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Original Article

Impact of voice disorders on the quality of life of affected individuals

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ABSTRACT

Background: Voice disorders are conditions characterized by abnormalities in voice quality, pitch, loudness, or endurance that interfere with effective communication. Because voice plays a central role in social interaction, education, and occupational performance, such disorders can substantially affect quality of life. Despite growing recognition of their psychosocial consequences, limited evidence exists in local populations regarding how voice disorders influence daily functioning and emotional well-being. Objective: To assess the impact of voice disorders on the quality of life of affected individuals. Methods: A quantitative cross-sectional study was conducted in Lahore, Pakistan, among 110 participants with voice-related complaints recruited using purposive sampling. Data were collected using a structured demographic form and the validated Voice-Related Quality of Life (V-RQOL) questionnaire. Descriptive statistics were calculated for demographic variables and voice quality ratings, and Pearson correlation analysis was performed to examine the association between perceived voice quality and V-RQOL scores. Statistical analyses were performed using SPSS version 25.0 with a significance threshold of $p \leq 0.05$. Results: Among the 110 participants, males and females were equally represented (50% each). Poor voice quality was reported by 40% of participants, while 14.5% reported fair voice quality. The mean V-RQOL score was 32.02 ± 14.23, indicating a moderate impact of voice disorders on quality of life. Correlation analysis demonstrated a statistically significant negative relationship between perceived voice quality and V-RQOL score ($r = -0.638$, $p < 0.001$), indicating that worsening voice quality was associated with greater impairment in daily functioning and emotional well-being. Conclusion: Voice disorders significantly affect quality of life by limiting communication ability, emotional stability, and occupational performance. Incorporating patient-reported outcome measures such as the V-RQOL questionnaire into routine voice assessment may improve clinical evaluation and guide more comprehensive management strategies.

Keyword:

Voice disorders; quality of life; V-RQOL; dysphonia; communication impairment; patient-reported outcomes

INTRODUCTION

Voice disorders represent a significant health concern because the voice is a primary instrument for communication, social interaction, and occupational functioning. Normal voice production requires coordinated activity of the respiratory system, laryngeal structures, and vocal tract resonators to generate sound with appropriate pitch, loudness, and quality. Disruption in any component of this system can lead to altered voice characteristics such as hoarseness, breathiness, strain, reduced vocal endurance, or difficulty projecting the voice, collectively referred to as voice disorders (1). These disturbances may interfere with effective communication and can negatively affect emotional well-being, professional performance, and interpersonal relationships.

Voice disorders may arise from a wide range of etiological factors including functional misuse of the voice, structural abnormalities of the vocal folds, neurological conditions affecting laryngeal control, or behavioral and environmental influences. Functional voice disorders frequently occur in the absence of visible structural pathology and are often associated with excessive vocal effort or poor vocal technique, whereas organic disorders involve structural changes such as nodules, polyps, cysts, or inflammatory conditions of the vocal folds. Neurological voice disorders occur when neural control of the laryngeal muscles is impaired, as seen in conditions such as vocal fold paralysis or neurodegenerative diseases (2). Regardless of etiology, the resulting alterations in voice production can compromise both communication effectiveness and overall quality of life.

Epidemiological evidence indicates that voice disorders are relatively common in the general population. Studies estimate that approximately 3–9% of individuals experience voice disorders at any given time, with considerably higher prevalence among populations exposed to intensive voice use (3). Occupational voice users including teachers, singers, call center workers, vendors, and law enforcement personnel are particularly vulnerable because their professional duties require prolonged and often strenuous vocal activity. Environmental factors such as background noise, poor acoustic conditions, and limited opportunities for vocal rest further increase the risk of vocal strain and voice disorders among these groups (4). Even among students and young adults, academic demands, frequent speaking, and inadequate vocal hygiene practices may contribute to the development of voice problems.

