

Gynaecological Malignancies in Nigeria: A Systematic Review

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Authors' contributions

This work was carried out in collaboration among all authors. All authors wrote the manuscript. All authors did a literature search and extracted data. Authors AA and CE conceptualized the topic, collated data, wrote the manuscript and analyzed the results. Author AA interpreted the result. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Gynaecological malignancies cause most death in women. The estimation of gynaecological epidemiology is invaluable in setting priorities for its control. No study has elucidated the epidemiological burden on Nigerian women until this point.

Methods: Our work covered published articles on gynaecological malignancies in Nigeria. The terms of search are "Gynaecological malignancies" and "Nigeria". We searched databases (PubMed, AJOL, Research4Life, Science Direct, Scopus, and Google Scholar), journal homepages (BMC, Sahel Medical Journal), and free web searches of related papers. Downloaded papers were assessed for eligibility following PRISMA 2009.

Results: The charted data indicated that cervical, ovarian, and uterine were the commonest forms. The rarest was fallopian tube cancers. Developed cities in Nigeria, such as Lagos, Zaria, Anambra, and Enugu had the highest number of publications. In contrast, less developed states such as Imo, Lokoja, Oyo, Akwa Ibom, Bauchi, Benin, Delta, Kebbi and Ogun states had the least publications. The histological screening was the primary means of diagnosis. Risk factors for some reported cases include active sexual history, age, parity, and family history.

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Conclusions: The distribution pattern of gynaecological cancers is consistent with what is obtainable worldwide, where cervical, ovarian, and uterine cancers were identified as the most prevalent. National screening protocol, national health insurance schemes, and workforce education are key to early detection, mitigating diseases, and improving survival outcomes.

Keywords: Gynaecological malignancies; cancers; burden; epidemiology; systematic review; prevalence; incidence.

1. INTRODUCTION

The public health concern of gynaecological cancers contributes to the burden of disease worldwide [1]. Gynaecological cancer encompasses a range of tumors with varying epidemiology, pathology, and treatment strategies [2]. It is the increase and expansion of malignant cells throughout women's reproductive organs, the most common of which is the uterine, vulva, cervical, ovarian and vaginal [3]. Fallopian tube cancer though present, rarely occurs. Patients with gynaecological malignancies exhibit no symptoms in the early stages until the disease has spread to other organs [4], while ovarian cancer patient remains asymptomatic until the disease has metastasized [5]. More than one-fourth of new cancer cases in females is related to gynaecological cancer, with more than 80% occurring between the ages of 35 and 64 [6]. A gynaecological cancer diagnosis alters the quality of life of patients and their relatives. Sexual, psychological, and social functioning are negatively affected [7]. Experts have projected a continued increase in cancers with more adverse outcomes in developing countries, such as Nigeria [1,8]. Estimating the cancer impact is required to set disease control priorities [9]. Thus, inadequate information is one of Nigeria's key issues limiting cancer control strategies. This article will give an overview of the situation and extent of gynaecological cancers in Nigeria based on recent data on the burden, thus serving as a basis for developing strategies for prevention and control of gynecologic cancer in Nigeria in the near future.

2. METHODOLOGY

2.1 Study Design

"Scoping reviews map the key concepts concerning a research area, as well as the available primary sources and types of evidence" [10]. It evaluates findings from various studies [11]. This review collated, arranged, and analyzed a diverse body of available evidence on

the burden of gynecological cancer in Nigeria. The Arksey and O'Malley framework [12,13], as reviewed and updated by Levac et al. [14], was adopted.

Arksey and O'Malley's structure consists of five distinct steps:

- Stage 1: Drafting of the research question
- Stage 2: Literature search
- Stage 3: Choosing a Study
- Stage 4: Result visualization
- Stage 5: Compilation, summary, and presentation of results

"The review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-analysis: Extension for systematic reviews (PRISMA-ScR) guidelines" [15].

2.2 Research Question

This systematic review aims to assess existing evidence and the extent of research on gynaecological cancers (cervical, ovarian, uterine, vaginal, vulva, and fallopian tube) in Nigeria. The epidemiological burden is measured based on incidence, prevalence, and mortality rates.

The secondary research questions are as follows:

- Is there evidence of gynaecological cancer research in Nigeria?
- Which screening techniques, methods, or recommendations for gynaecological cancers in Nigeria are based on evidence?
- Is there any evidence of the types of gynaecological cancers commonly encountered in Nigeria?
- What evidence exists on the trend of gynaecological cancer in Nigeria?

"The Joanna Briggs Institute's Population, Concept, and Context (PCC) mnemonic was used to validate the review question's suitability" [10].

Table 1. PCC defining the eligibility of the main systematic review question

P-population: Women
C-Concept: Gynaecological malignancies: Ovarian, Uterine (endometrial), Vaginal, Vulva Cervical, and Fallopian tube cancers
C-Context: The epidemiological burden (incidence, morbidity, prevalence, and mortality) in Nigeria, as well as potential screening methods/techniques.

2.3 Information Sources

Studies published in English were identified by electronically searching PubMed, Google scholar, African journal online library, HINARI, Science daily, free web search, Medline and the Cochrane Database. Reference lists of relevant articles were assessed and included in the review. The keywords were "Gynaecological malignancies", "Nigeria", and "cancer". Some authors were contacted directly for further clarifications about their study.

