



Original Article

Presbyphonia: Quality of Life Following Voice Therapy Intervention

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ABSTRACT

The deterioration of respiratory capacity that comes with aging exacerbates the consequences of presbyphonia. Diaphragmatic breathing is to improve the usage of respiratory muscles enough to cause respiratory and phonatory alterations. **Objectives:** To determine the effectiveness of voice therapy intervention in terms of improved quality of life for those with presbyphonia. **Methods:** The interventional study, a non-probability convenience sampling method was used to select 10 participants with presbyphonia identified by ENT, otolaryngologist to a SLP for either vocal function exercises or phonation resistance training exercises in order to improve their quality of life following a three-week course of twice-weekly therapy. Through the (V-RQOL) protocol the studies was used to evaluate the quality of life in presbyphonia before and after voice treatment. **Results:** Total 10 individuals were divided in 3 age groups majority 5 were in 51-60 age, 2 in 40-50 age among them 60% males and 40% females. The effect of treatment before and after intervention showed statistical significance difference (P-value = 0.001) which present significant improvement in quality of life in presbyphonia. **Conclusions:** According to preliminary evidence, patients with presbyphonia may benefit most by voice interventions and enhance subglottal pressure management, increase airflow, and improve patients' quality of life. Better results in terms of self-evaluation for phonation.

INTRODUCTION

In the United States, there are 41.5 million older individuals who are over 65. The number of senior people in the US is expected to nearly quadruple by 2030 and account for over 20% of the country's population. It is generally known that the subsystems that support voice production undergo a number of age-related changes, including alterations in respiration, phonation, and resonance. These aging-related changes and/or deteriorating health in certain senior people are enough to lead to vocal abnormalities that impair communication and have a detrimental impact on quality of life [1]. Approximately 10% of the general population and 50% of voice specialists report having voice abnormalities. Although both adults and children are

impacted, the causes vary depending on the age groups [2]. Presbyphonia is characterized as a series of physiological occurrences linked to the ageing process of the vocal folds. It comprises a variety of larynx-related morphological, endoscopic, and vocal acoustic alterations that are brought on by age. Mucous membranes, cartilage, intrinsic and extrinsic muscle mass, as well as a neurological and functional deficiency, are all affected by this process [3]. The clinical condition linked to presbylarynx is known as presbyphonia. Vocal problems can occur in between 12% and 35% of adults over the age of 65. Presbyphonia is the most typical cause of dysphonia in this group with a diagnosis of presbyphonia made in one-

fourth of the cases [4]. The high prevalence of voice abnormalities in older individuals is caused by a number of etiologies. One diagnosis for vocal issues linked to aging-related physiological changes is presbyphonia [5]. All voice production subsystems may be affected by these modifications. Communication is hampered by voice issues, which also lower quality of life [6]. The vocal fold's resistance to the driving pressure from the lungs causes them to push away from one another, starting the vibratory process. The lung-thorax unit's pressures have a role in loudness and pitch modifications as well [7]. Presbyphonia describes the signs of an ageing voice, whereas presbylarynx describes the structural changes that occur with ageing to the larynx. Due to the lack of a universally accepted definition of presbyphonia and the fact that age-related laryngeal changes are generally non-specific, a variety of features are typically used [8]. Age related structural changes in the larynx lead to vocal impairments (presbylarynx). Both the endolaryngeal soft tissues and the ectolaryngeal skeleton are affected by these changes (particularly the vocal folds). When there is a shortage of air, the vocalis muscle atrophies and becomes hypotonic, which is clinically evident as vocal fold bending and a glottic chink in the shape of a spindle [9]. Additionally, the respiratory muscles are crucial for controlling airflow because they work to offset the lungs' recoil pressures during the expiratory phase of speaking [10]. It's crucial to rule out any alternative diagnoses, such as social isolation, anxiety, and depression, before a presbyphonia diagnosis is confirmed. It may also coexist with other vocal diagnoses like benign vocal fold lesions, chronic inflammatory laryngitis, acute inflammatory laryngitis, muscle tension disorders, neurologic disorders, vocal malignancies, vocal fold [11, 12]. Patients with presbyphonia frequently self-report changes in voice quality, difficulty speaking, and increased fatigue in addition to clinician-assessed measures [13, 14]. With ageing, the phonation-related systems undergo significant physiological changes. Vocal tremor, vocal fold bending, prominence of the vocal processes, partial glottic closure, reduced phase and amplitude symmetry, and shrinking and weakening of the vocal folds are all possible effects of this [15]. Since the 1930s, when the first books on voice therapy were published, several books have proposed a wide range of therapeutic modalities for voice control. From these articles, a variety of philosophical perspectives on the therapy of voice problems have emerged [16, 17]. The goals of a program for physiologic voice management include modifying and improving the laryngeal muscles' strength, tone, balance, and endurance; improving the coordination between laryngeal muscle effort, respiratory effort and control, and supraglottic laryngeal tone modification; and

