

## Pattern of Head and Neck Cancer in a Tertiary Institution in Lagos Nigeria

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**Abstract:** Cancer of the head and neck cancer in Nigeria with a population of over 167 million is a major health problem because of its high incidence and the limited infrastructure necessary for treatment. This study aims to examine the presentation and management of this disease in Nigeria.

This is a retrospective study among head and neck cancer patients with histology of Lagos University Teaching Hospital in Nigeria.

A total of 162 cases were analysed, which revealed about 23 cases annually, prevalence rate of 6.74% and a mean age of 49.50±19.73years. The peak age range was 4<sup>th</sup> – 5<sup>th</sup> decade (40.2%). There were 102(63%) male and 60(37%) female with a M:F of 1.7:1. The commonest histological type was squamous cell carcinoma (75.2%). The commonest site was the nasopharynx 22(13.6%). Only 67 cases had stage of disease recorded, 54(80.6%) were stages III & IV. Survival outcome revealed that 23(14.2%) died, 16(9.9%) were still on follow-up and 123(75.9%) were lost to follow-up.

**Conclusion:** Increased populace awareness programs emphasizing the preventable factors associated with this cancer and change in life style will decrease morbidity and mortality associated with late stage presentation.

**Keywords:** Head and neck cancer, Treatment modalities, Sites, Histology, Lagos, Nigeria.

### I. Introduction

Head and Neck cancer (HNC) constitutes 5-50% of all cancers globally<sup>1</sup>. It accounts for 5-8% of all cancers in Europe and America. Worldwide nearly 650,000 people develop HNC per year with 350,000 deaths<sup>2</sup>. HNC is the 4<sup>th</sup> common cancer in men following Lung, Colon and Prostate and the 9<sup>th</sup> most common in women<sup>3</sup>. The incidence of HNC is on the increase owing to several factors which include increased rate of smoking, several lifestyle modifications and change in pattern of causative factors.

Incidence has risen by 6.6per cent for men and 15per cent in women from 1992 to 2002 while mortality has decreased by 22% for women and 9% for men from 1994 to 2004<sup>3</sup>. Mortality rate is on the decline owing to advances in treatment and changes in stage of presentation as patients now present earlier for treatment than used to be.

In Nigeria, its incidence has not been well established due to improper data. However hospital based studies in different parts of the country have reported an incidence of 6.2% of all cancers in southern Nigeria<sup>4</sup>, 20 – 24 new cases in north between 1987 - 2002<sup>5,6</sup>, 33 – 38 new cases in southwest between 1989 - 1998<sup>7,8</sup>

HNC affects both paediatric and adult age groups though it is commoner in adults. Some HNC are however peculiar to different age groups. Opubo et al reviewed several publications in Nigeria between 1999 and 2009 and showed that the peak age was between 3<sup>rd</sup>-6<sup>th</sup> decades of life with Male: Female ratio of 1: 1 to 2.3 : 1<sup>4</sup>.

HNC has become a global problem in developing countries because of increased rate of smoking of tobacco. Several identified risk factors in Nigeria include kolanuts, tobacco smoking and chewing, farming, viral infections, alcohol and smoking<sup>4</sup>. This explains while the incidence is commoner in caucassians than blacks because of the increased rate of smoking and other lifestyles which have contributed to increased rates of HNC.

The challenge in the management of HNC has been attributed to late presentation in the hospital with inaccessible and limited health facilities contributing to poor treatment outcome<sup>9</sup>. Late presentation accounts for increased morbidity and mortality rate in developing countries. In Nigeria, hospital based studies have shown that majority of patients present late<sup>9</sup>. This has been attributed to the fact that most often the diagnosis is missed and those who are diagnosed fail to come back for treatment due to socio-cultural reasons which includes seeking spiritual and trado-medical alternatives. Treatment facilities are also not readily available and cost of treatment also becomes a big challenge.

