ALSALIMI, LATIFA, Ph.D. Modeling and Implementing a Voice Care Prevention Program for School Teachers in Kuwait. (2020)
Directed by Dr. Robert Mayo. 86 pp.

The purpose of this dissertation is to develop a comprehensive voice care program dedicated to preventing voice disorders among public school teachers in Kuwait. Currently, no published research, document, chapter, or position statement presents a comprehensive voice care program to prevent voice disorders in populations known to be at risk for developing voice disorders like teachers. Students, educators, and professionals of Communication Sciences and Disorders (CDS) have no clear guidelines to follow when planning to prevent voice disorders among school teachers. This situation is true not only in the United States but also internationally, including the Middle East.

In this dissertation, the author provides a comprehensive and detailed model for preventing voice problems among school teachers in Kuwait. The author takes into consideration the unique cultural and environmental factors that can negatively influence the maintenance of healthy voices among school teachers in the country. Additionally, the author supports the developed voice care model with an implementation plan to ensure its successful translation into the public schools of Kuwait. The author completes the dissertation with an evaluation plan to investigate the effectiveness of the prevention model during the first year of its implementation. The results of the program evaluation will be used to make the necessary modifications to improve the quality of the program and ensure its positive effects on the lives of its teacher participants.

MODELING AND IMPLEMENTING A VOICE CARE PREVENTION PROGRAM FOR SCHOOL TEACHERS IN KUWAIT

by

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A Dissertation Submitted to
the Faculty of The Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Greensboro
2020

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CHAPTER I

INTRODUCTION

Definition of Voice, Normal Voice, and Dysphonic Voice

The word “voice” is defined in the English dictionary as the sound produced in a person’s larynx and uttered through the mouth as speech or song. It is the result of complex integration and coordination of many structural and physiological systems (Ferrand, 2012). Humans express their thoughts, feelings, and ideas orally using their voice and, subsequently, often use their voice in professional, vocational, and educational contexts. Cultural context and social expectations influence how humans use their voices and can be indicative of their social status. One considers a voice normal when it corresponds appropriately with a person’s expected gender, age, group, occupation, society, culture, community, and does not call attention to itself (Behlau & Murry, 2012). Because voice is considered a series of measures, like weight and height, rather than a descriptive category, like male and female, it is difficult to classify a given voice as normal or abnormal based on a voice sample, without a thorough history of the person producing that voice. A voice can be described as abnormal or dysphonic when an alteration in its production impairs social and professional communication (Stachler et al., 2018). In other words, a voice disorder occurs when voice quality, pitch, and loudness differ or are inappropriate for an individual’s age, gender, cultural background, or geographic location (Aronson & Bless, 2009; Boone, McFarlane, Von Berg, & Zraick,

2010; Lee, Stemple, Glaze, & Kelchner, 2004). A voice disorder is also present when an individual expresses concern about having an abnormal voice that does not meet their daily needs, even if others do not perceive it as different or deviant (American Speech-Language-Hearing Association [ASHA], 1993; Colton & Casper, 1996; Stemple, Glaze, & Klaben, 2010; Verdolini & Ramig, 2001).

Prevalence and Groups at Risk for Voice Disorders

The existing research covering the variety of topics related to voice disorders is significant. Nevertheless, the researcher found few epidemiologic studies of the prevalence of voice disorders in the general population in the Communication Sciences and Disorders (CSD) literature. Most published studies used the general population as their control group when investigating the prevalence of voice disorders in specific populations such as teachers and singers. Moreover, the reported prevalence of voice disorders within the general population shows substantial variability, ranging from 0.65% to 29.9%. Some studies have estimated voice disorders to be present in 3% to 9% of the U.S. population (Ramig & Verdolini, 1998; Roy, Merrill, Gray, & Smith, 2005). A study conducted by Roy et al. (2005) reported that the lifetime prevalence of a voice disorder (i.e., the percentage of persons who experienced a voice disorder at some point in their lifetime) among members of the general population was 29.9%, with 6.6% of participants reporting a current voice disorder.

The literature has revealed similar variability for the prevalence of voice disorders among different occupational groups. For example, the prevalence rate of voice disorders among school teachers ranged from 11% to 81% in the United States (Cantor Cutiva,

Vogel, & Burdorf, 2013; Martins, Pereira, Hidalgo, & Tavares, 2014; Mattiske, Oates, & Greenwood, 1998; Smith, Gray, Dove, Kirchner, & Heras, 1997). Researchers have conducted studies investigating the prevalence of voice disorders among the teacher population in many other countries around the world. They have reported similar variability in voice disorder prevalence rates like those seen in the United States. For example, Devadas, Bellur, and Maruthy (2017) estimated the prevalence rates of voice disorders among primary school teachers in India at 17.4%. A study in Iran reported much higher rates (54.6%) in school teachers (Seifpanahi, Jalaie, Nikoo, & Sobhani-Rad, 2015). Researchers have conducted similarly focused studies in Singapore, South Australia, and Italy, where they reported lifetime prevalence rates of voice problems among teachers of 6.8%, 25.4%, and 51.4%, respectively (Angelillo, Dimaio, Costa, Angelillo, & Barillari, 2009; Charn & Mok, 2012; Russell, Oates, & Greenwood, 2005). The wide range of variability in the data captured in the international studies investigating the prevalence of voice disorders among school teachers is likely related to several factors, including the definition of voice disorders or voice problems, methodological approach, sample size, sampling frame, and target population.

