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The Prevalence, Pattern, and Outcome of Ovarian Cancer Management in a Tertiary Hospital in Nnewi, South-East Nigeria

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ABSTRACT

Background: Ovarian cancer (OC) is the sixth most common malignancy among women worldwide and the eighth leading cause of cancer-related deaths. In Nigeria, it is the second most prevalent gynaecological malignancy after cervical cancer. Early diagnosis remains challenging due to the absence of an effective screening tool and vague, non-specific symptoms that mimic benign gynaecological conditions.

Objectives: This study aimed to determine the prevalence, sociodemographic characteristics, clinical features, and treatment modalities of patients with ovarian cancer managed at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Nigeria.

Methods: A retrospective cross-sectional study of all histologically confirmed ovarian cancer cases managed at NAUTH between January 1, 2017, and December 31, 2021, was conducted. Data were extracted using a structured proforma and included patient demographics, clinical presentation, histopathological findings, treatment modalities, and outcomes. Cases without histological diagnosis were excluded. Ethical approval was obtained from the NAUTH Ethics Committee. Data were analysed using IBM SPSS version 26.0 (Armonk, NY, USA).

Results: The prevalence of ovarian cancer was 2.0%. The mean age of patients was 57.6 ± 5.2 years, with majority (55.5%) in their sixth and seventh decades of life. The leading identifiable risk factors were age >50 years (70.4%) and obesity (40.7%), whereas only 13% reported a history of smoking. The predominant presenting complaint was weight loss (96.3%), and abdominal distension was the most common clinical feature (94.4%). The majority of patients (79.6%) were diagnosed at advanced stages, with epithelial ovarian cancer representing 96.3% of histological subtypes. Surgery combined with chemotherapy was the main treatment modality (79.6%), while the overall mortality rate was 38.9%.

Conclusion: Ovarian cancer remains a major cause of gynaecological morbidity and mortality in South-East Nigeria. Most patients presented at advanced stages with epithelial-type tumours. There is an urgent need for public health initiatives to promote awareness, early detection, and affordable screening strategies to improve patient survival.

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Introduction

Ovarian cancer (OC) ranks as the eighth most common cancer among women worldwide, and the leading cause of gynaecological cancer-related mortality [1, 2]. In Nigeria, it is the second most common gynaecological malignancy after cervical cancer [3]. Epithelial ovarian cancer (EOC) is the most frequent and deadliest subtype, with over 70% of cases diagnosed at advanced stages [4].

Globally, approximately 225,000 new OC cases and 140,000 deaths occur annually [5]. In the United States, over 22,000 new diagnoses and 14,000 deaths are reported each year [6]. Incidence varies by ethnicity: White women have the highest rate (11.3/100,000), followed by Hispanics (9.8), Asians/Pacific Islanders (9.0), African Americans (8.5), and American Indians/Alaska Natives (7.9) [6]. Risk increases markedly after age 50 years, peaking between ages 50-70 years [7].

Two major hypotheses explain OC pathogenesis, the incessant ovulation theory and the gonadotropin hypothesis [8]. Established risk factors include inherited gene mutations (BRCA1/BRCA2, Lynch syndrome), nulliparity, infertility, endometriosis, obesity, early menarche, late menopause, hormone replacement therapy, and smoking [9, 10]. Conversely, oral contraceptive use, parity, and tubal ligation confer protective effects [11].

In low and middle-income countries, mortality remains high due to late diagnosis, poor access to specialised care, and limited screening and pathology services [12,13]. Understanding the prevalence and outcomes of OC within specific contexts like Nigeria is vital for designing evidence-based interventions. This study assessed the prevalence, associated risk factors, and outcomes of ovarian cancer management at NAUTH, Nnewi, Nigeria.

Materials and Methods

Study Design and Setting

A retrospective descriptive cross-sectional study was conducted at the Department of Obstetrics and Gynaecology, Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Nigeria. NAUTH is a tertiary referral center serving five states in South-East Nigeria.

Study Population

All women with histologically confirmed ovarian cancer diagnosed and managed between January 1, 2017, and December 31, 2021, were included.

Inclusion Criteria

All histologically confirmed ovarian cancer cases managed at NAUTH, Nnewi between January 1, 2017 and December 31, 2021 were included. Cases without histological diagnosis were excluded.

