

A STUDY OF THE CLINICOPATHOLOGIC PATTERNS OF OROFACIAL CARCINOMAS IN A NIGERIAN POPULATION

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ABSTRACT

BACKGROUND: Several studies on oral cancers have been reported, but few studies have specifically reported on the pattern of orofacial carcinomas in our environment. This study aims to determine the prevalence and clinicopathologic patterns of orofacial carcinomas in a Nigerian population.

METHODS: A 25-year retrospective study which reviewed the clinical and histopathology records, and slides of histopathologically diagnosed orofacial lesions in the Department of Oral Pathology and Medicine, University of Benin Teaching Hospital, Benin City, Nigeria

RESULTS: Among the 1,523 biopsies with histological diagnosis within the study period, 285(21.3%) of the cases were malignant lesions, which consist of 160 (56.1%) carcinomas, 52 (18.2%) sarcomas and 73(25.6%) lymphomas. The mean age of the carcinomas was 51 ± 17.9 years, with the highest occurrence within the seventh decade of life ($n = 37$, 23.1%). There were 82 females (51.3%) and 78 males (48.8%) giving a ratio of 1.1:1. The Palate ($n = 30$, 18.8%) was the most common site. The most frequent carcinoma was the squamous cell carcinoma ($n = 94$, 58.6%), followed by salivary gland adenocarcinoma.

CONCLUSION: There was a relatively lower prevalence of orofacial carcinomas in this study compared to previous Nigerian reports. The lesions occurred mostly in the older age groups, with slight predilection for females, and the palate was the most common site. Squamous cell carcinoma was the predominant histological type. These findings serve as baseline on the clinicopathological patterns of orofacial carcinomas in the South-South geopolitical zone in Nigeria.

KEY WORDS: Orofacial region, carcinomas, clinicopathologic patterns

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INTRODUCTION

Oral cancers have been reported as the 6th most common cancer worldwide.¹ They comprise about 85% of all head and neck cancers.² Orofacial cancers may be derived from epithelial tissues (carcinomas), mesenchymal tissues (sarcomas) and haematolymphoid tissues (leukaemias/lymphomas/plasmacytomas).³ They show broad differences in orofacial site distribution.⁴ Orofacial carcinomas are malignant epithelial neoplasms arising from the oral cavity and surrounding tissues. Compared to the sarcomas, carcinomas are more frequent accounting for up to 81 to 82% of reported cases of orofacial cancers.⁵

Most carcinomas are reported to occur in the 7th decade, with males more commonly affected than females.^{1,5} Generally, squamous cell carcinoma (SCC) accounts for over 90% of oral carcinomas.^{6,9,10} However, studies from Nigeria and other African countries have reported much lower figures for SCC. Salivary gland adenocarcinomas are reported to be the second most common orofacial carcinomas after SCC.¹¹⁻¹⁴

Although several studies on oral cancers have been reported in Nigeria,^{11,12,15} there is paucity of studies reporting specifically on the clinicopathologic pattern of orofacial carcinomas in our environment. This study aims to determine the prevalence and clinicopathologic patterns of orofacial carcinomas among Nigerians in the South-South geopolitical zone.

MATERIALS AND METHODS

This was a retrospective study which reviewed the clinical and histopathology records and slides of histopathologically diagnosed orofacial lesions in the Department of Oral Pathology and Medicine, University of Benin Teaching Hospital over a 25 year period (1990 to 2014). The cases of orofacial carcinomas were selected.

The prevalence, age, gender, site and histopathological type of the lesions were analyzed. The variables analyzed using the Statistical Package for Social Sciences (Chicago, SPSS, 2005 version 21). Inferential analysis was done using Chi-square. The level of significance was set at $p < 0.05$. Ethical approval was obtained for this study.

RESULTS

Of the 1,523 histopathologically diagnosed orofacial lesions within the study period, 285 (18.7%) of the cases were malignant lesions, consisting of 160 carcinomas (56.1%), 73 lymphomas (25.6%) and 52 sarcomas (18.2%). The sarcomas and the lymphoproliferative malignant lesions were excluded from this study.