Despite the variability in the reported prevalence of voice disorders among different populations and the diverse factors causing such variability, there is general agreement regarding which groups are at risk for acquiring voice disorders due to their occupational demands. Occupational groups that appear to be at a higher risk for developing voice disorders include teachers, manufacturing/factory workers, salespersons, and singers (Cohen, Kim, Roy, Asche, & Courey, 2012; Fritzell, 1996;

Miller & Verdolini, 1995; Thibeault, Merrill, Roy, Gray & Smith, 2004; Williams, 2003). In a seminal study conducted by Titze, Lemke, and Montequin (1997), the authors examined data from the U.S. Bureau of Labor to determine which percentages of the working population identified as professional voice users. The authors define professional voice users as "(a) those who depend on a consistent, special, or appealing voice quality as a primary tool of trade, and (b) those who, if afflicted with dysphonia or aphonia, would generally be discouraged in their jobs and seek alternative employment" (p. 254). The largest percentage of professional voice users were workers in sales and sales-related occupations (13%). However, a limitation to this study was that the exact breakdown of those who regularly used their voice over the telephone to contact their clients, rather than by postal mail was uncertain. The second-largest occupational population identified by Titze et al. (1997) as at risk for developing voice disorders was teachers, who comprised 4.2% of the then-existing U.S. workforce. In a subsequent study conducted by Williams (2003), the author identified teachers, singers, actors, cheerleaders, and aerobics instructors as occupational groups that are potentially at risk for developing voice disorders. Interestingly, the Williams (2003) report noted teachers to have higher frequencies of voice disorders than the general population (e.g., 15% versus 6%).

Approaches to Identifying Voice Disorders

The production of a normal voice depends on three subsystems of voice production, which are respiratory, laryngeal, and subglottal vocal tract. If any of the three subsystems is not performing within normal limits, then a voice disorder can occur. A

disruption in the function of the subsystems supporting voice production can be due to organic, functional, or psychogenic causes. Organic causes can be structural or neurological. Structural causes are the result of physical changes in the voice mechanism, such as the existence of vocal nodules or edema. The structural causes can also be due to inflammation of the larynx or trauma to the larynx caused by chemical exposure. The neurological causes are related to problems with the central or peripheral nervous system innervation to the larynx, which affect the functioning of the vocal mechanism. An example of a neurological cause of voice disorder is laryngeal nerve paralysis. Functional causes of voice disorders are the result of inefficient use of the vocal mechanism when the physical structure is normal, such as muscle tension dysphonia and voice fatigue. The third category of voice disorders is psychogenic disorders, which occur when poor voice quality becomes a symbolic or outward manifestation of some unresolved psychological conflict. Some examples of psychogenic causes include chronic stress disorders, anxiety, and depression (ASHA, n.d.).

The process of identifying voice disorders usually starts with voice concerns triggered by individuals, parents, teachers, or health care providers. Those voice concerns are often addressed through a screening examination completed by a speech-language pathologist (SLP). A comprehensive assessment may be conducted when a deviation from a normal voice is identified during the screening. The voice assessment is typically divided into several components. These include a patient interview, case history, laryngeal examination, and perceptual and instrumental assessment of voice. The evaluation process also includes an interpretation of test results, prognosis, and

recommendations for treatment. During the evaluation process, the causes of the voice disorders are identified as well as the severity of the impairment and the impact of the disorder on the patient's quality of life (Ferrand, 2012; Sapienza & Hoffman Ruddy, 2013). A key element to a successful voice treatment is the accurate identification of the cause of the voice problem.

It is worth noting that the traditional assessment of voice disorders has always focused, in part, on perceptual measurements of the vocal output, and this approach remains one of the most used strategies of voice assessment. In parallel with the perceptual assessment of vocal function, a substantial effort was dedicated to the improvement of computerized objective analyses via acoustic and aerodynamic measures, as well as video endoscopic imaging of voice disorders in the early 1980s and 1990s (Behlau & Murry, 2012). However, those measures failed to capture the patient's feelings about the severity of their voice problem and their satisfaction with voice treatment outcomes (Jacobson et al., 1997). Among the most frequently used tools to assess the emotional aspect or personal impact of voice disorders are the Voice Handicap Index (VHI) and the Voice-Related Quality of Life (V-RQOL). Both self-assessment tools have been more frequently used in voice clinics in recent years. The VHI is a 30-item questionnaire that assesses the patient's perception of his/her voice handicap on physical, functional, and emotional domains (see Appendix A). It has been shown to be valid and reliable in assessing the patient's self-perceived voice handicap (Behlau & Murry, 2012; Ferrand, 2012). The V-RQOL is less widely used than the VHI, and it assesses the impact of the voice disorder on the social-emotional and the physical-functional domains of the

patient's life. Both tests were validated after being translated into several languages such as Brazilian, Portuguese, and Arabic. It is important to note that assessing the impact of a voice problem on the quality of life among voice patients can influence the strategies used to address the voice problem in therapy.

Approaches to Intervention

There are three main treatments for voice disorders. The first one is medical treatments such as the use of anti-reflux medication to treat reflux laryngitis. The second type of treatment involves surgical interventions, which have improved significantly in recent years. An example of a common surgical treatment is phonomicrosurgery, which removes vocal fold lesions such as nodules to improve vocal fold patency and vibration. The third and most common type of treatment is voice therapy. Voice therapy depends on the use of behavioral techniques to treat the most common causes of voice disorders, which are voice misuse and voice abuse or phonotrauma (ASHA, 2016; Ferrand, 2012).

