

RESEARCH ARTICLE

# Diagnosis and Management of Hoarseness in Developing Country

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**Citation:** Adegbiyi W.A., Aremu S.K., Nwawolo C, Olajuyin O.A, Olatoke F. (2018) Diagnosis and Management of Hoarseness in Developing Country. Open Science Journal 3(2)

**Received:** 7<sup>th</sup> February 2018

**Accepted:** 17<sup>th</sup> May 2018

**Published:** 31<sup>st</sup> May 2018

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**Funding:** The author(s) received no specific funding for this work

**Competing Interests:** The author have declared that no competing interests exists.

## Abstract

**Background:** Hoarseness/dysphonia of voice is the most common symptom of laryngeal disorder regardless of its pathology.

This study aimed at determining the sociodemographic profile, aetiology, predisposing factors, clinical profile and management of hoarseness.

**Materials and Methods:** This study was a prospective study carried out on all patients who presented hoarseness of voice via the Ear, Nose, and the Throat at the department of a tertiary institution in Nigeria.

The study was carried out between October 2015 to September 2017. Data were obtained from patients who gave consent by using pre tested interviewer assisted questionnaire. All the data obtained were analyzed using SPSS version 16.0.

**Results:** Prevalence of hoarseness was 2.4%. There were 58.4% males with male to female ratio being 1.5:1. Housewives were involved 27.6%, Singers 21.5%, Teachers 17.3%, and Clergy 13.1%. Main causes were 96.3% organic causes and 2.8% neurological causes. Common organic causes were 36.4% acute laryngitis, 30.8% chronic laryngitis, and 15.0% vocal nodules.

Main predisposing factors were Upper respiratory tract infections 50.5%, Voice abuse 33.6%, and Laryngopharyngeal reflux 29.4%.

Commonest duration of the hoarseness prior to presentation were >12 months in 29.4% and 6–9 months in 27.1%. Main clinical features were hoarseness 78.5%, catarrh/cold 73.4%, sensation of lump in the throat 62.6%, and cough 55.6%. Prior medications before presentation to otorhinolaryngologist were local herb 84.6%, over the counter medication 48.6%, and health care center 38.3%. Specialist care was conservative/medical treatment 77.6%, surgical intervention 20.1%, and referral 2.3%.

Conclusion: Prevalence of hoarseness of voice was high with associated presentation to the specialist. Organic causes are the commonest with predominant inflammatory origin. Laryngeal neoplasm with associated malignancy was significant in a numbers of patients.

**Keywords:** Hoarseness, Dysphonia, Laryngeal diseases, Laryngoscopy, Speech disorder

## Introduction

Hoarseness/dysphonia of voice is defined as a voice disorder which is characterized by changes in the vocal quality, frequency, intensity, or effort that limits communication or causes a negative impact on voice-related quality of life through a self-perceived decrease in the individual's physical, emotional, social, or economic status [1]. Voice is said to hoarse when the quality is coarse, scratchy, rough, breathy or harsh [2,3]. Hoarse voice disorders also have a significant influence on vocational, social, and emotional adjustments of the sufferers.

Epidemiologic studies of hoarseness have shown that it affects approximately 6% of children under 14 years of age, and 3–9% of the adult population [4]. This also assessed the prevalence of the condition among different age groups and occupational groups.

Some of the predisposing factors to hoarseness include vocal abuse, smoking, and frequent upper respiratory tract infections. Hoarseness may be an early, warning signal as it is the most common symptom of laryngeal pathology ranging from mild laryngeal inflammation to more severe laryngeal malignancy. Aetiopathological factors causing hoarseness include laryngeal irritation, infective laryngitis (acute and chronic), benign non neoplastic nodular lesions, laryngeal papillomatosis, neoplastic vocal cord lesions, neuromuscular disorders, and laryngeal cancers [5].

Several factors are involved in the development of hoarseness in a classification method. They can be divided into organic (structural changes of the vocalization system into malformation, traumatic, inflammatory/ infectious and neoplastic/tumor aetiologies), neurologic (innervation and muscular control of vocalization system, from respiration to voice production deficits caused by

lesions in the central or peripheral nervous system), and functional (aphonia, psychogenic, hyperfunctional and hypofunctional) categories [6,7].

