Comparison of Voice Handicap Index Scores Between Female Students of Speech Therapy and Other Health Professions

*Dionysios Tafiadis, †Spyridon K. Chronopoulos, *Vassiliki Siafaka, *Konstantinos Drosos, ‡Evangelia I. Kosma, *Eugenia I. Toki, and *Nausica Ziavra, *Ioannina, †Arta, and ‡Larissa, Greece

Summary: Students' groups (eg, teachers, speech language pathologists) are presumably at risk of developing a voice disorder due to misuse of their voice, which will affect their way of living. Multidisciplinary voice assessment of student populations is currently spread widely along with the use of self-reported questionnaires. This study compared the Voice Handicap Index domains and item scores between female students of speech and language therapy and of other health professions in Greece. We also examined the probability of speech language therapy students developing any vocal symptom. Two hundred female non-dysphonic students (aged 18–31) were recruited. Participants answered the Voice Evaluation Form and the Greek adaptation of the Voice Handicap Index. Significant differences were observed between the two groups (students of speech therapy and other health professions) through Voice Handicap Index (total score, functional and physical domains), excluding the emotional domain. Furthermore, significant differences for specific Voice Handicap Index items, between subgroups, were observed. In conclusion, speech language therapy students had higher Voice Handicap Index scores, which probably could be an indicator for avoiding profession-related dysphonia at a later stage. Also, Voice Handicap Index could be at a first glance an assessment tool for the recognition of potential voice disorder development in students. In turn, the results could be used for indirect therapy approaches, such as providing methods for maintaining vocal health in different student populations.
Key Words: Voice Handicap Index–Self-perceived analysis–Students–Speech therapy–Health professions.

INTRODUCTION

In recent years voice disorders relevant to occupational groups have received a widespread attention from researchers.[1,2] Population-based studies noted that voice disorders have prevalence depending on age factor,[3–7] with an estimated range of 4.8%–29.1%, on gender,[1,8] and on specific professional voice users, including teachers,[2,8–10] singers,[11] priests,[12] or even aerobics instructors.[13,14] Specifically, the occupational groups appear to be at the most risk of developing a voice disorder.[2,8,15–19]

Epidemiologic studies focused on the prevalence of vocal symptoms and voice disorders in different student groups, mostly on persons attending programs in order to become teachers.[2,20,21] One part of these studies focused especially on female students.[22–24] Similarly, the predominance of voice disorders in students (12%) is frequently exhibited prior to becoming speech language therapists (SLTs).[25] Van Lierde and partners[26] reported that SLT senior students mentioned hoarseness, laryngeal irritations (25%), and decreased vocal quality during the morning hours (13%).

Evidence-based models[27,28] and multidimensional protocols have been suggested to evaluate voice and voice disorders.[29] These protocols included laryngeal imaging,[30–34] aerodynamic,[35–37] perceptual-acoustic evaluation,[38–41] and the impact of voice on the quality of life via self-perceived questionnaires[42–45] such as the Voice Handicap Index (VHI).[46]

Since the prototype VHI[46] was released, many versions have been developed. These included (1) Voice Handicap Index-10,[47] (2) Singing Voice Handicap Index,[48] (3) Singing Voice Handicap-10,[49] and (4) Pediatric Voice Handicap Index.[50] VHI is included in most of the current research[51–54] and has been adapted in many languages,[55–65] including Greek.[66] It has also been correlated to acoustic measurements in different types of populations[67–75] or used in comparison studies.[76]

The primary purpose of the current study was to compare the VHI domains and items' scores between female students of speech and language therapy (50%) and of other health professions (OHP) (50%) in Greece. The second purpose was to explore, using VHI, the probability of SLT students being at risk to develop any type of vocal symptom.

MATERIALS AND METHODS

Participants

Two hundred female students were recruited from the School of Health and Welfare – Technological Educational Institute of Epirus. Participants who met the following criteria for at least 2 weeks before recruitment were excluded from this study. These participants (1) had no former history of laryngeal or respiratory system disorders, (2) had no former chronic history of laryngeal disorder or trauma, (3) had not reported complaints or any type of voice misuse, and environmental risk factors

TABLE 1.
Comparison of Medians Between SLT and OHP Students for VHI Total Score and VHI Domains

	SLT Students	OHP Students		
	Median (IQR)	Median (IQR)	Mann-Whitney U	P Level
Total	26.00 (14.50–40.00)	18.00 (15.00–27.00)	4175.50	0.005*
Functional	8.00 (4.75–14.00)	6.00 (5.00–8.00)	3857.50	0.000*
Physical	8.00 (5.00–13.25)	7.00 (5.00–8.00)	4214.00	0.003*
Emotional	8.00 (5.00–13.00)	7.00 (5.00–9.00)	4857.50	0.143

* P level at <0.05.
Abbreviations: IQR, interquartile range; OHP, other health profession; SLT, speech language therapy; VHI, Voice Handicap Index.

