

Personal and Professional Characteristics of Music Educators: One Size Does Not Fit All

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Summary: Objectives/Hypothesis. The prevalence of voice disorders among various educator groups is well known, and voice disorders among music educators are higher than the general classroom educators. Music educators vary with respect to behavioral and personality factors, personal characteristics, type of music taught, job-specific environment, and governmental professional expectations. This study aims to identify risk factors for voice disorders in a heterogeneous population of music educators.

Study Design. An online survey was conducted with 213 respondents.

Methods. Survey questions addressed demographics, level of education, years of music teaching experience, specialty training, primary teaching assignments and instrument, vocal health behaviors, and diagnoses of voice disorders. Summary statistics and group comparisons are reported.

Results. Those whose primary instrument was voice reported a greater frequency of voice disorders. Female and older music educators also had a higher prevalence of voice disorders.

Conclusions. Music educators are a heterogeneous group of individuals who require more careful consideration in the prevention and treatment of occupational voice problems.

Key Words: Voice disorders–Music educators–Singers–Instrumentalists–Vocal health.

INTRODUCTION

Educators are at greater risk for vocal problems than the general population. Across several continents studies consistently point to educators as a ubiquitous group at risk for experiencing voice problems^{1–5} with nearly 50% of educators facing voice problems at any given point in time.⁶ The corpus of this literature has investigated specific groups of educators with the intention of informing interventions.^{7–10} Much of this research posits that addressing the unique challenges of the educator's discipline will ultimately lead to more focused treatments and better outcomes.

One such discipline of educators, music educators, is a particularly concerning group because they require consistent, clear, and in-tune vocal quality to perform their job. Bartlett and Hartwig¹¹ estimate that at some point in their career, over 90% of music educators at all levels and specialties experience work-related voice problems. Morrow and Conner⁷ noted that among educators, music educators are roughly four times more likely than classroom educators to develop voice-related problems. Most research involving music educators has been conducted with general music educators^{7,11–13} and choral educators.^{14–19} Since general music and choral music educators tend to sing more while teaching, they are usually singled out for studies of vocal problems more often than band and orchestra educators.^{20–22} Very little research has investigated band directors^{15–17,23} and even less focused on orchestra directors, who potentially raise their voices over loud music and who conceivably have less vocal training than do choir directors and some general music educators.^{20,24}

While some instrumentalists may have a strong vocal background, this is often not a requirement for working as an instrumental music educator. Due to the heterogeneity of the population of music educators, it is prudent to explore subpopulations of instrumental, choral, and general music educators to determine if the prevalence of vocal problems is widespread or concentrated within the profession. Investigating the unique characteristics of specialty and context within the music educator population and quantifying their individual teaching environments may enlighten our understanding of which music educators are particularly susceptible to experiencing voice problems.²⁵ In addition, taking into account the wide variability within this discipline will ultimately assist in more focused voice treatment strategies for this population.

Music educators can have wide variances based on personal characteristics, job-specific environment, professional expectations, and background and training, making the specific risk factors for voice problems of an individual educator unclear. Music educators have complex jobs that vary greatly by specialty (band/choir/orchestra/general music), funding (ie number of colleagues/private lesson availability/curricular and co-curricular ensembles), instrument (and whether the main instrument matches the area of specialty), level, and location. Personal characteristics including general health practices or level of experience add additional complexities to the study of this heterogeneous population. Therefore, voice use and environmental risk factors for music educators are not universal.

Purpose of the study

The purpose of this research is to estimate the prevalence of voice disorders/complaints among various subgroups of music educators. In addition, this study seeks to identify risk factors that create vulnerability to developing voice disorders in this heterogeneous population. To accomplish this goal, the results were analyzed from the quantitative portion of a mixed qualitative and quantitative survey.

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METHODS

Participants

The participants were music educators from the state of Illinois who were members of the professional organization, the Illinois Music Educators Association (ILMEA), which is the state chapter of the National Association for Music Education. The ILMEA represents the largest professional organization for K-12 music educators in the state and one of the primary investigators for this study is a member. Members were contacted *via* their regional representatives through an e-mail requesting participation on a survey about vocal health. Three separate e-mails between 2011 and 2012 were sent to active members to ensure a maximal response rate. The research was approved by the Internal Review Board on Human Subjects Research at Northern Illinois University. All consenting participants were provided a copy of their Health Insurance Portability and Accountability Act (HIPAA) rights and an explanation of the survey. No compensation was provided.

