hospital, Parklane, Enugu, Nigeria.
[5]Department of Family Medicine, Nnamdi Azikiwe University Teaching Hospital, Nigeria
[6]Department of Obstetrics and Gynaecology, College of Medicine, University of Nigeria Ituku-Ozalla, Enugu, Nigeria.
[7]Department of Biostatistics and Epidemiology, East Tennessee State University, Johson City, Tennessee USA.
[8]Jiann-Ping Hsu College of Public Health, Georgia Southern University, USA. 9[8]Department of Maternal and Child Health, Global Health, US Agency for International Development (USAID), Nigeria.

ORGINAL ARTICLE

***Corresponding Author:** **Dr. George Uchenna Eleje**

DOI:

Abstract

Background:
Endometrial cancer is one of the most common gynaecological cancers globally, with its incidence rising in both high-income and low-income regions. Treatment outcomes are closely linked to the stage at diagnosis. Despite the growing burden, studies on endometrial cancer in Nigerian settings remain scarce.

Objectives:
To assess the prevalence, identify associated risk factors, evaluate clinical presentation patterns, characterise histological subtypes, and analyse treatment outcomes of endometrial cancer.

Methods:
A retrospective descriptive cross-sectional study was conducted using medical records of women with histologically confirmed endometrial cancer at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, South-East Nigeria, between January 1, 2017, and December 31, 2021. Patients without a histological confirmation of endometrial cancer or those whose case notes were missing or could not be retrieved were excluded from the study. Patient data were extracted from the histopathology register and corresponding case files. Descriptive statistics were performed using SPSS version 25.

Results:
Among 209 gynaecological malignancies recorded during the study period, endometrial cancer accounted for 18.7%, ranking third after cervical (45.5%) and ovarian (24.4%) cancers. Major risk factors included postmenopausal status (74.2%), hypertension (58.1%), diabetes mellitus (25.8%), obesity (9.7%), and a history of endometrial hyperplasia or malignancy (6.5%).

The most frequently reported presenting symptom was vaginal bleeding, occurring in 90.3% of cases. The predominant histological subtype was endometrioid carcinoma (35.5%), followed by serous carcinoma (22.6%) and carcinosarcoma (16.1%). Early-stage presentation occurred in 58.1% of patients. Multimodal treatment (surgery, chemotherapy, and/or radiotherapy) was received by 64.5% of patients. A total of 22.6% died, 38.8% survived at the time of the study, 6.5% achieved disease-free survival, and 38.7% were lost to follow-up.

Conclusion:

Endometrial cancer represents a significant disease burden at NAUTH, with late presentation in over 40% of cases and a substantial loss to follow-up. Strengthening early detection strategies and retention in care may improve outcomes.

Keywords: Endometrial cancer, risk factors, treatment outcomes, histological subtype, disease-free survival, NAUTH

INTRODUCTION

Endometrial cancer is a type of malignancy that arises from the endometrium, the inner lining of the uterus. It contributes significantly to the global burden of gynaecological cancers, particularly in resource-limited settings such as Nigeria, wherever delayed diagnosis, limited health service infrastructure, and socioeconomic constraints often result in poor outcomes [1, 2].

Worldwide, over 200,000 new cases of endometrial cancer are reported annually [3], and recent estimates indicate that a woman's lifetime risk of developing the disease by age 75 is approximately 1% [4]. Although the condition is more common in high-income countries, it remains a major cause of gynaecological cancer morbidity in sub-Saharan Africa [5–7]. In Nigeria, endometrial cancer is the third most prevalent gynaecological malignancy, coming after cervical and ovarian malignancies. [8–10].

Established risk factors include prolonged unopposed oestrogen exposure—such as that seen with hormone replacement therapy, early onset of menstruation, delayed onset of menopause, absence of ovulation, and polycystic ovary syndrome (PCOS)—along with obesity, nulliparity, hypertension, diabetes mellitus, and an individual or household history of malignancy [4–6,9]. Type I endometrial malignancy is generally oestrogen-driven and linked to endometrial hyperplasia, whereas Type II is non-oestrogen-related, tends to occur in older postmenopausal women, and is linked with a poorer prognosis [9–11].

