



## Profile of Otorhinolaryngology Patients Mortality in a University Teaching Hospital in Nigeria

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### Abstract

**Introduction:** Mortality in Otorhinolaryngology may not only be due to progression of disease conditions. Late presentation of patients to clinic, leads to diagnosis of advanced disease at time of presentation, allowing limited time for proper management. This results in poor management outcome, thus increasing the chances of mortality. Mortality from otorhinolaryngological diseases in the hospital can be peri-operative, occurring during surgical procedures in theatre, either due to surgical or anesthetic complications, or during pre- or post-surgical in-ward admission. The aim of this study was to review the causes and the pattern of mortality seen among the otorhinolaryngological conditions seen in ENT operating theatre and admission ward in the University of Port Harcourt Teaching Hospital, Rivers state, Nigeria.

**Materials and Methods:** A retrospective 10 year review of mortality among Otorhinolaryngology patients seen in the University of Port Harcourt Teaching Hospital, Rivers state, Nigeria from January 2009 to December 2018. Data was collected from Ear, Nose and, Throat ward records, operation theatre records, and case notes of patients who died during surgery and in otorhinolaryngological (ENT) admission ward during this study period. Their age, sex and clinical diagnosis was retrieved and analyzed. Results were presented in tables and figures.

**Results:** Over this 10 year period, a total of 2,572 otorhinolaryngological patients were seen through the theatre and admission ward. A total mortality of 46 patients (1.8%) was noted, 35 males and 11 females. The leading cause of death was Head and Neck Tumour, with 22 (47.8%) mortality. The age range of 51 years to 60 years had the highest mortality of 11 (24%), while 81 years to 90 years had the least mortality 1 (2.2%), followed by 41 years to 50 years and 61 years to 70 years with 8 (17.4%) mortality respectively.

**Conclusion:** Our study noted that Head and neck tumors are most liable for mortality in otorhinolaryngological patients, and mortality is more in males than females, usually promoted by several factors among which is late presentation of pathologies. Increased enlightenment on ENT diseases, and early presentation of these cases can help reduce mortality rate from otorhinolaryngological diseases.

**Keywords:** Mortality; Otorhinolaryngology; Admission; Port Harcourt; Patients

### Introduction

Mortality in Otorhinolaryngology may not only be due to progression of the disease conditions. Late presentation of patients to clinic, leads to diagnosis of advanced disease at time of presentation, allowing limited time for proper management [1]. This results in poor management outcome, thus increasing the chances of mortality. Mortality from otorhinolaryngological diseases in the hospital can be perioperative, occurring during surgical procedures in theatre, either due to surgical or anesthetic complications, or during pre- or post-surgical in-ward admission.

In Nigeria, there is poor health seeking behavior among citizens, which results in diseases even when preventable to present to hospital at advanced stages [2]. As much as mortality is an inevitable aspect of disease and surgical care drastic improvements in the standard and techniques of pre and post-operative management of Otorhinolaryngology patients have improved outcome with subsequent decline in mortality rate. Surgical care in the theatre and the wards make up the vital components of patient management with profound significance in altering the prognosis [1]. The analysis of mortality pattern is imperative because it shows the quality of surgical care validates the treatment methods and appraises the accessibility to healthcare resources in a community [3].

The aim of this study was to review the causes and the pattern of mortality seen among the

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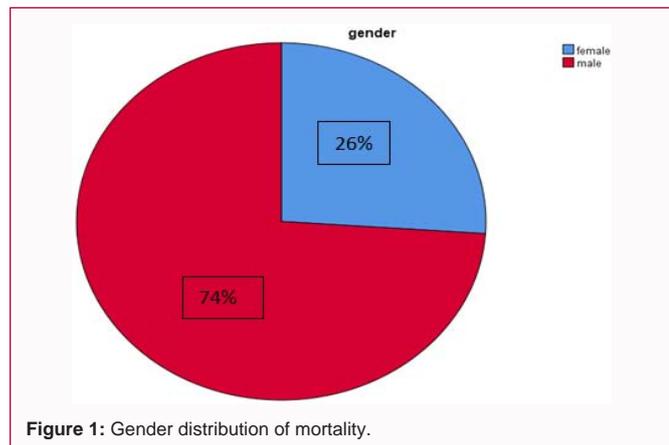


Figure 1: Gender distribution of mortality.

Table 1: Mortality according to age category of subjects.

Age category	Number of mortalities	% mortality
0-10	6	13
Nov-20	2	4.3
21-30	3	6.5
31-40	2	4.3
41-50	8	17.4
51-60	11	24
61-70	8	17.4
71-80	5	10.9
81-90	1	2.2
<b>Total</b>	<b>46</b>	<b>100</b>

otorhinolaryngological patients in the Ear, Nose and Throat operating theatre and admission ward in the University of Port Harcourt Teaching Hospital, Rivers state, Nigeria.