2.4 Search Strategy

Based on the different JBI reviews, a three-step literature search method was used [10]. The first step is to conduct a preliminary search of two online databases (PubMed, AJOL) related to the topic. A review of the word titles and abstracts of the extracted papers and the index terms used to describe the articles. A second search was conducted across all included databases using all identified keywords and index terms. Thirdly, all identified reports and articles' reference lists were searched for additional articles. In cases of ambiguity, the authors of primary studies or reviews were contacted via research gate and direct mail for clarification.

2.5 Selection Procedure

The principal investigator conducted a thorough title screening based on the eligibility criteria. Eligible studies were imported into the Mendeley reference manager study folder. Before the titles, full text, and abstract cleaning stage, the library was cleaned for duplicates. The cleaned library was then distributed to the review team. The abstracts and full texts were independently reviewed based on the eligibility criteria. Without certainty, the group discussed whether the articles met the criteria for study inclusion. For abstract or full-text reviews, author names from search results were not blinded.

2.6 Selection Criteria

Articles relevant to gynaecological malignancies in Nigeria were included.

Essays of all types with data on prevalence, incidence, management, and classification were retained for further screening based on the abstract.

Predefined criteria were adopted.

2.6.1 Inclusion criteria

Studies conducted in Nigeria.

Studies on women.

Gynaecological cancer studies (uterine, vaginal, fallopian tube, cervical endometrial, vulva and vaginal)

Paper on the epidemiological burden (morbidity, incidence, prevalence, and mortality)

Research published on risk factors for gynaecological cancers

Studies assessing the quality of life of gynaecological cancer patients

Primary research designs (quantitative, qualitative, and mixed methods studies)

Case studies and case series

Studies involving diagnosis and screening

Studies that have been reported are presented in English.

Hysterectomy for gynaecological cancers

Genital tract cancer research

2.6.2 Exclusion criteria

Studies focused on other cancer.

Studies focused on the economic burden of gynaecological malignancy.

Gray literatures, conference papers, opinions, editorials, theses, dissertations, and unpublished studies.

Articles lacking full text

2.7 Charting of Data

All of the included articles' findings were extracted to answer the main systematic review

question. An electronic visualization form was created for data extraction. Two independent reviewers piloted the data extraction tool before use. At the review stage, the data extraction form was developed further, and the visualization table was modified accordingly until all related and relevant information was extracted.

The following were the relevant data:

- The author and the year of publication
- Title of the study
- Objective/aim of the study

- The study's geographical location
- Study design
- The study setting
- The participants in the study
- Age distribution of the study population (women)
- Type of Gynaecological malignancy
- The nature of the reported burden (incidence, prevalence, morbidity, mortality)
- Potential screening