Behavioral voice techniques are classified as either indirect or direct. The indirect techniques focus on modifying the person's knowledge, emotions, surroundings, and lifestyle to promote healthy voice production. Indirect approaches typically include patient education as one of the main components, as well as patient counseling. Along with patient education and counseling, indirect approaches typically involve vocal hygiene, voice rest, vocal fold hydration, and relaxation techniques. The direct techniques, on the other hand, are designed to modify harmful methods of voice production by manipulating the voice production mechanisms and thus increase voice efficiency and improve voice quality (Ferrand, 2012).

Typically, voice disorders are addressed with a combination of treatment approaches and techniques. For example, patients who have surgery to remove vocal fold lesions will often need voice therapy to guide the recovery process and ensure healthy voice production habits. Moreover, when voice therapy is recommended, it is widespread that combinations of direct and indirect techniques are used to manage the voice problem.

Prevention of Voice Disorders

In 1987, ASHA adopted a position paper titled "Prevention of Communication Disorders." The Position Statement identified the roles of speech-language pathologists (SLPs) and audiologists concerning prevention. The statement described prevention as eliminating the onset of communication disorders and their causes, as well as promoting the development and maintenance of optimal communication. In that 1987 ASHA Position Statement, professionals of communication sciences and disorders (CSD) were advised to expand research into the causes of communication disorders and variables that influence the development and maintenance of communication abilities. Furthermore, the document emphasized the importance of educating the public regarding wellness strategies as they relate to the prevention of communication disorders.

When using the term prevention, concerning voice disorders, it mostly refers to primary prevention, rather than secondary or tertiary preventions. Primary prevention focuses on eliminating the development of a voice disorder by altering cognitive, behavioral, psychological, and physical environments in which voicing occurs for at-risk populations.

Statement of the Problem

There has been a considerable body of literature and research dedicated to preventing voice disorders from occurring in different populations. Many studies investigated the effectiveness of different voice strategies and techniques in preventing voice disorders from occurring; those strategies were dispersed over vast amounts of literature. Therefore, some researchers have taken the initiative to collect all effective voice strategies and publish them in one document (Mattiske et al., 1998; Speyer, 2008). However, none of these cross-sectional or meta-analytic studies suggested a comprehensive program to prevent voice disorders in the groups they studied. Currently, there no published research, document, chapter, or position statement presents a comprehensive voice care program to prevent voice disorders in populations that are known to be at risk for developing voice disorders, like teachers. Students, educators, and professionals of CSD have no clear guidelines to follow when planning to prevent voice disorders for a given population. The field, at large, lacks the existence of a comprehensive prevention program for voice disorders that is unique for every population identified as at risk for developing voice disorders due to their occupational demands. This situation exists not only in the United States, but also internationally, including the Middle East.

Purpose of the Dissertation

The purpose of this dissertation was to develop a comprehensive, evidence-based voice care program dedicated to preventing voice disorders among the teacher population in Kuwait. Additionally, the researcher designed a plan for implementing the voice care

program to ensure its successful enactment in the country. The implementation plan took into consideration the uniqueness of the Kuwaiti culture and followed the guidelines for implementing policies that exist in Kuwait. Although the present study may focus on Kuwait and Kuwaiti teachers, the researcher believes that this study will establish the foundation for developing similar voice programs in the Middle East, where common cultures and traditions are shared. This one document, which includes a comprehensive voice disorders prevention program among teachers and its implementation plan, will be the first reference for educators, SLPs, and decision-makers searching for evidence-based practice in this area.

CHAPTER II

LITERATURE REVIEW

Public Perceptions of Voice Disorders

Human voice is the primary tool for sharing thoughts, feelings, and communicating in everyday life situations. People develop perceptions about others' physical characteristics, gender, intelligence, and personality traits based on their voices; this can significantly influence those persons' social, interpersonal, and vocational quality of life (Addington, 1968; Bebout & Arthur, 1992; Krauss, Freyberg, & Morsella, 2002). Studies suggest that more negative attitudes and perceptions are held against people with communication disorders. Persons with communication disorders are perceived as less intelligent, employable, and emotionally disturbed (Allard & Williams, 2008), suggesting that negative stereotypes exist toward individuals with speech and language disorders.

Moreover, previous studies investigating the listeners' perceptions of people with voice disorders (i.e., dysphonia), suggested that dysphonic people are perceived as having more negative personality traits, such as being less attractive, more aggressive, and anxious. Furthermore, listeners perceive dysphonic speakers as less agreeable and as less reliable (Amir & Levine-Yundof, 2013; Blood, Mahan, & Hyman, 1979). It was also found that people with voice disorders are perceived more negatively as the severity of the disorder increases (Altenberg & Ferrand, 2006). Given this backdrop, it is essential to highlight that different cultural groups may have different perceptions about a given

disorder. For example, in a study conducted by Bebout and Arthur (1992), different cultural groups reported dissimilar attitudes toward certain speech and language disorders than others. Hence, understanding public perceptions, within a cultural context, toward a given disorder has crucial implications regarding how to approach preventing, assessing, and treating that specific disorder.