In otorhinolaryngological clinical practice, appropriate treatment of diseases requires accurate diagnosis of the underlying cause of hoarseness. Examination and evaluation of the pharynx, larynx, head, and neck seems to be essential. Although the location of these structures often inhibits direct observation, simple techniques may be used under clinical conditions for their evaluation among which fiberoptic laryngoscopy is a valid noninvasive and anesthesia-free approach. In comparison with indirect laryngoscopy, this method is easier, is of greater accuracy, and can be used for the diagnosis of different causes of hoarseness [8,9].

This study aimed at determining sociodemographic profile, aetiology, predisposing factors, clinical profile, and management of hoarseness of voice. This is to ensure that early diagnosis and appropriate intervention can be made. This practice will reduce morbidity and mortality in the patients.

## Materials and Methods

This was a prospective hospital-based study of patients with complaints of hoarseness at the Ear, Nose, and Throat at the department of Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria. The present study was carried out from October 2015 to September 2017. Patients were attended to at the Otorhinolaryngology outpatient department with history of hoarseness. Consent was obtained from patients and those who gave consent were enrolled into this study.

Complete medical and personal history including sociodemographic features was taken. Detailed history on the hoarseness onset, duration, precipitating factors, and relieving and aggravating factors were taken and documented. General clinical and otorhinolaryngology, head and neck examination was done for each of the patients. Detailed oral and oropharyngeal examination were performed. All the patients were subjected to indirect laryngoscopy and diagnostic flexible laryngoscopy.

Based on the findings, imaging studies such as Chest x-ray, Computerized tomography scan, and Magnetic resonance imaging were requested. Specimen obtained from examination under anaesthesia and biopsy was sent for histopathological examination.

Data were obtained by using pretested interviewers assisted questionnaire. All data obtained were documented.

All data were collated and analyzed using SPSS version 16.0. The data were expressed by frequency table, percentage, bar charts, and pie charts.

Ethical clearance for this study was sought for and obtained from ethical committee of the institution.

## Results

A total of 8,917 patients were seen during the study period out of which 214 patients had hoarseness of voice. The prevalence of hoarseness in this study was 2.4%.

Age group distribution is shown in Figure 1. All age group was involved in this study. The most commonly affected age group was 21-30 years whereby 68 (31.8%) patients were affected.

Sociodemographic features among the patients were demonstrated in Table 1. Among the 214 patients, 125 (58.4%) were males, 89 (41.6%) were females, with male to female ratio being 1.5:1. Urban dwellers were the majority and constituted 118 (55.1%). 193 (90.2%) patients were the majority and they belong to the Christian faith. Based on level of education, secondary school certificate holders and graduates from tertiary institutions constituted the majority and were 86 (40.2%) and 73(34.1%) respectively. Married 135 (63.1%) and single 63 (29.4%) were the main marital status that has affected the study population. Patients having hoarseness of voice belongs to different occupations. Housewives were 59 (27.6%), Singers 46 (21.5%), Teachers 37 (17.3%), and Clergy 28 (13.1%).

Aetiology of hoarseness among the patients is illustrated in Table 2. Functional causes were seen in 2 (0.9%) patients, organic causes were seen in 206 (96.3%) patients, and neurological causes were seen in 6 (2.8%) patients. Common organic causes were identified in 78 (36.4%) of the patients. These include acute laryngitis, 66 (30.8%) chronic laryngitis (of which 3 [1.4%] patients had tuberculous laryngitis), 32 (15.0%) vocal nodules, and 12 (5.6%) trauma. Vocal cord neoplasm was diagnosed in 18 (8.4%) patients with laryngeal papillomatosis in 5 (2.3%) patients and laryngeal carcinoma in 13 (6.1%) patients. Unilateral vocal cord palsy was seen in 6 (2.8%) patients. Also, left sided vocal cord palsy in 5 (2.3%) patients was more common than right sided vocal cord palsy in 1 (0.5%) patient. In 2 (0.9%) idiopathic and in 4 (1.9%) goiter, post thyroidectomy were the causes of vocal cord palsy in this study.