The age range of the carcinomas ($n=160$, 56.1%) in this study was between 2 to 94 years, with a mean age of 51 ± 17.9 years. The peak age of occurrence was within the seventh decade of life ($n=37$, 23.1%). There were 82 (51.3%) females and 78 (48.8%) males giving a male to female ratio of 1:1.1 (Fig 1). The highest prevalence in females was observed in the fifth decade of life ($n=18$, 11.3%). In males, it was seen mostly in the seventh decade of life ($n=23$, 14.4%) [Fig 1]. There was no significant association between the orofacial carcinomas and the age (P value = 0.992) and gender ($P=0.126$) of the patients (Tables 1 and 2).

There was significant association between the orofacial carcinomas and the site of the lesion ($P=0.000$). The palate ($n=30$, 18.8%) was the most common site, followed by the parotid area ($n=29$, 18.1%), the retromolar area ($n=20$, 12.5%) and the alveolar mucosa (19, 11.9%). Among the least common sites were the floor of the mouth and the maxilla (Fig 2).

Squamous cell carcinoma ($n=94$, 58.6%) was the most common orofacial carcinoma (Figure 3) [Figure 4]. SCC occurred mostly in the seventh decade of life ($n=26$, 16.3%). There were 54 (33.8%) males and 40 (25.0%) females, giving a ratio of 1.4:1. The palate ($n=19$, 11.9%) was the most common site of the SCC in this study.

The second most common orofacial carcinoma was salivary gland adenocarcinoma [Figure 3], consisting mostly of acinic cell carcinoma ($n=14$, 8.8%) [Figure 5] and adenocystic carcinoma ($n=13$, 8.1%) [Figure 6]. The least common orofacial carcinomas were verrucous carcinoma, basal cell carcinoma and epimyoepithelial carcinoma of the salivary gland with 1 (0.6%) case each (Figure 3).

Acinic cell carcinoma ($n=14$, 8.8%) was the most common adenocarcinoma and second most frequent carcinoma in this study. The patients were found mostly in the fourth ($n=4$, 2.5%) and

fifth (n = 5, 3.1%) decades of life. The lesion affected 11 (6.9%) females and 3 (1.9%) males, giving a female to male ratio of 3.7:1. The parotid (n=9, 5.6%) was the most affected site.

The third most frequent carcinoma in this study was Adenocystic Carcinoma. There were 13

(8.1%) cases of adenocystic carcinoma in this study, found mostly in the fourth (n=4, 2.5%) and the fifth decades (n=3, 1.9%) of life. There were (4.4%) females and 6 (3.8%) males, giving female to male ratio of 1.2: 1. The parotid region (n=4, 2.5%) was the most frequent site in the study.

