



Research Article

THE PREVALENCE OF OCCUPATIONAL VOICE DISORDERS IN TEACHERS
A CROSS-SECTIONAL STUDY

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ARTICLE INFO

Article History:

Received 6th December, 2018

Received in revised form 15th

January, 2019

Accepted 12th February, 2019

Published online 28th March, 2019

Key words:

Voice disorders, vocal behaviour occupational safety and health, Vocoergonomy

ABSTRACT

Background: Over 3 million teachers in the India use their voice as a primary tool of trade and are thought to be at higher risk for occupation-related voice disorders than the general population. The measurement of vocal demands and risk factors is essential for adjusting occupational safety and health services to this population's need. Hence it is quintessential to monitor the health of our teachers, whose contribution is ineluctable in the nation's progress.

Aim: The objective of this study is to correlate vocal behavior and symptomatology with risk factors and voice disorders.

Materials and methods: A cross-sectional study done at various school Across Chennai using a self-administered questionnaire in 100 randomly selected school teachers handling different standards after prior intimation.

Result: The data collected was statistically analyzed using SPSS software. A 'p' value of < 0.05 is to be considered as significant.

Conclusion: Voice disorders which affect most teachers have a multifactorial nature. The results support the notion that teaching is a high-risk occupation for voice disorders. Increasing awareness about healthy behavior with the voice in their occupation will help in improving their quality of work and in minimizing any permanent impairments and disability.

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INTRODUCTION

When the voice is used as a professional tool, a functional system is established between the phonatory system and environmental conditions by physiological and psychological pathways. Recently, the term 'vocoergonomy' was suggested as the study of 'the voice as a working tool' to emphasize the need to assess circumstances which contribute to adjusting the vocal load to the voice user's health and not vice versa. (1) Teachers' vocal abuse has been proven to be habitual by field studies and epidemiological surveys. It is known that the increase of loudness above conversational levels must be accomplished by boosting subglottal pressure and increasing neck and shoulder muscle tension leading hypertonic musculoskeletal pattern and voice disorders. (2) Voice disorders are manifested by -Vocal Fatigue, Hoarseness, Aphonia, Weakness, Strained harshness, Poor pitch and loudness modulation. Individuals who continue to teach with a disordered voice are often forced to make major changes in their teaching styles to reduce the demands on their voices. A teacher with a dysfunctional voice is far less effective in establishing classroom control and in developing effective working relationships with students and may be forced to leave

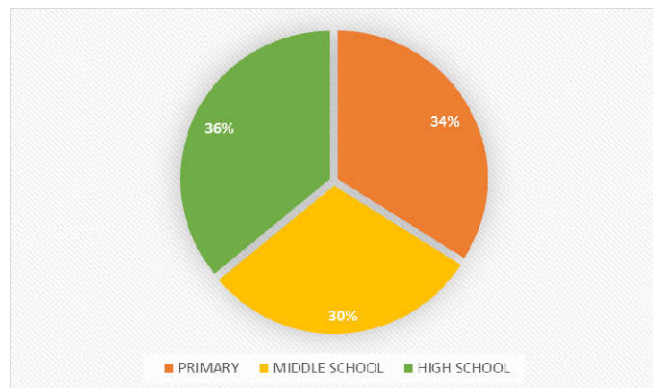
the classroom. An Occupational Safety and Health (OSH) program to prevent disorders from repetitive movements and psychosocial factors in teaching staff is often neglected. (3)

Prevalence of Vocal Problems in Teachers- a Review of Literature

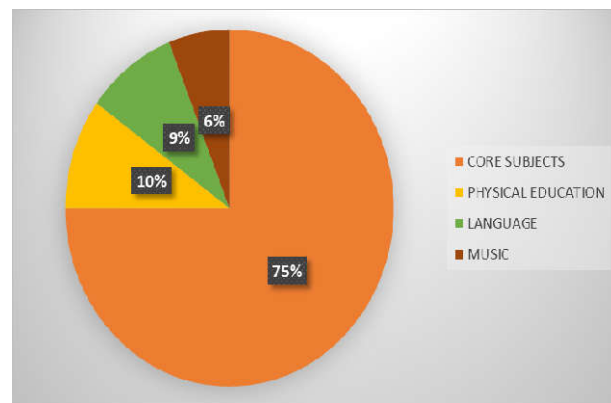
Table with 5 columns: S.no, Author, Study population, Study method, Observation. It lists five studies on vocal problems in teachers, including authors like CHAN, SAPIR, MARKS, and SMITH, and their respective findings on prevalence rates.