Irani, Abdalla, and Hughes (2014) investigated the attitudes of adults living in Kuwait toward people with voice disorders. A 4-point Likert scale (e.g., *strongly agree*, *agree*, *disagree*, *strongly disagree*) was used to measure participants' agreement with 13 survey statements. The results indicated favorable attitudes toward people with voice disorders, except for three statements. Slightly more than half (50.58%) of the participants agreed with the statement that people with voice disorders will "have trouble making friends or getting married." Additionally, 54.81% of the participants agreed that people with voice disorders "are emotionally disturbed." Finally, 43.46% of the participants agreed that people with voice disorders will "have trouble finding a good job." Even though the results indicated that participants held generally positive attitudes toward people with voice disorders, negative opinions were reported related to vocational choices and some aspects of societal inclusion. Unfortunately, such unfavorable stereotypes can cause serious setbacks that limit the participation of people with voice disorders in social activities and vocational choices within their society.

Lallh and Rochet (2000) examined the effect of previous knowledge of the nature and etiology of voice disorders on the attitudes of the public toward people with voice disorders. The authors concluded that, regardless of the information they received about

the nature and etiology of voice disorders, listeners perceived speakers with voice disorders more negatively than speakers without voice disorders. This single study supports the idea that changing public attitudes and stereotypes toward a specific communication disorder is not an easy task. Thus, instead of focusing only on awareness campaigns designed to change public perceptions of persons with voice disorders in the long term, it may be beneficial to provide voice care education programs to at-risk populations to prevent negative stereotypes of those with voice disorders from prevailing in society.

Teachers as the Target Population

As an occupational group, school teachers are at significant risk for incurring voice disorders due to their sustained use of their speaking voices during the school term and over a professional career (Roy, Merrill, Thibeault, Gray, et al., 2004; Smith, Lemke, Taylor, Kirchner, & Hoffman, 1998). Specifically, previous studies have reported that teachers experience voice problems more frequently than the general population (Roy, Merrill, Thibeault, Parsa, et al., 2004; Smith et al., 1998). The primary reason for teachers' vulnerability to voice problems is tied to the vocal demands placed upon them within their teaching roles (i.e., 'vocal attrition'). Throughout a workday, teachers are required to lecture/instruct, read aloud, and vocally manage the behaviors of their students. Additionally, after long hours of sustained speaking in classrooms, teachers often face more talking as a part of extracurricular activities (e.g., coaching, advising, recess monitoring). Moreover, teachers typically instruct without the use of voice amplification systems, which could spare their voices (Jónsdottir, Laukkanen, &

Vilkman, 2002). Also, most teachers have not received any formal training in oral communication, nor learned how to use their voices efficiently. Thus, the overall vocal load placed upon some teachers coupled with limited knowledge of how to efficiently use their voice in the workplace can result in a "wearing down" of the vocal apparatus in the form of tissue changes to the vocal folds (e.g., swelling, drying of tissues, strained use of voice). These harmful changes can increase the teachers' risk of developing a voice disorder.

Groups like classroom teachers have been extensively studied internationally and have been reported to have a higher prevalence of voice problems when compared to the general population (Williams, 2003). The prevalence rate of voice disorders among teachers ranges from 11% to 81% (Angelillo et al., 2009; Cantor Cutiva et al., 2013; Charn & Mok, 2012; Devadas et al., 2017; Marçal & Peres, 2011; Martins et al., 2014; Mattiske et al., 1998; Seifpanahi et al., 2016; Smith et al., 1997; Van Houtte, Claeys, Wuyts, & Van Lierde, 2011). Moreover, among the main risk factors associated with voice disorders are vocal load, and the role of biological and environment-related factors (Cantor Cutiva et al., 2013; Devadas et al., 2017; Seifpanahi et al., 2015). Specifically, environment-related factors such as background noise level, use of chalk, hours of work, years of work, crowded classrooms, stressful workplace, allergies, smoking, inadequate hydration, dust exposure, and higher temperature and humidity were reported to add to the development of voice problems among teachers (De Jong et al., 2006; Simberg, Sala, Vehmas, & Laine, 2005).

It is essential to highlight that the effect of personal risk factors for developing voice disorders can vary from country to country due to the uniqueness of each country's culture, education, economy, and environment (Behlau & Murry, 2012). Interestingly, with only a few exceptions, most investigations of the prevalence of voice disorders among classroom teachers have been conducted in Europe and the United States. Only one such study has been conducted in the Middle East by Seifpanahi et al. (2015). This study of 104 teachers and 41 non-teachers, conducted in Iran, found that 54.6% of teachers experienced a voice problem compared to 21% of non-teachers. Risk factors among the teacher participants that were found to be statistically significant included vocal load ($p<0.001$), physical factors ($p<0.001$), and environmental factors such as workplace acoustics, air humidity, airborne dust, chalk dust, and chemical and smoke exposure ($p<0.02$). Thus, the findings of this single study underscore the need for additional investigations of vocal attrition among teachers in other Middle Eastern nations. Therefore, the present author investigated the prevalence of voice disorders among school teachers in Kuwait to develop an understanding of the problem and its unique cultural and environmental factors in the country (Alsalimi & Mayo, 2017). In this study, a total of 690 teachers were randomly selected from 18 public schools and were compared to 2,416 individuals from the general population. The results showed that the number of teachers who reported voice complaints on the day of the survey (i.e., 34.9%), was significantly higher ($p<0.001$) than the general population (i.e., 22.7%). Additionally, the number of teachers who reported voice complaints at any time during their life (i.e., 67.5%) was also significantly higher ($p<0.001$) than the general population

(i.e., 53.4%). Thus, like the Seifpanahi et al. (2015) investigation of teachers in Iran, the results of the Alsalimi and Mayo (2017) study indicated a significantly higher prevalence of voice problems among teachers compared to non-teacher individuals at both current and lifetime periods in Kuwait. Thus, the findings of the Alsalimi and Mayo (2017) study underscore the impression that teachers are at higher risk for developing voice disorders during their lifetime, regardless of the different definitions and methods used to assess the prevalence of voice problems. Therefore, it is important to consider voice disorders in teachers as a professional impairment that warrants specialized attention.

