

Clinical and Voice-Related Characteristics of Teachers Presenting with Voice Disorders in Georgia

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ABSTRACT

BACKGROUND. Voice disorders represent a common occupational health problem among professionals who rely heavily on vocal communication in their daily work.

OBJECTIVES. To explore the clinical characteristics, occupational factors, and perceived voice handicap among teachers presenting with voice disorders in Georgia.

METHODS. A clinic-based cross-sectional study was conducted among 100 teachers presenting with voice complaints at a specialized otolaryngology clinic in Georgia between 2023 and 2025. Participants underwent videostroboscopic examination performed by experienced otolaryngologists. Data on sociodemographic characteristics, occupational conditions, lifestyle factors, comorbidities, and self-reported voice symptoms were collected using a structured questionnaire. Descriptive statistical analysis was performed using SPSS 21.0.

RESULTS. The mean age of participants was 39.3±10.0 years, and 53% were female. Inflammatory laryngeal conditions and benign vocal fold lesions were the most frequently identified diagnostic categories. Hoarseness and variable voice quality were the most reported symptoms. Occupational exposures, including noisy classroom environments and work-related stress, were frequently reported. Participants with benign vocal fold lesions had descriptively higher mean VHI-30 scores than those with inflammatory laryngeal conditions; however, no formal statistical comparison was performed.

CONCLUSIONS. This clinic-based study highlights the importance of early clinical assessment, preventive vocal health strategies, and occupational interventions to reduce the burden of voice disorders among teachers.

KEYWORDS. Georgia; Occupational health; Teacher; Videostroboscopic examination; Voice disorder.

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BACKGROUND

Voice disorders represent a common occupational health problem among professionals who rely heavily on vocal communication in their daily work. Teachers are among the occupational groups most vulnerable to voice disorders because their voices serve as their primary professional tool for classroom instruction, communication, and classroom management. Prolonged voice use, increased vocal intensity, inadequate vocal rest, and unfavorable classroom acoustics may contribute to excessive vocal load and increase the risk of developing voice-related symptoms and laryngeal pathology.¹

The prevalence of voice disorders among teachers has been widely reported in international studies, with estimates ranging from 30% to 50% during their professional careers.^{1,2} Commonly reported symptoms include hoarseness, vocal fatigue, throat discomfort, reduced vocal endurance, and voice instability.³ These symptoms may negatively affect teaching performance, communication effectiveness, work productivity, and psychosocial well-being. In some cases, persistent voice problems may contribute

to absenteeism, reduced professional performance, and the need for medical evaluation or voice therapy.

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Several occupational and environmental factors may contribute to the development of voice disorders among teachers. High teaching workloads, prolonged speaking duration, large classroom sizes, and noisy classroom environments frequently require teachers to increase vocal intensity in order to maintain communication with students. Previous studies have shown that teachers working in noisy environments often raise their voices for prolonged periods, which may increase vocal fatigue and the risk of vocal fold pathology.^{5,6} In addition, behavioral and health-related factors such as smoking, inadequate hydration, caffeine consumption, chronic cough, respiratory infections, allergies, and gastroesophageal reflux disease may further contribute to laryngeal irritation and vocal strain.^{4,6}

In Georgia, teachers often work in crowded classroom environments and may have limited access to occupational voice care services and preventive vocal health programs. Despite the potential

occupational burden associated with intensive voice use, there is limited evidence regarding the clinical presentation and occupational characteristics of teachers seeking medical care for voice complaints in Georgia. Understanding the characteristics of treatment-seeking teachers with voice disorders may help inform preventive strategies, workplace health interventions, and early referral practices for voice assessment and management.

Clinical evaluation plays an important role in the assessment of voice disorders. Videostroboscopy is commonly used to visualize vocal fold structure and vibratory characteristics during phonation and may assist in identifying inflammatory changes and benign vocal fold lesions.⁷ In addition to clinical examination, patient-reported outcome measures such as the Voice Handicap Index-30 (VHI-30) provide important information regarding the perceived functional, emotional, and physical impact of voice disorders on daily life and occupational functioning.⁸

Several international studies have investigated occupational voice disorders among teachers in different countries and educational settings.⁹⁻¹¹ However, limited clinic-based evidence is available from Georgia regarding the occupational and clinical characteristics of teachers presenting with voice complaints. Therefore, the present study aimed to describe the clinical characteristics, occupational factors, and voice-related symptoms among teachers presenting with voice disorders in Georgia.