### Materials and Methods

This study was a 10-year retrospective review of mortality among Otorhinolaryngology (Ear, Nose and Throat) patients seen from July 2008 to June 2018 in the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria. Medical records of Ear, Nose and, Throat ward, and operation theatre were studied, and data of these patients who died during surgery and admission in otorhinolaryngological (ENT) theatre and ward during this study period was collected. Their age, sex and clinical diagnosis was retrieved and analyzed. The total numbers of patients reported in this study were as seen by otorhinolaryngologists and reflected in the Ear Nose and Throat theatre and inward medical records. Within this study period, some related cases which were managed by allied specialties like general surgery and maxillofacial surgery were not captured; similarly the cases of mortality in the emergency department were not also included. Results were presented in tables and figures.

Table 2: Study year with yearly gender distribution of mortality.

		gender according to year of death										Total
		year of death										
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
gender	Female	1	2	2	1	0	2	3	0	0	1	12
	male	6	7	1	5	6	1	2	3	2	1	34
Total		7	9	3	6	6	3	5	3	2	2	46

p-value = 0.091

### Results

Within this 10 year period, a total of 2,572 otorhinolaryngological patients went through the theatre and admission ward. Among these, a total mortality of 46 patients (1.8%) was noted, 35 (76.0%) males and 11 (24.0%) females. The leading cause of death was Head and Neck Tumour, with 22 (47.8%) mortality. The age range of 51 years to 60 years had the highest mortality of 11 (24.0%), while 81years to 90 years had the least mortality 1 (2.2%), followed by 41 years to 50 years and 61 years to 70 years with 8 (17.4%) mortality respectively. The age range was 0.5 years to 85 years and the mean age was 48.27 SD 22.50 ± 3.35 years. Figure 1 is a pie chart showing the gender distribution of patients' mortality within the study period, and it shows males had a greater mortality than females, while Table 1 below shows the yearly distribution of mortality according to sex.

Table 2 shows the different pathologies that contributed to the mortality in the Otorhinolaryngology patients seen in our hospital. It shows that head and neck tumors had the highest mortality, while Corrosive oesophagitis, subperiosteal abscess, Lymphoma, Tracheo-oesophageal fistula, Granulomatous nasal disease, Submandibular cellulitis, had a mortality of one patient each. Figure 2 shows the yearly distribution of mortality, while Table 3 also shows the yearly distribution of mortality with their respective causes of death. It highlights the fact the rate of mortality reduced in the last 5 years of the study duration. From an average mortality for January 2009 to December 2013 of 6 deaths/year, to an average mortality from January 2014 to December 2018 of 3 deaths/year. Figure 3 is a bar chart showing the different types of head and neck tumors that contributed to the mortality seen in this study. Laryngeal Tumor was the commonest head and neck Tumor that contributed the highest rate of mortality. Conversely, Parotid Tumor, middle ear Tumor and Submandibular Tumor contributed the least with each being responsible for the mortality of one patient respectively. Figure 4 shows the number of theatre and ward mortality, 7 patients died in theatre and 39 died in the ward.

### Discussion

The study had 2,572 patients and a mortality rate of 46 (1.8%). The mortality age range was 0.5 years to 85 years with a mean age of 48.27 years SD 22.50 ± 3.35 years. The mortality rate was lower than the rate in the study by Kumar et al. [1], (9.42%) Anelechi et al. [3], (9.14%) and 8.3% by Ihegihu et al. [4], However, each of these studies were carried out over a study period of 5 years. This higher mortality rate may be attributed to the higher number of cases seen in their studies relative to this study. In addition, Kumar et al. have reported that otolaryngology wards witness relatively lower mortality compared to some other specialty wards like general surgery and internal medicine wards, due to the peculiarity of their respective cases [1].

The age group 81 years to 90 years had the least mortality in this study. This does not necessarily mean more cases of successful