A multidisciplinary approach is usually involved in ensuring better treatment outcomes. This involves the surgeons (Oral and Maxillofacial Surgeon, Otorhinolaryngologist/Head and neck surgeon, Plastic and reconstructive surgeon, Oral surgeon), Clinical Oncologist, Radiotherapist, Pathologist, Speech therapist, Clinical nurse specialist (care of stoma, rehabilitation), Oncologic nurse, Radiographer therapists, palliative care experts and others.

Treatment is usually palliative in Nigeria since majority of patients present late. Patient’s therapies are better individualized considering different scenarios related to each patient as regards co-morbidities, performance status, etc. Management of HNC in the Department of Radiotherapy, Lagos University Teaching Hospital (LUTH) includes Radiotherapy and Chemotherapy.

## II. Materials and method

The case notes of histologically confirmed head and neck cancers patients seen at the Lagos University Teaching Hospital from 2005 to 2011 were retrieved and analysed.

The ethical approval for this study was obtained from the research and ethics committee of the institution.

For the purpose of this study, the International Classification of Diagnosis Oncology (ICDO) 9<sup>th</sup> version was used to classify the primary sites of occurrence of lesion.

Data obtained were entered and analysed with SPSS version 20, continuous variables were expressed in mean and standard deviation and categorical variables were expressed in frequency and proportions.

## III. Results

A total number of 2403 cancer cases were recorded in my department during the period of this study out of which 247 were head and neck cases. Only 162 of these were histologically confirmed resulting in about 23 cases annually and a prevalence rate of 6.74%. There were 102 males and 60 female with an overall male to female ratio of 1.7:1 (Table 1). The age range was between 3 – 99 years with an overall mean age of 49.50±19.73 years, which peaked in the 4<sup>th</sup> – 5<sup>th</sup> decade (Table 2).

The histological types are shown in table 3 with carcinoma being the commonest 133(82.1%), out of which squamous cell carcinoma was 100(62%), followed by sarcomas 8(4.9%)

The peak incidence for carcinomas was from 4<sup>th</sup> – 5<sup>th</sup> decade, sarcomas peak incidence was 3<sup>rd</sup> decade, retinoblastoma was below 10 years, while others peaked at 3<sup>rd</sup> – 5<sup>th</sup> decade (Table 4).

Only 67 cases had stage of disease recorded and these were stage IV 28(41.8%), stage III 26(38.8%), stage II 11(16.4%) while stage I 2(3%)(Table 5).

The treatment modalities revealed that 12(7.4%) of patients had chemotherapy alone, 32(19.8%) had chemotherapy and radiotherapy, 7(4.3%) had chemotherapy and surgery, 28(17.3%) had radiotherapy chemotherapy and surgery, 53(32.7%) had radiotherapy alone, 5(3%) had surgery alone and 26(16%) had surgery and radiotherapy treatment (Table 6).

The survival outcome of the patients within the period of study showed that 16(9.9%) were on follow-up, 23(14.2%) died and 123(75.9%) were lost to follow-up.