Instrumentation and collection

The survey was designed to be both a source of quantitative and qualitative data to optimize both the population characteristics and the personal experiences that contribute to the variability among music educators. Data collection was *via* an original survey that was developed based on past research²⁴ and current research questions. It was made available through SurveyMonkey.com where a link was distributed to all potential participants. The survey questions were a combination of forced choice and open-ended answers designed to gather information on demographics, level and type of music education, proficiency in various instruments, work load and employment contracts, vocal behaviors, and vocal health. See Appendix for an outline and description of the survey.

Variables for analysis

Subgroups of music educators

Age. The participants open-endedly reported on their chronological age.

Sex. The respondents reported their sex as “male,” “female,” or “other.”

Level of education. Level and type of education categories for respondents included bachelors in music education with vocal emphasis, music education with instrumental emphasis, vocal performance, instrumental performance, theory and composition, and history and literature. Advanced degree choices included masters in music education (with a vocal or instrumental), masters of performance (vocal or instrumental), masters in conducting, masters in theory and composition, and masters in history and literature. Doctoral degree reporting was open-ended.

Years of experience. The participants stated the years of experience in an open-ended format.

Specialty training. The specialty training included advanced training and certifications in specific music pedagogies and included endorsements in Suzuki, Kodály, Orff, Dalcroze, Kindermusik, Feldenkrais, and Alexander. An additional area was included to report on other endorsements not listed.

Primary instrument. The participants listed what they considered to be their primary instrument in a choice format. For analysis, data were divided between those reporting voice as their primary instrument and those reporting instruments from the wind, brass, string, or percussion family as their primary instrument.

Primary teaching assignment. The participants reported whether their primary teaching assignment was in the elementary, middle, or high school level and whether their primary teaching assignment was general music, choir, band, or orchestral conducting. Because in Illinois, licensure is inclusive of all levels and subject area, a preliminary analysis was conducted to verify primary teaching assignment matched reported area of expertise.

Voice disorders

The strictest definition of voice disorder requires a medical diagnosis from a physician. Additional definitions employ a complex of symptoms and complaints from a set number of symptoms experienced,²⁶ a complex of symptoms and physical signs (ie videoendoscopy signs of lesions),²⁷ and the achievement of a score above a cutoff on self-reported measures such as the Voice Handicap Index-10 (VHI-10).²⁸ To gain a complete picture of the voice difficulties, we employed two definitions of a voice problem in this research, report of a diagnosis/treatment, and a VHI-10 score. The list of symptoms and complaints occurred in the qualitative portion of the survey and was not included in this analysis.

Diagnosis and treatment. The participants reported if they received a diagnosis of a voice disorder and treatment by responding “yes” or “no.” If they responded “yes,” then they open-endedly clarified the type of voice disorder and treatment.

VHI-10. Previous investigations^{28–31} employed the standardized VHI-10³² to determine a functional or clinical presence of a voice disorder. The VHI-10 total score for each participant was calculated and used as a third marker of the presence of a voice disorder.

Additional identifiers of a voice problem included a high score on the Singing Voice Handicap Index-10 (SVHI-10),³³ a report of personal concern about their voice functioning during work through direct questioning, and *via* an informal survey about the stress they felt during their work relating to voice performance.

SVHI-10. Because music educators, regardless of formal voice training, are likely to sing during their work day, the SVHI-10³³ provided information about perceived impairment in their singing voice.

Vocal concerns. The participants were asked despite receiving a formal diagnosis of a voice disorder, if they had any

vocal concerns. They responded with “yes” or “no.” If they responded “yes,” then they open-endedly clarified their concerns.

Job stress inventory. A seven-question, nonvalidated job stress inventory assessing the level of perceived stress on the job as a result of vocal activity was used. On a five-level response (never, almost never, sometimes, almost always, always), participants were asked to rate each question about their voice activity at work. Questions included: (1) I consider changing jobs because of voice concerns. (2) I notice that my voice can affect my mood. (3) I get depressed because of voice concerns. (4) I worry if my voice does not work properly. (5) I worry that my voice may not be there for me. (6) I have confidence that my voice can meet the demands of my job (keyed in reverse). (7) I wonder if I am not doing my job well because of my voice.

