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Pattern of Head and Neck Tumours in a North Central Nigerian Tertiary Hospital: An Epidemiological and Clinical Analysis

Enoch A Dahilo[1], Stephen S Yikawe[2], David F Folorunso[3], Kopdimma Botpoweh G[4]

[1,3,4]Department of Otorhinolaryngology, university of Abuja/University of Abuja teaching hospital Gwagwalada Abuja

[2]Department of Otorhinolaryngology, head and neck surgery, Nigeria Air Force Hospital, Abuja.

ABSTRACT:

Background: Head and neck tumours (HNTs) represent a significant global health burden, with marked geographical variations in incidence and histological patterns. While malignant lesions, particularly squamous cell carcinoma, have been widely studied, benign conditions such as adenotonsillar hypertrophy remain underreported despite their clinical relevance. This study aimed to characterise the epidemiological and clinicopathological profile of HNTs at the University of Abuja Teaching Hospital (UATH), Nigeria, and compare findings with regional and global trends.

Methods: A 10-year retrospective review (2013–2022) was conducted at the ENT Department of UATH. Data were extracted from patient records, including demographics, clinical presentation, histopathological diagnoses, risk factors, treatment modalities, and outcomes. Descriptive statistics were used to summarise categorical and continuous variables, while Chi-square tests assessed associations between variables. Statistical significance was set at $p < 0.05$.

Results: Of 337 patients analysed, 62.9% had benign lesions, while 6.2% were malignant. Males predominated (55.5%), and the mean age was 11.6 ± 16.7 years (47.2 ± 17.2 for malignant cases). Carcinomas (5.6%) were the most common malignancy, while adenotonsillectomy (66.8%) was the leading surgical intervention. Risk factor documentation was low (tobacco: 0.3%; alcohol: 2.1%). Notably, higher education levels correlated with malignancy ($p = 0.0015$). Late presentation was common, with 28.5% attributing delays to prior treatment at other clinics.

Conclusion: Benign HNTs were more prevalent than malignancies in this cohort. The predominance of late-stage presentations underscores systemic healthcare access challenges. The unexpected association between higher education and malignancy warrants further investigation. These findings highlight the need for enhanced diagnostic capacity, public awareness, and tailored interventions to improve HNT management in resource-limited settings.

KEYWORDS: Head and neck tumours, epidemiology, histopathology, Nigeria.

INTRODUCTION

Head and neck tumours (HNTs) encompass a diverse spectrum of benign and malignant neoplasms arising from the upper aerodigestive tract, salivary glands, thyroid, and other anatomical structures (1,2). While much attention has been paid to malignant lesions, benign conditions such as hypertrophic tonsils and adenoids constitute a significant proportion of head and neck masses requiring histological evaluation in clinical practice. Globally, head and neck malignancies account for approximately 900,000 new cases annually, ranking as the seventh most common cancer worldwide (3). Squamous cell carcinoma predominates, with well-established risk factors including tobacco use, alcohol consumption, and human papillomavirus (HPV) infection (4). However, in clinical practice, benign lesions - particularly reactive lymphoid hyperplasia of tonsils and adenoids - often present as the initial diagnostic concern before malignant pathology is excluded. The epidemiological profile of head and neck tumours shows marked geographical variation. In Bosnia and Herzegovina, a five-year analysis of 881 cases at the Tuzla ENT Clinic revealed laryngeal carcinoma (26.1%) and oral cavity tumours (21.7%) as the predominant malignancies, with squamous cell carcinoma comprising 72.1% of cases (5). The study noted an emerging trend of increasing laryngeal cancer incidence among Bosnian women, paralleling rising smoking rates in this demographic.