Data Collection

Patients' folder numbers were retrieved from the gynaecology cancer register, and corresponding medical records were accessed through the Medical Records Department. A structured proforma was used to extract data on sociodemographic characteristics, clinical features, histological subtype, disease stage, treatment modality, and outcomes. Data entry and verification were performed by two independent reviewers to ensure accuracy. Missing or ambiguous entries were cross-checked against laboratory and surgical reports to ensure data quality and completeness.

Data Analysis

Data were analysed using IBM SPSS version 26.0. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarise data.

Ethical Considerations

Ethical approval was obtained from the Nnamdi Azikiwe University Teaching Hospital Ethics Committee (Approval No: NAUTH/CS/66/VOL.14/VER.3/06/2024/004). Data confidentiality was maintained throughout the study.

Results

Prevalence

A total of 2,672 gynaecological cases were managed during the five-year period. Of these, 56 were histologically confirmed ovarian cancers, giving a prevalence of 2.0%. Only 54 case notes were available for review (attrition rate: 3.6%).

Sociodemographic Characteristics

Table 1 shows the sociodemographic characteristics. The mean age of participants was 57.6 ± 5.2 years. More than half (55.5%) were aged ≥50 years. The majority of women were married (38.9%) and had no formal education (37%). Table 2 shows the gynaecological features of patients with ovarian cancer. Most patients were multiparous or grand multiparous (57.4%).

Table 1: The Sociodemographic Characteristics of the Patients with Ovarian Cancer

PARAMETER	OPTIONS	FREQUENCY n (%)
AGE (YEARS)	<40	7 (13.0)
	40-49	9 (16.7)
	50-59	11 (20.3)
	60-69	19 (35.2)
	>69	8 (14.8)
MARITAL STATUS	Married	21 (38.9)
	Divorced	14 (25.9)
	Widowed	19 (35.2)
EDUCATION	No formal education	20 (37.0)
	Primary	13 (24.1)
	Secondary	7 (13.0)
	Tertiary	14 (25.9)

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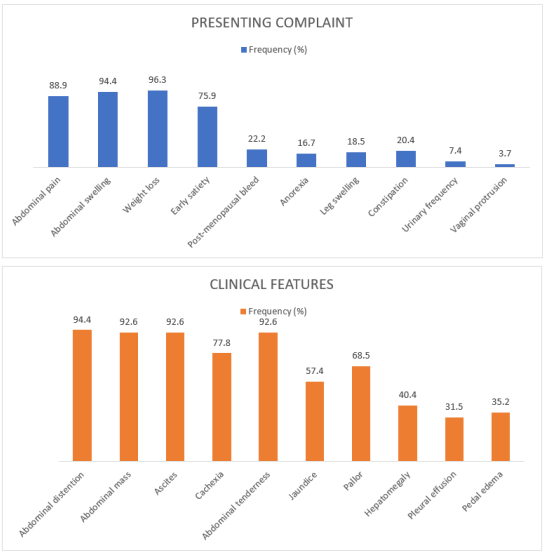
OCCUPATION	House wife	12 (22.2)
	Trader	17 (31.5)
	Civil servant	13 (24.1)
	Farmer	5 (9.30)
	Retired	7 (13.0)

Clinical and Associated Risk Factors

Figures 1, 2 and 3 show presenting complaints, clinical features, and identifiable risk factors among women with ovarian cancer. Common symptoms included weight loss (96.3%), abdominal swelling (94.4%), abdominal pain (88.9%), and early satiety (75.9%). On examination, abdominal distention and tenderness were observed in 94.4% and 92.6% of cases, respectively. The predominant risk factors identified were advanced age (70.4%), hypertension (57.4%), and diabetes mellitus (50%), while smoking history was uncommon (13.0%).