Statistical analysis

Summary statistics were conducted on each variable. In addition, voice disorder frequency was determined by conducting simple percentages on the different criteria for voice problems listed above: reported diagnosis and treatment, VHI-10 score, SVHI-10 score, reports of vocal complaints, and a high score on the informal job stress inventory. A one-way analysis of variance (ANOVA) compared the frequency of reported voice disorders for each interested variable: age, sex, years teaching, specialty training, primary instrument, and primary assignment. So, for each five indicators of a voice problem, a one-way ANOVA using the interested variable determined if that variable showed differences in the frequency of voice complaints/disorders. If variables required further analysis, a *post hoc* correlation to clarify results was performed.

RESULTS

The survey link was sent to ILMEA inviting individuals to complete the questionnaire. A total of 238 responded to the survey. One participant did not consent, so the response was eliminated. A total of 24 participants completed less than 20% of the survey, resulting in their data being removed from analysis. Data were analyzed on the remaining 213 participants who completed most of the survey.

Descriptive and summary statistics

Age

The average age of participants was 38.95 years (SD 14.66). The largest age group was from 20–29 year olds (25%), then 30–39 year olds (23%), 50–59 year olds (20%), 40–49 year olds (14%), and 60 year olds and above (5%).

Sex

There was a difference in male versus female respondents with 34% (72) males and 66% (141) females providing data. No one chose any additional options.

Level of education

All but three participants (98.4%) reported having at least a bachelor’s degree, with the remaining three not reporting any

educational level. Of the respondents, 92% (196) reported having a bachelor’s level education degree. And 57% (122) of respondents reported earning a master’s degree in a music-related field and 2.3% (5) reported earning a doctorate.

Years of experience

The average age years of experience was 14.04 years, SD = 10.20. The group breakdown was 0–5 years (24%), 6–10 years (15%), 11–15 years (15%), 16–20 years (9%), and 21–25 years (9%), 26–30 years (8%), and 30+ years (10%) with about 10% of participants not answering this question.

Specialty training

Specialty training included advanced training and certifications in specific music pedagogies and included endorsements in Suzuki, Kodály, Orff, Dalcroze, Kindermusik, Feldenkrais, and Alexander. An additional area was included to report on other endorsements not listed. A total of 141 (66%) respondents reported at least one specialty certification. However, only 97 (46%) listed specialization and a specific pedagogical method.

Primary instrument

Of the participants reporting on primary instrument (213), 121 (57%) reported voice as their primary instrument, the remaining respondents reported a wind, brass, string, or percussion instrument as their primary instrument.

Primary teaching assignment

The majority of participants presented with a high concordance (89.4%; 170/190) between the content of their primary teaching assignment (choir, band, orchestra) and their stated specialty (voice, instrument). There were great differences in the number of minutes per class period (range of 25–90 minutes) as well as number of classes taught back to back during the school day (range of 2–13). Of those responding to the primary teaching assignment questions (192), 19% reported teaching at the elementary level, 36% taught at the middle school level, and 45% taught at the high school level.

Prevalence of voice disorders

To determine if the prevalence of voice problems occurs in a specific subset of music educators more than others, one-way ANOVAs were conducted for a subset of the variables. Voice problems were defined as report of a diagnosis/treatment of a voice problem, VHI-10 score above 11, the SVHI-10 score, positive reports of vocal concerns, and the informal job stress inventory. For each definition of voice disorder, one-way ANOVAs were performed for prevalence in different subsets of music educators according to age, sex, years teaching, specialty training, primary instrument, and primary assignment.

Diagnosis and treatment

A total of 34 (23.6%) individuals reported a diagnosis of a voice disorder requiring treatment. There were significant differences depending on the sex of the individual, $F(1,165) = 3.919$, $P = 0.049$, where women had a greater prevalence of voice disorders than men. There were significant differences depending