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6.	COOPER (Speech Pathologist)	956 patients	Study conducted by laryngeal examination	31% of the patients (n=304) with functional voice disorders were teachers. He concluded that teachers were among the top 10 occupation groups experiencing voice problems. Although both the samples worked for same time, Teachers significantly had more vocal symptoms
7.	Ohlsson	31 Female teachers & 31 Female nurses	Voice Quality (Via acoustic analysis, fundamental frequency and pitch range) Voice Symptoms (Via Questionnaire)	The voice issues were in the ratio 2:1 of the teachers and nurses

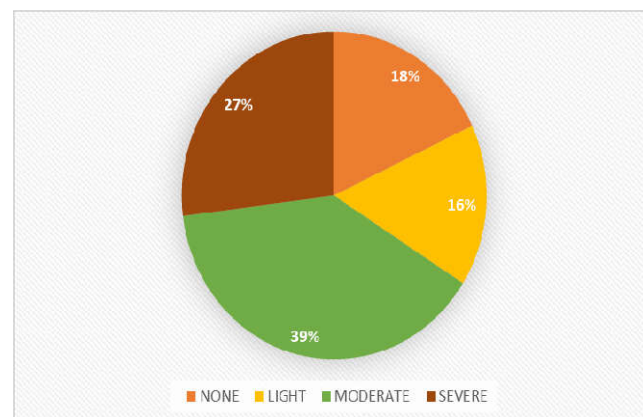


Subjects Handled by the Teachers



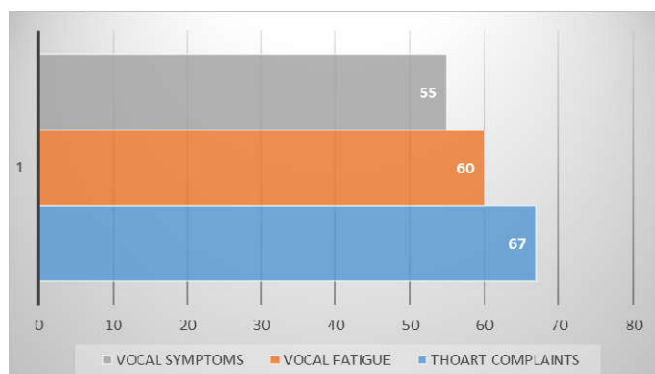
Perceived Vocal Effort

None	Light	Moderate	Severe
18	16	39	27



Vocal Symptoms

- Frequent to persistent throat complaints-67%
- Frequent to persistent vocal fatigue -60%
- Frequent to persistent vocal symptoms-55%



Aim of the Study

The objective of this study is to correlate vocal behavior and symptomatology with risk factors and voice disorders.

MATERIALS AND METHOD

1. A cross-sectional study done at various school in Chennai using a self-administered questionnaire in 100 randomly selected school teachers handling different standards after prior intimation.
2. The data collected was statistically analyzed using SPSS software. A 'p' value of < 0.05 is to be considered as significant.