Figures 1 and 2: Presenting Complaints and Clinical Features of Ovarian Cancer

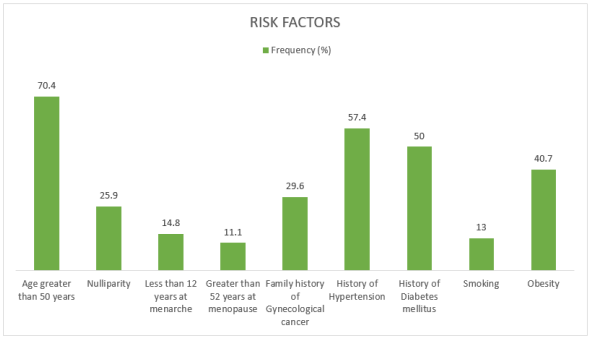


Figure 3: Show Presenting Complaints, Clinical Features, and Identifiable Associated Risk Factors Among Women with Ovarian Cancer

Histological Stage Distribution

Table 3 shows the staging and histological subtypes of ovarian cancer. Serous cystadenocarcinoma accounted for 77.8% of all cases, followed by mucinous cystadenocarcinoma (9.3%) and endometrioid carcinoma (7.4%). Most patients (79.6%) presented in advanced stages (FIGO III–IV).

Treatment and Outcomes

Figure 4 shows the modalities of treatment and outcome measures. The main treatment modality was combined surgery and chemotherapy (79.6%). Despite this, 46.3% of patients defaulted from treatment, while 38.9% mortality was recorded over the five-year period.

Table 2: The Gynaecological Features of Patients with Ovarian Cancer

PARAMETER	OPTIONS	FREQUENCY N (%)
WEIGHT	Normal	13 (24.1)
	Overweight	19 (35.2)
	Obese	22 (40.7)
AGE AT MENARCHE (YEARS)	Early	8 (14.8)
	Normal	42 (77.8)
	Late	4 (7.4)
PARITY	Nullipara	14 (25.9)
	Primipara	9 (16.7)
	Multipara	17 (31.5)
	Grand multipara	14 (25.9)
AGE AT MENOPAUSE (YEARS)	<45	2 (3.7)
	Early	8 (14.8)
	Normal	38 (70.4)
	Late	6 (11.1)

Table 3: Shows the Staging and Histological Subtypes of Ovarian Cancer

PARAMETER	OPTIONS	FREQUENCY N (%)
FIGO STAGING	I	2 (3.7)
	II	9 (16.7)
	III	18 (33.3)
	IV	25 (46.3)
HISTOLOGIC SUBTYPE	Serous cystadenocarcinoma	42 (77.8)
	Mucinous cystadenocarcinoma	5 (9.3)
	Endometrioid cystadenocarcinoma	4 (7.4)
	Clear cell cystadenocarcinoma	2 (3.7)
	Granulosa cell tumour	2 (3.7)

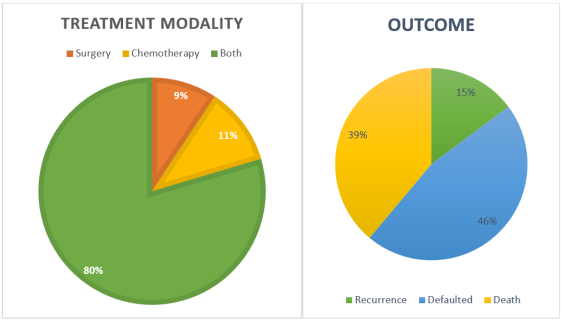


Figure 4: The Modalities of Treatment and Outcome of Treatment

Discussion

Ovarian cancer, often referred to as the "silent killer," is frequently diagnosed at an advanced stage due to its vague and nonspecific symptoms, making curative treatment challenging [4]. In this study, the prevalence of ovarian cancer was 2.0%. This finding is lower than the 2.9% previously reported Okonkwo et al in the same center but higher than the 1.7% documented in Lagos, Nigeria [9,10]. Ovarian cancer accounted for 24% of all gynaecological malignancies in NAUTH, Nnewi, Nigeria which is considerably higher than the 7% reported from Lagos University Teaching Hospital (LUTH) [10]. However, this rate aligns with findings by Okonkwo et al. (23.8%) and Igwegbe and Ugboaja (24%) in the same institution [9,11].

Advanced age was the most significant risk factor observed in this study, with 70.4% of patients aged 50 years and above and the highest prevalence (35.2%) within the 60-69 age group [6]. This trend corroborates findings Ayogu et al who reported that over 80% of women with ovarian cancer were 50 years and above, with 45% within the 60-69 age range [12]. Similar patterns were reported Okonkwo et al and Okunade et al. [8, 9]. The predominance of postmenopausal women may be attributed to the lack of reliable screening tools for early detection. Consequently, many patients present at an advanced stage of the disease. In contrast, studies conducted in Nigeria and Sudan reported a lower age distribution (<50 years), which may suggest either an earlier onset or a more aggressive disease course in those populations [13-15].

