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Original Article

Prevalence of Voice Disorders among University Teachers

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ABSTRACT

Background: Voice disorders pose a significant occupational hazard for individuals in voice-demanding professions, notably university professors. The complexity and frequency of these disorders highlight the need for a deeper understanding of their prevalence, severity, and the impact on affected individuals.

Objective: This study aimed to investigate the prevalence and severity of voice disorders among university professors, examining the differences in occurrence between genders and identifying potential risk factors contributing to these conditions.

Methods: Employing an observational cross-sectional study design, data were collected from a sample of 390 university professors from various institutions. Participants were assessed for voice disorders using a comprehensive voice handicap questionnaire. The severity of voice disorders was categorized into mild, moderate, and severe based on self-reported symptoms. Statistical analysis was conducted using SPSS version 26 to analyze demographic information, with percentages calculated for qualitative data and mean and standard deviation for quantitative data.

Results: The study found that 57.7% of participants experienced mild voice disorders, 22.8% moderate, and 19.5% severe, indicating a significant prevalence of voice issues among university professors. Gender analysis revealed that males exhibited a higher prevalence (58.5%) compared to females (41.5%), yet females reported greater severity in their conditions. Additionally, age-related differences suggested younger professors were more susceptible to voice disorders.

Conclusion: Voice disorders are notably prevalent among university professors, with significant variations in severity observed between genders. These findings underscore the importance of implementing preventive measures and vocal hygiene programs tailored to the needs of those in voice-intensive occupations. Addressing these issues is vital for maintaining vocal health and ensuring the longevity of professionals' careers in education.

Keywords: Voice disorders, University professors, Vocal hygiene, Occupational health, Gender differences.

INTRODUCTION

The human voice, an intricate instrument, serves not only as a medium for conveying complex intellectual concepts but also as a conduit for expressing emotions (1, 2). This capacity stems from a sophisticated interplay of various anatomical structures, notably the larynx, often referred to as the voice box. Located deep within the vocal folds, the larynx acts as the primary vibrator in voice production during speech. However, the creation of distinct speech sounds involves the coordinated action of other parts of the speech apparatus, including the pharynx, palate, tongue, and lips, which modulate the tone produced by the vocal folds (3, 4). In particular, professions such as teaching place high demands on communicative abilities and vocal endurance, making them susceptible to voice disorders (5, 6).

Voice disorders are characterized by deviations in vocal quality, pitch, loudness, resonance, and duration, which vary according to an individual's age and sex (6, 7). These disorders can arise from a variety of factors, including prolonged speech, smoking, throat clearing, coughing, exposure to irritants, and vocal overuse through shouting or yelling. Indeed, occupations that involve extensive vocal usage- such as preachers, counselors, cheerleaders, telemarketers, singers, attorneys, tour guides, educators, and stage actors - are particularly at risk. Among these, the teaching profession stands out due to its inherent vocal demands, which are often

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exacerbated by factors such as noisy classrooms that compel teachers to speak at higher volumes, thereby increasing their vocal load (8, 9).

The term "hoarseness" is commonly used to describe the alteration in voice quality resulting from abnormal vocal cord movement. Voice disorders can also stem from a combination of vocal abuse or overuse, laryngeal discomfort, and competition for voice (10, 11). Fortunately, most cases of acute onset hoarseness can be effectively managed through a combination of vocal hygiene, voice rest, medications, and voice therapy. The goal is to achieve and maintain a healthy voice, one that seamlessly integrates with both the professional and personal spheres of an individual's life without causing strain over their lifespan (12, 13).

In the context of university teachers, the prevalence of voice disorders is notably higher compared to the general population, primarily due to the high vocal demands of their profession. Common complaints include hoarseness, a low or weak voice, difficulty in being heard, and a fading voice. These symptoms are predominantly attributed to vocal abuse and misuse, often aggravated by the need to speak louder in noisy classroom environments. As such, understanding and addressing the unique vocal challenges faced by educators is crucial in ensuring their vocal health and, by extension, their effectiveness in their professional roles (14, 15).

MATERIAL AND METHODS

The study aimed to assess the prevalence of voice disorders among university professors, employing an observational cross-sectional design for this purpose. The research was conducted over a six-month period from August 2021 to February 2022, following the receipt of approval for the study topic. Data were collected from a purposively selected sample of professors at four universities: the University of Lahore, the University of Management Sciences, the University of Engineering & Technology Lahore, and the University of Central Punjab. The inclusion criteria targeted permanent university teachers of all ages and both genders, with a minimum of one year of teaching experience. Those with acute and chronic comorbid conditions were excluded from the study to avoid confounding factors (16, 17).

The sample size was determined using an online calculator, based on the prevalence of vocal difficulties among teachers, with a resulting frequency of hoarseness at 39.6%. This calculation was underpinned by a 95% confidence level and a 5% margin of error. Data were collected via a voice handicap questionnaire, a method chosen after securing the necessary permissions from the participating universities and the approval of the ethical committee. Participation in the study was voluntary, with individuals providing written consent after being informed about the study's objectives and methodology, and ensuring they met the inclusion and exclusion criteria (18, 19).