The most common presenting symptom is vaginal bleeding, particularly in postmenopausal women, often prompting medical evaluation [12]. At the study center, , endometrial cancer accounts for approximately 10.9% of postmenopausal bleeding cases [13, 14].

Diagnosis is confirmed histologically via endometrial biopsy, curettage, or surgical pathology. Radiological assessment methods such as transvaginal ultrasound, magnetic resonance imaging (MRI), computed tomography (CT), and positron emission tomography (PET) scans play a crucial role in staging and evaluating the extent of the disease. Treatment typically involves surgical staging and cytoreductive surgery, often followed by chemotherapy, radiotherapy, or hormonal therapy depending on disease stage and patient suitability [15–18]. Survival outcomes are primarily influenced by the stage at diagnosis, tumour grade, histological subtype, and molecular characteristics. Early detection and timely management substantially improve prognosis [15].

Despite its increasing burden, data on endometrial cancer from Nigerian settings remain limited. The objective of this study was to assess the prevalence, clinical features, histological types, and treatment consequences of patients diagnosed with endometrial cancer at a tertiary healthcare facility in Nigeria.

METHODS

Study Design:

This was a retrospective descriptive cross-sectional study.

Study Setting and Population:
The study was carried out at Nnamdi Azikiwe University Teaching Hospital (NAUTH) in Nnewi, utilising case records of all women with histologically confirmed diagnoses of endometrial cancer between 1st January 2017 and 31st December 2021.

Inclusion Criteria:
Women with a histopathological confirmation of endometrial cancer during the study period.

Exclusion Criteria:
Patients with no histological diagnosis of endometrial cancer or those with missing or irretrievable case notes were excluded.

Sample Size and Sampling Technique:
A total population sampling technique was employed. All eligible and available patient records that met the inclusion criteria were reviewed, making this a census of diagnosed cases within the study timeframe.

Data Collection Procedure:
Folder numbers of eligible patients were extracted from the histopathology department's diagnosis register. The appropriate case files were recovered from the medical-record unit. The data gathered encompassed sociodemographic information, clinical presentation, Corresponding case files were retrieved from the medical records department. Data extracted included sociodemographic characteristics, clinical presentation, staging (using the FIGO classification), histological subtype, treatment modality, comorbidities (as documented in clinical records), and outcomes.

Handling of Missing Data:
Cases with incomplete or missing data critical to the study objectives were excluded from analysis. For partially missing variables, available data were included, and frequencies reported accordingly.

Data Analysis:
Data were inputted and analysed using IBM SPSS Statistics version 25.0. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize the variables.

Ethical Considerations:
Ethical approval was granted by the NAUTH Research and Ethics Committee, under approval number NAUTH/CS/66/VOL 15/VER 3/121/2022/067. Patient confidentiality was maintained through anonymisation of records.

RESULT

A total of 209 cases of gynaecological cancers were documented in the Histopathology Department during the study period, of which 39 were diagnosed as endometrial cancer. However, only 31 of these 39 cases (79.5%) were retrievable and included in the study.

Distribution of gynaecological malignancies at NAUTH, Nnewi
Table 1 displays the distribution of gynaecological malignancies diagnosed at NAUTH, Nnewi. Endometrial cancer ranked as the third most prevalent gynaecological malignancy, following cervical and ovarian and cervical cancers, and accounted for 18.7% of all gynaecological cancer cases.

