

CLINICO-PATHOLOGICAL ANALYSIS OF CERVICAL CANCER IN MAIDUGURI, NORTH EAST NIGERIA

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Received: 18-Feb-2026

Accepted: 21-Apr-2026

Published: 30-Apr-2026

Abstract

Background: Cancer of the cervix is an important health problem and one of the leading cause of morbidity and mortality amongst women worldwide. It continues to be the most common gynecological malignancy especially in developing nations despite being a preventable cancer. The aim of this study is to review the clinico-pathological features of cervical cancer and provide update on these cancers that were diagnosed in our centre.

Materials and Methods: This is a retrospective, descriptive study of all cervical cancer cases that were histologically-diagnosed over a ten-year period (2015– 2024), at the Department of Histopathology, University of Maiduguri Teaching Hospital (UMTH), Maiduguri. The records of the cancer cases were retrieved from the Histopathology request forms and Cancer Registry of the hospital. Clinico-pathological information such as demographic data, clinical features, and stages of the tumors at presentation, and histopathological types and grades were extracted. The results were analyzed using descriptive statistics and presented in tables and charts.

Results: A total of 530 gynecological malignancies were diagnosed during the study period, out of which 337 cases was cervical cancer thereby constituting 63.6% of the gynaecological cancers. The patients' ages ranged between 25 and 84 years, with a modal age group of 41–50 years and mean age of 48.5 years. The three most common clinical presentations were abnormal vaginal bleeding, abnormal vaginal discharge and lower abdominal pain; while the commonest stage at presentation was stage III. The predominant histological type was squamous cell carcinoma representing 84.8% of the cancers. Adenocarcinoma was the second most common and accounted for 13.1%, while the other less common subtypes together constituted 2.1% of the cervical cancer. Majority of the patients then were referred for chemo-radiation and thus lost to follow-ups.

Conclusion: Cervical cancer was still the most common gynecological malignancy, with most patients presenting at advanced stage. Although squamous cell carcinoma was the predominant histological type, there was relative increase in the proportion of adenocarcinoma when compared to previous studies.

Keywords: Cervical cancer, Clinico-pathological features, Maiduguri, Nigeria

Cite this article: Kabir A, Adamu IA, Chiroma EM, Abe AM, Kyari AB. Clinico-pathological analysis of cervical cancer in Maiduguri, north east Nigeria. Yob Med J.2026;2(1):17-24

Introduction

Cervical cancer is a major health problem and is the fourth most common cancer in women worldwide.¹ Globally, it represents 7.9% of all cancer cases in women, with an estimated incidence of 662,044 and mortality of 348,709 in 2022.^{1,2} In sub-Saharan Africa where up to 80% of the cancer cases occur, cervical cancer is the second most common cancer in the female population.^{2,3,4} Furthermore, in this part of the world and other low- and middle-income countries (LMICs), cervical cancer is the most common cancer of the female genital tract.²⁻⁷ In the Sub-Saharan Africa, this higher incidence of cervical cancer is associated with concomitant high mortality affecting women at their prime age.^{2,3,7} This is a source of great concern considering the fact that cervical cancer is preventable and curable at low cost with currently available preventive methods.^{2,3,7}

In Nigeria, with 12,075 new cases and 7968 deaths due to cervical cancer, it is responsible for the highest number of incident cases and deaths in Africa, and one of the eight countries with the largest number of incident cases in the world.⁸

Several studies on cervical cancer reported similar clinico-pathological findings regarding patients' biodata, risk factors, clinical presentations, and management strategies.^{6,9-16} Cancer of the cervix uteri is mostly seen in middle-age, multiparous, unscreened women in a polygamous setting and of low socio-economic status. Additionally, significant risk factors for development of cervical cancer include smoking, long-term use of oral contraceptives and immunosuppression.^{6,9-16} Persistent infection with high-risk human papilloma virus (HPV) has been strongly and globally implicated in the development of cervical cancer.¹⁷⁻¹²⁰ As result, it has become increasingly apparent that most of the risk factors (e.g., age at first coitus, multiparity, number of partners, socioeconomic status) merely reflect the probability of HPV exposure and acquisition.²¹ Most patients

usually present at advanced stage with history of abnormal vaginal bleeding, foul-smelling vaginal discharge and lower abdominal pain.⁹⁻¹⁶ Depending on the stage of disease and availability and affordability of treatment facility, modalities of treatment include surgery, chemo-radiation, and palliation.^{2,4,16}