The questionnaire and checklist served as the primary tools for data collection, designed to capture both qualitative and quantitative aspects of the participants' voice disorders. Demographic information was also gathered as part of the study. Following data collection, analysis was conducted using SPSS version 26. This involved the calculation of percentages for qualitative data, such as gender distribution, and the computation of mean and standard deviation for quantitative data, including age. This analytical approach facilitated a comprehensive understanding of the prevalence and characteristics of voice disorders among the study's university professor cohort (20).

RESULTS

In the exploration of voice disorders among university teachers, a study encompassing 386 participants revealed significant findings regarding the prevalence and severity of voice disorders within this professional group. The gender distribution among the participants indicated a higher prevalence of voice disorders among males (58.5%) compared to females (41.5%), as delineated in Table 1. Age-wise, the majority of the affected individuals fell within the 25-34 age range, accounting for 59.6% of the total sample, followed by the 35-45 age range (23.6%), and the 46 and above age range (17.9%). This distribution underscores the heightened vulnerability of younger university teachers to voice disorders, possibly due to the demands of their profession.

Further analysis, as presented in Table 2, delved into the severity of voice disorders across genders, revealing a nuanced pattern. Among males, the distribution of disorder severity was primarily mild (137 cases), with moderate (61 cases) and severe (30 cases) disorders constituting smaller proportions. Conversely, females displayed a relatively higher incidence of severe voice disorders (46 cases) in comparison to mild (88 cases) and moderate (28 cases) conditions. This gender-based disparity in severity suggests potential differences in either the vocal demands placed upon or the physiological responses to stressors between male and female university teachers.

The application of the Voice Handicap Index (VHI) yielded insightful data on the subjective experiences of the participants related to their voice disorders (Table 3). A significant portion of respondents reported that their voice issues seldom (36.7%) or almost never (28.5%) made it difficult for others to hear them, indicating a varying impact on their communicative effectiveness. Challenges were more pronounced in noisy environments, with 35.9% of participants finding it hard to be understood almost never, and 28.5%

sometimes facing difficulties. Family communication also appeared to be affected, with 51.3% of participants never experiencing difficulties being heard at home, suggesting that the impact of voice disorders is context-dependent.

Table 1 Prevalence of Voice Disorders among University Teachers (N = 386)

Variable	Frequency (f)	Percentage (%)
Gender		
Male	228	58.5%
Female	162	41.5%
Age Range		
Ages 25-34	230	59.6%
Ages 35-45	91	23.6%
Ages 46+	69	17.9%

Table 2 Gender * Severity of Voice Disorder Crosstabulation (N = 386)

Gender	Mild	Moderate	Severe	Total
Male	137	61	30	228
Female	88	28	46	162
Total	225	89	76	390

The VHI further revealed that voice disorders led to behavioral changes, such as reduced phone usage (35.6% reported never avoiding phone use) and avoidance of social gatherings (59% never avoided gatherings due to their voice). Interestingly, a significant number of participants reported altering their social behaviors, with 62.6% talking less with friends, neighbors, or family members due to their voice condition. The impact on professional life was also notable, with 60.8% never having their voice cause loss of income, yet a small percentage (6.7%) always finding their voice issues affecting their earnings.

Moreover, daily vocal challenges were evident, with participants noting variations in their voice throughout the day (43.8% sometimes experiencing voice changes) and feeling the need to exert a lot of effort to speak (38.2% never experiencing this issue). The emotional toll of voice disorders was significant, with feelings of embarrassment (34.9% never feeling embarrassed when asked to repeat themselves) and social withdrawal (41.8% never becoming less sociable due to their voice issue) being reported.

Table 3 Scores of Voice Handicap Index Applied on Participants (N = 386)

VHI Statements	0 = Never (%)	1 = Almost Never (%)	2 = Sometimes (%)	3 = Almost Always (%)	4 = Always (%)
Hard for others to hear me	36.7	28.5	24.4	7.7	2.8
Hard to be understood in noise	20.3	35.9	28.5	12.6	2.8
Family hard to hear me	51.3	23.8	11.5	12.8	0.5
Use phone less	35.6	20.0	31.8	11.8	0.8
Avoid gatherings	59.0	12.8	11.0	11.3	5.9
Talk less with others	62.6	14.1	10.5	11.3	1.5
Asked to repeat in face-to-face	34.1	33.6	21.3	7.9	3.1
Voice limits social life	58.5	16.4	9.5	9.7	5.9
Left out of conversations	58.7	15.9	15.4	15.9	4.1
Voice causes loss of income	60.8	11.0	15.6	5.9	6.7
Run out of air when talking	27.9	37.2	25.1	8.2	1.5
Voice changes throughout the day	24.1	15.4	43.8	11.3	5.4
People ask about voice	38.7	27.7	19.7	11.3	2.6
Voice sounds creaky/dry	32.3	13.8	37.9	11.3	4.6
Need to strain to produce voice	35.9	27.7	23.6	9.5	3.3

