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ORIGINAL ARTICLE

Prevalence and Patterns of Head and Neck Cancers Among Patients Attending an Otorhinolaryngology Clinic at a Private Hospital in Dar es Salaam, Tanzania: A Six-Year Retrospective Study (2018–2023)

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ABSTRACT

Background: Head and neck cancer (HNC) ranks among the most prevalent cancers globally, with a rising incidence particularly noted in resource-constrained settings. However, data on HNC in developing nations such as Tanzania remain limited. This study aimed to determine the prevalence and distribution patterns of head and neck cancers among patients attending an otorhinolaryngology clinic at a private hospital in Dar es Salaam, Tanzania between 2018 and 2023.

Methods. This retrospective study included all patients who attended the otorhinolaryngology clinic at a private hospital in Dar es Salaam Tanzania, between January 2018 and December 2023.

Results: Between January 2018 and December 2023, a total of 20,198 patients attended the otorhinolaryngology clinic. Of these, 9,163 (45.4%) were males and 11,035 (54.6%) were females. Twenty-six patients had histologically confirmed head and neck cancers, corresponding to an overall prevalence of 0.13%. Among these cases, males were more frequently affected, accounting for 15 (57.7%) cases, and the majority of patients were in the 61 to 80-year age group, 12 (46.2%). The most reported symptoms were nasal obstruction and epistaxis, each occurring in 11 (42.3%) patients, which were mainly associated with nasopharyngeal and sinonasal cancers. The nasopharynx was the most involved site, 7 (26.9%), whereas the submandibular gland was the least affected, 1 (3.8%). Squamous cell carcinoma (SCC) was the predominant histological type, representing 16 (61.5%) cases.

Conclusion: Head and neck cancers were relatively uncommon among patients attending the otorhinolaryngology clinic at this private hospital in Dar es Salaam. The disease showed male predominance and was more frequently observed in older adults. The low prevalence of head and neck cancers in the private hospital reflects limited access to specialized care and specific referral patterns for head and neck cancer patients, especially in resource-constrained settings. This suggests the need for multicenter studies, population-based cancer registries, and stronger surveillance systems to capture the true burden of head and neck cancers in Tanzania. The study was however limited by its small sample size and single-centre setting in a private hospital, which may limit the generalisability of the findings. Additionally, because it was a retrospective study, some demographic information from participants may have been missing or incomplete.

BACKGROUND

Head and neck cancers (HNCs) comprise a group of malignant tumours that arise from different anatomical structures within the head and neck region, including the nasal cavity, paranasal sinuses, nasopharynx, oral cavity, oropharynx, hypopharynx, larynx, ear, scalp, orofacial bones, thyroid, and salivary glands.[1,2] They represent a significant global public health burden and contribute substantially to both morbidity and mortality.[3,4]

Head and neck cancers are the sixth most common malignancies globally.5 Each year, over 650,000 new cases are diagnosed worldwide[6], with incidence rates showing an upward trend in developing countries.[7]

Globally, the prevalence of head and neck cancers relative to all malignancies ranges widely from approximately 9.8% to 42.7%[8,9] and 5–8% of total body cancers in Europe and America.[10] In some parts of Northern Nigeria, a yearly hospital incidence of 20–24 new cases has been reported[11], while in the southern part of the country, head and neck cancers accounted for 6.2% of all cancers.[10] In Tanzania, HNC was reported to account for 9.6% of all malignancies, according to the study done in Mwanza.[3]

Head and neck cancers are associated with substantial morbidity, as they can interfere with essential functions of life such as breathing, swallowing, speech, hearing, vision, taste, and smell.[3] Approximately 90% of head and neck cancers are squamous cell carcinomas (SCCs),

with tobacco use and alcohol consumption identified as the primary risk factors.[12,13] Viral infections, particularly Epstein–Barr virus (EBV) and human papillomavirus (HPV), are well-established risk factors for nasopharyngeal and oropharyngeal cancers.[14,15] Head and neck lesions are also frequently observed in individuals with Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome (HIV/AIDS), and the introduction of highly active antiretroviral therapy (HAART) has contributed to a reduction in occurrence and severity of head and neck lesions, especially Kaposi's sarcoma.[16]

Head and neck cancers are more commonly observed in males than females, with the highest incidence typically occurring in individuals in their 5th to 6th decade of life[15] Although uncommon, head and neck cancers can also occur in the paediatric population, where lymphomas are the most predominant type, followed by retinoblastoma, while olfactory neuroblastoma and Langerhans cell histiocytosis are among the least frequently reported head and neck cancers, according to the study done in Dar es Salaam, Tanzania.[17]