Table 1: Gynaecological malignancies seen over the study period

Malignancy	Frequency (n=209)	Percentage (%)
Cervical	95	45.5
Ovarian	51	24.4
Endometrial	39	18.7
Choriocarcinoma	9	4.3
Uterine wall	5	2.4
Vulvar	6	2.9

Vaginal	3	1.4
Fallopian tube	1	0.5

Socio-demographic Characteristics of Patients with Endometrial Cancer at NAUTH

Table 2 presents the socio-demographic profile of women diagnosed with endometrial cancer at NAUTH. The majority of patients, 17 (54.8%), were aged over 60 years, with a mean diagnostic age of 61.36 ± 8.41 years. Most patients were multiparous—14 (45.2%)—followed by grand multiparous women—10 (32.3%). Primiparous and nulliparous women accounted for 4 (12.9%) and 3 (9.7%) cases, respectively. A significant proportion of the patients—23 (74.2%)—were postmenopausal, while 8 (25.8%) were premenopausal.

Table 2: Socio-demographic characteristics of studied population

Variable	Frequency	Percentage (%)
Age (years)		
<45	4	12.9
45-49	3	9.7
50-54	2	6.5
55-59	5	16.1
≥60	17	54.8
Parity		
Nullipara	3	9.7
Primipara	4	12.9
Multipara	14	45.2
Grand multipara	10	32.3
Occupation		
House wife	3	9.7
Trader	8	25.8
Civil servant	12	38.7
Others	8	25.8
Level of education		
No formal	4	12.9
Primary	7	22.6
Secondary	11	35.5
Tertiary	9	29.0

Clinical Presentation and Associated Risk Factors of Endometrial Cancer at NAUTH

Table 3, together with Figures 1 and 2, illustrates the clinical symptoms and related risk factors identified in patients diagnosed with endometrial malignancy at NAUTH, Nnewi.

Vaginal bleeding was the predominant presenting symptom, observed in 28 patients (90.3%). This was followed by abnormal vaginal discharge and abdominal pain, each reported in 16 patients (51.6%), and abdominal swelling in

12 patients (38.7%). Additional symptoms included anaemia, difficulty with bowel movement, signs of obstructive nephropathy, and weight loss, each observed in 8 patients (25.8%).

The most frequently identified associated risk factors were postmenopausal status (23 patients, 74.2%) and hypertension (18 patients, 58.1%). Other risk factors included diabetes mellitus (8 patients, 25.8%), obesity (3 patients, 9.7%), endometrial hyperplasia (2 patients, 6.5%), a family or personal history of malignancy (2 patients, 6.5%), polycystic ovarian syndrome (1 patient, 3.2%), infertility (1 patient, 3.2%), and use of exogenous oestrogens (1 patient, 3.2%).

Table 3: Presentation and associated risk factors of endometrial cancer

Variable	Frequency	Percentage (%)
Menopausal status		
Premenopausal	8	25.8
Postmenopausal	23	74.2
Presenting symptoms		
Vaginal bleeding	28	90.3
Vaginal discharge	16	51.6
Abdominal pain	16	51.6
Abdominal swelling	12	38.7
Others	8	25.8
Associated risk factors		
Hypertension	18	58.1
Diabetes	8	25.8
PCOS	1	3.2
Obesity	3	9.7
Infertility	1	3.2
Endometrial hyperplasia	2	6.5
Exogenous oestrogen use	1	3.2
Family or Previous history of malignancy	2	6.5