The Nigerian experience demonstrates different patterns across regions. At Jos University Teaching Hospital, a 30-month review identified nasopharyngeal carcinoma (31.3%) as the most common malignancy, followed by laryngeal carcinoma (28.1%), with squamous cell carcinoma accounting for 62.5% of cases (6). This contrasts with findings from Sokoto, where nasal masses constituted 8.2% of ENT admissions, with 56% being malignant sinonasal tumours (7). Notably, these studies focused primarily on malignant lesions, while benign conditions like adenotonsillar hypertrophy - though frequently encountered in clinical practice - were not systematically analysed. Late presentation remains a critical issue, especially for patients with malignant lesions, with

many patients seeking care only after prolonged symptom duration. This delay is compounded by limited access to diagnostic modalities - while advanced imaging and endoscopic facilities remain concentrated in tertiary centres, histopathology services face constraints in specimen processing and turnaround times. For benign conditions like adenotonsillar hypertrophy, the decision for surgical intervention often follows failed medical management or concerns about occult malignancy. Our experience demonstrates that these specimens constitute a significant proportion of head and neck tissues requiring pathological evaluation. This suggests that benign lesions warrant greater consideration in head and neck tumour epidemiology. This study aims to comprehensively analyse head and neck tumours at UATH by Characterising both benign and malignant head and neck tumours. The study will also compare findings with regional and global patterns to identify epidemiological trends.

METHODS

This study was a retrospective, hospital-based analysis conducted at the Ear, Nose, and Throat (ENT) Department of the University of Abuja Teaching Hospital (UATH), Nigeria, over 10 years from January 2013 to December 2022. The primary objective was to characterise the epidemiological and clinical patterns of head and neck tumours (HNTs), encompassing benign and malignant lesions, among patients presenting to the facility. The study population included all patients diagnosed with HNTs during the review period whose medical records were available in the hospital's archives. Data were systematically extracted from patient case notes, focusing on key variables such as demographic characteristics (age, sex, place of residence, ethnicity, occupation, and level of education), clinical presentation (duration of symptoms, anatomical site of the tumour, and reasons for delayed presentation), and histopathological findings (histological classification—benign or malignant—and specific subtypes of malignant lesions). Additionally, the study documented known risk factors such as tobacco use, alcohol consumption, and family history of malignancies, as well as treatment modalities employed. Patient outcomes, including treatment response, survival status (alive, deceased, or lost to follow-up), and recurrence rates, where applicable, were also analysed to provide a comprehensive assessment of disease management and prognosis. The collected data were analysed using both descriptive and inferential statistics. Categorical variables were presented as frequencies and percentages, while continuous variables were summarised as means ± standard deviations. Chi-square tests were employed to examine associations between variables such as age, sex, and histological type, with a p-value of <0.05 considered statistically significant. All statistical analyses were performed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA) to ensure robustness and accuracy.

RESULTS

A total of 337 patients' records were reviewed. Of these, 187 (55.5%) were males and 136 (40.4%) were females. The ages range from 6 months to 78 years, with a mean age of 11.6 ±16.7 years. However, among patients with malignant tumours, the mean age was 47.2 ± 17.2 years, while for Benign tumours, it was 7.9 ± 12.6 years. Details of clinical and demographic data of patients are in Table 1.

Table 1: Clinical and Demographic Characterisation of Patients

Sex	Frequency	Per cent
Sex Distribution		
Male	187	55.5
Female	136	40.4
Missing	14	4.2
Total	337	100.0
Place of Residence		
Town	230	68.2
Village	26	7.7
Missing	81	24.0
Total	337	100.0
State of Residence		
Anambra	1	0.3
Benue	3	0.9
Borno	1	0.3
Cross River	1	0.3
Edo	2	0.6

Enugu	1	0.3
Federal Capital Territory	234	69.4
Kaduna	2	0.6
Kogi	5	1.5
Lagos	1	0.3
Nasarawa	13	3.9
Niger	59	17.5
Plateau	1	0.3
Rivers	2	0.6
Missing	11	.3
Total	337	100
Level of Education		
None	1	0.3
Quranic	3	0.9
Primary	20	5.9
Secondary	23	6.8
Tertiary	29	8.6
Missing	261	77.4
Total	337	100.0
Exposure to Risk Factors		
Alcohol	7	2.1
Tobacco	1	0.3
Family History	1	0.3
Alcohol + Tobacco	5	1.5
Missing	323	95.8
Total	337	100.0
Outcome of Treatment		
Unknown	35	10.4
Alive	226	67.1
Dead	5	1.5
Lost to Follow Up	46	13.7
Referred	1	0.3
Missing	24	7.1
Total	337	100.0
Reasons for Delayed Presentation		
Finance	5	1.5
Not Causing any Problem	26	7.7
Traditional Medicine	3	0.9
Self Medication	10	3.0
Others	1	0.3
No Delay	3	0.9
No Reason	8	2.4
Other Clinic	96	28.5
Afraid of Surgery	1	0.3
Missing	184	54.6
Total	337	100.0
Histological Classification of Patients		