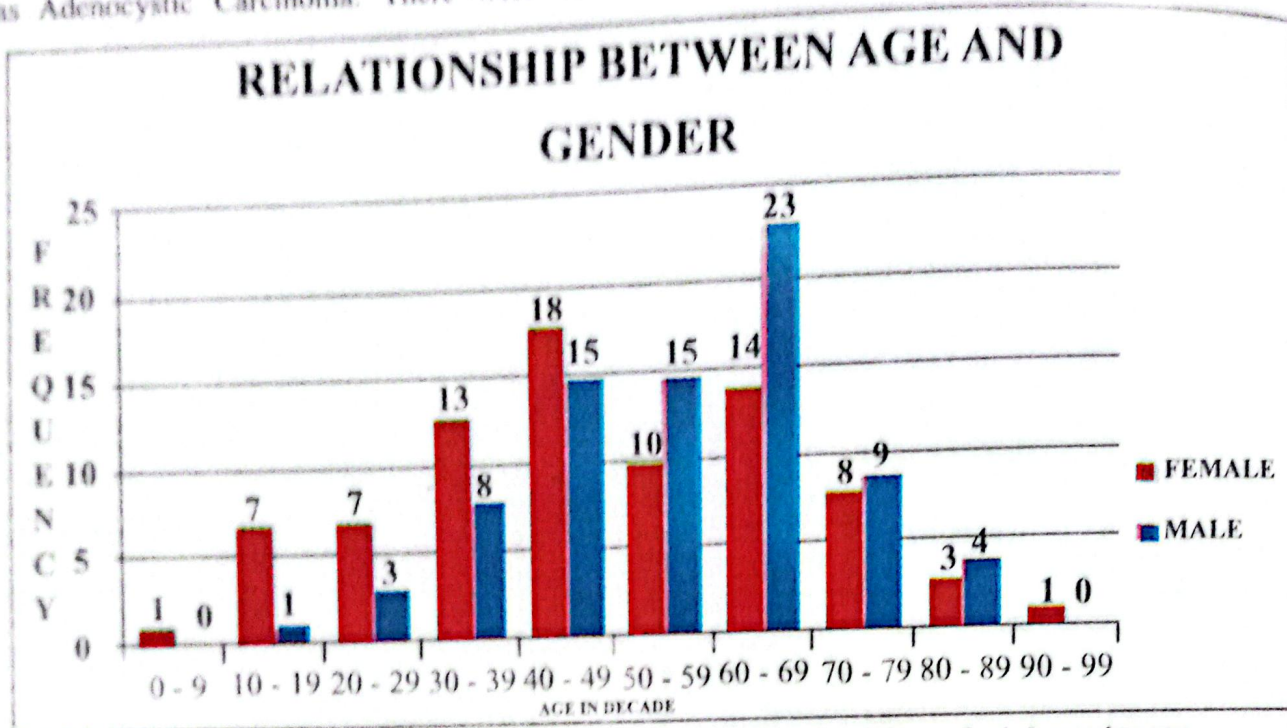


Figure 1: The age and gender distribution of patients with orofacial carcinoma

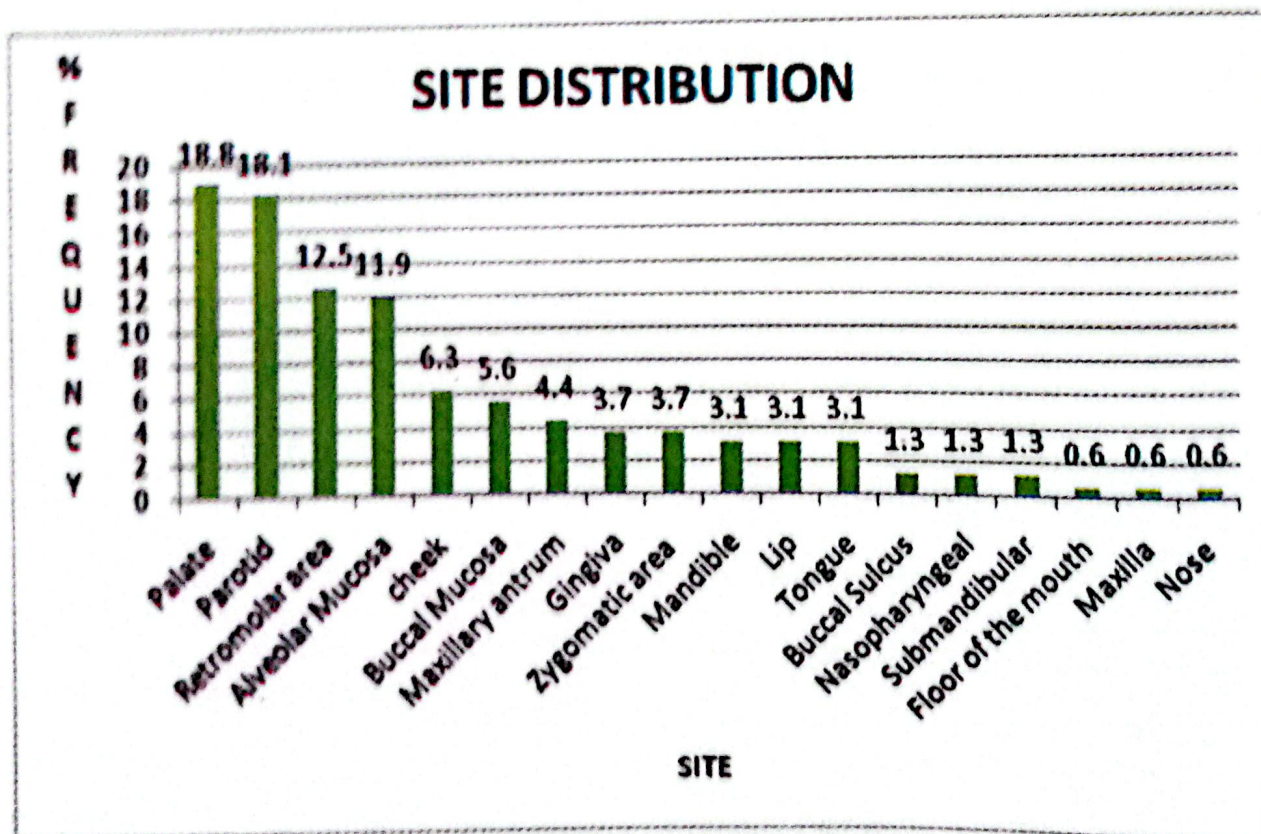


Figure 2: The orofacial site distribution of the carcinomas

Mucoepidermoid Carcinoma (n=11, 6.9%) constituted the fourth most commonly occurring orofacial carcinoma observed in this study. They were found commonly in the fourth decade of life (n=3, 1.9%). There were 7 (4.4%) females and 4 males (2.5%), giving a female to male ratio of 1.8:1. The parotid region (n=7, 4.4%) was the site mostly affected. There were 9 (5.6%) cases of PLGA in this study, without a predominant age group. The tumour occurred in 6 (3.8%) females and 3 (1.9%) males, giving a ratio of 2:1. The palate (n=3, 1.9%) was the most affected site.

Eight (5.0%) cases of ameloblastic carcinoma were identified without a predominant age group. There was equal gender predilection with a male (n=4, 2.5%) to female (n=4, 2.5%) ratio of 1:1. The mandible (n=5, 3.1%), was the most affected site. There was significant association between the orofacial carcinomas and the site of the lesion ($p=0.000$) [Table 3].