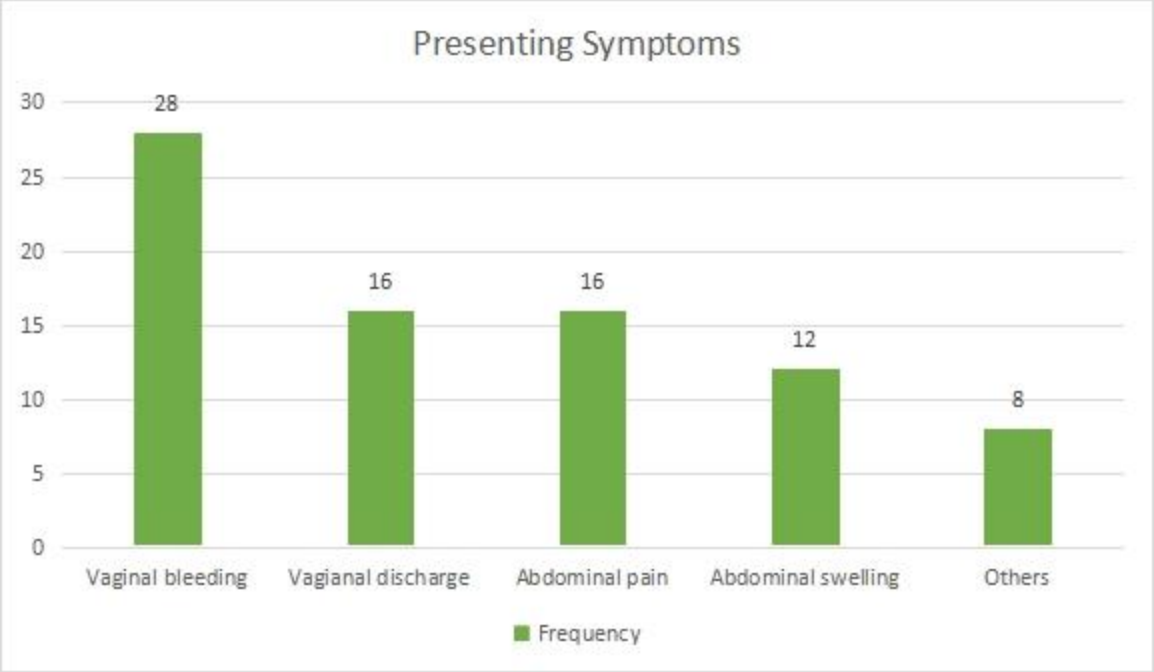

Figure 1: Chart showing presenting symptoms of endometrial cancers

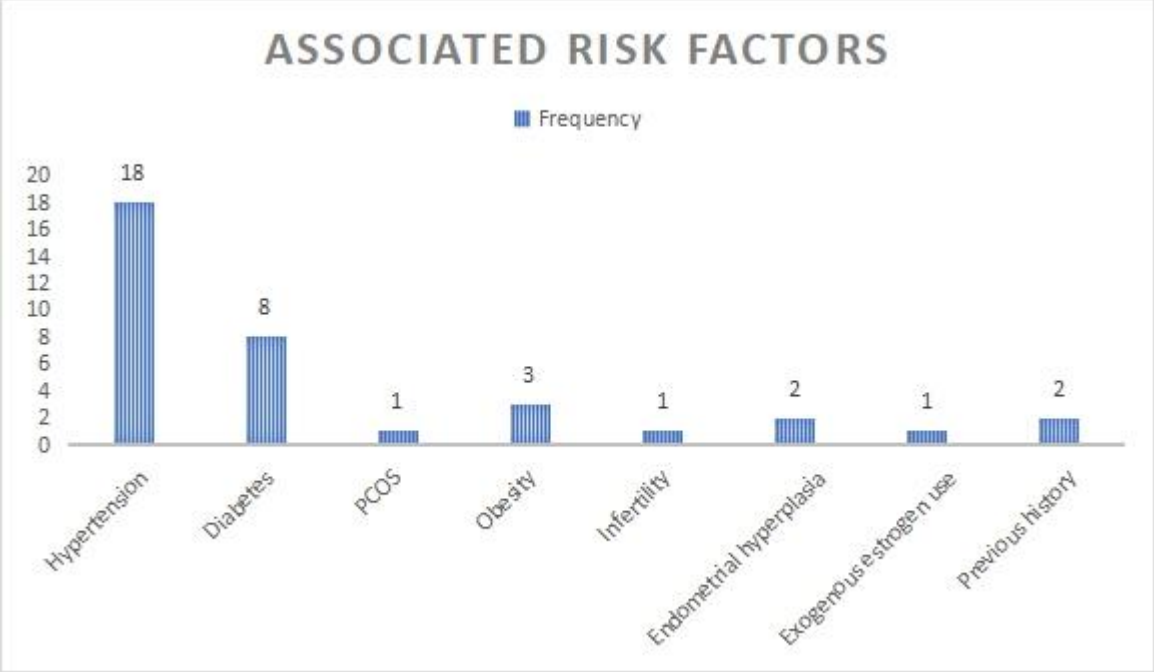

Figure 2: Chart showing associated risk factors for endometrial cancer

Stage at Diagnosis and Histological Subtypes of Endometrial Cancer

Table 4 shows the diagnostic stages and histological variants of endometrial cancer among patients managed at NAUTH. Early-stage diagnosis was more common, with 10 patients (32.3%) presenting at stage I and 8 patients (25.8%) at stage II. However, a significant proportion presented at advanced stages: eight patients (25.8%) were

diagnosed at stage III, while five patients (16.1%) were at stage IV, accounting for a combined 41.9% of late-stage diagnoses.

Adenocarcinoma was the predominant histological type, observed in 22 patients (70.0%). Other types included endometrial stromal sarcoma in 4 patients (12.9%) and carcinosarcoma (malignant mixed mesodermal tumours) in 5 patients (16.1%).

Among the adenocarcinomas, the most frequent subtype was endometrioid carcinoma, found in 11 patients (35.5% of all cases and 50% of adenocarcinomas). This was followed by serous carcinoma in 7 patients (32%) and clear cell carcinoma in 1 patient (4.5%). Additional adenocarcinoma variants identified included moderately differentiated neuroendocrine carcinoma, moderately differentiated adenocarcinoma, and high-grade carcinoma, collectively comprising 3 cases (13.6%).

Table 4: Endometrial cancer stage at diagnosis and histological subtype

Variable	Frequency	Percentage (%)
Stage of disease at diagnosis		
Stage I	10	32.3
Stage II	8	25.8
Stage III	8	25.8
Stage IV	5	16.1
Histological subtype		
Adenocarcinoma	22	71.0
Endometroid	11	35.5
Serous	7	22.6
Mucinous	0	0
Clear cell	1	3.2
Others	3	9.7
Stromal sarcoma	4	12.9
Carcinosarcoma (MMMT)	5	16.1

Abbreviation: MMMT= malignant mixed mesodermal tumour

Treatment Modalities and Outcomes of Endometrial Cancer