establishing a sound vocal fold cover [18, 19]. Aged voices tend to be weak, breathy, and strained. Reduced loudness, erratic hoarseness, lower pitch for females, higher pitch for men, greater vocal effort, and vocal tiredness are among the vocal symptoms [20]. As a result, it is believed that age-related systemic and structural changes all contribute to the ageing voice and deteriorating vocal quality [21]. Most persons over 40 years old can see some presbylaryngis symptoms, although many would deny having any voice issues [22]. An investigation into presbylaryngis and pathologic presbyphonia was started. We proposed that pathologic presbyphonia would result from the interaction of certain social, anatomical, and auditory elements with presbylaryngis [23]. Presbyphonia expert voice treatment is highly gratifying, and it is best delivered by a team that includes a doctor, a speech-language pathologist, and usually a voice expert. Along with voice treatment, the voice's wellspring of power, Direct voice therapy approach that incorporates vocal function exercises (VFE) and the phonation resistance training exercise (PhoRTE) method [24]. The study's purpose was to assess individuals with presbyphonia or prebylarynx, whose quality of life was affected in a number of different ways. This study concentrating on voice interventions that enhanced communication abilities, reduce emotional symptoms, and assist people with various voice techniques in their daily lives as a consequence.

METHODS

The interventional study was conducted at Sehat Medical Complex hospital located in Lahore. Data was conducted in span of 6 months. The study population consists of n=10 patients diagnosed with Presbyphonia that refer by ENT specialist or otolaryngologists by Non-Probability Convenience sampling and from both gender with age of 40-70 visit at SMC hospital. A trained research team member will be responsible for recruiting patients. The informed consent will be sought on the day of their initial appointment. Before beginning VFE and PHoRTE therapy, the informed consent procedure will take place in a private room. If they agree, the participants will be randomly assigned to one of the research arms. For Exercises for vocal function in the following four steps that include warm-up, stretching, contraction, power workouts that proceed. The exercises should be performed twice consecutively with the utmost softness, ease of initiation, and forward placement of tone. The four exercises for PhoRTE Keep the vowel /a/ in place with a loud, use a loud, energetic voice to glide on the vowel /a/ across the full pitch range, from low to high and from high to low. Shout useful words in a high-pitched voice. By repeating the same words and phrases, you may project a commanding voice with a

low tone. The data collection performa was used in order to evaluate quality of life in presbyphonia after voice therapy intervention through the voice related quality of life V-RQOL. Session was conducted thrice a week and duration of session was 45 min. The data were organized and SPSS 25.0(Statistical Package for Social Studies)was used for statistical analysis. The paired sample t-test was used to find out the before and after difference in QOL among patients. P-value <0.05 was considered as significant.

RESULTS

Total sample consider of 10 individuals were divided in 3 groups of age majority 5 were in 51-60 age, 2 in 40-50age among them 60% males and 40% females. Participants in this study came from a variety of occupations, each of which had an impact on their quality of life. The participant works as a businessman, a housewife, a builder, and a teacher. Minority of the participants were housewives (3 of them, 40%), businessmen (3 of them, 30%), teachers (2 of them, 20%), and builders (1 of them, 10). The frequency and percentage was carried out of demographics variables table 1.

Variable	N (%)
Age	
40-50 yrs	2(20%)
51-60yr	5(50%)
61-70yr	3(30%)
Gender	
Male	6(60%)
Female	4(40%)
Occupation	
Business man	3(30%)
House wife	4(40%)
School teacher	2(20%)
Builders	1(10%)

Table 1: Show frequency and percentage of demographic variables.