METHODS

Study design and setting

A clinic-based cross-sectional study was conducted to investigate the clinical and occupational characteristics of teachers presenting with voice complaints at a specialized otolaryngology clinic in Tbilisi, Georgia. Participants were recruited consecutively between 2023 and 2025 during routine clinical visits for voice-related complaints. The study population represents a treatment-seeking clinical sample rather than a population-based sample.

Study population

A total of 100 teachers were included in the study. Eligible participants were active school or university teachers aged 22 years or older presenting with self-

reported voice complaints. Participants with a history of laryngeal surgery, previously diagnosed neurological voice disorders, or incomplete clinical data were excluded from the study.

Data collection

Data were collected using a structured questionnaire and clinical assessment. The questionnaire was administered during the clinical visit. It included information on sociodemographic characteristics such as age and sex, occupational characteristics including teaching experience, teaching hours per week, classroom size, work-related stress, and noisy classroom environment, behavioral and lifestyle factors including smoking, alcohol consumption, coffee intake, and hydration habits, as well as medical and health-related factors such as symptoms of gastroesophageal reflux disease, chronic cough, respiratory infections, allergies, thyroid disorders, medication use, and respiratory diseases. Participants were also asked to report the duration and nature of their voice-related symptoms and self-reported voice characteristics.

Voice handicap assessment

The Voice Handicap Index-30 (VHI-30) was used to assess the self-perceived impact of voice disorders on daily functioning and occupational activities. The VHI-30 is a validated patient-reported outcome measure consisting of functional, physical, and emotional domains related to voice disorders (Jacobson et al., 1997). Higher scores indicate greater perceived voice-related handicap.

Laryngeal examination

All participants underwent laryngeal examination using videostroboscopy performed by otolaryngologists experienced in the assessment of voice disorders. Rigid or flexible videostroboscopic examination was performed depending on participant tolerance and clinical indication.

Videostroboscopic assessment included evaluation of glottic closure pattern, symmetry of vocal fold vibration, mucosal wave amplitude, vibration periodicity, presence of inflammatory changes, and structural lesions, including vocal fold nodules and edema.

Laryngoscopic findings were categorized into inflammatory laryngeal conditions (acute laryngitis and acute laryngopharyngitis), chronic inflammatory conditions (chronic laryngitis), and benign vocal fold lesions, primarily vocal fold nodules.

Statistical analysis

Statistical analysis was performed using IBM SPSS Statistics version 21.0. Descriptive statistics were used to summarize the study findings. Continuous variables were presented as means and standard deviations (mean $\pm$ SD), while categorical variables were summarized using frequencies and percentages.

The distribution of laryngoscopic findings, self-reported voice symptoms, occupational factors, lifestyle characteristics, and comorbidities was analyzed descriptively. Mean VHI-30 scores were calculated for each diagnostic category.

Cross-tabulation analysis was performed to explore the distribution of selected occupational and clinical characteristics across diagnostic groups. Because several contingency tables contained small expected cell counts, inferential analyses were considered exploratory and are interpreted with caution.

Ethical considerations

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the institutional ethics committee of Tbilisi State Medical University. All participants provided written informed consent prior to participation in the study.

RESULTS

Sociodemographic and occupational characteristics

A total of 100 teachers participated in the study. The mean age of participants was 39.3 ± 10.0 years. Female participants accounted for 53% of the study population, although male teachers also represented a substantial proportion of treatment-seeking participants. Teachers had a mean teaching experience of 17.0 ± 10.1 years and reported an average teaching workload of $21.0 \pm .6$ hours per week. The average classroom size was 28 ± 11 students (TAB.1).

TABLE 1. Sociodemographic and occupational characteristics of teachers (N=100)

Variable	Value
Age (mean $\pm$ SD)	39.3 ± 10.0
Female n(%)	53 (53%)
Male n(%)	47 (47%)
Teaching experience years (mean $\pm$ SD)	17.0 ± 10.1
Teaching hours per week (mean $\pm$ SD)	21.0 ± 9.6
Classroom size (mean $\pm$ SD)	28 ± 11.0

Lifestyle and medical characteristics

More than half of participants reported current smoking (55%), while coffee consumption was highly prevalent (90%). Chronic cough was reported by 56% of teachers, and 40% reported regular medication use. Occupational exposures were also common, with 62% reporting noisy classroom environments and 58% reporting work-related stress. Regarding medical conditions potentially associated with vocal health, allergic conditions and thyroid disorders were the most frequently reported (28% each), followed by gastroesophageal reflux disease (24%) and respiratory diseases (15%). Approximately one-third of participants reported no chronic medical condition (TAB.2).