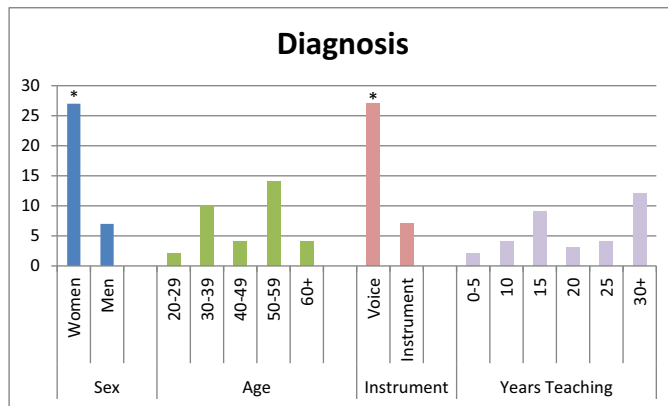


FIGURE 1. Number of reported voice disorder diagnosis and treatment for each category; sex, age, instrument, and years teaching. Significant differences are noted with asterisks.

on the age of the individual, $F(1,162) = 11.679$, $P = 0.001$, where individuals who were older had a greater prevalence of voice disorders than those who were younger. Additionally, there was significance in the primary instrument reported, $F(1,165) = 6.517$, $P = 0.012$, where individuals who reported voice as their primary instruments had a higher prevalence of a diagnosis (27/100 or 27%) than those who reported an instrument as their primary instrument (7/64 or 10.9%); and the number of years teaching, $F(1,165) = 16.509$, $P < 0.001$. Separate groups according to specialty training, and primary assignment failed to show significance. Refer to Figure 1 for a graphical display of the data.

VHI-10

A total of 24 (15%) individuals scored 11 or above on the VHI-10, suggestive of a voice impairment. There were significant differences depending on the sex of the individual, $F(1,160) = 4.66$, $P = 0.032$, where females had scored above 11 more than males. The scores on the VHI-10 failed to show significance between separate groups according to age, years teaching, primary instrument, specialty training, and primary assignment. Refer to Figure 2 for a graphical display of the data.

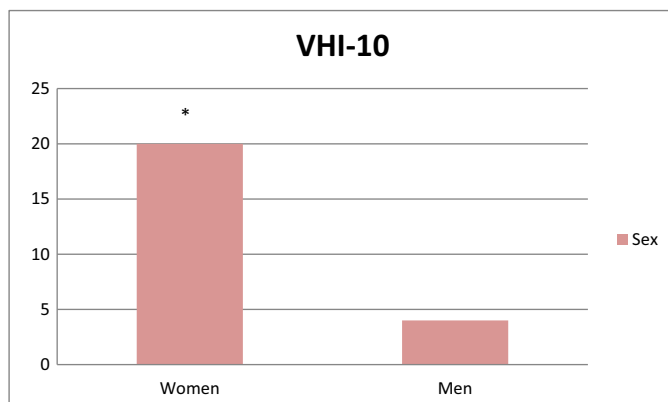


FIGURE 2. VHI-10 scored above 11 for the category, sex. Significant differences are noted with asterisks.

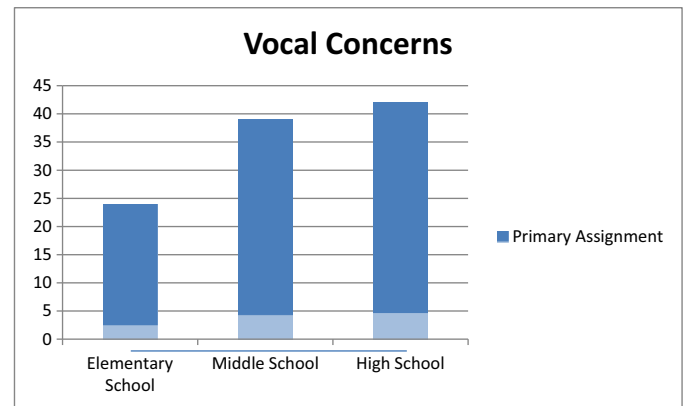


FIGURE 3. Number of reported vocal concerns in the category primary teaching assignment. Significant differences are noted between the lines.

SVHI-10

The average score on the SVHI-10 was 9.25 (SD = 8.47) with a maximum score of 40 out of a total 40 possible. The scores on the SCHI-10 failed to show significance between separate groups according to age, sex, years teaching, primary instrument, specialty training, and primary assignment.