Interestingly, nulliparity, commonly cited as a major risk factor for ovarian cancer, was identified in only about one-quarter (25.9%) of participants, whereas 57.4% were multiparous or grand multiparous. This observation contrasts with the widely accepted notion of pregnancy as a protective factor against ovarian cancer. Similar findings have been reported by [6,9]. The protective effect of pregnancy may vary across populations and could be less pronounced in sub-Saharan Africa. It is plausible that other unidentified environmental, genetic, or infectious cofactors may override this protection in these settings [13,16]. Further research is required to elucidate these mechanisms.

Most patients presented with symptoms consistent with advanced disease, including weight loss (96.3%) and abdominal swelling (94.4%). Clinical findings such as abdominal distension (94.4%), palpable mass, tenderness, and ascites (92.6%) were predominant, indicating late-stage presentation (FIGO stages III–IV) in approximately 80% of patients. These findings are consistent with previous reports highlighting late presentation as a major contributor to poor outcomes [6, 17].

Epithelial ovarian cancer was the most frequent histological type (96.3%), with serous cystadenocarcinoma being the predominant subtype (77.8%). This pattern aligns with findings from several studies [14, 18, 19]. However, this proportion was higher than the 33% serous subtype reported in a previous study from the same center, suggesting possible changes in diagnostic trends or population dynamics [9].

Management typically involved a combination of cytoreductive surgery and chemotherapy, which remains the standard of care for epithelial ovarian cancer [19]. In this study, 79.6% of patients received both treatment modalities. However, treatment default was high (46.3%), and mortality reached 38.9% during the review period. Financial constraints likely contributed to non-compliance, as the cost of cancer care remains prohibitive in many low- and middle-income countries. Recurrence was recorded in 14.8% of patients, predominantly within the first three years post-treatment.

The findings highlight the urgent need for earlier detection and affordable treatment strategies in Nigeria [20-22]. Strengthening health insurance coverage and subsidising cancer care could reduce treatment defaults. Clinically, enhanced training for primary care and gynaecological practitioners to recognise subtle early symptoms, such as unexplained bloating or weight loss, could improve referral rates and outcomes. Further studies should investigate the apparent loss of parity's protective effect, potential genetic predispositions among Nigerian women, and biomarkers for early detection in low-resource settings [22]. Longitudinal studies examining survival outcomes following different treatment modalities are also warranted to guide evidence-based management protocols.

A major strength of this study lies in its five-year span and use of histologically confirmed cases, providing reliable epidemiological and clinical data from a tertiary hospital in southeastern Nigeria. However, limitations include its retrospective design, reliance on hospital records, and exclusion of patients who sought alternative or traditional care, which may underestimate true prevalence and mortality. Additionally, the single-centre setting may limit generalisability to other regions.

Conclusion

The prevalence of ovarian cancer in Nnewi, Nigeria has remained relatively stable over time. Contrary to the long-held belief that pregnancy provides a protective effect, most affected women were multiparous, indicating the possible influence of other contributing risk factors that warrant further investigation. Late presentation remains a critical challenge, with the majority of patients diagnosed at advanced stages, contributing to high default and mortality rates. To reduce late presentation and improve treatment outcomes, government-funded cancer care and public health education should be strengthened to enhance affordability and awareness. Additionally, affordable screening tools and policies integrating routine abdominal ultrasonography and biomarker testing for women aged 50 years and above should be implemented nationwide.

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Disclosure

The authors declare that there is no conflict of interest in this work.

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Author Contributions

OSU, CMA, CE, CCO and GUE conceived, supervised the study and performed some of the surgery; CCA, LUO, NPO, WUH, ECE, CNO, OZI, and KEO analysed data; EIO, OSU, CGO, CCO, CCO1, CCO2, OKN, AVE, EUN, BIE, UCO, CTE CMO, GTI, CGO, WAM, SCE, OMO, and JEM wrote the manuscript; OSU, CMA, CAO, GOU, and ACE made manuscript revisions. All authors reviewed the results and approved of the final version of the manuscript.

Ethics Approval

Ethical approval was obtained from the Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria (approval number:

NAUTH/CS/66/VOL.14/VER.3/06/2024/004).

Availability of Data and Materials

All data generated or analysed during this study are included in this published article.

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