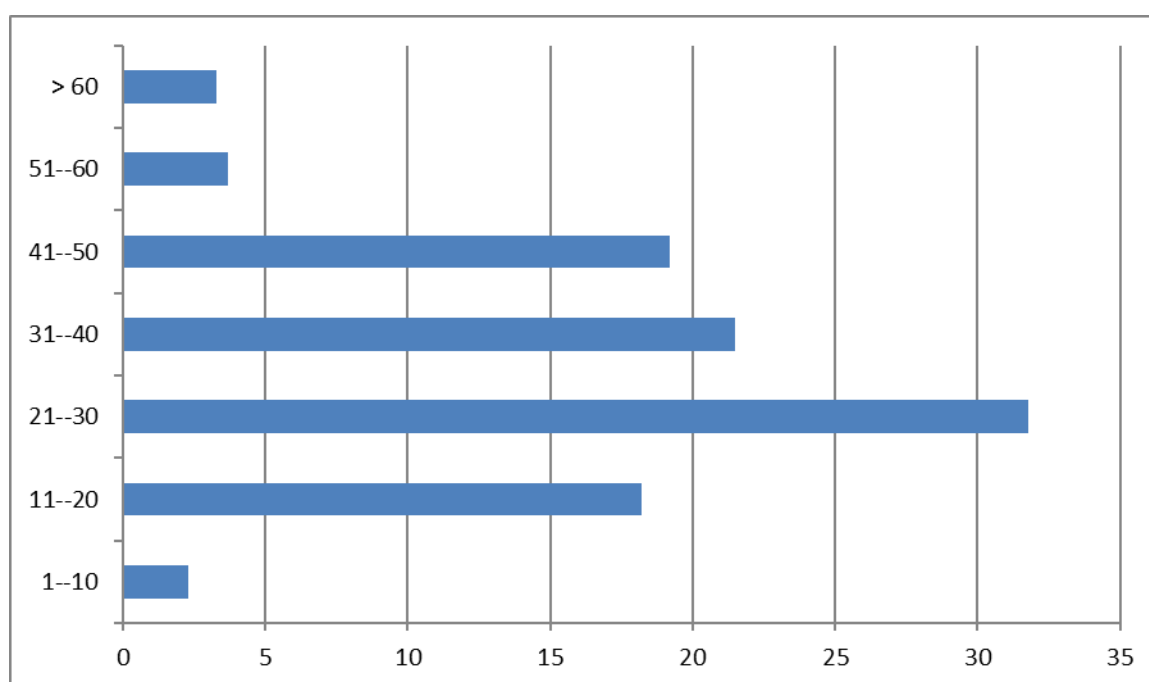
Predisposing factors among the patients is shown in Table 3. Main predisposing factors for the pathologies in this study were Upper respiratory tract infections in 108 (50.5%) patients, Voice abuse in 72 (33.6%) patients, and Laryngopharyngeal reflux in 63 (29.4%) patients. Others were Atmospheric pollution in 53 (24.8%) patients and Smoking in 44(20.6%) patients.

Duration of hoarseness prior to presentation is illustrated in Figure 2. Complaints with duration of hoarseness ranged from 1 month to more than 12 months. Commonest duration of the complaint of hoarseness prior to presentation were greater than 12 months in 63 (29.4%), 6–9 months 58 (27.1%), and 9-12 months 46 (21.5%).

Presenting complaints among the patients is demonstrated in Table 4. We found associated complaints among the patients with hoarseness in 168 (78.5%). They include cold 157 (73.4%), lump sensation in the throat 134 (62.6%), cough 119 (55.6%), and Hawking 103 (48.1%). Other complaints include 93 (43.5%) retrosternal pain, 88 (41.1%) dysphagia, and 87 (40.7%) of the patients.

Management of hoarseness among the patients is shown in Table 5. The type of medications prior to presentation at the ear, nose, and throat clinic were local

herb 181 (84.6%), over the counter medication 104 (48.6%), and health care center 82 (38.3%). Treatment in ear, nose, and throat department were medical treatment with antibiotics, anti-inflammatory agents, vocal rest/hygiene, and voice rest with resolution of symptoms 166 (77.6%). Surgical intervention included direct laryngoscopy with biopsy, chemoradiation for early laryngeal carcinoma, excision of vocal nodules, excision of laryngeal polyp and clearance of laryngeal papilloma 43 (20.1%), and referral to psychologist and speech pathologist 5 (2.3%).



