

The Prevalence of Voice Disorders in Secondary School Teachers in South west Nigeria

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Abstract

Background: Voice disorders are one of the major occupational hazards of school teachers. This study was carried out to determine the prevalence of voice disorders and identify possible associated risk factors among secondary school teachers.

Method: A 25-item questionnaire was administered to 143 secondary school teachers from six schools in Ilishan Remo area of western Nigeria.

Result: Out of 143 teachers, 89 (62.2% - 45 males and 44 females) reported voice problems without any significant difference in both sexes.

The most frequent voice change was low voice (39%). Most voice disorders were managed at home (39%). Demographic, work related factors, health and behavioral risk factors had little or no visible effect on the prevalence of voice disorders.

Conclusion: Voice disorders pose a significant threat to the health and profession of secondary school teachers. The demographic, work related variables and health/behavioral risk factors associated with voice disorders in prior studies were not significant in this study.

Keywords: Prevalence, voice disorders, risk factors

I. Introduction

Voice disorders are defined as problems of voice involving abnormal pitch, loudness, or quality of sound produced by the larynx¹. Voice disorders are characterized by lack of audibility or stability, inappropriate for the gender and age of the speaker. Voice disorders are associated with easy fatigability, pain and discomfort on phonation.¹ The Teachers who are classified as vocal professionals, are therefore not capable of fulfilling the required linguistic and paralinguistic functions. Voice disorders can be organic or non-organic. The latter is often referred to as functional or psychogenic. They are non-physical in origin or results from faulty habit of voice use. The voice sounds abnormal despite normal laryngeal anatomy. Voice disorders can also be categorised into habitual voice problems secondary to vocal misuse or abuse, and psychogenic vocal problems. Voice misuse or overuse is often associated with physical changes in the larynx, such as muscle tension and fatigues, and vocal pathologies such as nodules or polyps. A variety of symptoms associated with heavy voice use include: hoarseness, decreased loudness and discomfort.

Voice misuse or overuse is common among individuals who use their voice often, like the teachers, preachers, commercial bus conductors and singers. For heavy occupational voice users this problem can impede their work performance². Voice disorders were thought to occur more often in the older age groups due to age-related anatomical changes involving the vocal apparatus. Women have also been found to be at higher risk for voice disorders than men due to increased vibratory rate of vocal cord in women increasing their susceptibility to mild trauma over time. Also, a number of medical conditions such as cold, influenza, respiratory allergy, acid reflux, and social behaviors involving tobacco smoking and excessive alcohol intake have been associated with increased risk of voice disorders.

The prevalence of voice disorders has often been examined among individuals who rely on their voice for their profession e.g. singers, preachers, and teachers. Voice health problems are considered as one of the important occupational hazards affecting school teachers. Teachers need an effective functioning of the phonatory system for the exercise of their profession. The phonatory dysfunctions that develop or exacerbate in the course of their activity manifest as symptoms of voice disorders. Studies have shown that the prevalence of voice disorders, ranging from 11% to 50% in USA, Europe, and Nigeria³ is higher among teachers than other professionals. In the process of teaching, certain conditions such as: excessive hour load spent on direct activities with students, intensive use of loud voice as a resource in noisy classroom, deficient acoustics, ventilation and aeration in the classrooms and the exaggerated number of students in the classroom,⁴ exist that trigger disorders in the phonatory system especially in developing countries like Nigeria. Demographic variables like gender and age have been considered to be possible risk factors for the development of voice disorders⁵. The objective of this study was to determine the prevalence of voice disorders among secondary school teachers and to ascertain possible associated risk factors to inform policy and support services for school teachers.

II. Method

Study design

This was a cohort of community based study conducted among all secondary teachers in a sub-urban area in Ogun State, Nigeria. An ethical approval for the conduct of the study was obtained from Babcock University Health Research Ethical Committee. Permission was obtained from both Ogun State Ministry of Education Ikenne and principals of individual schools used.

Participants

The 143 (75 women and 68 men) participants in this study were all secondary school teachers from all six secondary schools in this area with a total number of 260 teachers.

Procedure

A structured questionnaire (see Figure 1) was administered by the researcher to the participants after obtaining informed consent from them to collect data for this study. The survey instrument was designed to assess the following:

- Prevalence of voice disorders ascertained by affirmation to the question: 'have you experienced any voice change?'
- Symptoms and its effect on their job
- Work related risk factors
- Health related risk factors
- Behavioral risk factors.

III. Results

Of the 143 teachers interviewed, 89 gave affirmative responses to the question on voice change representing a prevalence of 62.2%. Variable symptoms were reported by the participants with voice disorders. Seventeen described symptoms lasting more than a month. Negative effect of voice disorders to their job was reported by 24 (27%) out of 89 respondents with voice disorders.