Benign	212	62.9
Malignant	21	6.2
Missing	104	30.9
Total	337	100.0
Histological Subtype of Malignant Lesions		
Sarcoma	2	0.6
Carcinoma	19	5.6
Missing	316	93.8
Total	337	100.0
Frequency of Comorbidities		
RVD	2	0.6
Hypertension	4	1.2
Diabetes	2	0.6
Hypertension + Diabetes	3	0.9
Congenital Heart Disease	1	0.3
SCDx	5	1.5
Cerebral Palsy	1	0.3
G6PD Deficiency	1	0.3
PUDx	1	0.3
Missing	317	94.1
Total	337	100.0

The commonest occupation observed among the adult participants was business. Patients came from various ethnicities, with the Igbo tribe (112) being the most commonly encountered ethnicity. Details are in Figures 1 and 2.

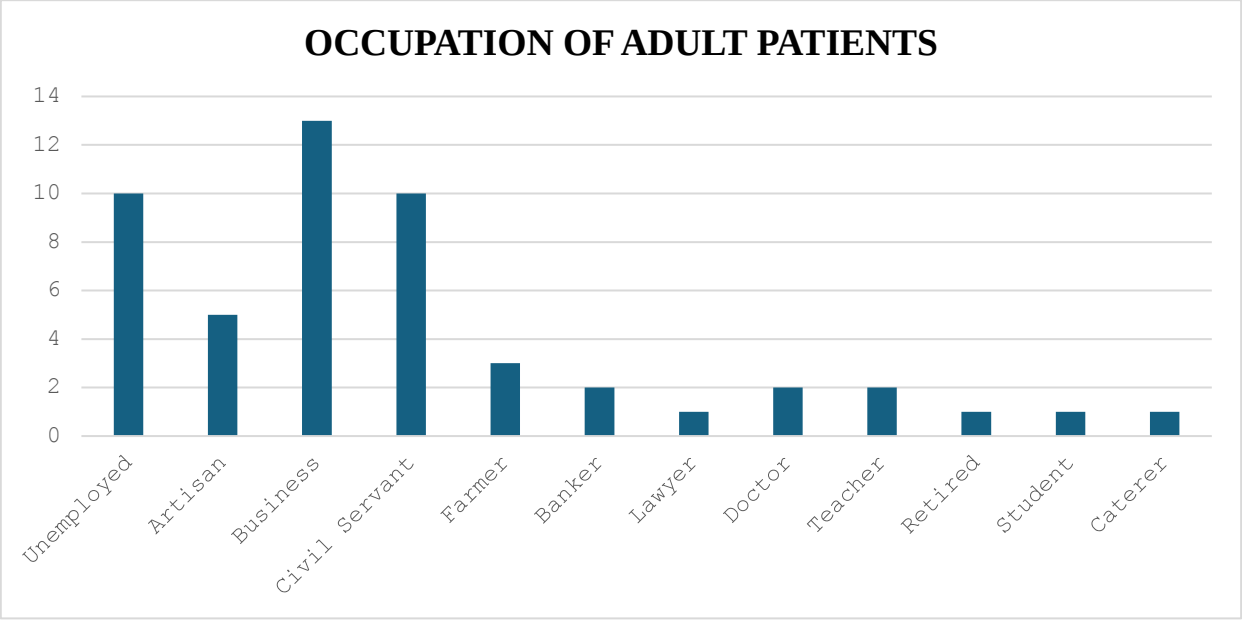