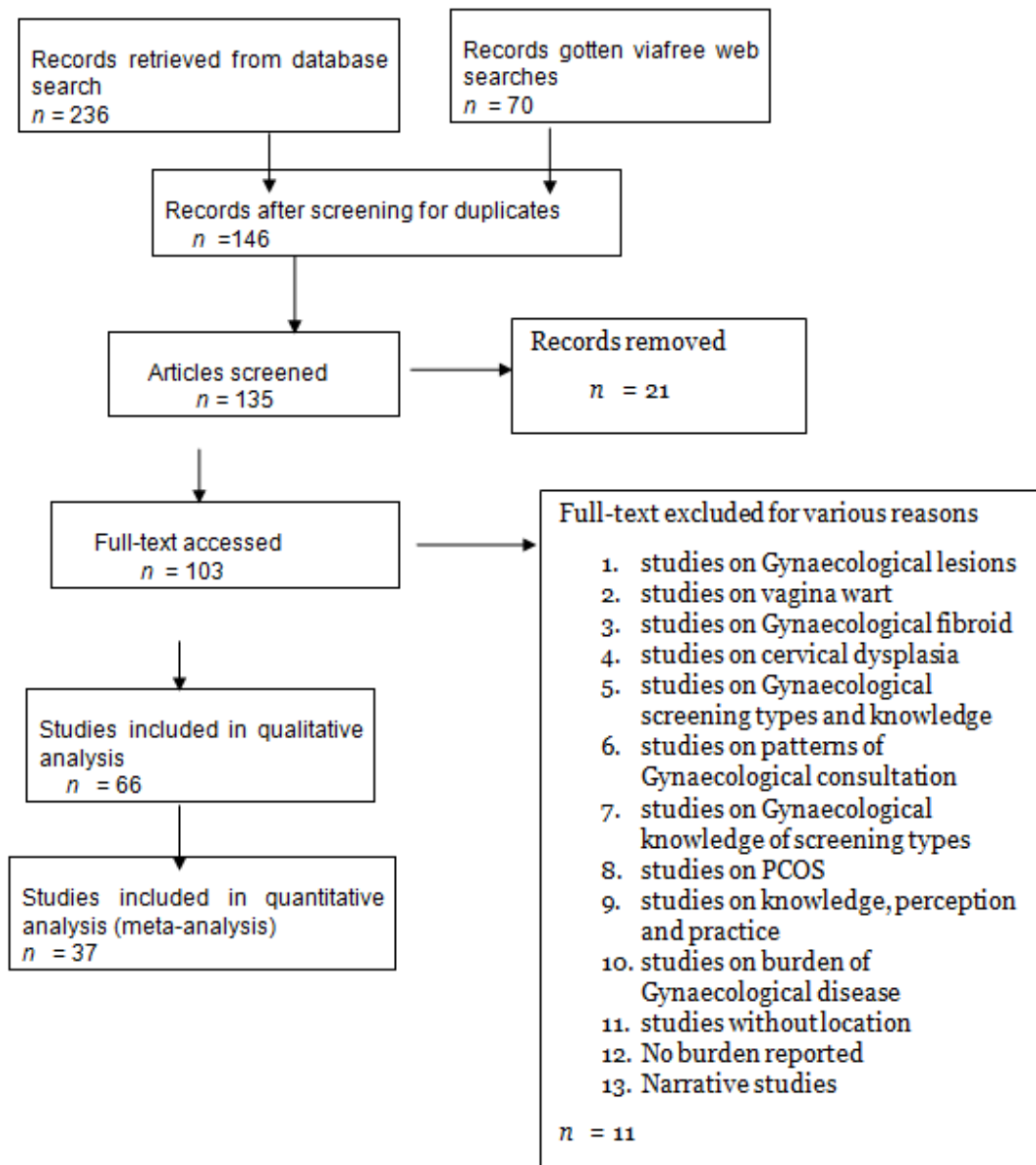


Chart 1. PRISMA flow diagram

2.8 Study Characteristics

List 1. Literature review showing types of cancer at different locations

Author	Year	Topic	Location	Types of cancer
Takai I. U et al. [16]	2016	A 2-Decade Review Of Histopathological Pattern of Endometrial Samples at a Referral Centre In Northern Nigeria	Maiduguri	choriocarcinoma, endometrial
Udigwe, &Ogabido [17]	2008	A Clinico-pathological study of cervical carcinoma in south eastern Nigeria; a five year retrospective study	Anambra	Cervical carcinoma
Muhammad et al. [18]	2017	A diary of endometrial malignancies in Zaria, Northern Nigeria	Zaria	endometrial malignancies
Okunade et al. [19]	2016	A Five Year Review of Ovarian Cancer at a Tertiary Institution in Lagos, South-West, Nigeria	Lagos	Ovarian
Usman et al. [20]	2017	A Five-Year Review of Female Genital Tract Malignancies at the University of Maiduguri Teaching Hospital, Maiduguri, Nigeria	Maiduguri	Cervical,ovarian,uterine,endometrial,choriocarcinoma,vulva
Sule A.A et al. [21]	2017	A histopathologic review of cervical cancer in Kano, Nigeria	Kano	Cervical
Silas O.A et al. [22]	2022	A Histopathologic Review of Cervical Cancers in Jos University Teaching Hospital, Jos, Nigeria	Jos	Cervix
Forae et al[23]	2014	A histopathological overview of ovarian lesions in Benin City, Nigeria: How common are the functional cysts?	Benin	Ovarian
Mohammed et al. [24]	2022	A histopathological study of ovarian neoplasms in children in a tertiary hospital of northern Nigeria	Zaria	Ovarian
Udigwe et al.	2011	A review of the prevalence and pattern of presentation of gynaecological cancers in a tertiary hospital in Nnewi, South-East Nigeria	Anambra	cervical, fallopian tube vulva
Okolo et al. [25]	2013	A Review of Vulvar and Vaginal Cancers in Ibadan, Nigeria	Ibadan	Vulvar ,Vaginal
Mandong et al. [26]	2003	A ten-year review of gynaecological malignancies in Jos university teaching hospital, Jos, Nigeria (1990-1999)	Jos	cervical,endometrial, ovarian ,vulva
Iyoke et al	2011	A ten-year review of ovarian cancer in Enugu, South east Nigeria	Enugu	Ovarian cancer
Adewuyi et al. [27]	2015	Age distribution, site of origin and HIV status of cases of gynaecological malignancies seen at a radiotherapy facility in Northern Nigeria	Zaria	cervical,ovarian, endometrial vagina,vulva
Sabageh et al. [28]	2012	An Analysis of the Clinicopathologic Characteristics of Ovarian tumours in Ile-Ife, Nigeria	Osun	Ovarian