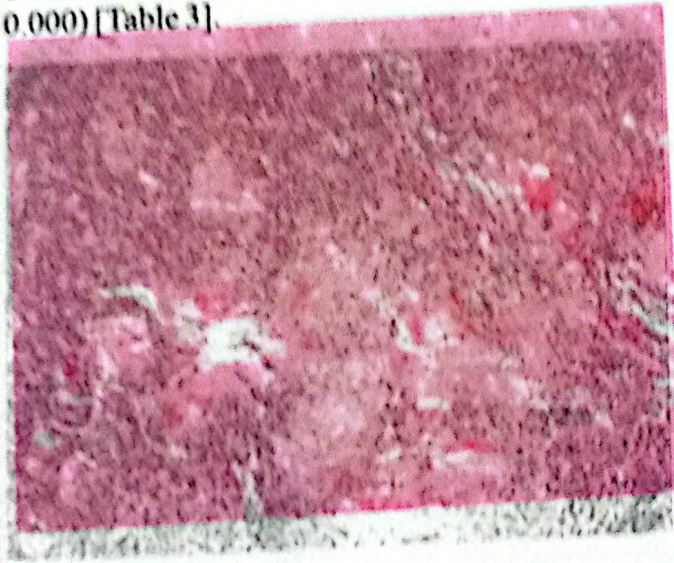


Figure 4: Well Differentiated Squamous Cell Carcinoma



Figure 5: Acinic Cell Carcinoma



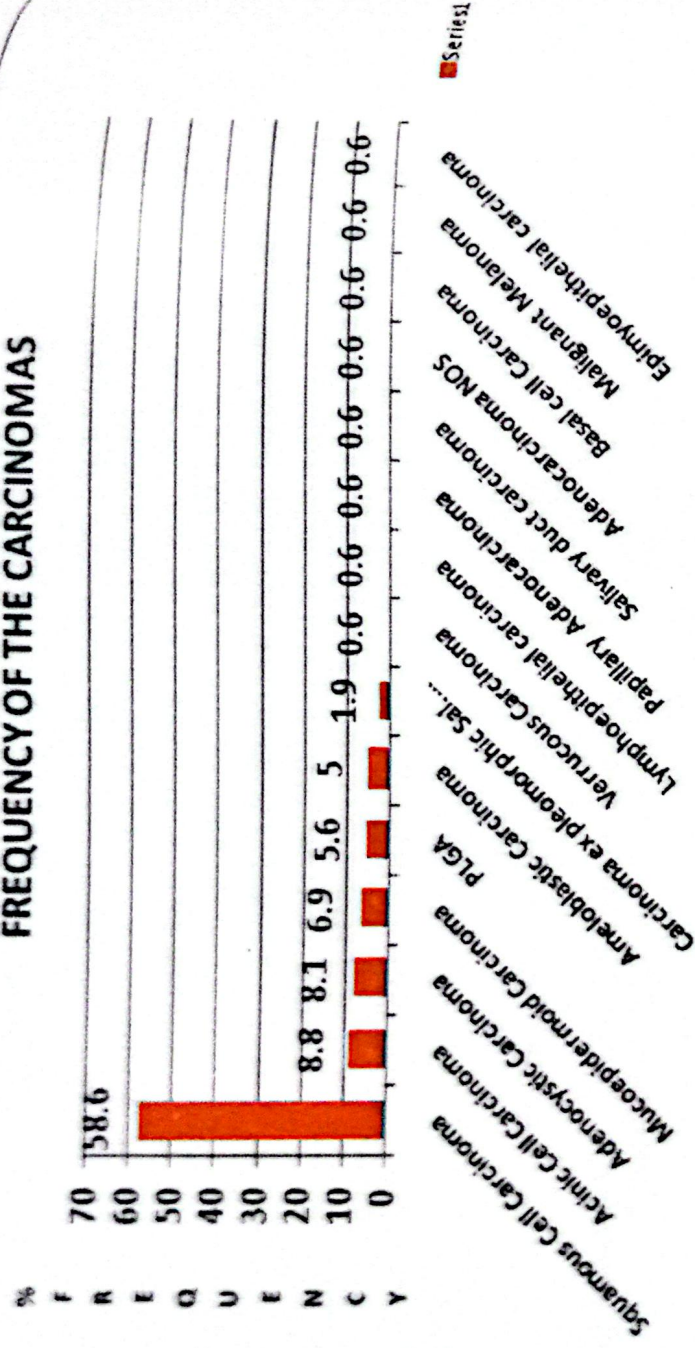
Figure 6: Adenocystic Carcinoma

Table 2: Gender distribution of histopathological diagnosis of the orofacial carcinomas

Histological diagnosis	Gender	
	Males	Females
Squamous Cell Carcinoma	54 (33.8)	40(25.0)
Mucoepidermoid Carcinoma	4 (2.5)	7 (4.4)
Acinic Cell Carcinoma	3 (1.9)	11 (6.9)
Adenocystic Carcinoma	6 (3.8)	7 (4.4)
Papillary Adenocarcinoma	1 (0.6)	-
Lymphoepithelial carcinoma	1(0.6)	-
Verrucous Carcinoma	-	1 (0.6)
Ameloblastic Carcinoma	4 (2.5)	4 (2.5)
PLGA	3 (1.9)	6 (3.8)
Salivary duct carcinoma	-	1 (0.6)
Adenocarcinoma NOS	-	1 (0.6)
Basal cell Carcinoma	-	1 (0.6)
Carcinoma ex pleomorphic Sal. Adenoma	2 (1.3)	1 (0.6)
Malignant Melanoma	-	1 (0.6)
Epimyoeipithelial carcinoma	-	1 (0.6)
Total	78 (48.8%)	82 (51.3%)

$p=0.126$

FREQUENCY OF THE CARCINOMAS



HISTOLOGICAL DIAGNOSIS

Figure 3: The frequency distribution of the orofacial carcinomas

Table 1: Age distribution of histopathological diagnosis of the orofacial carcinomas