There are several histopathological types of carcinoma of the cervix and as result, the WHO has grouped these epithelial tumours into three major categories namely: squamous cell tumours and precursors, glandular tumours and precursors, and other epithelial tumours.²² Squamous cell carcinoma (SCC) along with its variants, is the predominant histologic type of cervical cancer seen worldwide.^{9-16,23-25} The glandular tumours are the adenocarcinomas and constitute the second most common histologic type.^{9-16,23,24} However, recent reports have indicated a rising incidence of adenocarcinoma relative to SCC, which may be attributed to an improved method of screening for early squamous lesions and better identification of glandular lesions in cervical cytology samples.^{16,22,26} The other epithelial tumours group of cervical carcinoma include adenosquamous carcinoma, adenoid cystic carcinoma, neuroendocrine tumours, e.t.c.²² Although not as strong as tumour staging in cervical cancer prognostication, grading of both squamous cell carcinomas and adenocarcinomas are similar to their histological counterparts in other parts of the body, ranging from well- (grade I) to poorly-differentiated (grade III) carcinomas, whereas adenosquamous carcinoma is regarded as grade III tumour.^{22,27}

In an earlier study in our center 19 years ago, Mayun et al.²⁸ analysed histopathological features of non-squamous cell malignancies of the cervix. In this study, the aim was to determine the clinico-pathological features of all types of carcinoma of cervix and provide update on these cancers that were diagnosed

at the University of Maiduguri Teaching Hospital, Maiduguri, Northeast Nigeria.

Materials and Methods

This is a retrospective, descriptive study conducted at the University of Maiduguri Teaching Hospital, Maiduguri over a ten-year period from January 1, 2015 to December 31, 2024. The hospital is a tertiary health institution and a center for training, research and clinical services in Borno state, Northeast Nigeria.

All records of cases of histologically-confirmed cervical cancer were retrieved from the archives of Histopathology department and Cancer Registry of the hospital. The records of cases of gynaecological malignancies as well as total cancers of all histological types during the study period were collected from the hospital Cancer Registry. Clinico-pathological information such as demographic data, chief complaints, and stages of the tumors at presentation, and histopathologic types and grades were extracted. The results were analyzed using descriptive statistics and displayed in frequency tables and charts.

Results

During the period of study, the total number of histologically-confirmed cervical cancer cases was 337. The total number of gynecological malignancies was 530, whereas those of female cancers and overall total cancer cases respectively, were 1621 and 2809. Therefore, cervical cancer accounted for 63.6% of gynecological malignancies, 20.8% of female cancers and 12.0% of total cancer cases. The age range of the patients was from 25 to 84 years, mean age was 48.5 years and the modal age group was 41–50 years as shown in table 1.

As shown in table 2, most of the patients had more than one symptom at presentation, and the three most common chief complaints were abnormal vaginal bleeding, abnormal vaginal discharge and lower abdominal pain. Other features included loss of weight, difficulty in passing urine, dyspareunia,

leakage of urine and leakage of feces. Majority of the patients presented at stage III (51.2%), followed by Stages II (23.4%), whereas stages I and IV respectively, accounted for 6.8% and 18.6%.

During the period of study and before the commencement of chemo-radiation in our center, most of the patients were referred for such modalities of treatment and thus lost to follow-up. A total of 41 cases (12.2%) were referred to the UMTH's Cancer Centre (commissioned in 2023) for chemo-radiation. Squamous cell carcinoma (SCC) was the most common histological type and constituted 84.8% (286/337) of total cervical cancer cases, with large cell non-keratinizing accounting for the majority of subtypes of SCC (226/286; 79.0%). Cases of adenocarcinoma constituted 13.1% of the carcinoma of cervix, of which the usual-type adenocarcinoma represented the predominant subtype (39/44; 88.6%). Other less common subtypes of adenocarcinoma included clear cell (2/44; 4.5%) villoglandular (2/44; 4.5%) and mucinous (1/44; 2.3%). Adenosquamous carcinoma and adenoid cystic carcinoma respectively, contributed 1.8% and 0.3% of total cervical cancer cases as depicted in table 3 and figure I.

Grade 2 (moderately-differentiated) was the most common histological grade in squamous cell carcinoma and accounted for 66.4% of the cases. Grade 1 (well-differentiated) constituted 19.9% whereas grade 3 (poorly-differentiated) represented 13.6% of the cases. For adenocarcinoma, grade 1 was the most common and constituted 52.3%, while grade 2 and grade 3 respectively, accounted for 34.1% and 13.6% of adenocarcinoma cases.

