



Original Article

Risk Factors for Hyperfunctional Voice Disorders Among Teachers

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Abstract: The aim of the study was to assess the prevalence of voice problems among teachers, and identify risk factors for developing voice pathology. In this study we evaluated 448 teachers (400 females and 48 males) between the age range of 25 to 55 years, from primary school as well as secondary school which were selected randomly. A questionnaire was given to them to find out how many of them had a voice problem. All the positive cases were further evaluated by an Otorhinolaryngologist, an Audiologist and a Speech Language Pathologist. Out of the 448 teachers, 39 of them (9%) had an indication of voice disorder based on the positive response got from the questionnaire. Among the 39 cases identified 11 were males (28%) and 28 were females (71%). We tried to investigate on the factors that would have contributed to voice problem in the identified 9% of cases. Detailed history was taken and was examined by an otorhinolaryngologist, an audiologist and a Speech Language Pathologist. Out of the 39 cases identified 26% had history of recurrent allergic rhinitis and laryngitis, 18% had sinusitis and post nasal drip, 18% had asthma, 26% had gastroesophageal reflux disorder, (8%) had minimal sensorineural hearing loss and hypothyroidism was found in 8%. Interaction of multiple factors like hereditary, behavioral, lifestyle, medical and environmental can contribute to voice disorders in occupational voice users. Teachers need to be educated regarding vocal mechanism, vocal hygiene and effective voice use, dust free and noise free work environment, diet modification like drinking adequate water, avoiding spicy and deep fried food, regularizing meals and avoiding sleeping immediately after food. The underlying medical issues like allergy, sinusitis, laryngitis, hypothyroidism, gastroesophageal reflux, hearing loss etc also need to be addressed, since vocal

hygiene alone will not help until and unless the underlying cause is taken care of.

Key Words: Hyperfunctional voice disorder; Risk factors

Introduction:

Hyperfunctional voice disorders are conditions of abuse and/or misuse of the vocal mechanism due to excessive and/or imbalanced muscular forces. (1) In some cases, these excessive and/or imbalanced muscular forces can produce vocal fold lesions such as nodules, contact ulcers, hemorrhages or polyps and in some cases can lead to excessive intrinsic and extrinsic laryngeal muscle contraction, producing a tight, strangled sound similar to adductor spasmodic dysphonia called muscle tension dysphonia. (2)

Hyperfunctional voice disorders are more common in occupational voice users. The most commonly studied group among occupational voice users are teachers. Prevalence of voice problems is more in teachers compared to other professional categories. (3) Reports show that 16% (4) to 18% (5) of the voice cases of Speech Pathologists are people from teaching profession. Prevalence of voice problems among teachers varied between 20% to 75%. (4,6,7) The variation in the prevalence can be due to the variation in the methodology used and the operational definition of voice disorder used.

Vocal abuse and misuse as well as poor acoustic environments of the classroom have been frequently reported as the cause for vocal problems among teachers. (8) Medical, individual, psychological and emotional factors have also been reported to play a role in the development of voice disorders. (9,10)

Methodology

In this study we evaluated 448 teachers (400 females and 48 males) between the age range of 25 to 55 years, from primary school as well as secondary school which were selected randomly. All the teachers selected for the study had an average teaching duration of 5 hrs per day. A questionnaire was given to them to find out how many of them had a voice problem. The questionnaire consisted of the following questions.

1. Whether there is a feeling of mucus or lump in the throat
2. Feeling that effort is needed for speaking.
3. Tendency to lose voice frequently
4. Irritation in the throat
5. Needs to clear the throat frequently
6. Has change in the quality of voice
7. Feels tired or fatigued after speaking for some time
8. Has medically confirmed voice disorder

If answer to any of the questions were positive, they were further evaluated by an otorhinolaryngologist, an audiologist and a Speech Language Pathologist.

Results

Out of the 448 teachers, 39 of them (9%) had an indication of voice disorder based on the positive response got from the questionnaire. Among the 39 cases identified 11 were males (28%) and 28 were females (71%). Females had a higher prevalence of voice disorders compared to men. We tried to investigate on the factors that would have contributed to voice problem in the identified 9%. Detailed history was taken and were examined by an otorhinolaryngologist, an audiologist and a Speech Language Pathologist.

Table 1: Details of the factors associated with voice disorder

Factor	No of patients		% of total identified cases	
	Male	Female	Male	Female
Recurrent allergic rhinitis and laryngitis	4	6	10%	15%
Sinusitis and post nasal drip	3	4	8%	10%
Asthma	1	6	3%	15%
Hearing loss (minimal sensorineural)	1	2	3%	5%
Hypothyroidism	0	3	-	8%
Gastro esophageal reflux disorder	3	7	8%	18%
Deviated nasal septum	1	0	3%	-

Out of the 39 cases identified 26% had history of recurrent allergic rhinitis and laryngitis, 18% had sinusitis and post nasal drip, 18% had asthma and 26% had gastroesophageal reflux disorder. Minimal sensori neural hearing loss was found in 3 (8%) and hypothyroidism was found in 8% of the total identified cases with voice problem.

Based on the evaluation the positive cases were diagnosed as follows:

Table 2: Diagnosis of Positive Cases				
Voice disorder	No of patients		% of total identified cases	
	Male	Female	Male	Female
Muscle Tension Dysphonia	0	2	-	5%
Reinke's edema	1	2	3%	5%
Vocal Polyp	2	4	5%	10%
Vocal nodule (soft)	2	7	5%	18%
Laryngitis	3	6	8%	15%
Congestion of vocal cords	3	7	8%	18%

Other contributing factors identified were additional use of voice after the regular classes in 4 of the female teachers who were

giving private tuition to students after the regular school hours. The total voice use was more than for 7 hours in them.

Discussion

Our study revealed that only 9% of the teachers showed a voice problem. We tried to study the factors that would have contributed to the voice problem in this 9%. The major medical factors that we found to be associated were allergic rhinitis, laryngitis, sinusitis, gastroesophageal reflux, minimal sensori neural hearing loss and hypothyroidism

The source of energy for voice production is the air from the lungs. The respiratory ability to support speech can be affected by respiratory illness especially asthma and medications as supported by the previous studies.(11-14) Inhalation of corticosteroids by asthma patients can also cause laryngeal irritation.(14) Respiratory illnesses, chronic allergic rhinitis and sinusitis (11-13) and gastroesophageal reflux disorders (15) have been reported to affect the vocal fold mucosa. However effectiveness of anti-reflux treatment for hoarseness is inconclusive.(15) Hoarseness, voice fatigue, or voice weakness has been reported in patients with hypothyroidism.(16,17)

Unidentified hearing loss even if to minimal degree can cause strain on the vocal cords since they try to speak louder to get a feed back of their own voice.

Interaction of multiple factors like hereditary, behavioral, lifestyle, medical and environment can contribute to voice disorders in occupational voice users. Teachers need to be educated regarding vocal mechanism, vocal hygiene and effective voice use, dust free and noise free work environment diet modification like drinking adequate water, avoiding spicy and deep fried food, regularizing meals and avoiding sleeping immediately after food. The underlying medical issues like allergy, sinusitis, laryngitis, hypothyroidism, gastro esophageal reflux, hearing loss etc also need to be addressed, since vocal hygiene alone will not help until and unless the underlying cause is taken care of.

Conclusion

Apart from the overuse of voice, medical factors like respiratory illnesses ,hypothyroidism, gastroesophageal reflux and hearing loss can be an associated factor for hyperfunctional voice disorder. These medical issues also need to be addressed along with voice hygiene counseling.

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