**Figure 1.** Age group distribution of the patients

**Table 1.** Sociodemographic features of the patients

Sociodemographic features	Number	Percentage (%)
<b>Gender</b>		
Male	125	58.4
Female	89	41.6
<b>Domicile</b>		
Urban	118	55.1
Rural	96	44.9
<b>Religion</b>		
Christianity	193	90.2
Islamic	21	9.8
<b>Education level</b>		
None	13	6.1
Primary	42	19.6
Secondary	86	40.2
Tertiary	73	34.1
<b>Marital status</b>		
Single	63	29.4

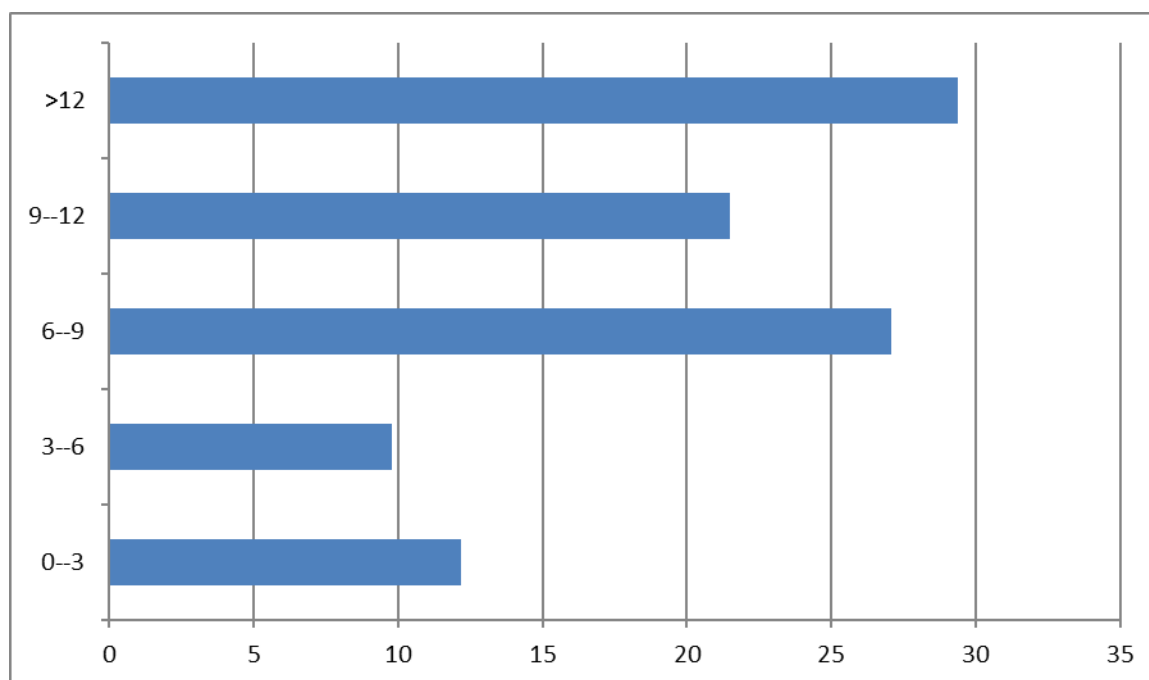
Married	135	63.1
Divorce	16	7.5
<b>Occupation</b>		
House-wife	59	27.6
Businessman	12	5.6
Student	14	6.5
Clergy	28	13.1
Teacher	37	17.3
Singer	46	21.5
Others	18	8.4

**Table 2.** Aetiology of hoarseness among the patients

Aetiology	Number	Percentage (%)
Functional causes	2	0.9
Acute laryngitis	78	36.4
Chronic laryngitis	66	30.8
Vocal nodules	32	15.0
Vocal cord palsy	6	2.8
Trauma	12	5.6
Laryngeal papillomatosis	5	2.3
Laryngeal carcinoma	13	6.1

**Table 3.** Predisposing factors among the patients

Predisposing factors	Number	Percentage (%)
Laryngopharyngeal reflux	63	29.4
Voice abuse	72	33.6
Alcohol	43	20.1
Upper respiratory infection	108	50.5
Smoking	44	20.6
Atmospheric pollution	53	24.8
None	42	19.6



**Figure 2.** Duration of hoarseness prior to presentation

**Table 4.** Presenting complaints among the patients

Presenting complaints	Number	Percentage (%)
Changes in voice/hoarseness	168	78.5
Lump sensation in the throat	134	62.6
Cold/Catarrh	157	73.4
Cough	119	55.6
Hawking	103	48.1
Itchy throat	87	40.7
Stridor	46	21.5
Retrosternal pain	93	43.5
Dysphagia	88	41.1
Vocal fatigue	83	38.8
Trauma to neck	12	5.6
Neck swelling	28	13.1
Aphonia	4	1.9

