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OCCUPATIONAL IMPACTS ON HYPERFUNCTIONAL DYSPHONIA: A COMPARATIVE BASELINE PROFILE OF PROFESSIONAL VS. NON-PROFESSIONAL VOICE USERS

Speech & Hearing

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ABSTRACT

Hyperfunctional dysphonia is a prevalent voice disorder characterized by excessive laryngeal musculoskeletal tension. While the condition affects the general population, Professional Voice Users (PVUs) face distinct "financial imperatives" and occupational demands compared to Non-Professional Voice Users (NPVUs). This study aimed to determine if the baseline clinical profile of hyperfunctional dysphonia—specifically acoustic impairment and psychosocial handicap—differs significantly based on occupational status prior to therapeutic intervention. A cross-sectional baseline analysis was conducted on 50 adults (25 PVUs, 25 NPVUs) diagnosed with hyperfunctional dysphonia. Participants underwent a multi-parametric assessment battery including objective acoustic analysis (Jitter, Shimmer), auditory-perceptual evaluation (GRBAS), and the Voice Handicap Index (VHI-30). Baseline data revealed high physiological and psychosocial severity across the entire cohort. Acoustic analysis showed elevated Jitter (>1.3%) and Shimmer (>6.4%) with no significant stratification by occupation. Similarly, VHI scores indicated moderate-to-severe handicap (~30) for both groups. A Pearson correlation analysis revealed a disconnect ($r \approx 0$) between objective acoustic irregularity and subjective handicap. The findings suggest that the physiological manifestation of hyperfunctional dysphonia is universal, irrespective of occupational voice demand. However, the lack of correlation between acoustics and handicap highlights the multidimensional nature of the disorder, suggesting that "occupational bias" should not dictate the diagnosis or assessment protocol.

KEYWORDS

Hyperfunctional Dysphonia, Professional Voice Users, Voice Handicap Index, Acoustic Analysis, Occupational Health.

INTRODUCTION

Hyperfunctional dysphonia, also known as muscle tension dysphonia, is a condition characterized by excessive laryngeal musculoskeletal tension and "pressing" of the vocal folds (Verdolini et al., 1998). It imposes a significant burden on communication and occupational performance, particularly given the high demands placed on the vocal mechanism in modern society. The prevalence of dysphonia varies, rising dramatically to approximately 44% among Professional Voice Users (PVUs) such as teachers and singers, compared to the general population (Roy et al., 2005).

Clinical literature often distinguishes between PVUs, whose livelihood depends on vocal quality (e.g., singers, teachers), and Non-Professional Voice Users (NPVUs), for whom vocal quality is incidental (e.g., clerical staff) (Cohen et al., 2012). A prevalent "Vocal Athlete" hypothesis suggests that PVUs may possess heightened "interoceptive awareness" regarding their vocal mechanism (Gilman et al., 2014). Furthermore, PVUs operate under a "Financial Imperative," where dysphonia represents a direct threat to economic stability.

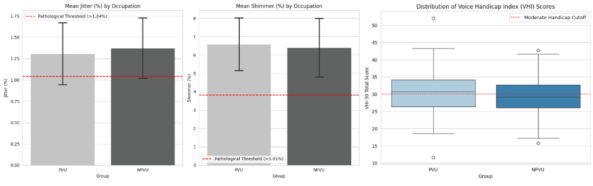
However, it remains unclear if these occupational pressures result in a different clinical presentation at the onset of seeking treatment. Do professionals report significantly higher psychosocial handicap (Voice Handicap Index) than non-professionals for the same degree of acoustic impairment? This study compares the acoustic and psychosocial profiles of PVUs and NPVUs, testing the hypothesis that occupational demand moderates the severity of the disorder at presentation.