Beyond the physiological symptoms, voice disorders have a substantial psychosocial impact. Individuals experiencing voice difficulties often report frustration, embarrassment, anxiety, and reduced self-confidence. Communication limitations may lead to avoidance of social interactions, reduced academic participation, and decreased occupational productivity. In professions where voice is central to identity and job performance, such as teaching or performing arts, even mild vocal impairment can significantly affect professional functioning and emotional well-being (5). Consequently, the burden of voice disorders extends beyond clinical symptoms to include psychological, social, and occupational consequences.

Quality of life has emerged as an important outcome measure in health research because it reflects an individual's perception of how a health condition affects daily functioning and well-being. In the context of voice disorders, quality of life encompasses the extent to which vocal problems interfere with communication, social participation, emotional health, and professional activities. Traditional clinical evaluations focusing solely on perceptual or acoustic measures may fail to capture the subjective experiences of individuals living with voice disorders. Therefore, patient-reported outcome measures have become essential tools for assessing the broader impact of voice impairment (6).

One widely used instrument for this purpose is the Voice-Related Quality of Life (V-RQOL) questionnaire, which evaluates both functional and socio-emotional aspects of voice problems. The V-

RQOL scale provides a standardized method for quantifying how voice disorders influence daily communication and emotional well-being from the patient's perspective (7). Research has demonstrated that individuals with dysphonia or other voice disorders often report significantly lower quality of life scores compared with healthy populations, highlighting the importance of integrating patient-reported outcomes into voice assessment and management (8).

Despite the recognized importance of voice disorders, their psychosocial consequences remain insufficiently explored in many developing regions. In Pakistan, voice disorders are commonly encountered among occupational voice users, yet limited research has examined their broader impact on quality of life. Factors such as limited awareness of vocal health, lack of preventive voice care programs, and restricted access to specialized speech-language pathology services may contribute to delayed diagnosis and management of voice problems in the local population (9). Moreover, most existing studies in the region focus primarily on prevalence or clinical characteristics rather than the functional and emotional effects of voice disorders on affected individuals.

Understanding how voice disorders influence quality of life is essential for developing comprehensive management strategies that address both physiological and psychosocial aspects of the condition. Assessing patient-reported outcomes can help clinicians better understand the daily challenges faced by individuals with voice problems and guide more holistic treatment approaches. In addition, local evidence is needed to inform educational and preventive initiatives aimed at promoting vocal health among high-risk populations.

Therefore, the present study aimed to evaluate the impact of voice disorders on the quality of life of affected individuals using a standardized voice-related quality of life instrument. By examining the relationship between perceived voice quality and quality of life outcomes, the study seeks to provide insight into the functional and emotional consequences of voice disorders within a local population. The study hypothesis was that individuals experiencing voice disorders would demonstrate significantly reduced voice-related quality of life scores compared with individuals reporting better voice quality.

MATERIALS AND METHODS

A quantitative cross-sectional observational study was conducted to evaluate the impact of voice disorders on the quality of life of affected individuals. The cross-sectional design was selected because it allows the simultaneous assessment of exposure and outcome variables at a single point in time, making it appropriate for evaluating associations between voice-related symptoms and patient-reported quality of life outcomes in clinical populations (10).

The study was carried out in Lahore, Pakistan, and included participants recruited from speech and language therapy clinics, hospital-based rehabilitation departments, and university-affiliated clinical settings where individuals commonly seek evaluation for voice-related complaints. Data collection was conducted over a six-month period following approval from the departmental research committee. These settings were selected to ensure access to individuals experiencing voice difficulties across different occupational backgrounds, including both professional voice users and non-professional voice users.

Adult individuals presenting with self-reported voice complaints were considered eligible for participation. Participants were required to be at least 18 years of age and able to understand and complete the study questionnaire independently. Both male and female participants were included to ensure representation across genders. Individuals with severe cognitive impairment that prevented reliable questionnaire completion were excluded. Participants with acute medical conditions unrelated to voice disorders that could interfere with study participation were also excluded. Eligibility was confirmed through initial screening conducted by the research team at the time of recruitment.

Participants were recruited using a non-probability purposive sampling approach, which is commonly applied in clinical observational studies where the research question requires individuals with specific characteristicsin this case, the presence of voice-related complaints. Potential participants attending clinics or rehabilitation centers were approached by the researchers, provided with information about the study objectives and procedures, and invited to participate voluntarily. Written informed consent was obtained prior to enrollment.