For school teachers, developing a voice disorder can be employment threatening as voice use is a critical component of their job. Further, studies show that most teachers are unaware of the factors that can negatively affect their voices (Hamdan, Sibai, Srour, Sabra, & Deeb, 2007). Moreover, teachers were found to be less satisfied with their job performance, missed more workdays due to voice-related problems, and were more likely to consider changing their occupation because of their personal voice problems (Roy, Merrill, Thibeault, Gray, et al., 2004). In a study that was conducted in Taiwan and investigated the effects of voice disorders on teachers, the authors concluded that teachers suffered a reduction in their communication and social abilities due to their voice impairments (Chen, Chiang, Chung, Hsiao, & Hsiao, 2010). Elsewhere, a unique investigation was carried out in Miami-Dade County, Florida, USA, to assess the economic impact of voice disorders on teachers (Rosow et al., 2016). The authors used absenteeism and presenteeism as their variables to calculate the economic costs of voice disorders among the teacher population. Absenteeism was defined as the number of hours

absent from work. Presenteeism was defined as the number of work hours lost due to reduced productivity while working. The authors concluded that per year, absenteeism-related costs were $1 million, whereas presenteeism-related costs were approximately $12 million. The results revealed that voice disorders have an enormous economic impact on the teaching profession. The Rosow et al. (2016) findings, along with the results of the Roy et al. (2001) and Chen et al. (2010) investigations, strongly suggest that voice disorders in teachers can have significant adverse effects on job performance, attendance, satisfaction, earnings, future career choices, and economic losses across the profession. Additionally, the adverse effects of voice disorders can influence the overall emotional state of teachers and deteriorate their quality of life. An important question to be asked at this point in our review is, could all these negative factors that impact the lives of teachers be avoided through voice care preventive programs dedicated to providing the necessary knowledge and tools for teachers to maintain healthy voices throughout their careers?

Rationale for the Need of Voice Care Programs

Researchers around the world have reported a higher prevalence of voice disorders among school teachers when compared to the general population or other occupational groups because of daily work demands. Almost every prevalence study of voice disorders among teachers has recommended taking action to prevent voice problems among this occupational group. In a study conducted in India investigating the prevalence and risk factors associated with voice disorders among school teachers, Devadas et al. (2017) emphasized the importance of voice problem prevention by

providing adequate education regarding the nature of voice production and the etiological factors that can lead to the development of voice disorders. Another study, conducted in Ireland, concluded that teachers should be provided with educational programs to promote safe and effective use of voice (McAleavy, Adamson, Hazlett, Donegan, & Livesey, 2008). Moreover, McAleavy et al. (2008) stated that teachers should be aware of the resources and facilities available for dealing with voice problems and that schools should have a protocol for referring teachers who are encountering voice-related issues. Additionally, Charn and Mok (2012) conducted a study investigating the voice-related difficulties experienced among primary school teachers in Singapore, which highlighted the need for an effective and comprehensive prevention program to stop vocal attrition and its detrimental effects on teaching quality. The authors recommended having health education policies that address vocal attrition and limit its impact on classroom teachers.

Studies conducted in Italy, Brazil, the Netherlands, Ireland, Belgium, and Hong Kong looked at voice disorders in the teacher population and their effects at the personal, vocational, and social levels, as well as their general impact on the teaching profession (Angelillo et al., 2009; De Jong et al., 2006; Marçal & Peres, 2011; Munier & Kinsella, 2008; Van Houtte et al., 2011; Yiu, 2002). Collectively, these studies reported the absence of voice disorder prevention programs in their countries and emphasized the need for developing such programs. Additionally, the authors highly recommended providing voice care educational programs as soon as possible, and suggested including them in the education curriculum for student teachers.

A large-scale literature review conducted by Ruotsalainen, Sellman, Lehto, and Verbeek (2008) evaluated the effectiveness of interventions aimed at preventing voice problems among adults. Six studies were evaluated, with a total of 262 participants. The authors concluded from the six reviewed studies that there were no effective direct or indirect approaches to prevent voice disorders in adults. Ruotsalainen et al. (2008) emphasized developing better methodological approaches and clear outcome measures to assess the effectiveness of voice disorders prevention strategies. This literature review highlighted the need for developing a well-structured prevention program with detailed content and steps for implementation. It also maximized the importance of grounded measures in assessing the success of voice problem prevention strategies for adults.

The existing literature regarding the effectiveness of direct and indirect strategies to prevent voice disorders among teachers is mainly based on cross-sectional studies aiming to investigate the successfulness of a specific approach in preventing voice problems among the teacher population. Most of those experimental studies lack the rigorous description of the methodology and the prevention program implemented to be replicated by other researchers. Mattiske et al. (1998) concluded in their literature review of vocal problems among teachers that the majority of the studies in this area lack the operational definition of what constitutes a voice disorder, as well as the instrumental measures, and the appropriate analysis that assess the effectiveness of strategies provided to prevent voice disorders in this population.