Figure 1: Occupation of Adult Patients

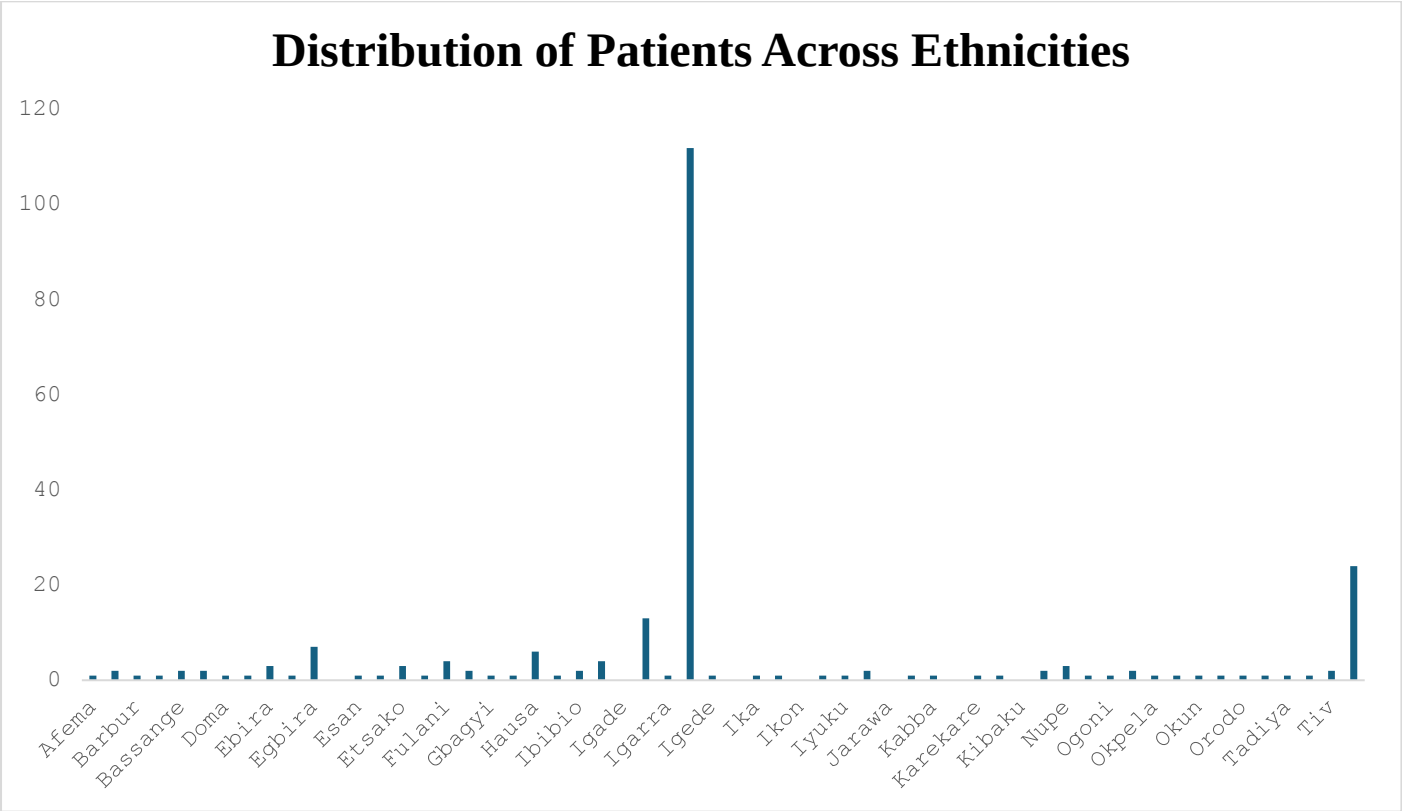

Figure 2: Ethnicity of Patients

Two hundred and twelve (212) patients had benign lesions, while 21 had malignant lesions. More males had benign and malignant lesions, but the two groups had no statistically significant difference. Details are in Table 2. However, there was a statistically significant difference between age and histologic type of lesion ($p<0.001$) (Malignant vs Benign lesion). Furthermore, there was no statistically significant difference between the duration of illness and histologic subtype ($p = 0.706$). Among patients with malignant lesions, carcinomas were more prevalent, see Figure 2.