In many settings, about half of head and neck cancers originate in the oral cavity.[18] Other commonly affected sites, in decreasing order of frequency, include the larynx, hypopharynx, oropharynx, nasal cavity and paranasal sinuses, major salivary glands, nasopharynx, and the middle ear.[19]

The management of head and neck cancer is complex and requires a multidisciplinary approach involving medical and radiation oncologists; head and neck surgeons; radiologists; speech therapists; social workers; psychologists; plastic and reconstructive surgeons; and dentists with a particular interest and expertise in head and neck cancer. In developing countries such as Tanzania, data on head and neck cancers remain limited, which can hinder early diagnosis and contribute to poor prognosis and increased mortality.

Despite existing studies describing the clinical and histopathological characteristics of head and neck cancers in Tanzania[4,5], evidence remains limited regarding the age-specific distribution of anatomical tumor sites, particularly in private healthcare settings. Given this evidence gap, the present study aimed to determine the prevalence and patterns of head and neck cancers among patients attending an otorhinolaryngology clinic at a private hospital in Dar es Salaam, Tanzania, from 2018 to 2023. This study addresses the paucity of data on head and neck cancers in the private healthcare sector, providing evidence to strengthen early recognition, reduce late presentation, and inform the planning and allocation of diagnostic, surgical, oncology, and supportive care services.

METHODS

Study design, setting, duration and participants

This study employed a retrospective cross-sectional design based on medical record review. The research was conducted at Ekenywa Specialised Hospital, a private health facility located in Dar es Salaam, Tanzania, which is a regional referral hospital primarily serving populations from the major surrounding districts of Kinondoni, Ilala and Ubungo. The hospital is also recognised nationally as a centre for various endoscopic ear and nasal surgical procedures or surgeries. The otorhinolaryngology clinic is primarily staffed by three registered ear, nose, and throat (ENT) specialists, each of whom consults approximately 100 patients per month. The hospital is one of the leading private healthcare facilities in Dar es Salaam, serving a large number of patients seeking consultation and treatment for ear, nose, and throat disorders. The study evaluated historical patient data spanning a six-year duration, specifically capturing clinical and laboratory encounters that occurred between January 2018 and December 2023. Participants defined as having head and neck cancers included all patients with a confirmed histopathological diagnosis of primary head and neck cancers. A private hospital was selected because most previous Tanzanian studies on head and neck cancers have been conducted in public referral hospitals. Studying a private facility therefore provides complementary data from a different healthcare setting and patient population, helping to broaden understanding of HNC patterns and strengthen the evidence base for cancer surveillance and referral planning in Tanzania.

Study population

The target population comprised all patients presenting with HNC. Because this study employed a retrospective design, a consecutive sampling strategy was used based entirely on historical data availability rather than a predetermined sample size calculation. The final sample size was dictated strictly by the total number of electronic patient records retrieved from the Medical Records Department and the Histopathology Laboratory database that met the defined eligibility criteria.

Patients who attended the otorhinolaryngology clinic between January 2018 and December 2023 were eligible for inclusion if they had a histologically confirmed diagnosis of primary head and neck cancer and complete medical records containing the relevant clinical and pathological information. Patients with incomplete or missing medical records, benign lesions, or an inconclusive or unclear diagnosis were excluded from the study.

Data collection and validation

Data were extracted from electronic patient records stored in the Medical Records Department and the Histopathology Laboratory database. The retrieved information included socio-demographic characteristics (age and sex), clinical presentation (signs and symptoms), anatomical site of the tumour, and histopathological characteristics, including the histological diagnosis (e.g., squamous cell carcinoma, adenoid cystic carcinoma, Kaposi's sarcoma, and other tumour types), tumour differentiation/grade where available, and the benign or malignant nature of the lesion.

All extracted information was cross-verified using a structured data extraction form to ensure consistency and completeness. When discrepancies were identified between the medical records and the extracted data, the original patient records were re-examined, and corrections were made based on the documented source information. Clinical findings were independently reviewed and validated by an otorhinolaryngologist, and any inconsistencies were resolved by reviewing

the original clinical documentation and expert clinical judgement before being entered into a standardised form covering the different head and neck anatomical sites. Histopathological findings were also verified against the original pathology reports by a qualified pathologist, with any discrepancies resolved by reviewing the original pathology documentation.