Knowing that most of the voice disorders experienced by classroom teachers are likely preventable if adequate education was provided, it is crucial to develop a well-

structured and described voice care prevention program to reduce, if not eliminate, voice disorders among the teacher population. The field of communication sciences and disorders has enough studies in this area that have investigated the effectiveness of different approaches in preventing voice disorders among school teachers. What is currently needed is a comprehensive voice care program that is based on a systematic and well-structured framework that can be understood and followed by policymakers and authority figures when planning to implement a preventive voice care program for their school teachers. This prevention program must include a detailed implementation plan that can be followed by healthcare providers to ensure the success of the program and guarantee its benefits for all classroom teachers participating in the program. There is sufficient evidence that occupational dysphonia prevention programs are essential in improving the quality of voice and consequently, the quality of subjects' lives. What is lacking is a well-structured prevention program with detailed content and steps for implementation, as well as grounded measures to assess the success of strategies used in the program for researchers to report and policymakers to use as a proof to ensure the sustainability of the program.

CHAPTER III

METHODOLOGY

The method section of this dissertation covers the objectives of the study, the prevention model, an implementation plan of the model, and an evaluation plan to assess the effectiveness of the model.

Objectives of the Study

This project aimed to develop a voice care program that can prevent voice disorders among school teachers in Kuwait. The objectives of the current program were as follows:

1. To identify affordable, easy to implement, and clinically tested strategies to prevent voice problems among classroom teachers.
2. To describe, in detail, the content of the voice care program, including the pre- and post-assessment measures, duration of the program, and the modes used to deliver the content of the program to the targeted audience.
3. To establish a policy plan for implementing the program in Kuwait.
4. To design an evaluation plan to assess the effectiveness of the developed program in preventing voice disorders among school teachers in the country.
5. To provide a comprehensive model for policymakers and healthcare providers interested in preventing voice disorders among teachers in their countries.

6. To add to the body of literature regarding best practices in the area of prevention of voice disorders among highly at-risk populations like teachers.

Description of the Voice Care Prevention Model

In this chapter, the author provides a rigorous description of the voice care program that she developed. The content of the program is described, highlighting the strategies used to address the problem. A rationale for selecting the strategies is offered, and evidence is provided to support the selected strategies. The author expands on the results of a previous study she conducted on voice problems in Kuwaiti school teachers (Alsalimi & Mayo, 2017), along with a systematic review of the literature to support her choices. Additionally, the modes and materials that will be used to deliver the program content are described in this section, as are the estimated duration of the program in the form of a detailed timeline table. Moreover, the author discusses the pre- and post-assessment measures that will be collected during the implementation of the program, and some of the considerations regarding their use which were reported in the literature. Finally, the author discusses some other aspects to consider when delivering the voice care program, such as individual differences, gender, and hydration, and their effects on program management.

Implementation Plan of the Voice Care Prevention Program

An implementation plan of the voice care program for teachers in Kuwait was developed and thoroughly described. In the implementation plan section (Chapter V), the author identified the stakeholders involved in the implementation of the program, and the agencies and organizations that might participate in the implementation process. The

author discussed the implementation process in detail, describing the steps that will be followed in each phase of the process. The author determined the assessment methods and the reporting mechanism that will be used to enforce the success of the implementation plan. At the end of this section, the author discussed the impact of the program implementation at the individual, organizational, and community levels. The author calculated the size of the impact based on statistical data that she collected in a previous study (Alsalimi & Mayo, 2017). The results were unique to Kuwait, but a clear description was provided for others who are interested in looking at the impact of implementing a similar voice care program in their countries.

Evaluation Plan of the Voice Care Prevention Program

The author designed an evaluation plan to assess the effectiveness of the voice care program developed in this study. In this section (Chapter VI), the author described the purpose of the evaluation, the audience, and the evaluation approaches. Additionally, the author listed the evaluation questions and the framework that will be followed to answer the questions. The author provided a logic model for the program, which is a visual way to show the relationship between the program planned work and the program intended results. The author then discussed the evaluation methods, explaining the evaluation design and the data collection and analysis methods that will be used. Finally, a reporting plan was described, along with a timeline of when each phase of the evaluation plan will be conducted, and the final evaluation report to be submitted.

Products of the Dissertation

This dissertation presents three products: (a prevention model for voice disorders among school teachers in Kuwait, (b) an implementation plan of that model in the country, and (c) an evaluation plan of the effectiveness of that model. Those three products were crafted carefully based on a systematic review of the literature, mixed with quantitative data collected from teachers in Kuwait (i.e., Alsalimi & Mayo, 2017) specifically for the current study. Table 1 provides a summary of the components of each of the three products of the current dissertation.

Table 1

Summary of the Dissertation Products

The Prevention Model	Implementation Plan	Evaluation Plan
• Content • Pre-and-post assessment measures • Modes • Materials • Duration • Description of the sessions	• Implementation team • Implementation process • Assessment methods • Reporting mechanism The impact of the implementation	• Purpose • Audience • Evaluation approaches • Evaluation questions & framework • Logic model • Methods • Reporting plan