(eg, overexposure to noise, exposure to chemicals, exposure to dust, etch), (4) had no alcohol or drug addiction, and (5) had no symptoms consistent with gastroesophageal reflux disease or laryngopharyngeal reflux.

Data collection

All students completed the Voice Evaluation Form, which is a consensus-based template provided by the American Speech-Language-Hearing Association.[77] They also filled in the VHI, a culturally adapted and validated questionnaire in Greek language.[66] VHI consisted of 30 questions that are summarized into a total score (VHI-T) split in emotional (VHI-E), physical (VHI-P), and functional (VHI-F) domains.

Statistical analysis

Variables with skewed distribution are expressed as median (interquartile range). Qualitative variables were expressed as absolute and relative frequencies. The comparison of proportions was conducted using chi-square tests. Mann-Whitney test was used for the comparison of continuous variables between the two study groups. All reported P values were two-tailed. Statistical significance was set at $P < 0.05$ and analyses were conducted using *SPSS* statistical software (Version 19.0., Armonk, NY: IBM Corp).

RESULTS

The sample consisted of 200 female students, 50% SLT and 50% OHP. The mean age of the total sample was 21.50 years (standard deviation [SD] = 2.33), ranging from 18 to 31 years of age. The mean age for speech therapy students was 22.04 years (SD = 2.38) and for OHP students was 22.22 (SD = 2.38). The two groups were similar as far as age and studies are concerned.

SLT students had a significantly higher overall VHI median (Mdn = 26.00) compared with OHP students (Mdn = 18.00) ($U = 4175.50$, $P = 0.05$). The same statistically significant differences of medians were computed for VHI-F (SLT: Mdn = 8.00; OHP: Mdn = 6.00; $U = 3857.00$, $P = 0.000$) and for VHI-P (SLT: Mdn = 8.00; OHP: Mdn = 7.00; $U = 4214.00$, $P < 0.05$), with SLT giving higher scores. A non-significant difference was observed for the VHI-E domain between SLT and OHP students (Table 1).

Comparison of medians between SLT and OHP students for VHI functional questions (items) showed statistically significant differences for items F1 (SLT: Mdn = 1.00; OHP: Mdn = 1.00; $U = 4253.00$, $P < 0.05$), F6 (SLT: Mdn = 1.00; OHP: Mdn = 1.00; $U = 4341.00$, $P < 0.05$), and F12 (SLT: Mdn = 1.00; OHP: Mdn = .000; $U = 4351.00$, $P < 0.05$). For the rest of the VHI-F items, non-significant differences were observed (Table 2).

TABLE 2.
Comparison of Medians Between SLT and OHP Students for VHI-F Items

	SLT Students	OHP Students		
Functional	Median (IQR)	Median (IQR)	Mann-Whitney U	P Level
F1	1.00 (0.000–2.00)	1.00 (0.000–1.00)	4253.00	0.002*
F3	1.00 (0.000–1.25)	0.000 (0.000–1.00)	4568.50	0.023
F5	1.00 (0.000–1.25)	1.00 (0.000–1.00)	4645.00	0.036
F6	1.00 (0.000–2.00)	1.00 (0.000–1.00)	4341.00	0.005*
F8	.000 (0.000–1.00)	0.000 (0.000–1.00)	5302.50	0.589
F11	1.00 (0.000–2.00)	1.00 (0.000–1.00)	4528.00	0.018
F12	1.00 (0.000–2.00)	0.000 (0.000–1.00)	4351.00	0.005*
F16	1.00 (0.000–1.00)	1.00 (0.000–1.00)	5374.00	0.757
F19	1.00 (0.000–1.00)	1.00 (0.000–1.00)	4996.00	0.219
F22	1.00 (0.000–1.00)	1.00 (0.000–1.00)	4870.00	0.123

* P level at <0.05.
Abbreviations: IQR, interquartile range; OHP, other health profession; SLT, speech language therapy; VHI-F, Voice Handicap Index-Functional.