Histological Diagnosis	Decades of life										Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Squamous Cell Carcinoma	-	4 (2.5)	4 (2.5)	6 (3.8)	16 (10.0)	19 (11.9)	26 (16.3)	14 (8.8)	4 (2.5)	1 (0.6)	94 (58.6)
Mucoepidermoid Carcinoma	-	2 (1.3)	1 (0.6)	3 (1.9)	2 (1.3)	1 (0.6)	2 (1.3)	-	-	-	11 (6.9)
Acinic Cell Carcinoma	-	1 (0.6)	2 (1.3)	4 (2.5)	5 (3.1)	1 (0.6)	1 (0.6)	-	-	-	14 (8.6)
Adenocystic Carcinoma	-	-	-	4 (2.5)	3 (1.9)	2 (1.3)	1 (0.6)	1 (0.6)	2 (1.3)	-	13 (8.1)
Papillary Adenocarcinoma	-	-	-	-	-	-	1 (0.6)	-	-	-	1 (0.6)
Lymphoepithelial carcinoma	-	-	-	-	1 (0.6)	-	-	-	-	-	1 (0.6)
Verrucous Carcinoma	-	-	-	-	-	-	-	1 (0.6)	-	-	1 (0.6)
Ameloblastic Carcinoma	-	-	2 (1.3)	1 (0.6)	2 (1.3)	1 (0.6)	2 (1.3)	-	-	-	8 (5.0)
PLGA	1 (0.6)	1 (0.6)	1 (0.6)	2 (1.3)	2 (1.3)	-	2 (1.3)	-	-	-	9 (5.6)
Salivary duct carcinoma	-	-	-	-	-	-	1 (0.6)	-	-	-	1 (0.6)
Adenocarcinoma NOS	-	-	-	1 (0.6)	-	-	-	-	-	-	1 (0.6)
Basal cell Carcinoma	-	-	-	-	-	1 (0.6)	-	-	-	-	1 (0.6)
Carcinoma ex pleomorphic Salivary Gland	-	-	-	1 (0.6)	-	1 (0.6)	1 (0.6)	-	-	-	3 (1.9)
Malignant Melanoma	-	-	-	-	-	-	-	1 (0.6)	-	-	1 (0.6)
Epithelioid carcinoma	-	-	-	-	1 (0.6)	-	-	-	-	-	1 (0.6)
Total	1 (0.6)	8 (5.0)	10 (6.3)	22 (13.8)	32 (20.0)	26 (16.3)	37 (23.1)	16 (10.0)	7 (4.4)	1 (0.6)	160

P value = 0.992

Table 3: Site distribution of histopathological diagnosis of the orofacial carcinomas

Histological diagnosis	Site of lesions									
	MAN	MAX	PAL	GIN	PAR	ANT	TUN	ZYG AREA	LIP	CHB
Squamous Cell Carcinoma	-	-	18(11.9)	6(3.8)	3(1.9)	5(3.1)	3(1.9)	3(1.9)	4(2.5)	9(5.6)
Microepidermoid Carcinoma	-	-	1 (0.6)	-	7(4.4)	-	1(0.6)	-	-	-
Adenoid Cyst Carcinoma	-	-	3 (1.9)	-	9(5.6)	-	-	-	-	-
Adenosarcoma Carcinoma	-	-	2 (1.3)	-	4(2.5)	1(0.6)	-	-	-	-
Papillary Adenocarcinoma	-	-	-	-	-	-	-	-	1(0.6)	-
Lymphoepithelial carcinoma	-	-	-	-	-	-	-	-	-	-
Verrucous Carcinoma	-	-	-	-	-	-	-	-	-	1(0.6)
Ameloblastic Carcinoma	5(3.1)	1(0.6)	-	-	-	-	-	-	-	-
PLGA	-	-	3 (1.9)	-	1(0.6)	1(0.6)	1(0.6)	-	-	1(0.6)
Salivary duct carcinoma	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma NOS	-	-	1 (0.6)	-	-	-	-	-	-	-
Basal cell Carcinoma	-	-	-	-	-	-	-	1(0.6)	-	-
Carcinoma ex pleomorphic Sal. Adenoma	-	-	1 (0.6)	-	-	-	-	-	-	-
Malignant Melanoma	-	-	-	-	-	-	-	1(0.6)	-	-
Epithyoeptithelial carcinoma	-	-	-	-	-	-	-	-	-	-
Total	5(3.1)	1(0.6)	30(18.8)	6(3.7)	29(18.1)	7(4.4)	5(3.1)	6 (3.7)	5(3.1)	10(6.3)
										9(5.6)
										20(12.5)
										19(11.9)

