

Assessment Of Voice-Related Quality Of Life Of School Teachers In Rural Areas Using The Voice Handicap Index-10 (VHI-10)- A Cross-Sectional Study

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Abstract:

Introduction: Teachers are professional voice users who face a high risk of developing voice disorders due to continuous vocal demands. Such problems often lead to hoarseness, vocal fatigue, absenteeism, and impaired quality of life. Despite this burden, many teachers tend to normalise symptoms and underreport them. The Voice Handicap Index-10 (VHI-10) is a validated tool to measure the self-perceived impact of voice disorders. However, there is limited data on voice-related quality of life in teachers from rural regions of India.

Objectives: To assess the prevalence and severity of Voice-related quality of life (QoL) impairment among school teachers, using the Voice Handicap Index-10 (VHI-10) questionnaire.

Methods: A cross-sectional study was conducted among 100 school teachers aged 25–60 years, currently employed in government or private schools in rural areas, with at least one year of teaching experience, and a minimum of three teaching hours per day. Data were collected using a structured proforma that included demographic details, occupational history, vocal hygiene practices, and the VHI-10 questionnaire. Descriptive statistical analyses were performed using SPSS version 25, and a *p*-value < 0.05 was considered significant.

Results: The mean age of the teachers was 41.2 ± 8.3 years, and 64% were female. Of the respondents, 50% had >10 years of teaching experience, and 49% taught for ≥ 4 hours daily. VHI-10 scores indicated that 40% had no significant vocal handicap (scores 0–10), while 33%, 17%, and 10% had mild, moderate, and severe voice-related impact, respectively. Significant associations were found between VHI-10 ≥ 11 and factors such as frequent shouting (*p* < 0.0001), lack of hydration during teaching (*p* < 0.0001), absence of voice rest (*p* < 0.0001), poor ventilation (*p* = 0.01), larger class size (*p* = 0.003), and teaching ≥ 4 hours/day (*p* = 0.004).

Conclusion: Most school teachers in rural areas experience some degree of voice-related impairment, influenced by modifiable occupational and behavioural factors.

Keywords: Voice disorders, quality of life, Voice Handicap Index-10, vocal hygiene practices, vocal handicap.

INTRODUCTION

Voice is the primary tool of communication for teachers, and its effective use is central to their professional performance and occupational success. Teachers, as professional voice users, are at high risk of voice-related problems due to the prolonged and demanding nature of their vocal usage during teaching activities.^{1,2} Studies have shown that the prevalence of voice disorders among teachers is higher than in the general population, ranging from 15% to 80%, compared to 6–15% among non-teachers.^{1,3} The high vocal demand of teaching combined with environmental stress factors increases the risk of developing voice-related impairments among teachers.⁴

Voice disorders in teachers often manifest as hoarseness, throat discomfort, vocal fatigue, and dysphonia, impacting their professional efficiency, quality of life (QoL), and sometimes leading to absenteeism or even attrition from job.^{5,6} It was found that 11% of teachers reported a current voice disorder, while 57.7% had experienced one during their lifetime, highlighting the occupational burden of teaching.⁷ A study reported that 63% of Brazilian teachers had experienced a voice problem at some point, with 16.7% considering changing jobs due to persistent vocal issues.³

Several occupational and environmental risk factors have been associated with increased prevalence and

severity of voice disorders in teachers.⁵ These include prolonged teaching hours, large class sizes, poor classroom acoustics, high vocal demands, and inadequate vocal hygiene practices.⁸ Teachers with untreated or unrecognised voice disorders may experience not only a reduction in teaching effectiveness and classroom engagement but also absenteeism, psychological distress, and impaired social functioning.⁹ Even with these consequences, many teachers tend to normalise hoarseness, vocal fatigue, or throat pain as part of their profession and rarely seek medical consultation.¹⁰ Furthermore, many teachers receive less to no formal voice training, further increasing the risk of developing chronic voice problems.⁸

The assessment of the severity and impact of these disorders often requires validated tools, such as the Voice Handicap Index-10 (VHI-10), which is widely used to quantify the self-perceived psychosocial burden of voice disorders in professional voice users.⁵ A higher incidence of voice disorders has been reported in southern India. A study that used the VHI-30 to assess dysphonia in school teachers in Kerala reported a current voice problem prevalence of 45.4%, with 70.1% experiencing symptoms at some point in their career.⁴ These findings are consistent with other regional studies that show a significant burden of voice-related QoL impairment in the teaching community. Though the prevalence of voice disorders in teachers has been reported, there is a lack of standardised, objective tools used to assess the functional and psychosocial impact of voice disorders in the Indian teaching population.