**Table 3:** Yearly distribution of mortality with cause of death and number of mortality.

Year	Month	number of mortality	Cause of mortality	Age(years)	Sex
2009	April	1	Subperiosteal abscess 2° CSOM	56	M
	June	2	Ludwig's angina	68	M
			Nasopharyngeal carcinoma	42	M
	Aug	1	Non-hodgkin's lymphoma	51	M
	Nov	1	Ludwig's angina	70	F
	Dec	2	Nasopharyngeal cancer	55	M
			Dysphagia in Diabetes mellitus	50	M
<b>Total</b>		<b>7</b>			
2010	Jan	1	Ludwigs angina	69	M
	Feb	1	Dysphagia? cause	59	M
	March	1	Oesophageal cancer	62	M
	May	1	Corrosive oesophagitis	27	M
	June	1	Laryngeal tumor	45	F
	Sept	1	Fishbone aspiration	6mths	F
	Oct	1	Submandibular cellulitis	20	M
	Dec	2	Advanced parotid tumor	60	M
			Parapharyngeal abscess	45	M
<b>Total</b>		<b>9</b>			
2011	Jan	1	Nasal polyposis	22	F
	June	1	Laryngeal tumor	42	M
	July	1	Deep neck abscess in HIV	69	F
<b>Total</b>		<b>3</b>			
2012	March	1	Obstructive adenoids and tonsils	2	M
	July	1	*Severe head injury + upper airway obstruction	33	M
	Aug	1	Dysphagia 2° oesophageal cancer	85	F
	Oct	1	Advanced sinonasal cancer	41	M
	Nov	1	Recurrent sinusitis with complications	55	M
	Dec	1	Trachea-oesophageal fistula	54	M
<b>Total</b>		<b>6</b>			
2013	Feb	2	Oropharyngeal tumor	47	M
			Nasopharyngeal tumor	80	M
	May	1	*Papillary thyroid carcinoma	12	M
	June	1	Oesophageal cancer	64	M
	July	1	Submandibular adenocarcinoma	27	M
	Nov	1	Ludwigs angina	72	M
<b>Total</b>		<b>6</b>			
2014	Sept	1	Advanced middle ear tumor	70	F
	Oct	1	Fungal granulomatous nasal disease	48	M
	Dec	1	*Laryngeal papilloma	6	F
<b>Total</b>		<b>3</b>			
2015	Feb	1	Parapharyngeal abscess in DM	76	M
	July	1	Oropharyngeal tumor with upper air obstruction	38	F
	Sept	1	Oropharyngeal tumor	72	M
	Oct	2	Advanced sinonasal tumor	70	F
			*Foreign body in airway	8	F
<b>Total</b>		<b>5</b>			

2016	Feb	1	Nasopharyngeal tumor	52	M
	June	1	Advanced laryngeal cancer	56	M
	Nov	1	*Foreign body in airway	5	M
<b>Total</b>		<b>3</b>			
2017	Jan	1	Laryngeal tumor	58	M
	April	1	Advanced oropharyngeal tumor	73	M
<b>Total</b>		<b>2</b>			
2018	March	1	*Obstructive adenoids and tonsils	3	F
	June	1	Advanced sinonasal tumor	53	M
<b>Total</b>		<b>2</b>			

\*cases of theatre mortality

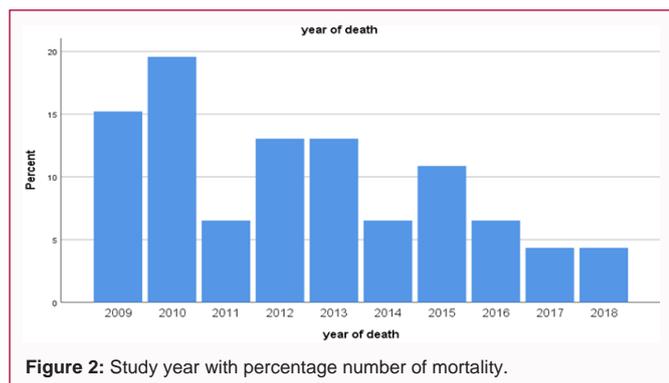


Figure 2: Study year with percentage number of mortality.

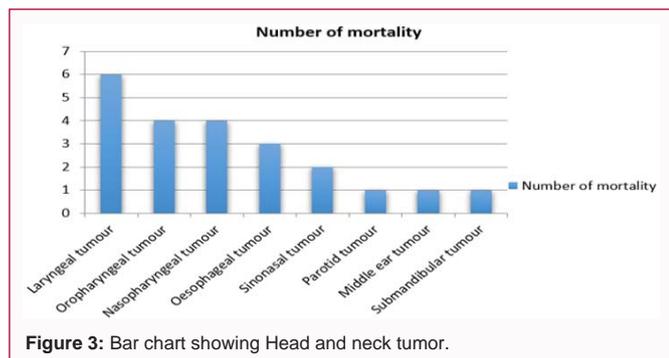


Figure 3: Bar chart showing Head and neck tumor.