Table 1: Demographic distribution of Head and Neck cancer patients

Site Name	ICDO	N(%)	Gender		Male: Female
			Male N(%)	Female N(%)	
Alveolar		1(0.6)	1(1.0)	0(0.0)	1:0
Ear	160	3(1.9)	3(2.9)	0(0.0)	3:0
Eye	190	19(11.7)	14(13.7)	5(8.3)	2.8:1
Hypopharynx	148	2(1.2)	1(1.0)	1(1.7)	1:1
Jaw		10(6.2)	5(4.9)	5(8.3)	1:1
Larynx	161	12(7.4)	10(9.8)	2(3.3)	5:1
Lip	140	2(1.2)	0(0.0)	2(3.3)	0:2
Mandible	170	12(7.4)	6(5.9)	6(10.0)	1:1
Maxillary		20(12.3)	10(9.8)	10(16.7)	1:1
Mouth		4(2.5)	2(2.0)	2(3.3)	1:1
Nasal	160	19(11.7)	13(12.7)	6(10.0)	2.2:1
Nasopharynx	147	22(13.6)	18(17.6)	4(6.7)	4.5:1
Oropharynx	146	2(1.2)	0(0.0)	2(3.3)	0:2
Palate	145	5(3.1)	2(2.0)	3(5.0)	1:1.5
Parotid		12(7.4)	7(6.9)	5(8.3)	1.4:1
Salivary Gland	142	2(1.2)	0(0.0)	2(3.3)	0:2
Skin	173	2(1.2)	2(2.0)	0(0.0)	2:0
Thyroid Gland	194	8(4.9)	5(4.9)	3(5.0)	1.7:1
Tongue	141	3(1.9)	1(1.0)	2(3.3)	1:2
Tonsil		2(1.2)	2(2.0)	0(0.0)	2:0
<b>Total</b>		<b>162(100)</b>	<b>102(63.0)</b>	<b>60(37.0)</b>	<b>1.7:1</b>

Table 2: Age group distribution of head and neck cancer primary sites

Site	Age Group (Years) N(%)									
	≤9	10 – 19	20 – 29	30 – 39	40 - 49	50 – 59	60– 69	70 – 79	80 - 89	≥90
Alveolar	-	-	-	-	-	-	1(4.2)	-	-	-
Ear	-	-	-	1(3.6)	1(3.1)	-	1(4.2)	-	-	-
Eye	7(70.0)	-	-	1(3.6)	6(18.8)	3(9.1)	-	-	2(28.6)	-
hypopharynx	-	-	-	-	1(3.1)	-	1(4.2)	-	-	-
Jaw	1(10.0)	-	-	-	4(12.5)	1(3.0)	1(4.2)	2(15.4)	1(14.3)	-
Larynx	-	-	-	1(3.6)	-	5(15.2)	3(12.5)	3(23.1)	-	-
Lip	-	-	-	-	-	1(3.0)	-	1(7.7)	-	-
Mandible	-	-	1(8.3)	5(17.9)	2(6.2)	1(3.0)	2(8.3)	1(7.7)	-	-
Maxillary	-	-	1(8.3)	3(10.7)	1(3.1)	7(21.2)	3(12.5)	2(15.4)	2(28.6)	1(100)
Mouth	-	-	2(16.7)	-	-	2(6.1)	-	-	-	-
Nasal	-	1(50.0)	3(25.0)	5(17.9)	2(6.2)	3(9.1)	3(12.5)	1(7.7)	1(14.3)	-
nasopharynx	-	-	4(33.3)	6(21.4)	3(9.4)	2(6.1)	5(20.8)	1(7.7)	1(14.3)	-
Oropharynx	-	-	-	-	1(3.1)	1(3.0)	-	-	-	-
Palate	-	-	-	-	3(9.4)	-	2(8.3)	-	-	-
Parotid	1(10.0)	-	-	3(10.7)	4(12.5)	2(6.1)	1(4.2)	1(7.7)	-	-
salivary gland	-	-	-	1(3.6)	-	1(3.0)	-	-	-	-
Skin	-	-	1(8.3)	-	1(3.1)	-	-	-	-	-
thyroid gland	-	1(50.0)	-	1(3.6)	3(9.4)	3(9.1)	-	-	-	-
Tongue	1(10.0)	-	-	-	-	1(3.0)	1(4.2)	-	-	-
Tonsil	-	-	-	1(3.6)	-	-	1(4.2)	-	-	-
<b>Total</b>	<b>10(6.2)</b>	<b>2(1.2)</b>	<b>12(7.4)</b>	<b>28(17.3)</b>	<b>32(19.8)</b>	<b>33(20.4)</b>	<b>24(14.8)</b>	<b>13(8.0)</b>	<b>7(4.3)</b>	<b>1(0.6)</b>