Table 1: Age distribution of patients with cervical cancer

Age group (years)	Number of cases	Percentage (%)
21-30	6	1.8
31-40	65	19.3
41-50	117	34.7
51-60	88	26.1
61-70	43	12.8
71-80	17	5.0
81-90	1	0.3
Total	337	100

Table 2: Clinical presentation of patients with cervical cancer

(This table allows multiple responses)

Clinical features	Number of cases	Percentage (%)
Abnormal vaginal bleeding	241	71.3
Abnormal vaginal discharge	168	49.7
Lower abdominal pain	80	23.7
Weight loss	55	16.3
Difficulty in passing urine	14	4.1
Dyspareunia	13	3.8
Leakage of urine	6	1.8
Leakage of feces	2	0.6

Table 3: Frequency distribution of histological types of cervical cancer

Cervical cancer	Number of cases	Percentage (%)
Squamous cell carcinoma	286	84.8
Large cell non-keratinizing	226	67.0
Large cell keratinizing	57	16.9
Basaloid/Small cell	3	0.9
Adenocarcinoma	44	13.1
Usual-type	39	11.6
Clear cell	2	0.6
Villoglandular	2	0.6
Mucinous	1	0.3
Other epithelial tumours	7	2.1
Adenosquamous carcinoma	6	1.8
Adenoid cystic carcinoma	1	0.3
Total	337	100

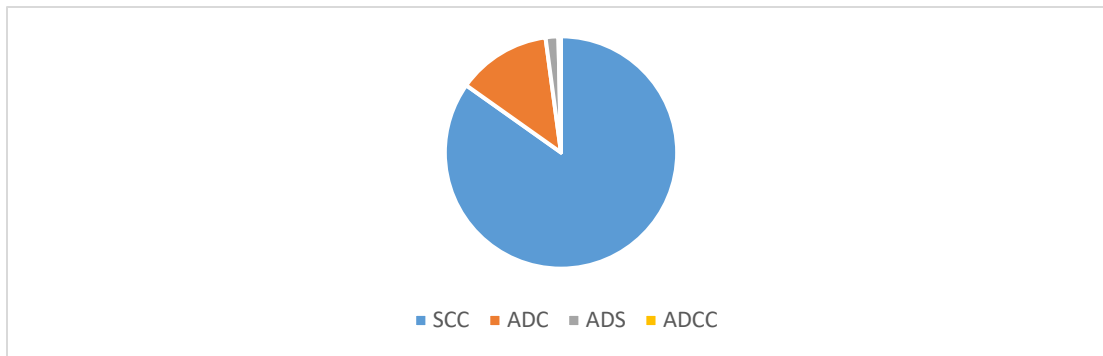


Figure I: **Histological types of cervical cancer**

Legends: **SCC**= squamous cell carcinoma; **ADC**= adenocarcinoma; **ADS**= adenosquamous carcinoma; **ADCC**= adenoid cystic carcinoma

Discussion

This study was conducted to review cervical cancer cases in Maiduguri, showing the prevalence over a 10-year period and detailing the clinico-pathological features.

Cervical cancer is the most common female genital tract cancer found in the study, a finding that aligns with findings of the studies conducted in Nigeria and other low- and middle-income countries (LMICs).^{3-5,7-16} The predominance of cervical cancer in this study and other parts of Nigeria as well as most LMICs could be attributed to the prevailing risk factors, and above all, the lack of organized population-based cervical cancer screening programme.²⁻⁷ In this study, cervical cancer accounted for 63.6% of the malignancies of female genital tract, which is lower than 70.5% observed in a previous study from the same centre.²⁹ The low prevalence in this study may not be unrelated to the availability of routine opportunistic cervical cancer screening programme in the health institution.

However, it is important to note that in recent years, the incidence and mortality of cervical cancer has been estimated to be on the decline in most regions of the world, except for few Sub-Saharan countries where it is still the leading cause of cancer mortality in women.^{16,30} This downward trend could be due to increase in the utilization of cervical cancer preventive measures and a relative surge in other gynecological malignancies and breast cancer.³⁰ To buttress the above

claim, a more recent report by Lawal Qudus O, et al.⁸ in 2023 has shown that in Nigeria, the numbers of incident cases and mortalities from cervical cancer were 12,075 and 7968, respectively compared to 14,089 new cases and 8240 deaths as reported by Bruni L, et al. in 2015.³¹

In this study, the age distribution with a mean age of 48.5 years is similar to those reported in several studies in Nigeria and other developing countries, corroborating the fact that most cases of cervical cancer occur in the middle-aged women.^{4, 6, 9-16} In majority of cases, women with cervical cancer present with more than one symptom as observed in this study; in which the three most common symptoms at presentation were abnormal vaginal bleeding, abnormal vaginal discharge and lower abdominal pain. Other uncommon chief complaints reported such as leakage of urine, leakage of feces and difficulty in passing urine are findings of advanced disease, as most women presented with stage III disease. These findings are consistent with observations by several other scholars.^{4,5,9-11,16,25,26} Depending on the stages of cervical cancer, modalities of treatment include surgery, chemo-radiation, or palliative care.^{2,16,25,26} The majority of our patients presented in advanced stages and were referred for chemo-radiation and thus lost to follow up.