Data were collected using standardized self-administered questionnaires. The primary instrument used in the study was the Voice-Related Quality of Life (V-RQOL) questionnaire, a validated patient-reported outcome measure designed to evaluate the functional and socio-emotional effects of voice disorders on daily life (11). The V-RQOL instrument consists of items assessing difficulties in communication, vocal performance, and emotional responses to voice problems. Responses were recorded on a five-point Likert scale reflecting the severity of perceived voice-related difficulties. A demographic information form was also administered to collect background variables including age, gender, occupation, and duration of voice-related symptoms.

The primary outcome variable was voice-related quality of life as measured by the total V-RQOL score. Lower V-RQOL scores indicate greater impairment in voice-related quality of life, reflecting a stronger negative impact of voice disorders on daily functioning and emotional well-being. The main explanatory variable was self-reported voice quality, categorized based on participant perception into levels ranging from excellent to poor. Additional descriptive variables included occupational voice use and demographic characteristics.

Several steps were implemented to minimize bias and improve data validity. Standardized questionnaires were used to ensure consistent data collection across all participants. Participants completed the questionnaires independently to reduce interviewer influence. Clear instructions were provided to ensure that participants understood each item. Data were reviewed immediately after collection to identify incomplete responses, and incomplete questionnaires were excluded from analysis to maintain dataset integrity.

Sample size estimation was performed using Raosoft sample size calculation software based on an estimated population of individuals with voice complaints in the study setting. A confidence level of 90% and margin of error of 10% were used to determine the required sample size. The final sample included 110 participants, which was considered sufficient to detect meaningful associations between voice quality and quality-of-life outcomes within the study population.

All collected data were entered into the Statistical Package for Social Sciences (SPSS) version 25.0 for analysis. Descriptive statistics were used to summarize demographic characteristics and questionnaire responses. Categorical variables were presented as frequencies and percentages, while continuous variables such as V-RQOL scores were summarized using mean and standard deviation. Correlation analysis was performed to examine the relationship between perceived voice quality and voice-related quality of life scores using Pearson's correlation coefficient. Statistical significance was determined using a p-value threshold of ≤ 0.05. Cases with missing data were excluded from inferential analysis through listwise deletion to maintain analytical accuracy.

Ethical approval for the study was obtained from the Departmental Research Committee prior to the initiation of data collection. Participation was voluntary, and all participants were informed about the purpose of the research, their right to withdraw at any stage, and the confidentiality of their responses. Personal identifiers were not recorded, and each participant was assigned a coded identification number to ensure anonymity. Data were stored securely and accessed only by the research team to maintain confidentiality and data integrity.

To ensure reproducibility and reliability, standardized procedures for participant recruitment, questionnaire administration, and statistical analysis were followed. All data entry and analysis procedures were documented systematically, enabling independent verification and replication of the study methodology by other researchers investigating the impact of voice disorders on quality of life.

RESULTS

Table 1. Combined Demographic and Occupational Distribution of Participants (N = 110)

Variable	Category	Frequency (n)	Percentage (%)	95% CI	p-value
Gender	Male	55	50.0	40.6–59.4	
	Female	55	50.0	40.6–59.4	0.99
Occupation	Students	20	18.2	11.9–26.7	
	Teachers	13	11.8	6.8–19.6	
	Call Center Workers	29	26.4	18.9–35.5	
	Traffic Wardens / Police	9	8.2	4.4–14.8	
	Singers / Musicians	8	7.3	3.7–13.9	
	Other Occupations	31	28.1	20.4–37.3	0.021
Total		110	100		

This combined table summarizes the gender and occupational distribution of the 110 participants included in the study. The sample included an equal proportion of males and females (50% each). Occupational analysis showed that call center workers (26.4%) and other occupations (28.1%) constituted the largest groups, reflecting a high representation of individuals involved in professions requiring frequent voice use. The occupational distribution showed a statistically significant variation ($p = 0.021$).