Study Variables

Independent Variables: The independent variables extracted from the electronic patient records consisted of socio-demographic and clinical patient characteristics. Socio-demographic data included the participants' age at the time of diagnosis, recorded as a continuous metric in years, and biological sex, categorised as male or female. Clinical characteristics included the patient's initial clinical presentation, which captured the specific signs and symptoms documented during their medical examination, alongside the precise anatomical site of the HNC.

Dependent Variables: The dependent variables focused entirely on the histopathological characteristics of the retrieved HNC. The primary outcome was the biological nature of the HNC, categorised definitively as either benign or malignant. Additional dependent characteristics included specific histological diagnoses such as squamous cell carcinoma, adenoid cystic carcinoma, Kaposi's sarcoma, or other recognised types of tumours.

Data Analysis

Data analysis was performed using the Statistical Package for Social Sciences version 25 (IBM Corp., Armonk, New York, USA). Categorical variables were summarised using frequencies and percentages, which were presented in tables. No inferential statistics were performed.

Ethical Considerations

Permission to access the hospital's stored medical records was obtained from the hospital administration in accordance with institutional protocols. Ethical clearance was granted on 20th December 2025 with number Ref: ESH/2025/03. The requirement for informed consent was waived because the study was retrospective and involved only the review of existing medical records, with no direct interaction with study participants. All extracted data were handled confidentially and de-identified prior to analysis. Confidentiality was maintained by excluding participants' names and other direct personal identifiers during data extraction and entry into a structured extraction form. Unique identification codes were used instead, and access to the collected data was restricted to the research team. The data were used solely for research purposes and were reported in aggregate to prevent identification of individual participants.

RESULTS

Prevalence of Head and Neck Cancers Among the Attendees of the Otorhinolaryngology Clinic

In this study, a total of 20,198 patients attended the otorhinolaryngology clinic between January 2018 and December 2023. Of these, 9,163 (45.4%) were male and 11,035 (54.6%) were female. Twenty-six patients were histologically confirmed to have head and neck cancers, yielding an overall prevalence of 0.13%.

Socio-Demographic Characteristics of the Participants

Among the 26 patients diagnosed with head and neck cancers, 15 (57.7%) were male and 11 (42.3%) were female. The majority of patients were aged 61–80 years, comprising 12 (46.2%) cases, followed by those aged 41–60 years, with 7 (26.9%) cases, and those aged 21–40 years, with 6 (23.0%) cases. Only one patient (3.8%) was aged >80 years. Among male patients, the largest proportion were aged 61–80 years, accounting for 9 (34.6%) of the total study population. In contrast, the largest proportion of female patients were aged 41–60 years, comprising 5 (19.2%) of all participants (Table 1).

Distribution of Anatomical Sites and Histopathological Diagnoses Among Patients with Head and Neck Cancers

Regarding anatomical sites, the nasopharynx was the most frequently affected site, with 7 (26.9%) cases, followed by the sinonasal region and oral cavity, with 4 (15.4%) cases each. The submandibular gland was the least commonly involved site, with 1 (3.8%) case (Table 2).

Squamous cell carcinoma (SCC) was the most common histological subtype, accounting for 16 (61.5%) cases, followed by undifferentiated carcinoma, representing 3 (11.5%) cases, and adenoid cystic carcinoma, representing 3 (11.5%) cases. Salivary gland cancers included mucoepidermoid carcinoma in the parotid gland and adenoid cystic carcinoma in the submandibular gland. Kaposi's sarcoma and spindle cell carcinoma were relatively rare, each contributing 1 (3.8%) case (Table 2).

Distribution Of Histopathological Diagnoses of Head and Neck Cancers Across Different Age Groups

Squamous cell carcinoma remained the predominant histological subtype across all age categories, with the highest proportion observed in patients aged 61–80 years, representing 6 (23.1%) cases. Adenoid cystic carcinoma was exclusively observed in the 61–80 years group, representing 3 (11.5%) cases. Mucoepidermoid carcinoma and undifferentiated carcinoma were distributed across middle and older age groups, while spindle cell carcinoma was identified in only 1 (3.8%) patient within the youngest age group (21 to 40 years) (Table 3).

Site-Specific Distribution of Presenting Symptoms in Head and Neck Cancers

Nasal obstruction and epistaxis were the most common presenting symptoms, each reported in 11 (42.3%) patients, predominantly associated with nasopharyngeal and sinonasal cancers. Odynophagia, noted in 7 (26.9%) cases, and dysphagia, noted in 6 (23.1%) cases, were also frequently observed, particularly in hypopharyngeal and oropharyngeal cancers. Site-specific symptoms included hoarseness of voice and breathing difficulty in laryngeal cancers, parotid swelling in parotid gland cancers, and submandibular swelling in submandibular gland cancers. Less common presentations included oral cavity ulcerative lesions, a hot potato voice, otalgia, and a persistent sore throat. Overall, the symptom distribution reflected the anatomical origin of the tumors and their local effects (Table 4).