CHAPTER IV

THE VOICE CARE PREVENTION MODEL

Content of the Model

Vocal Hygiene

The term vocal hygiene refers to an indirect preventive or treatment approach that modifies individuals' behaviors to protect their voices from abusive and hyperfunctional practices when talking without directly addressing voice production (Faham et al., 2016). Vocal hygiene programs typically consider altering any conditions or behaviors that influence the health of the vocal fold mucosa such as phonotraumatic behaviors, laryngopharyngeal reflux, aggressive throat clearing, or abrupt phonatory onset type (Ziegler, Gillespie, & Verdolini Abbott, 2010). The term vocal hygiene has evolved over the years to 'vocal well-being,' to include the environmental factors in the treatment process. The updated version of the vocal hygiene program addresses factors in the environment that can negatively affect the vocal folds, such as working in noisy or dusty environments. Thus, the new models of vocal hygiene programs discuss concepts such as hydration and amplification (Behlau & Oliveira, 2009). The primary purpose of vocal hygiene programs is to promote vocal well-being and improve communicative effectiveness. The goals of vocal hygiene programs typically include increasing the individual's awareness of various aspects of voice production, teaching the best practices to ensure vocal health, and developing strategies to minimize personal and environmental

risk factors that may lead to voice problems (Kovacic, 2005; Rodríguez-Parra, Adrián, & Casado, 2011; Ziegler et al., 2010).

There is a substantial body of research investigating the effectiveness of different preventive and treatment approaches to voice problems among teacher populations. Most of these investigations derive from cross-sectional studies in which teachers are either assigned to direct or indirect treatment approaches. In these studies, the data were collected mostly by using acoustic or self-reported evaluations to assess the effectiveness of the investigated approaches. The results from these investigations are contradictory, and no firm conclusions resulted concerning the superiority of one approach over another. Some studies concluded that direct approaches, such as vocal function exercises, are more beneficial in treating patients with dysphonia than the indirect approaches (Laukkanen, Leppänen, & Ilomäki, 2009; Rodríguez-Parra et al., 2011; Roy et al., 2001). Others reported similar positive effects of both approaches in minimizing voice problems among the teacher population (Leppänen, Ilomäki, & Laukkanen, 2010; Pizolato et al., 2013). The main point here is that most of the previously cited studies used the indirect approach, the voice hygiene program, as a treatment tool rather than a preventive one. In a minimal number of studies that used vocal hygiene programs to prevent voice problems among school teachers, positive outcomes were reported (Bolbol, Zalat, Hammam, & Elnakeb, 2017; Pasa, Oates, & Dacakis, 2007; Pizolato et al., 2013). One of those studies, which was conducted in the Middle East in Iran, reported significant benefits on the vocal performance of school teachers who participated in a vocal hygiene educational program (Faham et al., 2016). Thus, the current model for preventing voice problems will solely

focus on providing an adapted version of the vocal hygiene program without the use of any direct approaches when working with school teachers in Kuwait. The rationale for eschewing the use of direct approaches, such as vocal function exercises, is the absence of their demonstrated superiority over vocal hygiene programs in preventing voice problems among school teachers. Another reason for limiting the prevention model to only the vocal hygiene program is for logistical purposes. Implementing a vocal hygiene program requires less training, personnel, time, and resources than vocal function training. The author is aiming to design a model that is relatively easy to implement in the country with the minimum cost possible and maximum efficiency.

The current model presents a comprehensive vocal hygiene program, including the following six components:

- Educational information regarding basic anatomy and physiology of voice production;
- Discussion of the prevalence and impact of voice problems in the teacher population, worldwide and locally;
- Identification of phonotraumatic behaviors and their causes, high-risk vocal situations, and warning signs of vocal fatigue;
- Strategies to reduce harmful vocal behaviors such as vocal rest, hydration, and the use of amplification;
- Discussion of lifestyle and diet factors that can support or interfere with a healthy voice;
- Strategies for managing students' behaviors in the classroom.

Besides the main concepts covered in typical vocal hygiene programs, two additional components will be presented in the current model, which are hydration and voice amplification. When referring to vocal fold hydration, there are two forms, systemic or internal, and superficial or external. Systemic hydration refers to the fluid within the vocal fold tissue (Sivasankar & Leydon, 2010). One can achieve systemic or internal hydration by drinking copious amounts of water. The vocal folds move best when the body is well-hydrated, and well-hydrated vocal folds may be less likely to be injured from voice use.

In contrast, superficial hydration refers to the fluid lining the vocal fold surface. One can achieve superficial or external hydration through several simple strategies such as breathing through the nose or using room humidification or steam inhalation (Leydon, Sivasankar, Falciglia, Atkins, & Fisher, 2009). Adequate hydration caused the mucus that covers the vocal folds to become thin and slippery so that they move against each other easily and vibrate smoothly. Data from animal and human studies have revealed that systemic and superficial hydration can promote laryngeal health and facilitate optimal voice production. Interestingly, the action of swallowing itself can optimize the throat's mucous production, aiding vocal fold lubrication (Sivasankar & Leydon, 2010). Thus, the current model of the vocal hygiene program highlights the importance of vocal fold hydration and includes tips on how to achieve and maintain vocal hydration.

Along with hydration, voice amplification (VA) is the second added component that is presented in the current model, which is not usually covered in traditional vocal hygiene programs. Voice amplification systems aim to modify vocal loudness without

restricting the amount of voice use or the vocal activities in which a person is engaged. One of the causes of voice problems among school teachers is the requisite increase in their phonatory loudness when instructing students inside and outside of the classrooms (Gaskill, O'Brien, & Tinter, 2012). As mentioned previously, teachers often need to increase the loudness of the voices due to background noise and to manage the behaviors of their students. Thus, the idea of using voice amplification to support teachers' phonatory behaviors (by decreasing their need to "speak louder") was assumed to result in reducing voice problems among teachers. Roy, Weinrich, Gray, and Tanner (2002) investigated this idea and used voice amplification as a treatment approach for teachers with voice problems. The results indicated a significant improvement of voice quality for the group that used voice amplification during their teaching day. Another study compared the voice quality of teachers who used voice amplification to ones who did not (Jónsdottir et al., 2002). The latter findings showed better voice quality for the group using voice amplification.