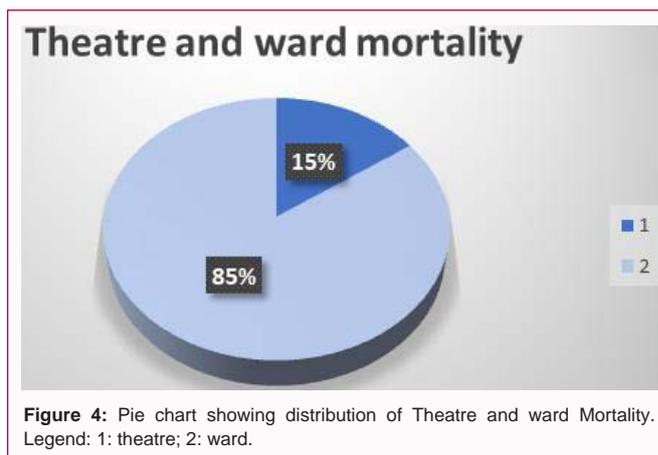


Figure 4: Pie chart showing distribution of Theatre and ward Mortality. Legend: 1: theatre; 2: ward.

discharge. It may only reflect the few cases within this age group that presents to the hospital. This is because at this age, hospital presentation is most likely at the discretion of their caregiver and often may depend on the economic power of the caregiver, who weighs the cost of hospital treatment against expensive burial rites practiced in most parts of the Nigeria [2-5]. The age group 51 to 60 had the highest rate of mortality in this study. Since most tumors have their peak manifestation around the 6<sup>th</sup> to 7<sup>th</sup> decade of life, this finding agrees with the progressive pattern of disease [1]. This is similarly reported in the study by Adoga et al. [6]. However, as much as most tumors are seen in this age group, late presentation of tumor at advanced disease is very prevalent in our environment and can be a factor responsible for poor outcome and high mortality rate. Conversely, death due to complications of adenotonsillar hypertrophy, upper airway obstruction was more in the younger population, similar to the findings by Kumar et al. [1].

Mortality was higher in males than females in this study this is in tandem with higher rate of admission in males than females. However, the different in the mortality rate among males and females were not statistically significant with a p value of 0.091. Similar

finding was reported by Bari et al. where the mortality in males were almost double the mortality in females and the study by Kumar et al. who reported that males make up two thirds of their mortality rate [1-7]. This is probably because with male occupation and hustle in life, they are prone to more environmental modifiers that promote injury and the progression of disease.

In this study, it was noted that in the span of the study period, the rate of mortality was higher in the earlier 5 years with an average of 6 deaths/year, than in the latter half of the study years with average of 3 deaths/year. This can be attributed to several factors such as increased number of specialized personnel attending to cases, combined with acquisition of contemporary hospital equipment with improved skills and techniques. This is a welcome development; however there is need for us to acquire good maintenance culture in the bid to maintain functionality and durability of hospital equipment, thereby ensuring sustainability. The need for continuous training and retraining of specialized personnel cannot be over emphasized in the sustainability of such remarkable results.

Head and neck cancers were noted to be the highest cause of mortality in our study this is akin to findings by Kumar et al. [1], who also studied mortality in Otorhinolaryngology patients. As much as Adoga et al. [6], have reported that risk factors for Head and Neck tumors have not been adequately studied in Nigeria, there may be several factors responsible for this trend. Primarily is the financial power of the average Nigerian, which relatively cannot afford the cost of treatment for these tumors because the cumulative cost of theatre and surgery fees, laboratory tests, and histopathologic assessment outweighs the average income. This was similarly reported by Garko et al. [2], in their study of duration of hospital stay

and mortality in the medical ward of a university teaching hospital in Nigeria. This becomes a huge impediment when hospital bills are paid out of pocket by patients or their relatives due to the absence of state funded health care system [3]. Secondly, the treatments of these tumors often require radiotherapy or chemotherapy, or both as chemo-radiotherapy in some cases. These forms of treatment are not readily available in some tertiary hospitals in the country, thereby necessitating patients to travel to other parts of the country to joining an elongated waiting list for treatment at risk of advancing tumour and its associated poor prognosis. This situation further complicates the accessibility to treatment, with a much higher risk of mortality [4-6]. Furthermore, the traditional belief of some Nigerians, irrespective of their educational height, is to regard disease as a spiritual or fetish attack from an 'enemy'. This mentality relegates hospital presentation to be a last resort after long and exhaustive days, months or even years in prayer houses and traditional herbal or fetish shrines. The subsequent delay encourages the advancement of the tumour leading, higher risk of complications with increased mortality.

In this study, mortality was higher in the admission ward than in theatre. Mortalities that occurred in theatre were either due to anesthetic complications or intra-op complications of surgery. In addition, some cases admitted in the ward come from the clinic, and do not necessarily have to go through theatre. In line with that, more patients pass through admission ward than through theatre. The admission ward has a combination of those admitted from clinic, and patients on pre or post-operative admission for theatre. In addition, some inoperable cases or terminal diseases who may not be candidates for theatre are admitted in the ward for palliative care, and these contribute to a greater inward mortality rate when compared to theatre.

## Conclusion

Our study noted that Head and neck tumors are most liable for mortality in otorhinolaryngological patients, and mortality is more in males than females, usually promoted by several factors among

which is late presentation of pathologies. Increased enlightenment on ENT diseases, and early presentation of these cases can help reduce mortality rate from otorhinolaryngological diseases.

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