Table 2: Comparison between Patients with benign and Malignant Lesions

Place of Residence			
Place	**Benign**	**Malignant**	**Total**
Town	156	11	167
Village	11	4	15
Total	167	15	182
X^2	7.338	df = 1	P = 0.007
N	182		
Sex			
Sex	**Benign**	**Malignant**	**Total**
Male	120	12	132
Female	92	6	98
Total	212	18	230
X^2	0.687	df = 1	P = 0.407
N	230		
Outcome of Treatment			
Outcome	**Benign**	**Malignant**	**Total**
Unknown	14	6	20
Alive	161	11	172
Dead	1	3	4
Lost to Follow-Up	31	1	32
Referred	1	0	1
Total	208	21	229
X^2	34.324	df = 4	P < .001
N	229		

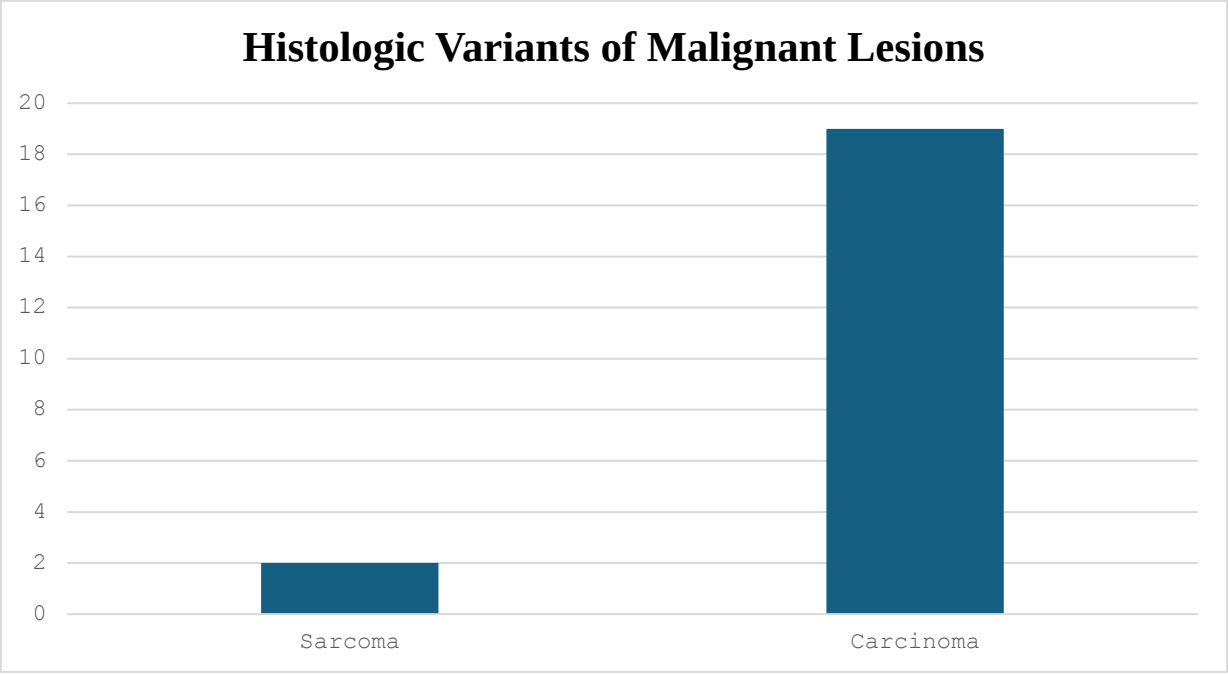

Figure 3: Histologic Subtypes of Malignant Tumours

Various treatment options were offered to patients, including surgery, chemotherapy and radiotherapy. The commonest surgical procedure carried out on participants was adenotonsillectomy among 225 patients (66.8%). Details are in figure 3 and table 3.