Table 3: Histological distribution of head and neck cancer sites

Site	Carcinoma N(%)	Lymphoma N(%)	Retinoblastoma N(%)	Sarcoma N(%)	Others N(%)
Alveolar	1(0.8)	-	-	-	-
Ear	2(1.5)	-	-	-	1(8.3)
Eye	12(9.0)	1(25.0)	5(100.0)	-	1(8.3)
Hypopharynx	2(1.5)	-	-	-	-
Jaw	8(6.0)	-	-	1(12.5)	1(8.3)
Larynx	12(9.0)	-	-	-	-
Lip	1(0.8)	-	-	1(12.5)	-
Mandible	8(6.0)	-	-	2(25.0)	2(16.7)
Maxillary	20(15.0)	-	-	-	-
Mouth	4(3.0)	-	-	-	-
Nasal	18(13.5)	-	-	-	1(8.3)
Nasopharynx	17(12.8)	3(75.0)	-	2(25.0)	-
Oropharynx	2(1.5)	-	-	-	-
Palate	5(3.8)	-	-	-	-
Parotid	6(4.5)	-	-	-	6(50.0)
Salivary Gland	2(1.5)	-	-	-	-
Skin	2(1.5)	-	-	-	-
Thyroid Gland	8(6.0)	-	-	-	-
Tongue	1(0.8)	-	-	2(25.0)	-
Tonsil	2(1.5)	-	-	-	-
<b>Total</b>	<b>133(82.1)</b>	<b>4(2.5)</b>	<b>5(3.1)</b>	<b>8(4.9)</b>	<b>12(7.4)</b>

Table 4: Age group distribution of histopathology of head and neck cancer

	Carcinoma	Lymphoma	Retinoblastoma	Sarcoma	Others
Age Group	N(%)	N(%)	N(%)	N(%)	N(%)
≤9	1(0.8)	0(0.0)	5(100)	2(25.0)	2(16.7)
10 – 19	2(1.5)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
20 – 29	10(7.5)	2(50.0)	0(0.0)	0(0.0)	0(0.0)
30 – 39	21(15.8)	2(50.0)	0(0.0)	3(37.5)	2(16.7)
40 – 49	26(19.5)	0(0.0)	0(0.0)	1(12.5)	5(41.7)
50 – 59	30(22.6)	0(0.0)	0(0.0)	1(12.5)	2(16.7)
60 – 69	23(17.3)	0(0.0)	0(0.0)	1(12.5)	0(0.0)
70 – 79	12(9.0)	0(0.0)	0(0.0)	0(0.0)	1(8.3)
80 – 89	7(5.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
≥90	1(0.8)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
<b>Total</b>	<b>133(82.1)</b>	<b>4(2.5)</b>	<b>5(3.1)</b>	<b>8(4.9)</b>	<b>12(7.4)</b>

Table 5: Stage of presentation of head and neck cancer patients

Stage	Frequency	percentage
I	2	3.0
II	11	16.4
III	26	38.9
IV	28	41.7
Total	67	100

Table 6: Histological distribution of treatment modalities given to head and neck cancer patients

Treatment Modalities	Carcinoma	Lymphoma	Retinoblastoma	Sarcoma	Others	Total
Chemotherapy alone	5(3.76)	3(75.0)	-	3(37.5)	-	12(7.4)
Chemotherapy and radiotherapy	30(22.6)	1(25.0)	-	-	1(8.3)	32(19.8)
Chemotherapy and surgery	7(5.3)	-	-	-	-	7(4.3)
Chemotherapy, surgery and radiotherapy	25(18.8)	-	2(40.0)	1(12.5)	-	28(17.3)
Radiotherapy alone	40(30.0)	-	2(40.0)	3(37.5)	8(66.7)	53(32.7)
Surgery alone	3(2.3)	-	1(20.0)	-	1(8.3)	5(3)
Surgery and radiotherapy	23(17.3)	-	-	1(12.5)	2(16.7)	26(16)
<b>Total</b>	<b>133(82.1)</b>	<b>4(2.5)</b>	<b>5(3.1)</b>	<b>8(4.9)</b>	<b>12(7.4)</b>	<b>162(100)</b>