Ogunlaja O.A et al. [29]	2022	An appraisal of pattern and presentation of gynaecological malignancies in Bowen University Teaching Hospital, Southwest Nigeria	Oyo	Cervical
Eke BA et al.	2017	An Epidemiological Analysis of the Pattern of Breast and Gynaecological Cancers at Federal Medical Center and Benue State University Teaching Hospital, Makurdi, North-Central Nigeria	Benue	cervical, ovarian, endometrial
Anorlu et al.	2010	Cancer mortality among patients admitted to Gynaecological wards at Lagos University Teaching Hospital, Nigeria.	Lagos	cervical, ovarian, vulva endometrial, choriocarcinoma,
Ijaiya M.A et al. [30]	2004	Cancer of the cervix in Illorin, Nigeria	Illorin	Cervical cancer
Oguntayo et al. [31]	2011	Cancer of the cervix in Zaria, Northern Nigeria.	Zaria	Cancer of the cervix
Okonkwo et al. [32]	2008	Cancer of the Ovary in Nnewi, Nigeria	Anambra	Ovarian
Ago et al. [33]	2013	Cancer of the uterine cervix at the University of Calabar Teaching hospital, Calabar Nigeria	Calabar	uterine cervix
Adelusi B. [34].	1977	carcinoma of the cervix uteri in Ibadan: coital characteristics	Ibadan	cervix uterine
Eze et al. [35]	2012	Cervical cancer awareness and cervical screening uptake at the Mater Misericordiae Hospital, Afikpo, Southeast Nigeria.	Ebonyi	Cervical Cancer
Omotoso et al. [36]	2010	Cervical Cancer in Calabar, Nigeria	Calabar	cervical cancer
Adebayo et al. [37]	2022	Cervical leiomyosarcoma in a teenage girl: A rare form of uterine	Lokoja	Cervical leiomyosarcoma
Iyoke et al. [38]	2014	Challenges associated with the management of Gynaecological cancers in a tertiary hospital in south east Nigeria	Enugu	cervical, ovarian, vulva, endometrial, choriocarcinoma
Umar et al. [39]	2008	Childhood and Adolescent Reproductive Tract Tumours in Zaria	Zaria	ovary, cervix, uterus
Ajani et al. [40]	2016	Childhood ovarian neoplasms in Ibadan, South-western Nigeria	Ibadan	Ovarian
Ikechebelu1 et al. [41]	2010	Clinicopathological analysis of cervical cancer seen in a tertiary health facility in Nnewi, south-east Nigeria	Anambra	Cervical
Samaila1 et al. [42]	2012	Cutaneous umbilical metastases in post-menopausal females with gynaecological malignancies		cervical, ovarian, endometrial
OMIGBODUN et al. [43]		Cytologic detection of urinary bladder involvement in cervical cancer	Ibadan	Cervical

Zayyan et al. [44]	2019	D-dimer levels as marker of deep vein thrombosis in patients with cervical cancer: A study of a northern Nigerian patient population Marliyya	Zaria	Cervical
Rabiu et al. [45]	2013	Delays in presentation and management of ovarian cancer in Lagos, Nigeria	Lagos	Ovarian
Adekanbi et al	2016	Endometrial Cancer in Ibadan: Epidemiological and Clinico-pathological Features -10 Year Review	Ibadan	endometrial cancer
Umezulike et al. [46]	2007	Epidemiological characteristics of carcinoma of the cervix in the federal capital territory of Nigeria.	FCT	Cervix
Okeke T.A et al. [47]	1999	Epidemiological Studies of a cervical cancer screening programme population	Enugu	Cervical
Sahabi & Abdullahi [48]	2017	Epidemiological Survey of Malignant Neoplasms in Sokoto, Nigeria	Sokoto	Cervical,ovarian endometrial
Marliyya Sanusi Zayyan et al. [49]	2017	Epidemiology of ovarian cancers in Zaria, Northern Nigeria: a 10 year study	Zaria	Ovarian cancers
Osakwe CR et al. [50]	2016	Evaluation Of Histologically Confirmed Carcinoma Of The Cervix In Nnewi Nigeria: A five year review	Anambra	Cervical
ADEFUYE et al. [51]	2014	Female genital tract cancers in Sagamu, Southwest, Nigeria	Ogun	cervical,Endometrial,ovarian, choriocarcinoma,vulval
Agboeze et al. [52]	2015	Frequency and Pattern of Gynaecological Cancers in Federal Teaching Hospital, Abakaliki, Nigeria	Abakiliki	cervical,ovarian,vulvac horiocarcinoma,endom etrial
Obodo et al. [53]	2009	P1077 Gynaecological deaths in a tertiary hospital in Lagos: A 6-year review	Lagos	cervical,ovarian,endom etrial, choriocarcinoma
Aminu et al. [54]	2020	Gynaecological malignancies in Azare, North-East Nigeria: an assessment of types, stage at presentation and treatment affordability	Bauchi	cervical,ovarian,endom etrial
Omotoso et al. [55]	2018	Gynaecological Malignancies in Calabar, Nigeria: A Tertiary Hospital Based Study	Calabar	cervical,corpiusuteri, endometrial,myometrium, ovarian,vulva, vagina
Galadanci et al. [56]	2003	Gynaecological Malignancies Seen in a Tertiary Health Facility in Kano, Northern Nigeria	Kano	cervical, ovarian, corpus uteri, vulva,vaginal
Umeobika et al. [57]	2018	Gynaecological Malignant Tumours at Imo State University Teaching Hospital Orlu South Eastern Nigeria	Imo	cervical.ovarian,uteri,v ugina,endometrial, choriocarcinoma

