

The Effects of a Voice Education Program on VHI Scores of Elementary School Teachers

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Summary: Introduction. Teachers seem to be vulnerable to voice disorders because of excessive use of their voice. The purpose of this study was to investigate the effects of a voice education program on the Vocal Handicap Index (VHI) scores of elementary school teachers in the Persian education system.

Method. This was a semi-experimental study, performed in Shiraz public schools. Ten schools were selected on their similarity in number of students and teachers, and allocated at random to training or control groups. Sixty-one teachers in the training group and 66 teachers in the control group completed the VHI in the first week. Teachers in the trained group received voice education for 4 weeks, and then continued to follow the program for a further 4 weeks. The control group received no training. After 8 weeks, all subjects completed the questionnaire again.

Results. Compliance was good for all practices except “breathing exercises” and “using amplifiers” where it was exceptionally poor. Teachers in the training group improved significantly in total VHI score (from 14.2 to 6.8), whereas the control group showed a significant worsening (from 10.1 to 13.7). These effects were significant ($P < 0.05$) for total VHI score and for all subscales. The corresponding effect sizes for the training group range from -0.53 to -0.84 (-0.83 in the overall VHI).

Conclusion. A voice education program can have positive effects on the voice of teachers, even without dysphonia, in the middle of their teaching. Such a program may have a place in the Persian education system.

Key Words: Voice hygiene–Voice disorder–voice education–VHI–Teacher.

INTRODUCTION

There is a direct link between the long-term professional use of the voice and the development of voice disorders. Teachers are a large group of professional voice users at high risk for voice disorders, and often are not aware of voice care.^{1,2} As a result, there is a high prevalence of voice disorders in teachers.^{3–6} Roy et al reported 43% prevalence of voice disorders among the general population compared with 57.3% for teachers.⁶ Smith et al declared 5.6% for the general population and 14.6% for teachers.⁷

Voice disorders due to long-term voice abuse cause economic, professional, and personal complications in classroom teachers.^{3,8,9} They have a negative effect on the teacher's voice quality,¹⁰ causing loss of income,¹¹ absenteeism, and work limitation.¹² In addition, voice disorders have negative effects on the speech processing and learning of students in the classroom.^{13,14} Given that an unhealthy voice makes teaching and learning more difficult, some researchers have focused on voice education for the prevention of voice disorders in teachers.^{15–19} Boone et al said, “identification and reduction of vocal abuse-misuse are the primary goals in voice therapy for hyperfunctional disorders such as a functional dysphonia with or

without such physical changes as vocal nodules, polyps or contact ulcer.”²⁰

An important first-line strategy is to use a voice hygiene program, and the majority of most voice education programs would be described as voice hygiene, sometimes modified with the addition of exercises or other basic therapeutic techniques. Voice hygiene is a preventive and therapeutic approach that focuses on behavior modification to protect voices from abusive and hyperfunctional behaviors during vocalization.^{21,22} Vocal hygiene usually includes education on the voice mechanism, abusive behaviors, excessive talking, abnormal pitch and loudness, reflux control, and systemic and laryngeal hydration. One would then hope to modify such behaviors to decrease or even eliminate the risk factors, particularly in the case of functional voice disorders.²²

There is no consensus about the efficacy of voice education and voice hygiene. Some researchers find a vocal hygiene program effective in reducing vocal loading symptoms in teachers, arguing that it may be useful even for noisy children and talkative people.²³ Others report no effect. We consider the evidence briefly; Table 1 summarizes the method and main results of some of the key studies in the literature.

Evidence in favor of vocal hygiene

Pasa et al reported that a voice hygiene program is effective in decreasing vocal symptoms and increasing voice knowledge of teachers. Hygiene training was more effective than vocal functional exercises in reduction of symptoms, although the sample size was small.¹⁸

Pedersen et al showed that an updated voice hygiene program including abdominal breathing during speech, a changed intonation pattern, and resonance training could improve the quality of life of patients with functional voice disorders.²⁴

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TABLE 1.

A Summary of Key Studies Assessing the Value of Voice Hygiene and Voice Education Using Questionnaire-based Outcomes

Duffy & Hazlett¹⁵ Trainee teachers VHI at baseline and post treatment	
Direct therapy (N = 12) Training to encourage healthy vocal behavior, modifying inappropriate techniques or compensatory behaviors. Focus on posture, respiration, release of tension in vocal apparatus, resonance, and voice projection.	Baseline VHI = 15.0 Posttreatment VHI = 14.4
Indirect therapy (N = 20) Information on voice production, amount and type of voice use, traumatic vocal behavior, hydration, lifestyle, and diet.	Baseline VHI = 12.8 Posttreatment VHI = 14.9
Control (N = 23) No intervention	Baseline VHI = 11.5 Posttreatment VHI = 8.6
Bovo et al¹⁶ Female kindergarten and primary teachers Mean (SD) VHI at baseline, 12 weeks and 12 months.	
Intervention (N = 21) Course on voice care, including a theoretical seminar (120 minutes) and small group therapy (180 minutes).	Baseline VHI = 24.0 (12.8) 12 weeks VHI = 19.1 (9.7) 12 months VHI = 21.9 (12.7)
Gillivan-Murphy et al¹⁹ Teachers with self-reported voice problems. Mean (SD) change in VRQOL from baseline to 8 weeks. N.S. between treatment and control	
Combined treatment (N = 9) Vocal function exercises and voice hygiene	Baseline VRQOL = 72.8 (18.9) 8w VRQOL = 88.3 (6.3) Δ VRQOL = 15.6 (15.8)
Control (N = 11) No intervention	Baseline VRQOL = 57.7 (22.7) 8w VRQOL = 64.3 (10.4) Δ VRQOL = 6.6 (10.4)
Pedersen et al²⁴ Patients with functional dysphonia lasting at least for 2 weeks. Mean change in VRQOL from baseline to 4 weeks.	
VH (N = 7) 30 minutes sessions about 1-month program contains: abdominal respiration, posture correction, intonation, and resonance training	Baseline VRQOL = 66.8 4w VRQOL = 75.0 Δ VRQOL = 8.2 (N.S.)
Medical treatment (N = 9) Treated for: allergy, viral or bacterial infections, GERD, environmental irritants	Baseline VRQOL = 68.1 4w VRQOL = 85.8 Δ VRQOL = 17.8 (N.S.)
Nanjundeswaran et al²⁵ Student teachers in Pittsburgh and Hong Kong (summary of two centers presented) Mean (SD) VHI at baseline and at 4 weeks	
Voice Hygiene alone (N = 9) 2-hour group seminars + individual session for each participant (10–15 minutes) to set personal vocal hygiene program on hydration, inflammation, heavy voice use.	Baseline VHI = 16.2 (6.3) 4w VHI = 10.2
Voice Hygiene plus voice therapy (N = 8) 2-hour group educational seminars, training adapted from Lessac-Madsen resonant voice therapy. Deliver exercises during the 4-hour seminar, twice weekly.	Baseline VHI = 16.7 (3.7) 4w VHI = 7.3
Control (N = 10) No intervention	Baseline VHI = 20.7 (4.8) 4w VHI = 20.9
Roy et al²⁶ Elementary and secondary school teachers with history of voice problems VHI at baseline and following a 6-week treatment phase (* = estimated from graphs)	
Vocal hygiene (N = 20) Voice hygiene program adapted from Morrison and Rammage (1994) plus some other suggestions including: throat clearing, yelling, vocal load, speak behind noise, singing, low pitch, breathing, general health in detail. Four occasional sessions.	Baseline VHI = 26.0* 6w VHI = 26.5* P = 0.2 (N.S.)

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