Table 5 outlines the treatment approaches and outcomes for patients with endometrial cancer at NAUTH, Nnewi. Among the patients, cancer-specific treatments included surgery alone in 5 cases (16.1%), chemotherapy alone in 3 cases (9.7%), and combined therapy in 20 cases (64.5%). Three patients (9.7%) did not receive any form of treatment. The combined treatment modalities included surgery with chemotherapy in 13 patients (41.9%), surgery with radiotherapy in 4 patients (12.9%), and chemotherapy with radiotherapy in 3 patients (9.7%).

Outcomes during the review period showed that 7 patients (22.6%) died, while 2 patients (6.5%) were disease-free for more than six months post-treatment. Ten patients (32.3%) were still undergoing care, and a significant number—12 patients (38.7%)—were lost to follow-up at various stages of their treatment.

Table 5: Treatment modality and outcome

Variable	Frequency	Percentage (%)
Treatment modality received		
None	3	9.7
Surgery only	5	16.1
Chemotherapy only	3	9.7
Radiotherapy only	0	0
Combined	20	64.5
Surgery/chemotherapy	13	41.9
Surgery/Radiotherapy	4	12.9
Chemotherapy/Radiotherapy	3	9.7
Treatment outcome		
symptoms free survival	2	6.5
Continued care	10	32.3
Lost to follow-up	12	38.7
Death	7	22.6

DISCUSSION

At the study center in Nnewi, Nigeria, endometrial cancer emerged as the third most prevalent gynaecological malignancy, following cervical and ovarian cancers. This aligns with findings from other Nigerian studies, including those conducted in Lagos, Bayelsa, and Enugu, which similarly reported endometrial cancer as a prevalent gynaecological malignancy [4,7, 18,19]. In this report, endometrial cancer represented 18.7% of all diagnosed gynaecological malignancies, closely matching the 16% prevalence reported in Lagos [4]. However, this figure is higher than the 3.1% reported in Ibadan [9], 10.1% in Ebonyi [18], and 5.1% in Zaria [20], but lower than the 25% observed in Bayelsa [7], all in Nigeria.