The Teachers were asked to answer questions regarding

- ✓ Vocal use during teaching time
- ✓ Perceived vocal effort
- ✓ Number and frequency of vocal symptoms
- ✓ Time required to relieve vocal symptoms

Vocal risk factors like

- Background noise levels
- General health perception
- Vocal hygiene habits
- Potential occupational vocal

Hazards such as

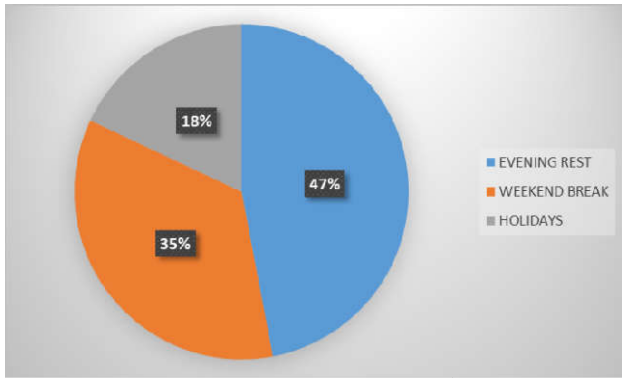
- ✓ Continuous voice use
- ✓ Student's indiscipline
- ✓ Type of subject taught

OBSERVATIONS & RESULT

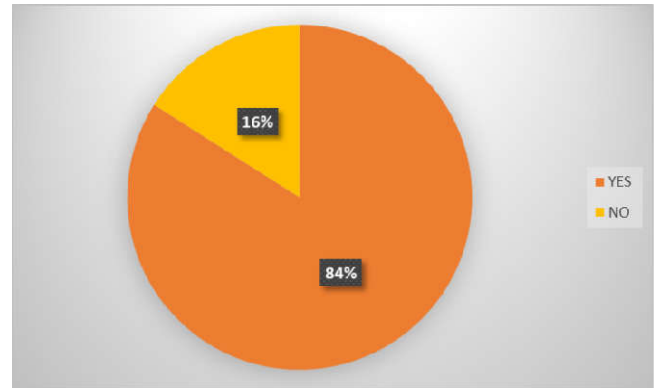
Classes Handled by the Teachers

Primary school	Middle school	High school
34 Teachers	30 Teachers	36 Teachers

Time Needed to Relieve Vocal Symptoms

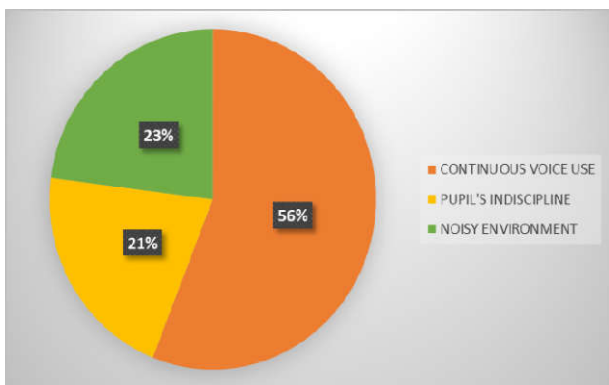


Vocal Discomfort in Smokers

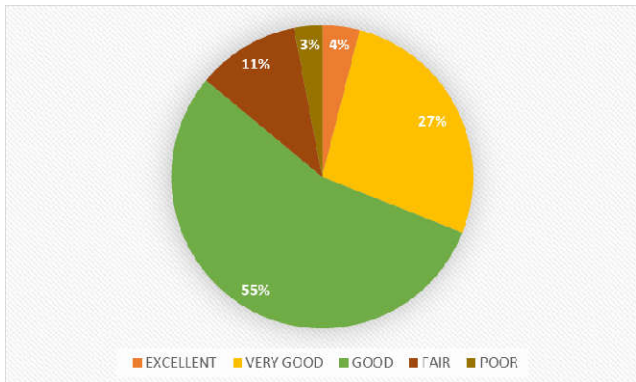


Vocal Difficulties

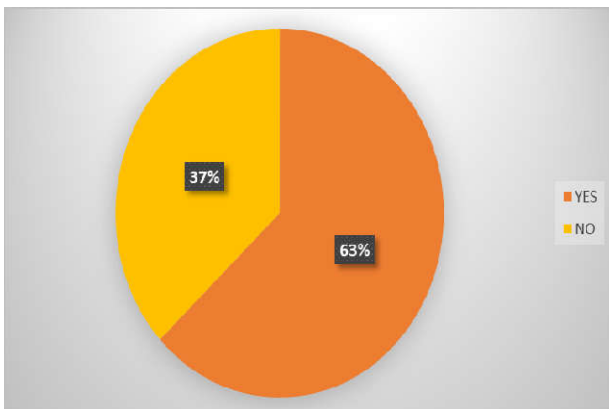
Continuous voice use	Pupil's indiscipline	Noisy environment
56 Teachers	21 Teachers	23 Teachers