TABLE 2. Lifestyle, occupational, and medical characteristics of teachers (N=100)

Variable	n	%
Current smoking	55	55
Alcohol consumption	10	10
Coffee consumption	90	90
Chronic cough	56	56
Regular medication use	40	40
Noisy classroom environment	62	62
Work-related stress	58	58
Respiratory diseases	15	15
Gastroesophageal reflux disease	24	24
Allergic conditions	28	28
Thyroid disorders	28	28
No chronic disease	30	30

Self-reported voice symptoms

Hoarseness or rough voice quality was the most frequently reported voice symptom, followed by variable voice quality. Diplophonia, low-pitched voice, and breathy voice quality were reported less frequently among participants (TAB.3).

TABLE 3. Self-Reported Voice Characteristics Among Teachers (N=100)

Voice characteristic	n	%
Hoarse/rough voice	43	43
Variable voice quality	35	35
Diplophonia	10	10
Low-pitched voice	6	6
Breathy/noisy voice	5	5
Normal voice	1	1

Videostroboscopic findings

Videostroboscopic examination demonstrated a predominance of inflammatory laryngeal conditions and benign vocal fold lesions among teachers presenting with voice complaints. Inflammatory laryngeal conditions, including acute laryngitis and acute laryngopharyngitis, represented the largest diagnostic category. Benign vocal fold lesions consisted primarily of vocal fold nodules (TAB.4).

TABLE 4. Videostroboscopic findings among teachers with voice disorders (N=100)

Diagnostic category	n	%
Inflammatory laryngeal conditions	50	50
Benign vocal fold lesions	30	30
Chronic inflammatory conditions	20	20

Inflammatory laryngeal conditions included acute laryngitis and acute laryngopharyngitis. Benign vocal fold lesions primarily consisted of vocal fold nodules

The distribution of self-reported voice symptoms varied across diagnostic categories. Hoarseness was more commonly reported among participants with inflammatory and chronic inflammatory conditions, while variable voice quality was frequently observed

among teachers with benign vocal fold lesions (TAB.5).

TABLE 5. Distribution of voice symptoms according to diagnostic category

Voice symptom	Inflammatory conditions (n=50)	Benign vocal fold lesions (n=30)	Chronic inflammatory conditions (n=20)
Hoarse voice	23 (46%)	10 (33%)	10 (50%)
Variable voice quality	17 (34%)	10 (33%)	8 (40%)
Diplophonia	7 (14%)	3 (10%)	0 (0%)
Low-pitched voice	2 (4%)	4 (13%)	0 (0%)
Breathy/noisy voice	1 (2%)	3 (10%)	2 (10%)

Voice handicap (descriptive findings)

Mean VHI-30 scores were descriptively higher among participants with benign vocal fold lesions (50.1 ± 24.5) than among those with inflammatory laryngeal conditions (27.3 ± 5.4) or chronic inflammatory conditions (21.5 ± 13.2). However, no formal statistical comparison was performed due to the study's descriptive nature and limited sample size. These findings should therefore be interpreted as descriptive observations rather than evidence of statistically significant differences.

DISCUSSION

This clinic-based cross-sectional study described the occupational and clinical characteristics of teachers presenting with voice disorders at a specialized otolaryngology clinic in Georgia. The findings demonstrated that inflammatory laryngeal conditions and benign vocal fold lesions were common among treatment-seeking teachers. At the same time, hoarseness and variable voice quality represented the most frequently reported voice-related symptoms. Participants with benign vocal fold lesions had higher perceived voice handicap scores than teachers with inflammatory laryngeal conditions.