Most studies rely on self-reported symptoms, such as hoarseness and vocal fatigue, but do not measure QoL or psychological impact using validated tools, such as the VHI-10. The absence of structured data from rural or semi-urban populations limits our understanding of how voice disorders affect teachers in these areas. The VHI-10 is brief, validated, and user-friendly, making it suitable for large-scale screening in resource-limited settings such as public schools in semi-urban area such as rural areas. Hence, this study aimed to assess the prevalence and severity of voice-related QoL impairment among school teachers in this region using the VHI-10 and to identify associations between VHI-10 scores and variables including teaching hours, classroom acoustics, and vocal hygiene behaviours.

OBJECTIVES:

To assess the prevalence and severity of Voice-related quality of life (QoL) impairment among school teachers in rural areas, using the Voice Handicap Index-10 (VHI-10) questionnaire.

MATERIALS AND METHODS

This cross-sectional study was conducted on 100 school teachers currently employed in government and private schools in rural areas of Karnataka . The study was conducted in the Department of Otorhinolaryngology at a tertiary care teaching hospital in a rural area for 1 month. The study was approved by the Institutional Ethics Committee. (Vide No: SDUAHER/R&D/CEC/SDUMC-PG/08/2025-26)

Inclusion criteria

School teachers currently employed in government or private institutions in a rural area, aged between 25 and 60 years, with at least one year of continuous teaching experience, and a minimum of three teaching hours per day were included.

Exclusion criteria

Teachers were excluded if they had a history of diagnosed laryngeal disorders (such as vocal cord nodules, vocal cord palsy, or chronic laryngitis) and had undergone or completed voice therapy or vocal surgery within the past six months. Teachers with a known systemic illness affecting the voice (including GERD, hypothyroidism, or neurological disorders such as Parkinson's disease or stroke) or who were currently experiencing an acute illness such as an upper respiratory tract infection were also excluded.

Sample size: The sample size was calculated using the following formula: $n = 4pq/l^2$, where $p = 46.5\%$, $q = 53.5\%$, and $l = 10\%$.⁴ Thus, $n = 99.5$, which was rounded off to 100.

METHODS

All government and private schools in rural areas of karnataka were approached for administrative permission to conduct the study. Eligible teachers were identified and after obtaining informed consent, data were collected using a structured proforma that included demographic details, occupational history, voice hygiene practices, and the VHI-10 questionnaire. The VHI-10 consists of 10 items scored on a 5-

point Likert scale, with a total score ranging from 0 to 40. Higher scores indicate greater perceived voice-related impairment. The results obtained, such as the VHI-10 score, teaching hours, class environment, and vocal hygiene practices, were subjected to statistical analysis.

Statistical analysis

IBM SPSS (v25) was used to analyse the data. Statistical analysis with demographic statistics were analysed and Chi-square test was used to analyse categorical data, and a p-value < 0.05 was considered significant.

RESULTS

Among the 100 teachers included in the study, the age of teachers aged between 32 to 50 years, of which 64(64%) were females and 36(36%) were males. Half of the teachers (49%) had >10 years of teaching experience, followed by teachers with 5–10 years of experience (33%). About 51% taught <4 hours daily, 56% handled classes with >40 students, and 41% reported poor classroom ventilation. Notably, 38 teachers had taken leave due to throat or voice issues, and 27 teachers had consulted a doctor for related complaints (Table 1).