Vocal concerns

Of the 162 individuals reporting a concern about their voice functioning, 105 (65%) had vocal concerns. There was significant differences depending on the primary assignment of the individual, $F(1,162) = 6.83$, $P = 0.010$, where individuals who taught in older grades had more vocal concerns. Separate groups according to age, sex, years teaching, primary instrument, and specialty training failed to show significance. Refer to Figure 3 for a graphical display of the data. A correlation of this measure revealed that individuals who taught higher grades were also older ($r = -0.281$, $P < 0.001$).

Job stress inventory

The average score on the informal job stress inventory was 7 (SD = 5.28) with a maximum score of 24 out of a total 28 possible. The scores on the informal job stress inventory failed to show significance between separate groups according to age, sex, years teaching, primary instrument, specialty training, and primary assignment.

DISCUSSION

The purpose of this research was to determine the frequency of reported voice disorders and complaints among various subgroups of music educators to identify any specific factors that create vulnerability to voice disorders in this population. It is clear that music educators are a heterogeneous group of individuals with different backgrounds, abilities, behaviors, and teaching environs.

Female music educators presented with a higher frequency of voice disorders than male educators. This finding is not surprising because this is consistent with the literature in both educator's surveys²⁶ and general voice disordered population surveys (see below). In addition, according to the National Bureau

of Labor and Statistics,³⁴ there are more female educators than male educators. This sex difference was reflected in our survey where there was nearly a 2:1 response rate where there were more women than men responding. However, beyond the obvious numerical difference between men and women, there are some technical considerations that might also contribute to this finding. For those educators who sing as a primary method of instruction, it is not uncommon for them to sing outside their tessitura to model a musical concept. It might be that singing outside of one's tessitura is more taxing for women than for men, particularly given the differences in their vocal fold morphological make up.³⁵ It could be that men more readily go to their head voice which employs less contact force during voice fold vibration³⁶ to model for their female students. Conversely, women might attempt to press more in their lower range to model for their male students, which might place a greater vocal load on their mechanism.³⁶

Older educators had a higher incidence of voice disorders than younger educators. There are a number of reasons why this might be the case. First, older music educators might not have the recovery resilience following increased vocal load or injury that younger educators might have. Reduced vocal fold muscle fibers,³⁷ reduced Hyaluronic Acid (important in tissue recovery),³⁸ respiratory drive and coordination, and neuromotor coordination that occur as one ages, might factor into the development of a vocal problem. Also it could be that voice problems arise following long-term cumulative load that would be seen in a music educator with a long history of teaching. In addition, more experienced music educators might have a higher vocal load during the teaching day as they realize the development and establishment of curricular musical programs. A more experienced educator might also take on greater administrative duties that would expose them to higher vocal load in addition to their teaching load. Finally, according to a survey conducted by Rosenthal,³⁹ more specialized music teaching such as choir, band, or orchestra are taught by older individuals. In this case, if increased specialization increases vocal load because there is less variability in a teaching day or greater number of classes taught then specialization might be a moderator variable with respect to age.

However, the most remarkable finding in this survey was that the frequency of voice disorders was the highest in those who reported that voice was their primary instrument. In fact, in this survey, music educators who were instrumentalists reported a frequency of voice complaints that was no greater than a typical classroom educator. In our survey, the overall music educator frequency is what commensurate with past research,⁷ but when broken down according to reported instrument, those with a primary instrument of voice presented with a much higher frequency or reported voice problems. It appears as though music educators whose primary instrument is voice appear to be the driving factor in the high frequency percentages observed in the literature of music educators. This finding is both intuitive and counterintuitive. It makes sense that voice problems occur more in vocal music educators. If the primary instrument is voice, then teaching assignments will focus on the voice and demand a higher vocal quality than other musical specialties. Although important, it may not be imperative that a band director possess an

aesthetically pleasing vocal quality compared to a choir director. Therefore, the detection of such a vocal problem might be greater in a vocal music educator. In addition, an educator whose primary instrument is voice may likely be using that voice as a primary tool for teaching through instruction, modeling, and demonstrating compared with another instrument. This increased use will lead to an overall increase in vocal load. However, this finding is counterintuitive because arguably vocal music educators will have vocal training that should armor them against vocal problems. This indeed could be the case, but the vocal load is simply too high for even the best vocal technique. However, it is more likely that the vocal music educator may have excellent singing technique for their voice part with a limited and select repertoire; but during teaching, that technique might not be used in other voice parts or during speaking activities. Most likely, both the demand for a superior vocal quality, the increased vocal load, and the use of the voice in untrained arenas all contribute to this finding.