Worldwide, squamous cell carcinoma is the most common histological type of cervical cancer constituting 70-80% of all cases.^{9-16,22-24,26} Adenocarcinoma is the second most common histological type and accounts for

10-15% of the cases.^{16,22,26} The other epithelial tumours of the cervix which include adenosquamous carcinoma, adenoid cystic carcinoma, neuroendocrine carcinoma, together comprise about 5% of all carcinoma cases.^{16,22,26} In this study, squamous cell carcinoma was the most common histological type and constituted 84.8% of the cases. Adenocarcinoma was the second most common (13.1%), while the other epithelial tumours together contributed 2.1% of all cases of cervical cancer. These findings are in consonance with observations in local and international studies on cervical cancer.^{9-16,22-24,26s} The major histological subtypes of squamous cell carcinoma of the cervix are large cell non-keratinizing, large cell keratinizing and basaloid/small cell carcinoma. The predominance of large cell non-keratinizing squamous cell carcinoma in our study is in keeping with most studies, but lower than a finding in a Ghanaian study which could be due to regional variation.^{9,11-16,22,26}

In this study, the non-squamous carcinoma of the uterine cervix constituted 15.2% and included adenocarcinomas (13.1%), adenosquamous carcinoma (1.8%) and adenoid cystic carcinoma (0.3%). The proportion of non-squamous carcinoma of 15.2% in this study is greater than that of Mayun et al²⁸ (12.0%) from the same centre 19 years ago. In their study, adenocarcinoma accounted for 77.9% of non-squamous cell carcinoma which is lower than 86.2% found in this study. This difference could be due to the global increase in the incidence of adenocarcinoma relative to squamous cell carcinoma attributed to an improved method of screening for early squamous lesions and better identification of glandular lesions in cervical cytology samples, as reported in more recent studies^{16,22,26}

Squamous cell carcinoma of the cervix is graded similar to those squamous cell carcinomas in other parts of the body, while adenocarcinomas are graded based on architectural features, similar to that of endometrial adenocarcinomas.^{22, 27} This

study has found out that majority (66.4%) of the cases of squamous cell carcinoma were grade 2 tumours, which is in keeping with similar observation in most reports.^{9, 16, 27, 32} In adenocarcinoma, grade 1 (well-differentiated) was the most common and constituted 52.3% of the histological tumour grading. The predominance of the grade 1 adenocarcinoma in this study could be due to the large number of usual-type adenocarcinoma- an observation also reported by Mayun et al,²⁸ although more studies are needed to confirm it. Several studies reported that adenosquamous carcinoma is a high grade and aggressive tumour with a poorer outcome than common adenocarcinomas or squamous cell carcinomas.^{16, 22, 27} It has been reported that tumour grading may convey some degree of prognostic information related to tumour sensitivity to chemotherapy or radiation therapy; in that high histologic grade was associated with decreased survival in patients with cervical carcinoma treated by radical surgery and radiation therapy.^{16, 22, 33} Of note, the utility of tumor grading and typing in prognostication of cervical cancer may be limited, because some studies have reported that when these tumour types were compared stage by stage, there was no difference in survival.^{16, 33, 34}

Conclusion

This study has also found out that cervical cancer was still the most common gynecological malignancy in our community, with majority of women presenting at advanced stages of disease. Although squamous cell carcinoma was the predominant histological type, there was relative increase in the proportion of adenocarcinoma when compared with previous studies. The menace of this preventable cancer can be curtailed by establishment of organized screening program and enrollment of such individuals in health insurance scheme.

Acknowledgement

We wish to acknowledge Prof. U. H. Pindiga, Prof. H. A. Nggada and Dr. Abba Zarami Bukar for diagnosing some of the malignancies. We equally acknowledge the assistance of the entire staff of Department of Histopathology and Cancer Registry of the University of Maiduguri Teaching Hospital, Maiduguri, Borno State Nigeria.

Conflict of Interest

The authors declare no conflict of interest

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