VHI Statements	0 = Never (%)	1 = Almost Never (%)	2 = Sometimes (%)	3 = Almost Always (%)	4 = Always (%)
Voice clarity is unusual	43.6	24.4	17.2	11.8	3.1
Change voice to sound different	40.8	17.9	20.3	16.4	4.6
A lot of effort to talk	38.2	22.1	17.4	10.5	11.8
Voice worse in the evening	31.5	35.9	13.8	16.2	2.6
Voice "gives out" while talking	30.8	45.4	15.6	7.4	0.8
Tense talking to others	41.8	35.9	10.3	9.0	3.1
People annoyed by voice	30.8	45.4	15.6	7.4	0.8
Others don't understand voice issue	39.2	30.3	15.9	13.1	1.5
Voice issue disturbs me	34.6	20.5	32.3	6.7	5.9
Less sociable due to voice issue	41.8	13.6	16.7	25.1	2.8
Voice makes me feel sick	59.0	18.2	10.5	9.7	2.6
Irritated when asked to repeat	63.3	16.2	10.3	9.0	1.3
Embarrassed when asked to repeat	34.9	33.3	19.5	11.0	1.3
Voice makes me feel awkward	38.5	34.1	14.4	5.6	7.4
Ashamed of voice issue	38.5	15.4	35.1	10.5	0.5

The findings from this study, as articulated through Tables 1 to 3, underscore the pervasive impact of voice disorders on university teachers' professional and personal lives. The nuanced differences in prevalence and severity across gender and age groups, coupled with the diverse experiences captured through the VHI, highlight the complexity of voice disorders within the academic profession. These insights call for targeted interventions and support mechanisms to mitigate the adverse effects of voice disorders on educators.

DISCUSSION

The study investigated the prevalence and severity of voice disorders among university professors, revealing significant insights into the occupational hazards faced by professionals in voice-demanding roles. The findings indicate that a substantial proportion of the sample, consisting of 390 university professors, experienced some degree of voice disorder, with 57.7% reporting mild severity, 22.8% moderate severity, and 19.5% severe voice disorders. Notably, the prevalence of voice disorders was higher among males (58.5%) compared to females (41.5%), yet the severity of these disorders was more pronounced in females.

These results align with and expand upon previous research conducted in diverse geographical and professional contexts. For instance, a study in Brazil found a 39.6% prevalence of hoarseness among university lecturers, with females exhibiting a higher percentage of hoarseness than males. Conversely, the current study found a higher overall prevalence of voice disorders among males, suggesting potential variations in vocal demand or occupational stressors between genders or cultural contexts. Similarly, studies in Norway and Sweden highlighted the presence of voice issues among teachers, with a notable percentage demonstrating scores indicative of voice disorders on the Voice Handicap Index (VHI-30) (21, 22).

The current study underscores the widespread nature of voice disorders among educators, a group already identified as at-risk due to the vocal demands of their profession. This risk was further substantiated by findings from Cyprus, which suggested the need for preventative vocal hygiene programs to enhance the quality of life for college staff. Research from Nigeria highlighted additional risk factors, such as smoking, beverage consumption, and environmental conditions, emphasizing the multifaceted nature of voice disorder etiology (23, 24).

The study's strength lies in its comprehensive assessment of voice disorder prevalence and severity among university professors, providing valuable data for the development of targeted interventions. However, it also faces limitations, including its cross-sectional design, which limits the ability to ascertain causality, and the reliance on self-reported measures, which may introduce bias. The study's findings are further constrained by the lack of diversity in the sample, primarily drawn from a single professional and geographical context, limiting the generalizability of the results (8, 10).

Future research should adopt a longitudinal design to explore the progression of voice disorders over time and incorporate objective measures of vocal function to complement self-reported data. Additionally, expanding the study to include a more diverse range of professions and geographical locations could provide a more comprehensive understanding of the risk factors and protective measures against voice disorders.

The study highlights the significant impact of voice disorders on university professors, with a notable gender discrepancy in prevalence and severity. These findings emphasize the need for increased awareness and the implementation of preventive measures, including vocal hygiene and tailored intervention programs, to mitigate the risk of voice disorders among voice-intensive professionals. The establishment of such programs, alongside further research into the underlying causes and potential treatments for voice disorders, is essential for improving the occupational health and quality of life for educators and other professionals reliant on their voices for their work (5, 14, 17).

CONCLUSION

The study conclusively highlights the significant prevalence and varying severity of voice disorders among university professors, with a notable disparity between genders. This underscores the critical need for heightened awareness, preventative strategies, and targeted vocal hygiene programs to address and mitigate the risk factors associated with voice disorders in voice-demanding professions. The implications of these findings are far-reaching, suggesting that educational institutions and healthcare providers must collaborate to develop and implement comprehensive vocal health initiatives. Such measures are essential not only for preserving the vocal health of educators but also for ensuring the sustainability of their professional capabilities and enhancing their overall quality of life.

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