

# The Prevalence and Pattern of Non-Odontogenic Tumours of the Jaws in a Nigerian Tertiary Hospital

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## ABSTRACT

**Objective:** Though odontogenic tumours of the jaws are well studied globally it appears there is paucity of data on the non-odontogenic tumours of the jaws. The objective of the study was to determine the prevalence and pattern of non-odontogenic tumours of the jaws in a Nigerian tertiary hospital.

**Methods:** This was a retrospective study on patients diagnosed histologically of non-odontogenic tumours of the jaws from September 2017 to September 2022 in the departments of oral and maxillofacial surgery of a Nigerian teaching hospital. Data were collected from the register and case-notes of the patients. Patients with incomplete information were excluded. Data collected were age, gender, location of tumour, origin of tumour, and type of tumour. Both descriptive and inferential statistics were performed. Data was analyzed using SPSS version 21. A P- Value of less than 0.05 was considered statistically significant.

**Results:** The age of the patients ranged from 18-87 years with a mean age of 45.3±20.1 years. There were more males with a male to female ratio of 1.1: 1. The prevalence of non-odontogenic tumour was 33.2%. More than half (55.0%) of the patients had the tumors located on the mandible. More than two-third (69.4%) of the tumours were of mesenchymal origin. A higher (69.4%) proportion of the patients had malignant non-odontogenic tumours. Malignancy of odontogenic tumours were associated with the age of the patient and the origin of the tumours (P<0.05).

**Conclusion:** The prevalence of non-odontogenic tumours is high in our environment. More malignant non-odontogenic tumours were seen in the middle age group of 35-59 years and tumours of mesenchymal origin were also found to be more malignant.

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## INTRODUCTION

Tumours of the jaw bones can be classified as odontogenic and non-odontogenic (Montero et al., 2021). They are frequently encountered worldwide (Sharma et al., 2020). The term "non-odontogenic" indicates that the tumour is not composed of cellular constituents whose primary purpose is to form teeth or tooth-related structures (Mascitti et al., 2020). Non-odontogenic tumours of the jaws are a heterogeneous group of pathologic disorders with various histologic types and clinical behaviour (Aregbesola et al., 2018). They may be benign, or malignant with diverse clinical behavior, biologic characteristics, and histologic types that affect both soft and hard tissues of the jaws (Omoriegie et al., 2015). Like every jaw tumour, they constitute a major health problem. It has a wide range of health burden

ranging from the benign odontomas to the highly aggressive chondrosarcoma (Omoriegie et al., 2015).

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Their morbidity and mortality increased in developing countries due to late presentation of patients to health facilities (Kabukcuoglu et al., 2014). Prompt diagnosis of non - odontogenic tumors is essential so as to ameliorate morbidity and mortality. In addition, an understanding of their prevalence and pattern of presentation is necessary for effective management.

Global literature has shown that odontogenic tumours are well studied (Mosqueda- Taylor et al., 1997; Ochsenu et

al., 2002; Ladeinde et al., 2005; Kamulegeya & Kalyanyama 2008; Gupta & Ponnai, 2010; Lasisi et al., 2013; Deepthi et al., 2016) with few studies (Johnson et al., 2013; Tiwari et al., 2018) on non-odontogenic tumours. To the best of our knowledge, none has been reported in our environment leading to poor characterization of these tumours. It is hopeful that this study will provide baseline information for further studies and help health providers to optimally characterize these tumours. The objective of this study was to determine the prevalence and pattern of non-odontogenic tumours of the jaws in a Nigerian tertiary hospital.

### MATERIALS AND METHODS

This was a retrospective study of patients diagnosed histologically of non-odontogenic tumours of the jaws from September, 2017 to September, 2022 in the Department of Oral and Maxillofacial Surgery of a Nigerian teaching hospital. Data were collected from the Clinical register and case-notes of the patients. Patients with incomplete information were excluded. Data collected were age, gender, location of tumour, origin of tumour, and type of tumour. Both descriptive and inferential statistics were performed. Data was analyzed using IBM SPSS version 21.0. A P- value of less than 0.05 was considered statistically significant.

### RESULTS

Of the 295 tumors of the jaws, there were 98 cases of non-odontogenic tumors given a prevalence of 33.2% in this 5-year retrospective study. Table 1 shows the clinico-demographic characteristics of the non-odontogenic tumors. There were more males with a male to female ratio of 1.1: 1. The age of the patients ranged from 18-87 years with a mean age of 45.3±20.1 years. There were more (40.8%) cases of non odontogenic tumors among the middle age group and this was followed (30.6%) by those above 60 years. More than half (55.0%) of the patients had the tumors located on the mandible. More than two-third (69.4%) of the tumors were of mesenchymal origin. A higher (69.4%) proportion of the patients had malignant non-odontogenic tumors. Table 2 shows the distribution of malignancy of non-odontogenic tumors by age, gender, location and origin of tumor. There were significantly more proportion of malignant non-odontogenic tumors in the age group between 35 and 59 years (Table 2). Male patients had more malignant non-odontogenic tumors, and a higher proportion of malignancies were seen in the mandible, however, this was not statistically significant (P=0.42). Tumors of mesenchymal origin were found to be more malignant; this also was of statistical significance (P=0.00).