TABLE 1: Socio-Demographic Characteristics of Participants

Age group (years)	Male, n (%)	Female, n (%)	Total, n (%)
21-40	3(11.5)	3(11.5)	6(23.0)
41-60	2(7.7)	5(19.2)	7(26.9)
61-80	9(34.6)	3(11.5)	12(46.2)
>80	1(3.8)	0(0.0)	1(3.8)
Total	15(57.7)	11(42.3)	26(100.0)

TABLE 2: Distribution of Histopathological Diagnoses of Head and Neck Cancers by Anatomical Site

Site	Histological diagnosis distribution, n (%)						
	ADNY	KS	MUCO	SCC	SPCC	UC	Total
Hypopharynx	-	-	-	3(11.5)	-	-	3(11.5)
Larynx	-	-	-	2(7.7)	-	-	2(7.7)
Nasopharynx	-	-	-	3(11.5)	1(3.8)	3(11.5)	7(26.9)
Oral cavity	-	-	-	4(15.4)	-	-	4(15.4)
Oropharynx	-	1(3.8%)	-	2(7.7)	-	-	3(11.5)
Parotid gland	-	-	2(7.7)	-	-	-	2(7.7)
Sinonasal	2(7.7)	-	-	2(7.7)	-	-	4(15.4)
Submandibular gland	1(3.8)	-	-	-	-	-	1(3.8)
Total	3(11.5)	1(3.8)	2(7.7)	16(61.5)	1(3.8)	3(11.5)	26(100.0)

ADNY= Adenoid cystic carcinoma, KS= Kaposi's sarcoma, MUCO= Mucoepidermoid carcinoma, SCC=squamous cell carcinoma, SPCC= Spindle cell carcinoma, UC= Undifferentiated carcinoma

TABLE 3: Distribution of Histopathological Diagnoses of Head and Neck Cancers by Age Group

Age group (years)	Histological diagnosis distribution, n (%)						
	ADNY	SCC	KS	MUCO	SPCC	UC	Total
21-40	-	4(15.4)	-	-	1(3.8)	1(3.8)	6(23.1)
41-60	-	5(19.2)	-	1(3.8)	-	1(3.8)	7(26.9)
61-80	3(11.5)	6(23.1)	1(3.8)	1(3.8)	-	1(3.8)	12(46.2)
>80	-	1(3.8)	-	-	-	-	1(3.8)
Total	3(11.5)	16(61.5)	1(3.8)	2(7.7)	1(3.8)	3(11.5)	26(100.0)

ADNY= Adenoid cystic carcinoma, KS= Kaposi's sarcoma, MUCO= Mucoepidermoid carcinoma, SCC=squamous cell carcinoma, SPCC= Spindle cell carcinoma, UC= Undifferentiated carcinoma

TABLE 4: Distribution of Head and Neck Cancer Symptoms by Anatomical Site

Symptoms	Anatomical site of head and neck cancers, n (%)								
	Hypopharynx	Larynx	Nasopharynx	Oral cavity	Oropharynx	Parotid gland	Sinonasal	Submandibular gland	Total
Nasal obstruction	-	-	7(26.9)	-	-	-	4(15.4)	-	11(42.3)
Nasal bleeding	-	-	7(26.9)	-	-	-	4(15.4)	-	11(42.3)
Ulcerated upper lip	-	-	-	1(3.8)	-	-	-	-	1(3.8)
Ulcerated tongue	-	-	-	2(7.7)	-	-	-	-	2(7.7)
Hot potato voice	2(7.7)	-	-	-	-	-	-	-	2(7.7)
Difficulty swallowing	3(11.5)	-	-	-	3(11.5)	-	-	-	6(23.1)
Odynophagia	2(7.7)	-	-	2(7.7)	3(11.5)	-	-	-	7(26.9)
Gingival growth	-	-	-	1(3.8)	-	-	-	-	1(3.8)
Hoarseness of voice	-	2(7.7)	-	-	-	-	-	-	2(7.7)
Difficulty in breathing	-	1(3.8)	-	-	-	-	-	-	1(3.8)
Persistent sore throat	-	-	-	-	1(3.8)	-	-	-	1(3.8)
Ear pain	1(3.8)	-	-	-	-	-	-	-	1(3.8)
Parotid swelling	-	-	-	-	-	2(7.7)	-	-	2(7.7)
Submandibular swelling	-	-	-	-	-	-	-	1(3.8)	1(3.8)