Health State Perception



Vocal Discomfort in Non-Smokers



DISCUSSION

In order to detect subjects with frequent vocal problems, the present research established a definition which included teachers with

Light vocal problems (i.e. light vocal effort and 2 frequent symptoms)

Severe vocal problems (i.e. severe vocal effort and more than 2 frequent or usual vocal symptoms)

Based on this definition, our results showed that 59% teachers were currently experiencing vocal problems. On the simultaneous presence of any degree of vocal effort and a minimum of two vocal symptoms, a new variable was created which is called "Unhealthy Voice Teachers" (UVT), the remaining "Healthy Voice Teachers" (HVT). It is found that 62.7% belonged to UVT and 37.3% belonged to HVT category. Among the Female teachers 67% were under the category UVT. The mean age in the UVT group was 44 years (SD=9.8 years) with no significant difference with HVT group which was 42 years (SD=7 years). It was found that the female teachers experienced more frequent vocal problems than their male colleagues, and they also accumulated more occupational hazards because they usually worked with younger children. The Primary school mean noise level was above than the recommended level for verbal communication and that teachers spoke an average of 9.1 dB louder than the mean noise level. In our study, perceived noise levels were moderate-to-high for most teachers, and they were significantly increased among teachers with vocal problems. Furthermore, high noise levels were twice as frequent for female UVT than for male UVT. (4) This study found that UVT required three times longer than HVT to relieve vocal symptoms, and duration of complaints depended on the severity of vocal effort and the reported frequency of symptoms. These data corroborate that teachers' vocal problems have a cumulative effect due to the so-called laryngeal tension-fatigue syndrome, which progressively leads to voice deterioration, the development of laryngeal dysfunction. Poorer health state perceptions can be associated with chronic upper respiratory diseases, hypertonic neck muscles, and gastro esophageal reflux, all of which are frequent conditions in teachers with voice disorders. (5) In our study, UVT were also significantly more prone than HVT to use mints and balm sprays, thus increasing dryness and laryngeal strain due to chemically refreshing substances which have a rebound dehydrating effect on respiratory mucosa. Since throat dryness is one of the most frequent vocal

complaints among teachers, the use of mints or balm sprays reflects their poor information about vocal hygiene habits. Among all of these variables and independently of gender, those factors that best discriminated between UVT and HVT were long-lasting vocal complaints, lowered health state perceptions, and vocal difficulties to cope with continuous voice use and indiscipline. Age showed no significant association with vocal problems.

CONCLUSION

Occupational Safety and Health (OSH) measures should be addressed to the whole teaching staff and special attention should be given to detecting teachers with persistent vocal effort and vocal symptoms. This study may contribute to detect teachers at a greater risk for vocal problems as it evidences the multifactorial nature of professional voice problems. (6)The odds of having a vocal problem were significantly increased when teachers were female. The figures were independent of gender, when

- they needed long time to relieve their vocal symptoms,
- they experienced lowered health state perceptions, and
- they reported vocal difficulties to cope with continuous vocal use or with indiscipline.

Our findings also suggest that promoting a 'preventive culture' among teachers should be established as a priority in OSH programs; e.g. teachers should learn to identify the initial stages of their vocal health problems and to improve vocal hydration. Other OSH measures such as acoustic conditioning, generalized use of amplification systems, and a rational distribution of speaking times are further suggested by these findings.

How to cite this article:

Chandra A and Harissh G (2019) 'The Prevalence of Occupational Voice Disorders in Teachers A Cross-Sectional Study', *International Journal of Current Advanced Research*, 08(03), pp. 17955-17958.
DOI: <http://dx.doi.org/10.24327/ijcar.2019.17958.3421>

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