The age range of patients in this study was 36–80 years, with the majority (54.8%) aged over 60 years and a mean age at diagnosis of 61.36 years. This finding is consistent with mean ages reported in Lagos (62.2 years) [4], California (61.0 years) [10], and India (59 years) [17], reinforcing the observation that endometrial cancer is more prevalent in older women.

Although literature typically associates low parity with increased endometrial cancer risk [4], this study found higher proportions of multiparous (45.2%) and grand multiparous (32.3%) patients. Only 12.9% and 9.7% of patients were primiparous or nulliparous, respectively. Similar trends have been reported in Nigerian studies from Lagos, Bayelsa, and Enugu [4, 7, 19], possibly reflecting unique regional reproductive patterns.

Identified risk factors among patients included postmenopausal status, hypertension, diabetes mellitus, obesity, endometrial hyperplasia, family or personal history of malignancy, polycystic ovarian syndrome, infertility, and exogenous oestrogen use. A large proportion of patients (74.2%) were postmenopausal, which is comparable to 67% in Ibadan [20], 81.8% in Lagos [4], and 80% in India [17].

Hypertension was notably prevalent, affecting 58.1% of patients, which is higher than the 30.9% reported in India [17] and 25.0% in Lagos [4], though lower than the 64.7% seen in Bayelsa [7]. This may be attributed to the older age profile and comorbidities in the population. Diabetes mellitus was present in 25.8% of patients—similar to the 29.4% prevalence in Bayelsa

[7] but higher than the 13.6% in Lagos [4]. Obesity was reported in only 9.7% of patients, significantly lower than the 90.9% reported in Lagos [4], which may reflect under-documentation or regional lifestyle differences.

Vaginal bleeding was the most frequent presenting symptom (90.3%), in line with previous studies which reported rates ranging from 88–100% [4, 7, 9, 20]. Abnormal vaginal discharge (51.6%) and abdominal pain (51.6%) were also common symptoms. This finding aligns with other Nigerian studies such as the Lagos study [4], which also noted vaginal discharge as a common symptom, but contrasts with the Bayelsa study, where abdominal swelling was more frequently reported [7].

Most patients (58.1%) presented with early-stage disease (Stage I and II), which is encouraging and consistent with reports from Lagos and Zaria [4, 20]. Nonetheless, a considerable percentage (41.9%) of the patients were diagnosed at advanced stages of the disease (Stages III and IV), despite the high prevalence of vaginal bleeding, which should have prompted earlier presentation. This late presentation rate is higher than the 11% in Zaria [20] and 34.0% in Lagos [4], all in Nigeria. Contributing factors may include poverty, lack of awareness, and reliance on non-medical sources of care due to cultural and religious beliefs.

Histologically, adenocarcinoma was the most frequent type (70.0%), similar to the 78% reported in Zaria in Nigeria [20]. Endometrioid adenocarcinoma was the most common subtype (35.5%), though lower than the 80% and 68.2% recorded in India [17] and Lagos [4], respectively. The serous subtype accounted for 22.6%, aligning with the 20.5% found in Lagos [4].

In terms of treatment, 64.5% of patients received combination therapy, mainly surgery with either chemotherapy (38.7%) or radiotherapy (16.1%). Radiotherapy services were provided outside NAUTH. Surgery alone was used in 16.1% of patients, including those with carcinoma in situ (6.5%), those who refused further treatment (3.2%), were lost to follow-up (3.2%), or died post-surgery (3.2%). Chemotherapy alone was administered to 9.7% of patients who had advanced or inoperable disease. A further 9.7% received no treatment due to rapid deterioration or loss to follow-up.