**Table 5.** Management of hoarseness among the patients

Management of hoarseness	Number	Percentage (%)
<b>Prior treatment</b>		
Local herbs	181	84.6
Over the counter medication	104	48.6
Health care center	82	38.3
<b>Otorhinolaryngology treatment</b>		
Medical	166	77.6
Surgical	43	20.1
Referral	5	2.3

## Discussion

Hoarseness of voice is one of the common manifestation of laryngeal disease in otorhinolaryngological practice worldwide. The care has caused a lot of challenges in medical practice for centuries [10]. Hoarseness is rarely life threatening but may signify the presence of more serious laryngeal disorder such as malignancy or airway compromise and should not be underestimated [11,12]. Prevalence of hoarseness in the studied patients was 2.4%. Prevalence of hoarseness in this study is higher than findings in previous studies [13,14].

In this study, there was male predominance. This finding is in accordance with record from other studies [15,16]. The highest prevalence was recorded among young age group (21-30 years) in this study. It is noted that individuals in younger age group are more ambitious, active, and they use their vocal skills more than other age groups. There was high prevalence of hoarseness of voice among housewives, singers, and teachers in this study. Hoarseness is known to be due to laryngeal disorder, with occupational abuse or excessive vocal use as in teachers, clergy, choir/singers, actor and housewives etc. The observations in this study are similar to record in other reports [17,18].

In this present study, there were associated laryngeal as well as extra laryngeal symptoms. The commonest laryngeal symptom was hoarseness of voice which was the most common presenting complaint. Further complaints were catarrh/cold, lump sensation in the throat, cough, and hawking in this study.

Duration of hoarseness of voice at presentation in this study ranges from 1 month to more than 12 months. Majority of the studied patients were presented with hoarseness duration of greater than 12 months. This finding is similar to record seen in other studies [15,16].

Commonest predisposing factors for hoarseness of voice were found to be upper respiratory infection, vocal abuse, and laryngopharyngeal reflux disorder. This is in accordance with findings in other studies [19-20]. In this present study, smoking and alcohol were less common predisposing factors compared to other previous study [16]. The intake is lower among these patients due to campaign against and because of religious background based on reduced smoking and alcohol intake in the present study.

In this study, commonest causes of hoarseness of voice were organic causes. This is followed by neuromuscular causes with least causes in functional causes. Functional causes of hoarseness of voice was predominant in previous studies [21,22]. Of the organic causes, acute laryngitis was the most common causes of hoarseness of voice seen in this study. This finding is similar to report from other studies [23]. This high prevalence is attributed to frequent upper respiratory tract infections and exposure to atmosphere pollution from industrialization and urbanization.

Chronic laryngitis is the second most common cause of organic causes of hoarseness observed in this study. Similar findings were reported in another study [24]. Contrary to these findings, chronic laryngitis was the second major causes of hoarseness of voice [25]. Specific laryngitis such as tuberculous laryngitis were not common in this research work.

Vocal nodules were noted as the third commonest cause of hoarseness in this study. This resulted from vocal abuse as one of the predominant factor causing



vocal nodules in this study. This pathology may be reversed by conservative therapy like voice rest and voice therapy.

In this study, malignancy disorder were common than benign laryngeal tumour. Similar results were demonstrated in other studies [15].

Of the neuromuscular causes, vocal cord palsy causes of hoarseness of voice are secondary to idiopathic and post thyroidectomy in the studied patients.

Functional causes of hoarseness of voice occurred when there is no clinical structural abnormality in the patients. In this study, all the patients were secondary to psychogenic types as shown in previous study [26].

In this present study, most of the participants believed hoarseness of voice was a minor feature that is self-relieving or can be cured with local herbs with gin. Over the counter, medication was their second line of treatment while health care center was the last resort for the patients. In this study, majority of the patients were treated conservatively by voice therapy and/or medical treatment [27,28]. Surgical intervention for hoarseness of voice was indicated for neoplastic conditions or cases that failed conservative treatment as documented in other studies [29-31].

## Conclusion

Prevalence of hoarseness of voice was high with associated late presentation in this study. The most common pathology involved was organic causes with inflammatory origin. Laryngeal neoplasm with malignancy was diagnosed in a significant number of patients. Early presentation and diagnosis are advised to reduce the avoidable morbidity and mortality.

## Acknowledgements

The authors are most grateful to Ekiti State University Teaching Hospital and all the patients who participated in this study.

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