Uchendu Obiora Jude [58]	2022	Gynaecological lesions in Delta State, Nigeria: A hospital based histopathologic study	Delta	Cervical, Endometrial, Ovarian
Yakasai et al. [59]	2013	Gynaecological malignancies in Aminu Kano Teaching Hospital Kano: A 3 year review	kano	cervical, ovarian, endometrial, choriocarcinoma
Galadanci et al. [56]	2003	Gynecological malignancies in Aminu Kano Teaching Hospital Kano : A 3 year review	kano	cervical, ovarian, vulva, vagina, corpus uteri
Omoniyi-Esan et al. [60]	2004	Histological Pattern of cervical malignancies in southwestern Nigeria	Osun	Cervical
Obed et al. [61]	1999	Histological types of ovarian tumours as seen in an African teaching hospital in north ± eastern	Maiduguri	Ovarian
Omenai et al. [62]	2020	Histopathological characteristics of carcinoma of the uterine cervix in a tertiary hospital in southern Nigeria Sebastian	ibadan	Uterine cervix
Nnadi et al. [63]	2014	Histo-pathological Features of Genital Tract Malignancies as Seen in a Tertiary Health Center in North-Western Nigeria: A 10-year Review	Sokoto	Cervical, ovarian, vagina, choriocarcinoma,
Nnadi et al	2009	Histo-Pathological Features Of Primary Ovarian Tumours Managed In A Tertiary Hospital, Sokoto	Sokoto	Ovarian
Musa J et al	2019	HIV status, age at cervical cancer screening and cervical cytology outcomes in an opportunistic screening setting in Nigeria: a 10-year cross-sectional data analysis.	Jos	Cervical
Awoyesuku et al. [64]	2021	Hysterectomy for primary gynaecological malignancies in a non-cancer centre: prevalence, indications and surgical outcomes at a tertiary hospital in Port-Harcourt, Nigeria: a six-year review	Rivers	endometrial, cervical, ovarian
Iyoke et al. [65]	2013	Incidence ,pattern and management of Ovarian Cancer at a tertiary medical center in Enugu, South East Nigeria	Enugu	Ovarian cancer
G. A. Ebughe et al. [36]	2016	Incidence of Cervical Cancer in Calabar, Nigeria.	Calabar	Cervical
Alakaloko et al. [66]	2014	Investigation Of Endometrial Cancer and Associated Risk Factors At Lagos University Teaching Hospital, Nigeria: A 5-Year Review	Lagos	Endometrial
Nwosu S.O and S E Anya.	2004	Malignancies of the female genital tract at the University of Port Harcourt Teaching Hospital: a ten year review – 1990- 199	Rivers	cervical, endometrial, ovarian, vulva, vagina

Kyari et al. [67]	2004	Malignant tumours of female genital tract in North Eastern Nigeria	Maidugari	cervical, ovarian, uterine
Ogunbiyi et al. [68]		Malignant tumours of the corpus uteri in Nigerian women	Ibadan	corpus uterine
Mohammed et al. [69]	2006	Malignant tumours of the female genital tract in Zaria, Nigeria. Analysis of 513 cases	Zaria	ccervical,corpusuteri,ovarian
Eke Et Al. [70]	2010	Management Options For Vulvar Carcinoma In A Low Resource Setting	Anambra	Vulva,
R Adejumo. [70]	2020	Ovarian Cancer Epidemiology In Jigawa, Nigeria.A 4 Year Review	Jigawa	Ovarian
Odukogbe Et Al. [71]	2004	Ovarian Cancer In Ibadan: Characteristics And Management*	Ibadan	Ovarian
Forae et al. [72]	2016	Ovarian Tumors Among Nigerian Females: A Private Practice Experience In Benin-City, Nigeria	Benin	Ovarian
Adegbesan et al. [73]	2009	P969 Knowledge and perception of cancer of the cervix among women with invasive cervical cancer in Lagos, Nigeria	Lagos	Cervix
Eke et al. [74]	2009	P971 Carcinoma of the ovary in a Nigerian tertiary hospital	Anambra	Ovary
Fubara et al. [75]	2007	Pathology of vaginal cancers in port-harcourt, Nigeria. A 14-year study	Rivers	vagina cancer
Abdullahi et al. [76]	2020	Pattern and relative frequencies of Gynaecological malignancies at the University of Abuja Teaching Hospital, Abuja	Abuja	cervical.ovarian, vulva,endometrial, choriocarcinoma,
Ibrahim SA et al. [77]	2011	Pattern Of Gynaecological Admissions In Aminu Kano Teaching Hospital: A Three Year Review	Kano	cervix, ovary
Ugwu EO et al. [78]	2011	Pattern of gynaecological cancers in university of nigeria Teaching Hospital Enugu, South Eastern Nigeria	Enugu	cervical,ovarian,chorio carcinoma, endometrial
Ibrahim H.M et al. [79]	2013	Pattern of gynaecological malignancies at the University of Ilorin Teaching Hospital, Ilorin, Nigeria	Ilorin	cervical,ovarian, uterine, vulva1,vaginal
Osinachi et al. [80]	2020	Pattern of gynaecological malignancies in a Nigerian tertiary hospital	Abuja	cervical,ovarian,Endometrial,Choriocarcinoma, vulva
Sanni et al. [81]	2013	Pattern Of Gynaecological Malignancies In Jos	Jos	uterine,ovary,cervix,vagina, vulva
Ugwu et al. [78]	2011	Original Article Pattern Of Gynaecological Cancers In University Of Nigeria Teaching Hospital , Enugu , South Eastern Nigeria	Enugu	ovary,cervix,leiomyosarcoma,choriocarcinoma