METHODOLOGY

This quantitative, cross-sectional investigation analyzed baseline (T0) data from 50 adults (aged 18–60) diagnosed with hyperfunctional dysphonia, excluding patients with organic laryngeal lesions. To evaluate the role of occupational demand, the cohort was stratified into two equal groups based on daily vocal load: Professional Voice Users (PVUs) with high vocal demand (>4 hours/day) and Non-Professional Voice Users (NPVUs,) with low demand (<4 hours/day) (Hunter et al., 2020).

The assessment protocol was conducted in a sound-treated environment with ambient noise levels kept below 40 dB. A multi-parametric assessment battery was employed, utilizing Praat software (v.6.1) (Boersma & Weenink, 2023) to extract objective acoustic perturbation measures (Jitter and Shimmer), alongside blinded auditory-perceptual ratings using the standardized GRBAS scale. Additionally, the Voice Handicap Index-30 (VHI) was administered to quantify the functional, physical, and emotional impact of the disorder (Johnson et al., 1997). Statistical analysis was performed using IBM SPSS (v.29.0). Following normality testing via the Shapiro–Wilk method, descriptive statistics and Pearson's correlation coefficients were calculated to determine the relationships between occupational status, objective acoustic instability, and subjective psychosocial handicap.

RESULTS AND DISCUSSION



The study cohort (N=50) displayed a gender distribution of 54% female and 46% male, aligning with established epidemiological trends regarding the prevalence of hyperfunctional voice disorders (Roy et al., 2005). Baseline (T0) analysis confirmed a pathological population, with scores for Jitter, Shimmer, and VHI deviating significantly from normality ($p < .05$). Acoustic evaluation revealed elevated perturbation across the entire sample, with mean Jitter scores (1.31%–1.39%) and Shimmer scores (6.47%–6.60%) exceeding normative thresholds for vocal stability (Hirano, 1981). Concurrently, Voice Handicap Index (VHI) scores clustered around a mean of 29.95 (± 5.70), indicating a moderate level of perceived psychosocial and functional impairment prior to intervention.

Contrary to the hypothesis that the "financial imperative" faced by Professional Voice Users (PVUs) would drive higher baseline severity or distinct psychosocial reporting, the data revealed a remarkable homogeneity between PVUs and Non-Professional Voice Users (NPVUs). Interaction analysis demonstrated that both groups-initiated therapy at statistically comparable starting points for both physiological instability and perceived handicap. This suggests a universality in the biomechanical manifestation of hyperfunctional dysphonia; the excessive laryngeal tension governed by tissue viscoelasticity and aerodynamics affects the vocal mechanism uniformly, irrespective of occupational classification (Titze, 2006). Consequently, the threshold for seeking treatment appears similar across groups, with non-professionals reporting social limitations comparable to the occupational limitations reported by professionals.

Perhaps the most critical finding was the disconnect between objective and subjective measures. Pearson correlation analysis indicated a

negligible relationship ($r \approx 0$) between acoustic irregularity (Jitter/Shimmer) and VHI scores. This lack of covariance supports the "Vocal Athlete" hypothesis regarding interoceptive awareness: PVUs may perceive significant handicap from subtle sensory changes not yet capturing high acoustic perturbation, whereas NPVUs may require severe acoustic deterioration to report similar handicap levels (Gilman et al., 2014). This disconnect highlights the multidimensional nature of the disorder, confirming that "occupational bias" should not dictate clinical expectations. Ultimately, the severity of the lived experience cannot be predicted solely by acoustic analysis, necessitating a comprehensive, multi-parametric assessment battery for all patients regardless of their vocational demands (Cohen et al., 2012).

CONCLUSION

This comparative baseline profile demonstrates that Occupational Status does not strictly dictate the initial severity of hyperfunctional dysphonia. Both Professional and Non-Professional Voice Users present with comparable levels of acoustic impairment and psychosocial handicap. The lack of correlation between objective acoustics and subjective handicap underscores the multidimensional nature of voice disorders. Clinicians should avoid "occupational bias" and ensure that assessment protocols are comprehensive, addressing both the physiological impairment and the unique psychosocial needs of the individual, regardless of their vocational label.

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