The mortality rate was 22.6%, predominantly among those with late-stage disease. Only 6.5% of surviving patients remained symptom-free for over six months post-treatment, while 32.3% were still receiving care. Alarmingly, 38.7% of patients were lost to follow-up at various stages—likely due to treatment costs, logistical issues with accessing radiotherapy offsite, or seeking care elsewhere. Factors such as poverty, stigma, and lack of cancer care infrastructure may have contributed to this attrition.

Strengths and limitations

This study possesses several key strengths. First, it provides critical epidemiological and clinical data on endometrial cancer from a tertiary hospital in southeastern Nigeria—an area where such data remain scarce. Second, the study was conducted at NAUTH, Nnewi, a major referral center for cancer care in Anambra State in Nigeria and neighbouring regions. This enhances the generalisability of the findings to the broader southeastern Nigerian population. Third, the study offers comparative analysis with findings from other local studies (e.g., Lagos, Bayelsa, Enugu, Ibadan, Zaria) and international literature (e.g., India, California), allowing for benchmarking and contextual understanding of regional and global variations. Fourth, it identifies a wide spectrum of risk factors, clinical symptoms, and histological subtypes, thus enhancing the overall understanding of the disease pattern in this context.

Despite these strengths, the study has certain limitations. As a retrospective review, it was constrained by incomplete case file retrieval and inconsistent clinical documentation, which may have affected the completeness and accuracy of the data. Nevertheless, the findings reveal important gaps in

cancer care and follow-up that can inform future research, clinical practice, and health policy development in Nigeria.

Conclusion

Endometrial cancer prevalence appears to be increasing in this environment, with stage at diagnosis playing a pivotal role in determining prognosis. While a majority presented with early-stage disease, a significant proportion still reported late, and there was a high rate of loss to follow-up. To improve outcomes, public health campaigns and health education initiatives are needed to promote early recognition of symptoms such as abnormal vaginal bleeding. Financial support, including subsidization of diagnostic tests and cancer therapies, could reduce default and loss to follow-up rates. Additionally, improving local access to radiotherapy and developing patient tracking systems could enhance continuity of care. A prospective, multi-center study is recommended to explore reasons for late presentation and loss to follow-up. Such findings would be valuable for health policy formulation, improved patient support services, and the development of targeted interventions for endometrial cancer care in Nigeria.

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Disclosure Statement for Publication

This manuscript has not been submitted to any journal for publication. The conceptualisation, design, writing, critical editing, data collection, and analysis of the article were all substantially contributed to by each author. The authors have given their full approval for the submission of this work to a journal for review.

Declaration of Conflicting Interest

The authors have no conflict of interest to declare.

Ethical Approval

Ethical approval for the study was obtained from the Nnamdi Azikiwe University Teaching Hospital (NAUTH) ethics review committee on July 5, 2022, with approval reference number NAUTH/CS/66/VOL 15/VER 3/121/2022/067. The research was carried out in accordance with ethical guidelines for human scientific research as outlined in the Helsinki Declaration.

Consent to participate

This is not applicable as this is a retrospective study.

Consent for publication

This is not applicable.

Author Contributions

CE and OSU are the principal investigators. GUE, FEM, CBO, ACI, CCO, CCO1, CIE, and SON conceived the study. Data assessment was performed by EAE, KEE, OCE, NLO, CTE, CJO, COE, OMO, OSU and CE. Calculations and data interpretation were performed by OSU, CE, CMO, CGO, CCN, KCO, GOU and GUE. Statistical analysis was performed by CE and FEM and FEM prepared tables and figures. The first draft of the paper was written by OSU, CE, GUE, FEM, CBO, ACI, CCO, CCO1, CIE, and SON. EAE, KEE, OCE, NLO, CTE, CJO, COE, OMO, OSU and GUE critically revised the paper. All authors reviewed and edited the final draft. All authors thoroughly reviewed the article, gave their final approval for the version to be published, agreed on the journal to which the article was submitted, and took responsibility for all aspects of the work.

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Data availability statement

The datasets generated and/or analysed during the current study are available from the corresponding author upon reasonable request.

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