Table 1: Distribution of teaching and voice-related occupational characteristics

Variable	Category	Count (%)
Total years of teaching experience	< 5	18 (18%)
	5–10	33 (33%)
	>10	49 (49%)
Average daily teaching hours	< 4	51 (51%)
	≥ 4	49 (49%)
Number of students per class	≤ 40	44 (44%)
	> 40	56 (56%)
Classroom ventilation	Adequate	59 (59%)
	Poor	41 (41%)
History of leave due to throat/voice issues	Yes	38 (38%)
	No	62 (62%)
Consulted a doctor for a voice/throat complaint in past	Yes	27 (27%)
	No	73 (73%)

Over half (56%) reported regular water intake while teaching, and 48% admitted to frequent shouting during class, while only 34% took a voice rest when experiencing hoarseness. The prevalence of smoking was low (9%), but the majority of teachers frequently consumed caffeinated beverages (61%). While 40% had no impact, 60% had various degrees of voice impairment, with 33%, 17%, and 10% reporting mild, moderate, and severe impacts, respectively (Table 2).

Table 2: Distribution of vocal hygiene practices, voice-related behaviours and VHI-10 scores

Parameters	Categories	Count (%)
Regular water intake while teaching	Yes	56 (56%)
	No	44 (44%)
Frequent shouts during class	Yes	48 (48%)
	No	52 (52%)
Takes a voice rest when hoarse	Yes	34 (34%)
	No	66 (66%)
Smoking habit	Yes	9 (9%)
	No	91 (91%)
Frequent consumption of caffeinated drinks	Yes	61 (61%)
	No	39 (39%)

VHI-10 Score	No significant impact (0–10)	40 (40%)
	Mild impact (11–20)	33 (33%)
	Moderate impact (21–30)	17 (17%)
	Severe impact (31–40)	10 (10%)

Frequent shouting, lack of hydration while teaching, and not taking voice rest when hoarse were more common in the voice-impaired group and the group with VHI-10 ≥ 11 ($p < 0.0001$). Additionally, poor classroom ventilation, large class size, longer daily teaching hours, and prior medical consultation or leave owing to voice issues were associated with higher VHI-10 scores ($p < 0.05$) (Table 3).

Table 3: Association between occupational and behavioural factors with VHI-10 scores

Variable	VHI-10		p-value
	< 11 (n = 40)	≥ 11 (n = 60)	
Frequent shouting	6 (15%)	42 (70%)	<0.0001
No hydration while teaching	8 (20%)	36 (60%)	<0.0001
No voice rest when hoarse	14 (35%)	52 (86.7%)	<0.0001
Poor classroom ventilation	10 (25%)	31 (51.7%)	0.01
Class size > 40 students	15 (37.5%)	41 (68.3%)	0.003
Teaching ≥ 4 hours/day	12 (30%)	37 (61.7%)	0.004
History of doctor consultation	3 (7.5%)	24 (40%)	<0.0001
History of voice-related leave	4 (10%)	34 (56.7%)	<0.0001

DISCUSSION

Teachers are professional voice users exposed to high vocal demands, thereby getting exposed to factors such as teaching duration, class size, ventilation, and vocal hygiene practices that can influence voice-related problems. This study aimed to evaluate the prevalence and severity of voice-related QoL impairments among school teachers in rural areas using the VHI-10 and to explore associations between VHI-10 scores and various occupational and behavioural factors.

The mean age of the teachers was 41.2 ± 8.3 years, and the majority of them were female (64 vs. 36%). Similar to our findings, **Moy et al.** reported a mean age of 41.2 ± 8.5 years, and females were predominant in their study (93.9%).¹¹ **Gonzalez et al.** reported a mean age of 41.6 ± 9.4 years and 65.5% of female teachers.¹² Further supporting our findings, **De Melo et al.** reported a mean age of 41 ± 9.35 years with a predominance of female teachers in the school (74.7%).¹³ Thus, indicating that voice impairment is more prevalent among young female teachers.