Fubara et al.	2003	Pattern Of Primary Female Genital Cancer Port- Harcourt, Nigeria: A 12-Year Review	Rivers	Cervix,ovary,vagina,vulva,uterus
Briggs N.D &KatchyK.C. [82]	1990	Pattern Of Primary Gynecological Malignancies As Seen In A Tertiary Hospital Situated In The Rivers State Of Nigeria	Rivers	vulva,cervix,endometrium,ovary
Popoola et al. [83]	2013	Prevalence and Pattern of Cancers among Adults Attending a Tertiary Health Institution in Lagos, Nigeria	Lagos	Ovarian,endometrial,cervical
Awofeso et al. [84]	2019	Prevalence and Pattern of Late - Stage Presentation in Women with Breast and Cervical Cancers in Lagos University Teaching	Lagos	Cervical cancer
Ikechebelu [41]	2005	Clinicopathological analysis of cervical cancer seen in a tertiary health facility in Nnewi , south-east Nigeria	Anambra	Ovary
kabir et al. [85]	2019	Prevalence of human papillomavirus genotypes in cervical cancer in Maiduguri, Nigeria	Maiduguri	Cervical
Ugwu et al. [86]	2019	Primary vaginal adenocarcinoma of intestinal-type: case report of a rare gynaecological tumours	Lagos	Vagina
Okunowo et al. [87]	2020	Primary vaginal leiomyosarcoma: case report of a rare gynaecological malignancy and diagnostic challenge in a resource-constraint setting	Lagos	vagina leiomyosarcoma
Goddy et al. [88]	2015	Profile and retrospective analysis of the use of preventive strategies in patients with cervical cancer in	Rivers	Cervical
Olaleye et al. [89]	2019	Profile of Gynaecological Malignancies in Alex Ekwueme Federal Teaching Hospital, Abakaliki, Southeastern Nigeria	Abakiliki	cervical,ovarian,endometrial,vulva1,vaginal,choriocarcinoma
Zayyan et al. [90]	2018	Quality of life in patients with advanced cervical cancer in Nigeria	Zaria	Cervical
Okunade et al. [91]	2020	Risk predictors of early recurrence in women with epithelial ovarian cancer in Lagos, Nigeria	Lagos	epithelial ovarian cancer
Nnadi Dc et al. [92]	2014	Screening for cervical cancer: A review of outcome among infertile women in a tertiary hospital in North-West Nigeria	Sokoto	Cervical cancer
Adewuyi& Rafinadadi [93]	2007	Sociodemographic and clinicopathologic characterization of cervical cancers in northern Nigeria	Zaria	Cervical

Oguntayo et al. [94]	2013	The burden of Gynecological cancer management in Northern Nigeria	Zaria	Cervical
Okeke et al. [95]	2013	The Frequency and Pattern of Female Genital Tract Malignancies at the University of Nigeria Teaching	Enugu	cervix,ovarian,corpiusuteri,vulva
Nwafor C.C &Nwafor N.N [96]	2018	The Pattern and Distribution of Cancers in Akwa Ibom State, Nigeria	Akwa Ibom	cervical cancer
Adekunle et al. [97]	2016	The pattern of carcinoma of the vulva in Zaria, Northern Nigeria	Zaria	Vulva
BOBZOM et al. [98]	1997	Types of ovarian tumours seen in Benin-City,	Benin	granulosa cell tumour
Fubara et al. [99]	2007	Uterine sarcomas in Port Harcourt, Nigeria A 12-year clinico-pathologic study	River	Uterine
Sodje et al. [100]	2015	Vulva Carcinoma at The University Of Benin Teaching Hospital (UBTH); A Ten Year Review	Benin	Vulva,ovarian,endometrial,cervix
Malami et al. [101]	2007	A Descriptive retrospective study of the pattern of malignant disease in Sokoto, north western Nigeria (1999-2004)	Sokoto	cervix uteri, ovary
Olufunsho et al. [102]	2011	Cancer distribution pattern in south western Nigeria	Lagos, Ibadan	cervical cancer
Akinde et al. [103]	2015	Cancer mortality pattern in Lagos teaching hospital, Lagos Nigeria	Lagos	cervix, ovary
Ekamem&Par kin. [36]	2016	5-year cancer incidence in Calabar, Nigeria (2009-2013)	Calabar	cervix, uterine, ovary

List 2. MMAT Table for studies undertaken in Nigeria

Study Type	Questions	Yes	No	Can't tell	Total
Screening questions	Are there any obvious research questions?	102	0	1	103
	Does the data answer the research questions?	101	0	2	103
Quantitative descriptive	Is the sampling strategy appropriate for answering the research question?	64	0	2	66
	Is the sample representative of the intended audience?	65	0	0	65
	Are the measurements correct?	57	2	5	64
	Is there a low risk of non-response bias?	62	1	3	66
Mixed Methods study	Is the statistical analysis suitable for answering the research question?	35	0	2	37
	Is there a justification for using a mixed methods design to answer the research question?	32	0	5	37
	Are the various components effectively incorporated to address the research questions?	36	1	0	37
	Are the results of incorporating qualitative and quantitative components properly interpreted?	36	0	1	37
	Are disparities between quantitative and qualitative results fully handled?	33	0	4	37

2.9 Quality Evaluation

The Mixed Methods Appraisal Tool (MMAT) V.2018 [104] software was used to evaluate the included literature quality. MMAT allows for the evaluation of diverse study designs. The tool comprises relevance to the research question, the study design, methods, suitability, data collection, analysis of data, and key findings. To avoid bias, two review authors carried out the quality appraisal process separately and in duplicate. Disagreements among reviewers were settled through discussion.

2.10 Collation, Summary, and Result Report

The publications were summarized using a narrative approach to establish the burden of gynaecological malignancy. The study was structured around the geographical distribution of gynaecological cancer and its frequency of occurrence. We examined and reported on any additional concepts that addressed the research question. Tables and graphs were used to illustrate findings where necessary. The results were used to establish knowledge gaps concerning Nigeria's gynecological malignancies burden.