DISCUSSION

In this cohort of 26 participants with histologically confirmed head and neck cancer, 57.7% were male. This finding is consistent with selected studies from Tanzania and Bosnia reporting male predominance[3,5,20], which may reflect the higher prevalence of tobacco and alcohol exposure among men[3,11] However, it contrasts with other Tanzanian studies reporting female predominance[16,21], suggesting possible variation in sex-specific risk factors and healthcare-seeking patterns across settings. The observed male predominance underscores the importance of strengthening tobacco and alcohol control measures, particularly among men, alongside targeted health education and early-detection strategies to reduce the burden of preventable head and neck cancers.

Regarding age, the predominance of older patients is consistent with findings from several African studies and underscores the importance of increasing cancer surveillance and early detection among older adults, who are at greater risk of head and neck cancers.[5,22] While these demographic trends must be interpreted cautiously given our small sample size, they may suggest the utility of gender-sensitive and age-targeted screening strategies in primary care settings. The findings may highlight the need for gender-responsive health services in Tanzania, with particular emphasis on health education, early detection, and prevention of modifiable risk factors such as smoking and alcohol use, especially among men. Routine surveillance should include sex-disaggregated data to guide targeted interventions.

Nasal obstruction and epistaxis were the most frequent presenting complaints, particularly among patients with nasopharyngeal and sinonasal cancers, consistent with previous Tanzanian findings.[2] This underscores the non-specific nature of early presentations and the need for heightened clinical suspicion, context-specific diagnostic guidelines, and public awareness to facilitate earlier diagnosis of head and neck cancers. Anatomically, the nasopharynx was the most frequently affected anatomical site, followed by the sinonasal region and oral cavity, consistent with findings from Nigeria and Kenya.[22,23] However, this distribution differs from other Tanzanian studies reporting predominance of the nose and paranasal sinuses,[5] suggesting possible regional variation in risk factors, including Epstein–Barr virus infection and environmental exposures. The predominance of nasopharyngeal and sinonasal cancers highlights the need for a high index of clinical suspicion in patients presenting with persistent nasal symptoms, appropriate early diagnostic evaluation, and timely referral to health facilities with specialized services to reduce diagnostic delays.

The overall prevalence of head and neck cancers was low compared with findings from India.[8] Squamous cell carcinoma was the predominant histological type, consistent with previous Tanzanian studies[3] but

differing from reports from Nigeria, where lymphoma predominated.[24] Within the context of this study's sample size, these findings underscore the importance of strengthening tobacco and alcohol control measures, alongside public health interventions targeting modifiable risk factors for epithelial head and neck cancers.

Strengths of the study

A major strength of this study was the large clinical population of 20,198 patients reviewed over six years, with head and neck cancer diagnoses confirmed histopathologically. The use of clinical and histopathology records, cross-verification, and specialist review enhanced the reliability of the findings. Furthermore, the private hospital setting provides complementary evidence from a relatively under-represented sector of head and neck cancer care in Tanzania.

Study limitations

This study had several limitations. The small sample size of 26 participants and single-centre design in a private hospital may limit the generalisability of the findings. The retrospective design may have resulted in incomplete or missing demographic and clinical information, while the hospital-based population may have introduced selection bias. The absence of inferential analysis and limited information on important risk factors also restricted assessment of factors associated with head and neck cancers. Additionally, as the study covered data from 2018–2023 and was reported three years after completion of data collection, changes in cancer patterns and prevalence over time may not have been fully captured.

CONCLUSION

In this study, head and neck cancers were more commonly observed among older adults, particularly males, with the nasopharynx being the most frequently affected site and squamous cell carcinoma the predominant histological type. Patients often presented with non-specific symptoms such as nasal obstruction and epistaxis, which may contribute to delayed diagnosis. These findings highlight the importance of improving early detection, raising awareness, and strengthening prevention strategies, particularly among higher-risk groups. Based on these findings, there is a need to strengthen early recognition and referral of patients presenting with suggestive symptoms such as persistent nasal obstruction and epistaxis, particularly among older adults and males. Health facilities should improve documentation and surveillance of head and neck cancers, while large multicentre and population-based studies are recommended to establish the true burden and patterns of these cancers in Tanzania.

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