DISCUSSION

Orofacial carcinomas cause morbidity and mortality for people worldwide. This group of lesions is reported as the most common malignancy known to affect the oral and maxillofacial region in our environment. Arotiba et al. (2006)¹¹ and Ajayi et al. (2007)¹² have reported a prevalence of 70.5% and 69% respectively for carcinomas among orofacial malignancies in Lagos (South-West, Nigeria). Furthermore, Adeyemi et al (2008),¹⁶ reported a prevalence of 71.1% for carcinomas among head and neck cancers analyzed in Ibadan (South-West, Nigeria), while Otoh et al.,¹⁷ reported a prevalence of 68.4% and 60.8% for carcinomas among head and neck cancers analyzed in Maiduguri and Jos respectively (Northern, Nigeria). However, a relatively lower prevalence (56.1%) of orofacial carcinomas was observed in this study in Benin City (South-South, Nigeria). These findings suggest regional variation in the prevalence of orofacial carcinomas in Nigerians.

Earlier studies reported a predilection of orofacial carcinomas for the 6th decade¹¹ and 7th decade of life.¹⁸ The lesions in this study were common in the older age group (7th decade of life). moreover, the mean age (51 ± 17.9 years) of orofacial carcinomas in this study was similar to previous reports of a mean age of 51.2 ± 15.6 in North eastern Nigeria¹¹ and a mean age of 51.2 ± 17 in Lagos.¹² Overall, there was slight female predilection for orofacial carcinomas in this study, which agrees with earlier reports^{11,19} Although, some studies have reported male predilection for orofacial carcinomas.¹³ This variation in the findings of various studies confirms that there was no significant association between the age and gender of the patients with the development of orofacial carcinomas observed in this study. The palate was the most common site and there was significant association between orofacial carcinomas and the site of the lesions in this study. Otoh et al. (2005),¹⁷ also reported the palate as the most common site of intraoral carcinomas in

Oyob et al. Orofacial carcinoma
Further study to ascertain the actual prevalence of neoplastic salivary gland lesions diagnosed in this hospital is ongoing in the Oral Pathology Department (with predominant samples of intraoral / minor salivary gland lesions) and Morbid Anatomy Department (with predominant samples of extraoral / major salivary gland lesions).

Nigerians. However, some other studies have reported the maxillary as the most common site.

Squamous cell carcinoma (SCC) was the most histopathological type of carcinomas from which, which is similar to findings from studies.^{4,10} SCC accounted for most of the oral carcinomas in this study, with 70% of the lesion for males, the 7th decade and the palate. This supports earlier report by Arooba et al. (2012)¹¹ that analyzed oral variants of orofacial SCC and found conventional SCC as the predominant histological subtype, occurring frequently in the 7th decade of life and the palatal region. Arooba et al.,¹¹ reported a predilection of oral SCC for males, with the 6th decade of life as the peak age group and the maxillary as the most common site. Furthermore, as recently been reported as the most common malignant maxillary antral lesion.¹²

Salivary gland adenocarcinoma was the most common histopathological type of carcinomas found in this study. This is similar to report of glandular carcinoma as the second common carcinoma, arising from minor salivary glands involving the maxillary antrum affecting patients below 40 years.¹³ This study observed that most of the salivary gland carcinomas occurred in intraoral minor salivary glands, with predilection for females and 1st decade of life. The lesions consist predominantly of acinic cell carcinoma and mucinous cystic carcinoma followed by mucoepidermoid carcinoma. There was consistency in the prevalence of the salivary gland adenocarcinomas in this study compared to our reports of mucoepidermoid carcinoma as the most common salivary gland adenocarcinomas.^{14,15,16,17} Adenocarcinoma NOS (not otherwise specified) has also been reported as the second most common malignancy followed by acinic cell carcinoma.²⁰ The variation in the prevalence of salivary gland adenocarcinoma found in this study compared to earlier studies, may be due to the variation of specimens of salivary gland lesions involving intraoral minor salivary glands to the oral pathologists, and some of the major salivary glands to the general pathologists for histopathological examination in this Centre.

In conclusion, there was a relatively low prevalence of orofacial carcinomas in this study compared to previous Nigerian reports. The lesions occurred mostly in the older age groups with slight predilection for females and the palate was the most common site. Squamous cell carcinoma was the predominant histological type of the orofacial carcinoma, followed by salivary gland adenocarcinoma. These findings serve as baseline on the clinicopathologic patterns of orofacial carcinomas in the South-South geopolitical zone in Nigeria.

Conflict of Interest: None declared

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