In our study, half of the teachers had >10 years of teaching experience, approximately 49% taught >4 hours daily, and 56% handled classes with >40 students. Among the teachers, 38% had taken leave due to throat or voice issues, and 27% had previously consulted a doctor for related complaints. Coinciding with our findings, **Gonzalez et al.** reported that 31.9% had >15 years of teaching experience and 62.3% reported working ≥ 40 hours per week.¹² **Sundaram** reported a mean working time of 15.2 hours a week.¹⁴ Similarly, **Sankar et al.** reported that 47.3% teachers taught a class with >40 students regularly.⁵ Further supporting our study, **Ubillos et al.** reported that 57% went to the family doctor because of voice-related issues, 71% visited the laryngologist, and 36.2% took sick leave because of voice-related issues. They further observed that 52.2% had never received any kind of voice training.⁸ Thus, suggesting that voice disorders are common among more experienced teachers handling larger classes for long durations a day. In our study, more than half (56%) reported regular water intake while teaching, 48% admitted to frequent shouting during class, and only 34% took voice rest when experiencing discomfort in talking. The prevalence of smoking was low (9%), but the majority of the participants frequently consumed caffeinated beverages (61%). Aligning with our reports, **Sankar et al.** reported that 67.3% do continuous teaching for ≥ 45 min, and 61.8% take a < 5-minute break before each class. Voice disorders were common among non-smokers (47.3 vs 18.2%) and non-alcoholics (47.5 vs 26.3%).⁵ This suggests that voice impairments are prevalent among teachers who do not follow vocal hygiene.

In our study, 40% of teachers had no impact, and 60% had various degrees of voice impairment, with 33%, 17%, and 10% having mild, moderate, and severe impacts, respectively. Supporting our findings, **Niebudek-Bogusz et al.** analysed 120 teachers and reported that 18% had a mild, 62% had a medium, and 20% had a severe impact. While 100% of the non-teaching group reported no voice impairment.¹⁵ **Lia et al.** studied 50 teachers and reported that 68% teachers had a VHI score ≥ 11 .¹⁶ **Albustan et al.** reported that female teachers had higher VHI-10 scores than males, and elementary school teachers had a comparatively higher score than the middle and high school teachers.¹⁷ Thus, indicating that voice impairments are common among most teachers, although their degree of severity varies with the vocal behaviours of each individual.

In our study, frequent shouting and not taking voice rest when hoarse were significantly associated with VHI-10 scores of ≥ 11 ($p < 0.0001$). Additionally, poor classroom ventilation, large class size, longer daily teaching hours, and prior medical consultation or leave owing to voice issues were associated with higher VHI-10 scores ($p < 0.05$). Supporting our findings, **Alarouj et al.** reported that elementary school teachers had higher VHI-10 scores than middle and high school teachers. They also emphasise that elementary school teachers are required to perform a lot of voice repetition and shout frequently because of the age group and the in-classroom behaviours of the elementary students.¹⁸ Further strengthening our findings, **Kodomi et al.** reported that teachers with voice impairment had normalised hoarseness, vocal fatigue, or throat pain as part of their profession.¹⁹

Sundaram reported that teachers with voice impairment had to teach a significantly higher number of children compared to teachers without voice impairment (4.3 ± 1.94 vs. 3.8 ± 2.03 , $p = 0.03$).¹⁴ Similarly, **Sankar et al.** reported that teachers teaching >21 hours a week are significantly associated with higher VHI-10 scores (66 vs. 11.8%, $p < 0.01$).⁵ **Moy et al.** reported that teachers with voice disorders are significantly associated with voice-related absenteeism (18.2 vs. 8%, $p = 0.001$).¹¹ Thus, improper vocal hygiene and behaviours, along with factors like poor classroom ventilation, large class size, and longer daily teaching hours, are associated with voice impairment among teachers.

Most teachers reported some degree of voice-related QoL impairment, and specific occupational and behavioural factors significantly influenced severity. Recognising these modifiable risk factors can aid in the development of targeted preventive strategies and timely interventions to preserve vocal health and improve teaching effectiveness.

CONCLUSION

Most school teachers in rural areas reported voice-related QoL impairments, with higher VHI-10 scores associated with factors such as frequent shouting, inadequate hydration, lack of voice rest, poor classroom ventilation, larger class sizes, and longer teaching hours. Addressing these modifiable risk factors through awareness, vocal hygiene education, and early intervention can help reduce the burden of voice disorders and support teachers' occupational health and effectiveness.

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