3. RESULTS AND DISCUSSION

Most studies were retrospective; patient folders were obtained from medical records or regional cancer registries. Diagnoses were based on histological findings. The setting of the study was in tertiary hospitals with minor exemptions, such

as in a community setting. Developed cities in Nigeria, such as Lagos, Zaria, Anambra and Enugu had the highest number of publications. Other less developed states, such as Imo, Lokoja, Oyo, Akwa Ibom, Bauchi, Benin, Delta, Kebbi and Ogun states, had minor publications. There was a spike in the number of publications on gynecological cancers until recently when a sharp decline was observed.

Cervical, ovarian and uterine cancers have the highest rate of occurrence. Endometrial carcinoma is the most common uterine cancer. Reported histological cancers include endometrioid carcinoma, squamous cell carcinoma and adenocarcinoma, while granulosa cells of the ovary and trophoblastic tumors were rare forms reported. Other gynaecological malignancies such as vulva, vagina and fallopian tube cancers were scarcely found. The three most prevalent forms of cancer identified in the study are consistent with the reports of other authors [105,106,1]. Risk factors for some of the reported cases of cancers include active sexual history, age, parity, family history, and vaginal bleeding, among others. Radiotherapy and chemotherapy are the major treatment procedure utilized.

The major limitation of the study was that some of the journals reviewed lacked information on the median age of patients.

This article will contribute to the basis for a systematic review of the epidemiological evidence of gynaecological malignancy in Nigeria.