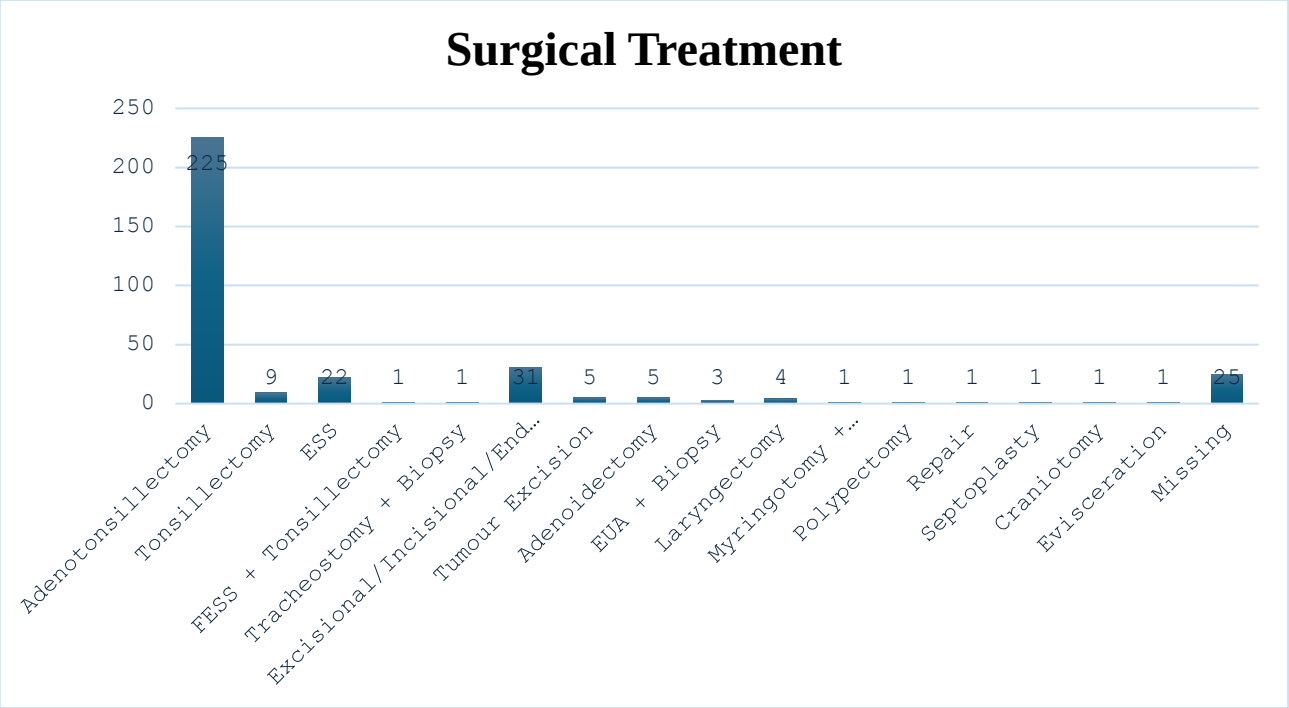

Figure 4: Surgical Treatment Offered to Patients

Table 3: Surgical Treatment Offered to Patients

Histology	Surgery	Frequency	Per cent
Benign	Adenotonsillectomy	173	81.6
	Tonsillectomy	6	2.8
	Endoscopic Sinus Surgery	12	5.7
	Endoscopic Sinus Surgery + Tonsillectomy	1	0.5
	Excisional/Incisional/Endoscopic Biopsy	13	6.1
	Tumour Excision	1	0.5
	Adenoidectomy	4	1.9
	Myringotomy + Adenotonsillectomy	1	0.5
Malignant	Endoscopic Sinus Surgery	2	9.5
	Tracheostomy + Biopsy	1	4.8
	Excisional/Incisional/Endoscopic Biopsy	9	42.9
	Tumour Excision	1	4.8
	Examination Under Anaesthesia + Biopsy	3	14.3
	Laryngectomy	4	19.0
	Craniotomy	1	4.8

Patients with higher levels of education had more tumours, and there was a statistically significant difference between the level of education and histologic type (Table 4). Using standardised residuals, patients with tertiary education are significantly associated with higher malignancy rates (observed > expected; residual = +2.31).