**Table 1: The clinico-demographic characteristics of non-odontogenic tumours**

Variables	Category	Frequency(n)	Percentage (%)
Age groups(years)	18-34	28	28.6
	35-59	40	40.8
	≥60	30	30.6
Gender	Male	52	53.9
	Female	46	46.1
Location of tumours	Maxilla	43	43.9
	Mandible	55	56.1
Origin of tumours	Epithelial	29	29.6
	Mesenchymal	69	70.4
Type of tumour	Benign	30	30.6
	Malignant	68	69.4

**Table 2: The distribution of malignancy of non-odontogenic tumors by age, gender, location and origin of tumour (n=98)**

Variables	Category	Type of neoplasms		Chi-value	P-value
		Benign (n=30)	Malignant (n=68)		
Age groups(years)	18-34	14	14	9.18	0.01
	35-59	12	28		
	≥60	4	26		
Gender	Male	12	40	2.96	0.09
	Female	18	28		
Location of tumours	Maxilla	15	28	0.66	0.42
	Mandible	15	40		
Origin of tumours	Epithelial	30	29	18.1	0.00
	Mesenchymal	0	39		

## DISCUSSION

The prevalence and pattern of non-odontogenic tumours of the jaws was assessed by this study. A prevalence of 33.2% was found in this study and this finding suggested that they are common in our environment. The prevalence observed in this study was higher than the 8.6% reported by a 1-year prospective study in Australia (Johnson et al., 2013) and this variation could be attributable to the differences in the study designs. However, the prevalence is lower than the 93.6% reported by Tiwari et al. (2018) in an 8-year retrospective study in India. Racial and genetic differences could be the probable explanation for this variation (Lac et al., 2019). The mean age of patients in this study was 45.3 years which is greater than the 38.6 years and 38.3 years reported by Johnson et al. (2013) and Tiwari et al. (2018) respectively. This present study recruited adults only while previous studies recruited both adult and paediatric patients and this could be the reason for the mean age variations. Occurrence of non-odontogenic tumour was highest among the ages between 35 and 59 years and this age range are reported to be more exposed to environmental risk factors and mutation of genes peaks in the age groups (Lac et al., 2019). There was gender predilection with more affectation of female patients and this was similarly reported by previous studies (Tiwari et al., 2018; Lac et al., 2019). The possible reason for this global female predilection could be attributable to the greater masticatory activities in men which reverse the dormancy effect of the labile cells (Lac et al., 2019). Mandible was affected more compared to the maxilla and this finding corroborated the report of previous studies (Johnson et al., 2013; Tiwari et al., 2018). The non-odontogenic tumours of mesenchymal origin were more frequently observed compared to those of epithelial origin. Since no previous study examined the pattern of origin of cells this present study was limited with comparison. Most of the non-odontogenic tumours were malignant in nature and this finding is contrary to that reported in previous study that reported more benign non-odontogenic tumours (Johnson et al., 2013). The variation in these findings could be related to the nature of samples recruited in previous study, the present study was strictly on tumours while previous study was on both cysts and tumours (Lasisi et al., 2012; Johnson et al., 2013; Aregbesola et al., 2018).. The pattern of malignancy of non-odontogenic tumour was significantly distributed by age and origin of cells. The pattern of malignancy of non-odontogenic tumours based on age showed that there were significantly more malignant tumours in the age between 35 and 59 years. This finding could be related to the fact that this age group constituted the highest proportion of the patients. The pattern of malignancy was also significantly distributed by the type of cells as the mesenchymal cells were more malignant than epithelial cells of origin. It is possible that the mesenchymal cells are

more prone to undergo malignant transformation if irritated by mutagens (Lac et al., 2019). These findings could not be compared due to lack of previous studies on these findings.

This study has few limitations to be considered in interpretation of the findings, it only recruited tumours in the jaws rather than orofacial region; however, the jaws constitute the major parts of the orofacial region. The sample size may be relatively small and some data may have been lost due to the retrospective nature of the study, however, this present study provides a baseline data for further prospective studies.

## CONCLUSION

The prevalence of non-odontogenic tumours is high in our environment. More malignant non-odontogenic tumours were seen in the middle age group of 35-59 years and tumours of mesenchymal origin were also found to be more malignant.

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