Table 1. Prevalence of Voice Disorders by Gender and Age

Voice change	Yes	No	df	X ²	p
Gender			0.2	0.6	0.2
Male	45	43			
Female	44	31			
Age			3	4.9	0.2
20-29	9	9			
30-39	44	32			
40-49	28	9			
50-59	8	4			

Chi-square tests conducted indicated no significant relationship between the prevalence of voice disorder and either age or gender (Table 1). Potential risk factors for development of voice disorders like health, work related and behavioral variables when tested in this study showed the outcomes in the expected direction. However, there was no statistical significance, as shown in Table 2.

Table 2: Potential risk factors for voice disorders

Potential risk factors (n= 89)	Yes	No	df	X ²	p
Medical conditions			5	4	0.3
Asthma	1	1			
Peptic ulcer	8	1			
Diabetes	0	2			
Hypertension	0	1			
None	52	76			
Allergies			4	5.0	0.3
Cold	15	5			
Dust	26	3			
Smoke	6	3			
Others	0	1			
None	41	42			
Behavioural variables					
Smoking	2	87			

Alcohol	3	86			
Work related variables					
Durationof teaching (Hours)			3	1.3	0.7
0-2	16	12			
3-4	44	29			
5-6	20	9			
≥7	4	9			
Job duration					
0-10	53	36	3	2.7	0.4
11-20	25	11			
21-30	10	3			
31 and above		2			
No of classes per day			3	2.6	0.5
1-2	4	2			
3-4	45	28			
5-6	36	36			
≥7	4	0			
Number of students/class					
0-20			4	5.3	0.3
21-40	19	14			
41-60	42	26			
61-80	10	11			
≥ 81	12	2			
	0	0			

IV. Discussion

This study revealed a high prevalence of 62.2% of reported voice disorders among secondary school teachers. This prevalence rate is higher compared to that reported in USA (40%), Brazil and Spain (20% to 50%), Utah and Iowa (11%, 57.7%) as well as among the primary school teachers in Lagos, Nigeria (42%)³. The high prevalence might be related generally to the poorer working conditions compared to the communities where the other studies were carried out. The explanation for higher prevalence of voice disorder seen in teachers may be due to the task of teaching itself rather than health and behavioral variables. These work related risk factors, which showed the expected direction in this study, were not statistically significant. Variables suggested in previous studies (Roy et al., 2004) including medical conditions such as Peptic Ulcer Disease, respiratory allergy, alcohol ingestion, smoking and work related variables showed no significant relationship with voice disorders in this study. These findings were also corroborated by Kristen P. Higgins (2012). However, it is also possible that the findings occurred by chance and may not be a reflection of negative correlation between the above variables and voice disorder.

Although, common symptoms such as hoarseness, vocal discomfort, decreased loudness and pitch changes were reported in this study as in other studies (Jonsdottir et al., (2002), Roy et al., (2004), Verdolini et al., (2001), the most common symptom was low voice (39%). For instance, Jonsdottir et al., (2002), Roy et al., (2004), Verdolini et al., (2001)¹² reported about 15% with these symptoms most of the time. The analysis of demographic variables in this study revealed no statistically significant difference in prevalence of voice disorders between the male and female teachers. This is different from past studies which suggested that women may be at higher risk than men (Grillo et al., 2011, Jonsdottir et al., 2002, Rantala., et al., 2002). However in this study, voice disorders were marginally higher in men, even with women being the higher respondents. However, there was no gender effect on the development of voice disorders, as reported by Kristen P. Higgins, 2012, with similar findings. Nonetheless, more research with larger sample size will be required to establish this finding. The risk of voice disorders, had been associated with increasing age in prior studies with a greater prevalence among individuals between ages 40 and 50¹⁷. This is not supported by our findings in this study as most of the teachers with voice disorders (76%), were between the ages of 30-39 (n=44). Although the trend was in the expected direction, possible associated risk factors for the development of voice disorders examined in this study showed no statistically significant relationship to voice disorders.

V. Conclusion

The results from this study suggest that the task of teaching has significant demanding effects on the voice and the higher prevalence rate of voice disorders in over half of the secondary school teachers in this study is of great concern. Demographic and behavioral factors commonly reported as increasing voice disorders apparently had little effects on the prevalence of voice disorder in this study. Future studies with bigger sample sizes at different levels of education across geographical locations as well as fiberoptic laryngoscopy of teachers are necessary for a better understanding of the unique pathophysiology of voice disorders in this community.

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