Table 4: Comparison Between Level of Education and Histologic Type (Benign/Malignant)

Histology	Quranic	Primary	Secondary	Tertiary	Total
Benign	1	14	12	10	37

Malignant	1	1	0	10	12
Total	2	15	12	20	49
	Fishers exact			p = 0.0015	

DISCUSSION

The present study provides a comprehensive epidemiological and clinical analysis of benign and malignant head and neck tumours at the University of Abuja Teaching Hospital, Nigeria. This is a significant contribution to the existing literature, as most previous studies, including those referenced here, have focused exclusively on malignant tumours, thereby neglecting the broader spectrum of head and neck pathologies. Our findings reveal a predominance of benign lesions (62.9%) over malignant ones (6.2%), with a notable proportion of cases (30.9%) missing histological classification. This contrasts with studies such as Adeyemi et al., which reported a higher proportion of malignant tumours (55.5%) in a tertiary care centre in Ibadan, Nigeria (8). The disparity may stem from differences in patient demographics, referral patterns, or the inclusion of benign conditions like adenotonsillar hypertrophy in our study, which are often excluded in malignancy-focused research. Our cohort comprised 337 patients, with a male predominance (55.5%) and a mean age of 11.6 years, reflecting a younger population compared to other studies. For instance, Adeyemi et al. reported a mean age of 43.8 years for malignant tumours, while Amusa et al. noted a bimodal age distribution with peaks in the first and fifth decades (8,9). The younger age in our study may be attributed to the inclusion of benign conditions such as adenotonsillar hypertrophy, which are more prevalent in paediatric populations. This aligns with global trends where benign lesions like tonsillar hyperplasia are common in children, whereas malignancies typically affect older adults.

The male-to-female ratio in our study (1.4:1) is consistent with findings from other Nigerian studies, such as Adoga et al., who reported a ratio of 2.6:1 for malignant tumours. However, our ratio is lower than the 1.8:1 reported by Adeyemi et al. (6,8). The variation could reflect differences in the types of tumours included, as benign lesions may have a less pronounced gender bias compared to malignancies, which are often linked to lifestyle factors like tobacco and alcohol use, which is more common in males. The majority of our patients resided in urban areas (68.2%). This urban predominance may reflect better healthcare access or higher awareness in urban settings. Conversely, rural patients often present later due to limited healthcare infrastructure, as noted in Amusa et al., where a delayed presentation was linked to financial constraints and reliance on traditional medicine(9). In our study, delayed presentation was attributed to financial barriers (1.5%) and prior treatment at other clinics (28.5%), underscoring the need for improved healthcare access and education in rural communities.

Squamous cell carcinoma (SCC) was the predominant malignant subtype (5.6%), consistent with global trends where SCC accounts for over 90% of head and neck malignancies (4,5). However, the proportion of SCC in our study was lower than the 66.7% reported by Adeyemi et al. and the 72.1% in Altumbabic et al. (5,8). This discrepancy may arise from the inclusion of benign lesions in our study, diluting the relative frequency of malignancies. Additionally, the high proportion of missing histological data (30.9%) highlights challenges in diagnostic completeness, a common issue in resource-limited settings. Among benign lesions, adenotonsillectomy was the most common surgical procedure (66.8%), reflecting the high prevalence of adenotonsillar hypertrophy, particularly in children. This finding diverges from malignancy-focused studies where laryngeal and nasopharyngeal carcinomas dominated surgical interventions (6).

Exposure to risk factors such as alcohol (2.1%) and tobacco (0.3%) was low in our cohort, contrasting with studies from Europe and North America, where tobacco and alcohol are major contributors to head and neck cancers (10,11). The low prevalence may reflect underreporting or cultural differences in substance use. Notably, 95.8% of cases had no documented risk factors, suggesting gaps in data collection likely influenced by patients withholding such information due to cultural reasons. Comorbidities were rare, with hypertension (1.2%) and diabetes (0.6%) being the most reported. This contrasts with Western studies where comorbidities like cardiovascular disease are more prevalent due to ageing populations and lifestyle factors (12,13). Our study's low comorbidity rate may reflect our cohort's younger age or the underdiagnosis of chronic conditions.