Another notable finding was that despite the higher frequency of vocal music educators reporting a greater occurrence of voice disorders, the SVHI-10³³ did not show any differences in any of the subgroups. This could be because despite the instrument, the singing voice does indeed appear to be important to all music educators, as was observed in overall high scores. If this were the case, then we would have expected a higher frequency rate for other instrumental subgroups. However, without reported diagnostic cutoffs, it is difficult to explain this finding. It could also be that the SVHI-10³³ captures additional information about a music educator's vocal concern that a report of a voice disorder does not.

Limitations of the study

One limitation to this study was that because the investigators did not have direct access to the membership (it was distributed *via* area coordinators) reporting rates could not be calculated. Regardless over 200 music educators responded, providing a large sample size to conduct inferential statistics. The response rate was also probably limited by the time of year the survey was sent. While music educators are always busy, many programs are in the height of concert season in the spring when the survey was sent. While performances are an extension of curricular work, they also involve layers of extra duties, responsibilities, and time added onto an already full plate, leaving little room for vocal rest. For this reason, it is possible that educators did not have time to respond or more likely, the educators who did respond were feeling the effects of this heightened stress on the voice. This leads to another limitation, which is response bias. The inherent response bias that occurs in these types of surveys suggests that those who answer vocal surveys will be more interested in voice concerns than those who did not. Other limitations are due to the exploratory nature of this study where there was no effort made to balance respondent's demographic variables. Despite this, for the noteworthy findings in this research (eg the frequency of vocal concerns is greater in vocal music educators than in instrumental music educators) there appeared to be relatively comparable group numbers.

CONCLUSIONS AND FUTURE DIRECTIONS

Music educators are a widely varied group of individuals with different backgrounds, training, experience levels, teaching schedules, loads, and environments. Although it is clear from these data that subsets of music educators should be studied to understand their unique vocal challenges experienced, grouping music educators into subgroups according to specialty reveals concerns. Future research should focus on domain-specific needs in the music educator population. This might require more qualitative research that would investigate additional demographic information such as family situation (eg parenting young children), additional voice use demands not directly associated with employment, among other variables. Because this research indicated high needs among singers, care for these individuals requires medical professionals capable of treating this highly specialized patient population. In addition, older educators presented a greater frequency of voice problems. This would indicate that in addition to preservice educator training programs that benefit new educators, training should be available *via* school district in-service sessions or through music educator professional organizations (such as the National Association for Music Education or the American Choral Directors Association).

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APPENDIX

Questionnaire Outline

Demographics

The initial questions queried general background information, agreement to participate, age, sex, and ethnicity.

Education

The participants completed questions about their level of education, membership in professional organizations and societies, certifications, and specialty training in pedagogy (Suzuki, Kodaly, etc.).

Musical instrument

The participants reported the number of instruments in which they were proficient, and rated which instrument they considered to be their primary instrument, reported which instrument(s) they taught, and which ensembles they felt most proficient to conduct. (Primary Instrument was analyzed in this study).

Work environment

Questions related to scheduling, teaching assignments, quality of teaching location, class size, assistance from para-professionals, and extra-curricular teaching duties were included.

Voice behaviors

The participants responded to answers regarding functional and occupational usage of their voice (ie how long they were required to teach without a break or whether they had to teach in a cafeteria or gymnasium). The respondents provided information about voice use both during work and during additional professional vocal activities (community choirs, community theater, church, private instruction, etc.).

Health and personal habits

Health-related questions were asked about general health (current medical diagnosis) and personal habit questions (water intake, sleep habits, etc.), which provided information for secondary analysis if data presented obvious health-related trends.

Voice disorders and symptoms

Specific questions about voice disorder diagnosis (nodules, polyps, cysts) and symptoms of a potential voice disorder (hoarseness, aphonia, odyndyphonia) offered valuable information about prevalence of official diagnosis and about conditions that might be markers of an undiagnosed voice problem. Along with a list of possible diagnosis and symptoms, the participants provided information about whether they sought or received treatment for voice problems.

Quality of life measurements

The respondents completed the VHI-10³² to ascertain the level of perceived handicap that voice usage may impart, the SVHI-10,³³ and an informal voice stress survey to determine the participant's stress surrounding voice usage.

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