Teachers are widely recognized as a high-risk occupational group for voice disorders because of prolonged voice use and continuous occupational vocal demands. The predominance of inflammatory

laryngeal conditions observed in this study likely reflects the clinic-based nature of the study population. Teachers frequently seek specialist evaluation during episodes of acute dysphonia, whereas chronic structural lesions may develop gradually before referral. Therefore, the diagnostic distribution reported here should not be interpreted as the prevalence of voice disorders among teachers in the general population. The findings of the present study are generally consistent with international literature reporting a high burden of voice disorders among teachers and other professional voice users.^{1,2} Similar studies conducted in different educational settings have identified hoarseness, vocal fatigue, and voice instability as common complaints among teachers exposed to intensive vocal load and unfavorable workplace conditions.^{3,4}

Several occupational factors potentially associated with increased vocal strain were identified in the present study. Many participants reported noisy classroom environments and work-related stress during teaching activities. These occupational conditions may contribute to excessive vocal effort, particularly when teachers are required to increase vocal intensity for prolonged periods in order to maintain classroom communication. Previous studies have similarly demonstrated that classroom noise, prolonged speaking duration, and increased vocal intensity are important occupational contributors to voice disorders among teachers.^{4,5}

Lifestyle and health-related factors potentially influencing vocal health were also frequently reported among participants. Smoking, chronic cough, gastroesophageal reflux disease, allergic conditions, and thyroid disorders were observed in a substantial proportion of teachers. These conditions may contribute to laryngeal irritation and vocal symptoms through chronic inflammation, throat clearing, mucosal irritation, or altered vocal fold function. Previous studies have similarly reported associations between reflux disease, respiratory conditions, smoking, and increased risk of voice-related symptoms among professional voice users.^{3,4}

Videostroboscopic assessment demonstrated that inflammatory laryngeal conditions and benign vocal fold lesions were among the most frequent findings in teachers presenting with voice complaints.

Participants with benign vocal fold lesions demonstrated higher VHI-30 scores, suggesting greater perceived impact of voice disorders on communication and occupational functioning. These findings are consistent with previous reports indicating that structural vocal fold lesions may substantially affect voice-related quality of life and professional voice performance.⁹

The present findings are also broadly consistent with studies by Roy, Van Houtte, and Sliwiska-Kowalska.¹¹⁻¹³ These studies demonstrated that teachers experience higher rates of voice problems compared with many other occupational groups due to increased occupational vocal load and workplace exposures. Although the current study was conducted with a clinic-based sample, the observed occupational and clinical patterns suggest that teachers in Georgia may experience occupational voice-related risks similar to those reported internationally.

This study has several strengths. First, all participants underwent videostroboscopic examination performed by otolaryngologists experienced in voice assessment, allowing clinical confirmation of laryngeal findings. Second, the study incorporated clinical findings, occupational characteristics, self-reported symptoms, comorbidities, and patient-reported measures of voice handicap, providing a multidimensional assessment of teachers presenting with voice complaints.

Several limitations should also be acknowledged. The study was conducted in a single specialized clinic and included only treatment-seeking teachers; therefore, the findings may not be generalizable to the overall teacher population in Georgia. The cross-sectional design does not allow causal relationships between occupational factors and voice disorders to be established. In addition, the study did not include a comparison group without voice complaints, and auditory-perceptual voice assessment by speech-language pathologists was not performed. Some occupational and behavioral variables were self-reported and may therefore be subject to reporting bias.

Despite these limitations, the study provides important preliminary clinic-based evidence regarding occupational voice disorders among teachers in

Georgia. The findings support the importance of preventive vocal health programs, workplace interventions targeting classroom acoustics and vocal load, and early referral for voice assessment among teachers experiencing persistent voice symptoms. The relatively small sample size may limit statistical generalizability.

CONCLUSIONS

This clinic-based cross-sectional study provides insight into the occupational and clinical characteristics of teachers presenting with voice disorders in Georgia. Videostroboscopic examination demonstrated that inflammatory laryngeal conditions and benign vocal fold lesions were common among treatment-seeking teachers. At the same time, hoarseness and variable voice quality were the most frequently reported voice-related symptoms.

Occupational factors such as prolonged voice use, noisy classroom environments, and work-related stress, together with lifestyle and health-related conditions including smoking, chronic cough, gastroesophageal reflux disease, and allergic conditions, were commonly reported and may contribute to vocal symptoms and laryngeal disorders.

Teachers with benign vocal fold lesions demonstrated greater perceived voice handicap than participants with inflammatory laryngeal conditions, highlighting the potential impact of voice disorders on communication, occupational functioning, and quality of life.

The findings of the present study emphasize the importance of preventive strategies, occupational voice health education, early clinical assessment, and timely management of voice symptoms among teachers. Further large-scale and population-based studies are needed to better understand occupational voice disorders among teachers in Georgia and to support the development of targeted workplace health interventions.

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