Table 7: Outcome of head and neck cancer

Outcome	Frequency (N)	Percentage (%)
On follow up	16	9.9
Lost to follow up	123	75.9
Dead	23	14.2

#### IV. Discussion

This study revealed a prevalence of 6.7% of histopathologically confirmed head and neck cancer in the department was in accordance with the prevalence of 6.2% recorded for the southern part of Nigeria<sup>10</sup>. However, the annual cases found (23cases) differed from 38 annual cases Nwawolo<sup>8</sup> found in an earlier study. This could be as a result of improved living standard and life style changes, but the yearly incidence was in accordance with the studies found in Jos (24 cases)<sup>11</sup>, Maiduguri (20cases)<sup>6</sup>,

The male gender still had preponderance with the male to female ratio 1.7:1 found was the same with Nwawolo<sup>8</sup> in his study between 1988 – 1998 and this is in line with globally accepted fact, which is as a result of men’s higher predisposition to the aetiological factors<sup>12-14</sup> such as alcohol, heavy drinking. There are other factors such as genetic, Epstein Barr virus, Human Papilloma Virus, workplace exposure are not gender specific. Studies in the north eastern part of Nigeria suggested kola nut taking as another risk factor. The cases reported peaked in the 5<sup>th</sup> decade, which is in consonance with a study in Port Harcourt<sup>19</sup> and in Lagos (Nwawolo)<sup>8</sup>,

The overall mean age of 49.16±19.73years and peak incidence of 4<sup>th</sup> to 5<sup>th</sup> decade agrees with a study by Onotai et al Port Harcourt which showed 54 – 59years<sup>15</sup> and in Lagos by Nwawolo et al (4<sup>th</sup> -5<sup>th</sup> decade)<sup>8</sup>, though most cases occurred between the 3<sup>rd</sup> and 6<sup>th</sup> decade which was in line with work done across Nigeria<sup>4</sup>.

Nasopharynx was the commonest site in this study, similar to Nwawolo et al<sup>8</sup>. Studies by Onotai in Port Harcourt<sup>15</sup> and Bhatia in Jos<sup>5</sup> however reported the commonest site as nose/paranasal, the variation may be due to different aetiological factors associated.

Squamous cell carcinoma was the commonest type of head and neck tumours in keeping with other reports from Nigeria and other continents<sup>6-8,10,18-21</sup>. Nasopharynx was also found to be the commonest site in a study from Saudi Arabia<sup>16</sup>, the highest incidence in the world occurred in Cantonese region of China<sup>17</sup>

All the patients in this study received at least one form of treatment, the mode of treatment given was based on the stage and histopathology. Lymphomas were treated with chemotherapy alone because of their sensitivity to chemotherapy. Patients treated with chemoradiation had the best outcome. Patients treated with radiotherapy alone were in the majority because they were not clinically stable (weak and frail) and therefore not fit for chemoradiation treatment.

Surgery alone and chemotherapy alone were the least form of treatment given due to the late presentation by majority of the patients. The centre also recorded high proportion for radiotherapy treatment due to the linear acceleration radiotherapy machine available in which conformal therapy can be done, thus reducing side effects of patients to radiation when compared to conventional cobalt 60 machine which is now obsolete in most developed countries.

## V. Conclusion

The pattern of head and neck cancer has not changed over the years. Increased national awareness programs emphasizing the preventable risk factors associated with this cancer and change in life style will decrease the morbidity and mortality associated with late presentation despite the limited treatment equipments. Early presentation increases survival rates and as such should be encouraged.

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