Table 3. Overall Voice Quality Rating Among Participants

Voice Quality	Frequency (n)	Percentage (%)	95% CI	p-value
Excellent	8	7.3	3.7–13.9	<0.001
Very Good	11	10.0	5.7–17.0	
Good	31	28.2	20.6–37.3	
Fair	16	14.5	9.1–22.4	
Poor	44	40.0	31.4–49.3	
Total	110	100		

Table 3 presents the overall voice quality ratings of the 110 participants. Poor voice quality was the most frequently reported category, observed in 44 participants (40.0%), followed by good voice quality in 31 participants (28.2%). Fair voice quality was reported by 16 participants (14.5%), while very good and excellent voice quality were reported by 11 (10.0%) and 8 (7.3%) participants, respectively. The distribution was statistically significant ($p < 0.001$), indicating that lower perceived voice quality was more common in this sample.

Table 4. Descriptive Statistics of V-RQOL Total Scores

Statistic	Value
Mean	32.02
Standard Deviation	14.23
Minimum	10
Maximum	50
95% CI for Mean	29.30 – 34.74

Table 4 summarizes the descriptive statistics of the total V-RQOL scores among participants. The mean V-RQOL score was 32.02 with a standard deviation of 14.23, reflecting a moderate level of voice-related quality of life impairment. Scores ranged from a minimum of 10 to a maximum of 50, showing considerable variation in the severity of voice-related difficulties across participants. The 95% confidence interval for the mean was 29.30 to 34.74, indicating that the average quality-of-life impact was consistently within this range.

Table 5. Correlation Between Voice Quality and V-RQOL Scores

Variables	Correlation Coefficient (r)	95% CI	p-value	Effect Size
Voice Quality × V-RQOL Score	−0.638	−0.74 to −0.51	<0.001	Large

Table 5 shows the correlation between perceived voice quality and V-RQOL scores. A statistically significant negative correlation was found between these variables ($r = −0.638$, $p < 0.001$), with a large effect size. This result indicates that as voice quality worsened, V-RQOL scores reflected greater impairment in quality of life. The 95% confidence interval for the correlation coefficient ranged from −0.74 to −0.51, confirming a strong and consistent inverse relationship between voice quality and voice-related quality of life.

DISCUSSION

Voice disorders can substantially affect communication, emotional well-being, and professional functioning, making the evaluation of their impact on quality of life an important clinical and public health concern. The present study assessed voice-related quality of life among individuals experiencing voice complaints and found that voice disorders were associated with notable functional and psychosocial consequences. A considerable proportion of participants reported poor or fair voice quality, and the mean V-RQOL score indicated a moderate level of impairment in voice-related quality of life. These findings support the hypothesis that voice disorders significantly influence daily functioning and perceived well-being among affected individuals.

The distribution of voice quality ratings observed in this study suggests that voice complaints are common among individuals whose occupations involve frequent or prolonged voice use. Professions such as call center workers, teachers, singers, and traffic wardens require sustained vocal effort, which may increase the risk of vocal fatigue and dysphonia. Previous epidemiological research has similarly identified occupational voice users as a high-risk group for the development of voice disorders due to repeated vocal loading, speaking in noisy environments, and limited opportunities for vocal rest (12). The occupational distribution observed in this study therefore aligns with earlier evidence demonstrating that occupational vocal demands play an important role in the development and persistence of voice disorders.

The average V-RQOL score obtained in the present study reflects a moderate reduction in voice-related quality of life among participants experiencing voice difficulties. These results are consistent with earlier studies demonstrating that individuals with dysphonia often report reduced quality of life across both functional and emotional domains (13). Voice disorders may interfere with routine communication, limit participation in social interactions, and reduce professional efficiency, particularly in occupations that rely heavily on effective voice use. As a result, even relatively mild vocal disturbances may produce significant distress when they affect occupational performance or social participation.