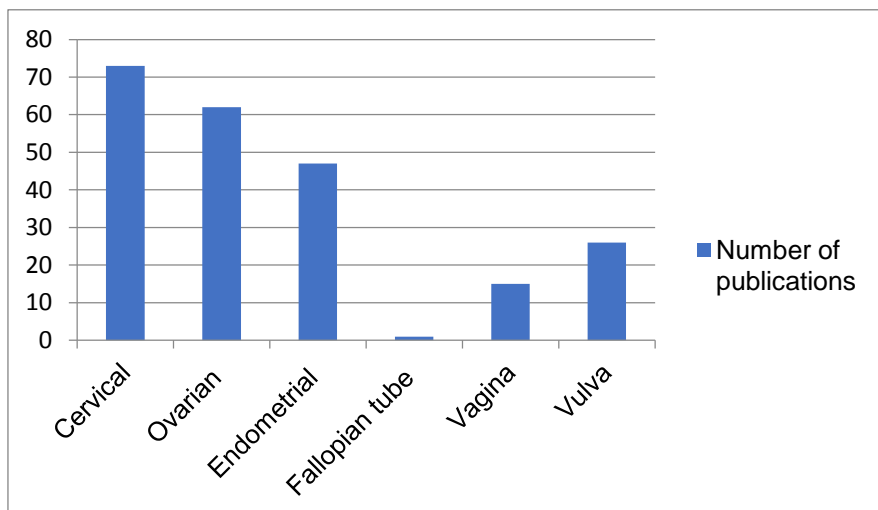


Fig. 1. Number of publications reported on various types of cancer

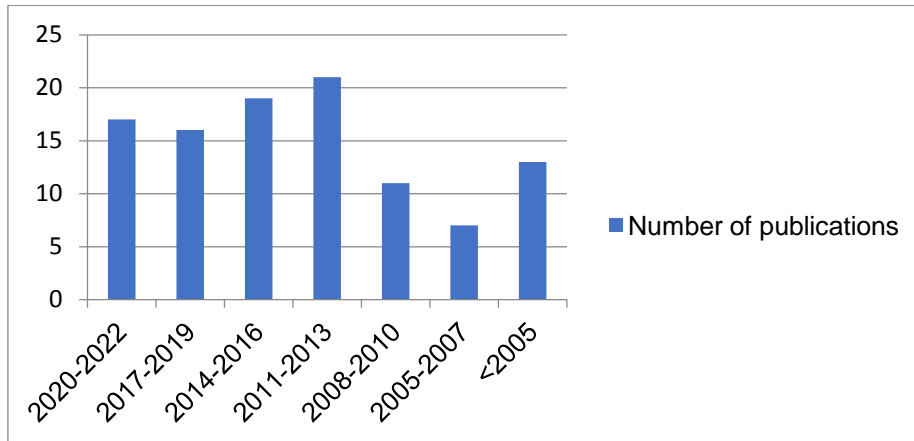


Fig. 2. Number of publications by year

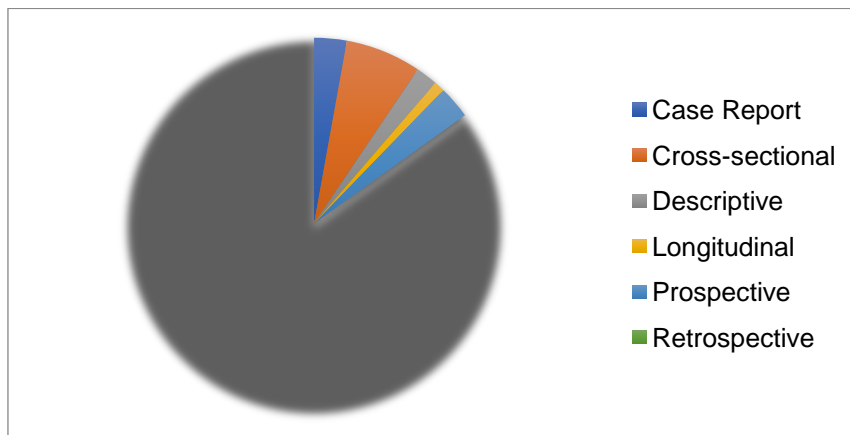


Fig. 3. Rate of Occurrence of each study design/method

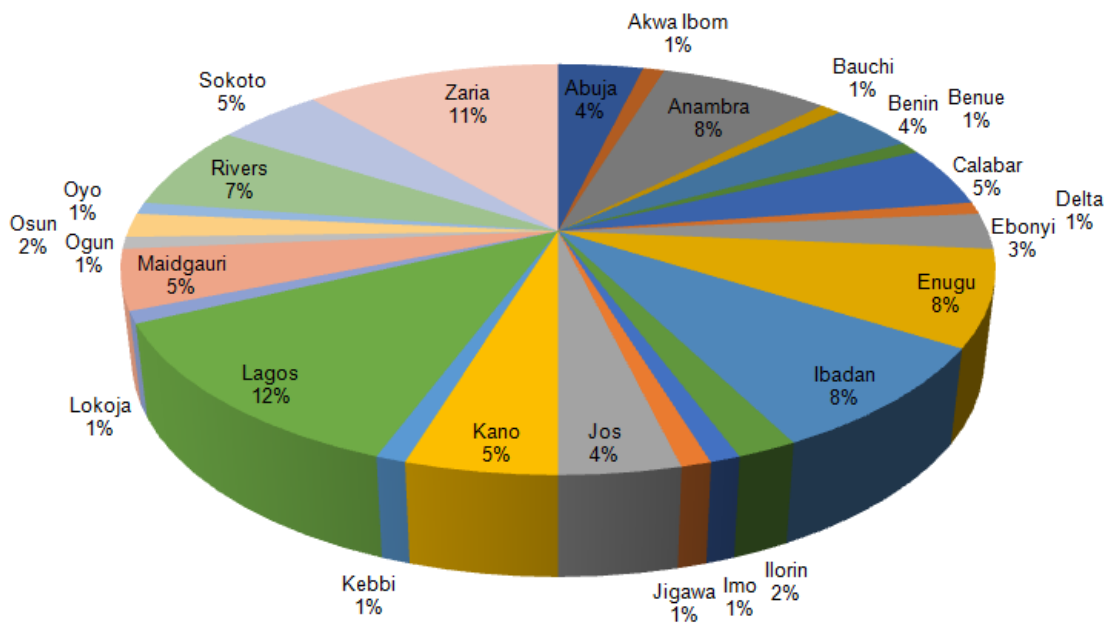


Fig. 4. Percentage publication by state

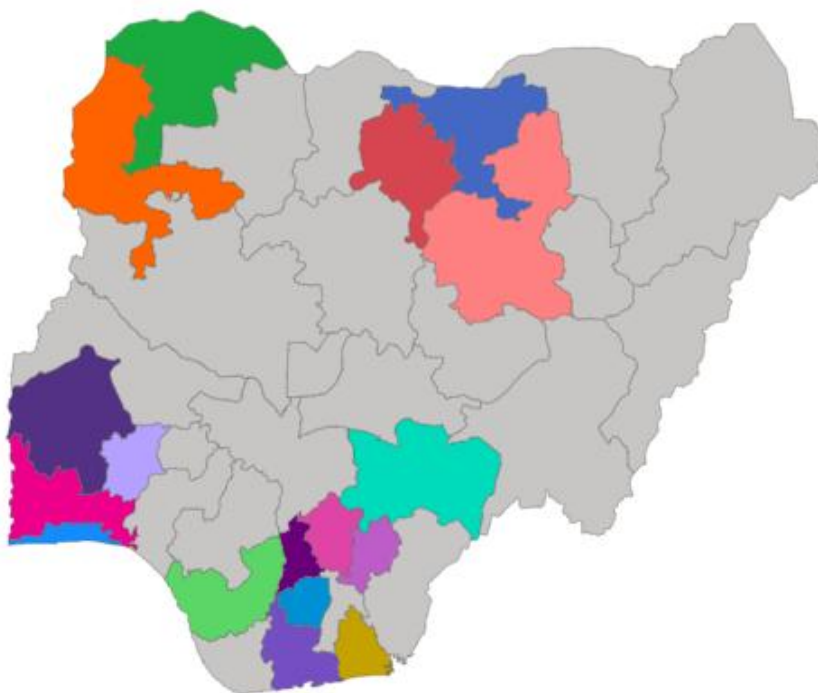


Fig. 5. Shape map distribution of studies by state

4 CONCLUSION

This study collates published works in gynaecological malignancies in Nigeria. Our finding is consistent with the worldwide burden, which identified cervical, ovarian and uterine cancers as the most common forms of cancer. Due to poor screening in Nigeria, many women only present with symptoms of complications or advanced stage of the disease. Highly urbanized localities had the most significant number of published articles on gynaecological malignancies, leaving the rural areas with fewer publications, which signify limited health access in rural settings. The establishment of national screening protocol, national health insurance schemes and workforce education is needed to mitigate the disease state and improve survival outcomes, especially in rural areas.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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