The majority of our patients had favourable outcomes, with 67.1% alive at follow-up, while 1.5% died, and 13.7% were lost to follow-up. The high rate of loss to follow-up mirrors challenges noted in other Nigerian studies and underscores systemic issues such as financial barriers and fragmented healthcare systems (9,14). The low mortality rate compared to other studies may reflect the inclusion of benign cases in our research, which generally have better prognoses (8,15).

A striking finding in our study was the statistically significant association between higher education levels and malignant tumours ($p = 0.0015$). Patients with tertiary education were more likely to present with malignancies, as evidenced by standardised residuals (observed > expected; residual = +2.31). This contrasts with global trends where low socioeconomic status (SES) is typically linked to higher cancer incidence due to increased exposure to risk factors like tobacco and alcohol (10,16). However, findings of higher prevalence of head and neck cancer (HPV related) have been reported among patients with higher SES, which may not likely be the case in this study (10). The association observed in our study may reflect lifestyle differences, such as dietary habits or occupational

exposures, which were not captured in our data. Additionally, the likelihood of better health-seeking behaviour among educated patients may reflect this higher prevalence as the uneducated tend to resort to non-orthodox forms of healthcare, hence not being captured in a hospital-based study. Further research is needed to explore this unexpected relationship in the Nigerian context. The pattern of malignant head and neck lesions in our study shares similarities with regional reports. For instance, Iseh & Malami in Sokoto, Nigeria, found that carcinomas accounted for 30% of malignancies, with nasopharyngeal carcinoma (11.5%) being the most common in adults (17). Similarly, Gilyoma et al. in Tanzania reported carcinomas as the predominant histological type (59.6%), with squamous cell carcinoma comprising 75.7% of cases (16). These findings underscore the regional burden of SCC and highlight the need for targeted interventions. Notably, our study's lower malignancy rate may reflect the inclusion of benign conditions, which are often overlooked in malignancy-focused studies. Managing head and neck tumours in resource-limited settings like Nigeria is challenging. In our study, 28.5% of patients delayed presentation due to prior treatment at other clinics, often with inadequate facilities. This aligns with (16), who reported that 61.8% of patients in Tanzania sought traditional healers before hospital presentation, leading to advanced-stage diagnoses. The high loss-to-follow-up rate (13.7%) further exacerbates poor outcomes, as noted in other Nigerian studies (9). While our study did not assess HPV status, its role in head and neck cancers, particularly oropharyngeal SCC, is well-documented (10). In high-income countries, HPV-positive oropharyngeal cancers are rising, especially among younger white males with higher SES. Although similar trends are not yet evident in Nigeria, the increasing global prevalence of HPV-related cancers warrants vigilance. Future studies should incorporate HPV testing to elucidate its impact in our setting. The limitation of this study is premised on its retrospective design and missing data, which affects the robustness of our conclusions. Additionally, the focus on a single tertiary centre may not capture regional variations in disease patterns. Future prospective studies with standardised data collection are needed to address these gaps.

CONCLUSION

This study highlights the predominance of benign head and neck tumours (62.9%) over malignancies (6.2%) at the University of Abuja Teaching Hospital, with adenotonsillar hypertrophy being the most common benign lesion. Carcinomas were the leading malignancy, predominantly affecting older males. Notably, higher education levels were unexpectedly associated with increased malignancy rates, warranting further investigation into potential lifestyle or occupational factors. Late-stage presentations and low documentation of risk factors like tobacco and alcohol use underscore systemic challenges in healthcare access and data collection. Limitations include the retrospective design and a single-center focus, which may limit generalizability. Future research should adopt prospective, multi-center studies with standardized data collection to better capture regional variations and risk factors. Incorporating HPV testing could elucidate its role in malignancies, while public health initiatives should focus on early detection and improving diagnostic capacity in resource-limited settings.

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