A key finding of this study was the strong negative correlation between perceived voice quality and V-RQOL scores. The correlation coefficient indicated that worsening voice quality was associated with greater impairment in quality of life. This relationship supports the conceptual framework linking physiological impairment to functional limitation and reduced well-being described in health-related quality-of-life models (14). Similar correlations have been reported in previous voice research, emphasizing that subjective perceptions of voice quality are closely linked to patient-reported functional outcomes and emotional well-being (15). The strong association observed in the present study reinforces the importance of incorporating patient-reported measures when evaluating voice disorders.

The psychosocial effects observed in this study also align with previous literature describing the emotional burden of voice disorders. Individuals experiencing persistent voice problems often report frustration, embarrassment, anxiety, and reduced confidence in communication settings. Communication difficulties can result in reduced participation in academic, social, or occupational activities, which may further contribute to emotional distress (16). These psychosocial consequences highlight that voice disorders should not be considered solely physiological conditions but rather complex health problems that influence multiple aspects of daily life.

When compared with findings from international research, the results of the present study demonstrate similar patterns regarding the impact of voice disorders on quality of life. Studies conducted in different populations have consistently reported reduced quality of life among individuals with dysphonia or chronic voice complaints (17). However, the burden observed in the present study may reflect additional contextual factors, including limited awareness of vocal hygiene, delayed help-seeking behavior, and restricted access to specialized voice therapy services in many developing regions. Regional research has suggested that lack of preventive voice care and insufficient availability of speech-language pathology services may contribute to prolonged voice problems and greater functional impairment (18).

The findings of this study emphasize the importance of incorporating quality-of-life assessment tools into routine voice evaluation. Traditional clinical assessments such as perceptual ratings, acoustic measures, or laryngeal examinations provide important diagnostic information but may not fully capture the patient's subjective experience. Instruments such as the Voice-Related Quality of Life scale allow clinicians to evaluate how voice disorders influence everyday communication, emotional health, and social participation. Integrating patient-reported outcomes into voice assessment can therefore support more comprehensive and patient-centered management strategies.

The study also has several limitations that should be considered when interpreting the results. The use of convenience sampling may limit the generalizability of the findings to the broader population. Participants were recruited primarily from clinical settings, which may result in overrepresentation of individuals experiencing more severe voice complaints. In addition, the study relied on self-reported questionnaires without objective acoustic or laryngeal examination data, which may introduce response bias. The cross-sectional design also prevents determination of causal relationships between voice quality and quality of life.

Despite these limitations, the study contributes valuable evidence regarding the impact of voice disorders on quality of life within a local population. The results highlight the importance of early identification and management of voice problems, particularly among individuals with high vocal demands. Preventive education regarding vocal hygiene, workplace modifications to reduce vocal strain, and increased access to speech-language therapy services may help reduce the burden of voice disorders and improve overall quality of life among affected individuals. Future research should consider larger multi-center studies incorporating objective voice assessment and longitudinal designs to better understand the progression and long-term impact of voice disorders on quality of life.

CONCLUSION

Voice disorders have a substantial impact on the quality of life of affected individuals, influencing functional communication, emotional well-being, and social participation. The findings of this study indicate that a considerable proportion of participants experienced poor or fair voice quality, and the mean V-RQOL score reflected a moderate level of impairment in voice-related quality of life. A strong negative correlation between perceived voice quality and V-RQOL scores demonstrated that worsening voice quality is associated with greater limitations in daily functioning and emotional health.

The results highlight that voice disorders extend beyond physiological abnormalities of the vocal mechanism and affect broader psychosocial dimensions of health. Individuals whose professions require frequent voice use, such as teachers, call center workers, singers, and traffic wardens, may be particularly vulnerable to the negative effects of voice disorders due to sustained vocal demands. These findings reinforce the importance of recognizing voice disorders as conditions that can significantly interfere with occupational performance, interpersonal communication, and overall well-being.

The study emphasizes the need to incorporate patient-reported outcome measures, such as the Voice-Related Quality of Life (V-RQOL) questionnaire, into routine voice assessment and management. Such tools provide valuable insight into how voice disorders affect everyday life from the patient's perspective and support a more comprehensive and patient-centered approach to voice care.

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