According to table 2 the result of this study the mean and standard deviation of pretest was (M=3.1000 ± SD=4.50802) the pretest mean standard deviation of pretest reading and the mean and standard deviation of posttest showed (M=22.6000 ± SD=3.80643) After compering the statistics of pretest and posttest through paired t-test the analysis showed statistical significance in the result that indicated by p value 0.001 < 0.05 (5%) which indicating rejecting null hypothesis and accepting alternative hypothesis that showed significant improvement in quality of life in presbyphonia after following voice intervention.

Paired Samples Statistics			
	N	Mean ± SD	P-Value
Pretest	10	33.1 ± 4.50	0.001
Posttest	10	22.6 ± 3.83	

Table 2: Pre-post comparison of Qol among patients

After the analysis of pretest and posttest according to standardize tool V-RQOL. In the table 3 the subject with presbyphonia demonstrated a poor quality of life throughout the pretest. After the following VFE and PhoRTE in session's period participant with presbyphonia showed very good improvement in their quality of life.

Variable	Frequency	
Categorical View of Pre and Post Treatment		
Quality of Life	Pre Test	Post Test
Very good	0(0%)	5(50%)
Good	1(10%)	1(10%)
Fair	1(10%)	4(40%)
Poor	8(80%)	0(0%)

Table 3: Comparison of improved quality of life among patients

DISCUSSION

Improved respiratory function would result in better voice results, which was the main justification for include respiratory muscle and phonatory in voice treatment. Because there was few research on the vocal results from breathing exercises and presbyphonia at the time of this trial, the mechanism underlying this notion remained unknown. According to Siqueira et al., that in order to improve understanding of the mechanism of action, future research identify the independent variable is a respiratory training and report a wide variety of voice and respiratory outcomes [25]. All but one of the voice treatments considered showed that at least one outcome measure might improve statistically as a result of voice therapy. Desjardins et al., and all of the publications favored using voice treatment as the main strategy [26]. Along with the conclusions reported, this research looked at the population's compliance with home treatment recommendations. According to Tay et al., study conducted, both VFE and PhoRTE participants seemed to start practicing their program on a regular basis [27]. According to Angadi et al., who conducted two independent reviewers searched for outcome studies that employed VFEs as an intervention. VFEs are effective in boosting vocal function in people with normal and disordered voices, presbylaryngeus, and professional voice users, according to outcome studies [28]. The efficacy of remedies that help the ageing voice has been the subject of several vocal researches. The vocal parameters and quality of life of the elderly people provided evidence of the benefits of the suggested treatment. The findings of the self-assessment showed improvement

from before to after treatment, supporting evidence from earlier research that show improved voice-related quality of life following speech therapy in the elderly. In contrast of Hartnich et al., and Gampel et al., noted that the improvement in this study was more pronounced in conditions connected to the physical element of presbyphonia, which have previously been characterized to have the greatest effects on older people's quality of life [29, 30]. According to this study only three weeks after the end of the treatment was observed, a socio-emotional improvement was noted. It is important to keep in mind that this was the time when the patients had the chance to engage in more communication scenarios and were therefore better able to gauge the improvement in vocal performance as well as its emotional impact on social activities. The senior population has a strong urge to communicate, but they also tend to negatively characterize their voice quality and experience emotional effects from this connection, making improvement in regard to socio-emotional elements following therapy significant. Thus, it is crucial to talk about the necessity for regular follow-up with these patients in order to check on how they are carrying out their home exercises.

CONCLUSIONS

The real improvements in self-assessment results came from voice therapy, which included vocal function exercises and phonatory resistance training exercises as a result of a balance between both the vocal folds' capacity and the resulting respiratory flow to produce an acceptable amount of resistance to adjust the airflow. Difference was found in the V-RQOL protocol results between the participants, with consistent improvement immediately after therapy. These approaches allow for enhancement of vocal strength, projection, and expression of emotion and reduce the anxiety or depression among the population that diagnosed by presbyphonia. Benefits extend to improved patient confidence, increased vocal authority, and ultimately enhanced communication skills in them.

Conflicts of Interest

The authors declare no conflict of interest

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