Additionally, teachers who used voice amplification reported experiencing less fatigue in their voices than what they were accustomed to without the use of VA. Thus, the current model includes the use of VA as one of the strategies to reduce abusive voice behaviors among school teachers. Moreover, since teachers are regularly using their voices in situations other than during classroom instructions, a portable VA system will be implemented in this program to maximize its use in different vocal activities that teachers are engaged in during their teaching day.

Pre- and Post-Assessment Measures

The Voice Handicap Index (VHI) will be used as the only outcome measure of voice disorders in this program. The VHI is a self-reported inventory assessment tool that has been frequently used to investigate the patient's perception of his/her voice handicap on physical, functional, and emotional domains, and has been proven to be strongly valid and reliable (Behlau & Murry, 2012; Ferrand, 2012). The VHI total score comprises 30 statements, divided into physical, emotional, and functional subscales, each having 10 statements. Each statement is scored on a 5-point scale: 0 (*never*), 1 (*almost never*), 2 (*sometimes*), 3 (*almost always*), 4 (*always*). Total scores range from 0 (*no problem perceived*) to 120 (*a severe problem in all three subscales*).

Jacobson et al. (1997) developed the original version of the VHI, which has been translated and adapted to more than 12 languages, including Arabic. Currently, there are two validated versions of the Arabic VHI-30 (Malki, Mesallam, Farahat, Bukhari, & Murry, 2010; Saleem & Natour, 2010). The version developed by Malki et al. (2010) is the one that will be used in this model due to two reasons (see Appendix B). The authors of this version did a back-translation to English and allowed their reviewers to comment and evaluate the translation where the other version did not (Seifpanahi et al., 2015). The second and most important reason for selecting the Malki et al. (2010) version is their use of vocabulary that was more relevant to the Kuwaiti Arabic than the other version. All the participants will be asked to fill out the adapted Arabic version of the VHI-30 before attending the program and upon their completion of the program. The results of the pre- and post-VHI scores will be calculated for every participant, and the difference between

the two scores will be used to measure the outcome of that subject and respectfully assess the effectiveness of the program.

In this prevention model of voice disorders among Kuwaiti school teachers, the VHI will not be used along with other self-reporting assessment tools such as Voice-Related Quality of Life (V-RQOL). The results of the V-RQOL were shown to be highly correlated with the results of the VHI when assessing the severity of voice disorders among different occupational groups (Morawska, Niebudek-Bogusz, Wiktorowicz, & Śliwińska-Kowalska, 2018). It would be a waste of time and resources to report and analyze two different tests that provide relatively the same results. Moreover, the program will not include any acoustic measures to assess the effectiveness of the program. The reason is that several studies examined the correlation between acoustic measurements and the self-reported assessment (i.e., VHI), and showed a significant relationship between the objective voice measurements and the VHI (Lin, Chen, Chen, Wang, & Kuo, 2016; Niebudek-Bogusz, Woznicka, Zamyslowska-Szmytke, & Sliwinska-Kowalska, 2010). These results confirmed that the VHI could be used as a reliable (and less expensive) tool for assessing the impact of voice disorders on the participants' quality of life.

The VHI is a commonly used self-reporting tool that is valid and reliable in assessing the severity of voice disorders and its biopsychosocial impact on individuals' quality of life. It is worth mentioning that developers of the VHI were surprised to hear individuals frequently reporting that they were unaware of the degree of severity of their voice problems until they completed the VHI (Jacobson et al., 1997). This lack of

awareness highlights the educational component of the VHI, which is a critical element in the process of changing behavior. When people are aware of the severity of their voice problem, they are more motivated to learn about how to prevent it and maintain healthy voices during their careers. Aside from its educational component, the VHI is a simple test that requires no equipment or specialized training to be administered and is relatively easy to score, analyze, and report. The results of the VHI can be easily interpreted to convey a message about the effectiveness of the program implemented when used as an outcome measure.

Duration of the Program

In the current literature, there is considerable variability in the duration of the vocal hygiene programs delivered to teachers as a preventive approach. In this model, the program will have a total duration of 16 hours, where eight lectures will be provided to the participants over 8 weeks, with each session lasting 2 hours. The eight sessions will cover the main components of the vocal hygiene program listed earlier, with the last session for reviewing main points and concepts covered during previous sessions.

Delivery Mode

Multimedia resources will be used to communicate the content of the lectures. The primary mode will use PowerPoint slides, along with several pictures and video clips, to convey the concepts of each session. The participants will receive a folder for each session containing explanatory matter on the subject. The participants will also receive a bottle of water to get accustomed to the habit of hydration. Moreover, there will be a 20-minute workshop/activity session each week during the lecture to get the

participants involved and allow them to practice and discuss the concepts explained in the lecture.

The Content of the Eight Sessions

Session 1

During the first session, the Arabic version of the VHI (see Appendix B) will be administered along with a brief questionnaire (see Appendix C) that will allow the program instructor/clinician to become familiar with her/his teacher participants. The questionnaire includes some demographic questions as well as some other questions related to the teachers' working load and teaching schedules. Subsequently, there will be an overview of the voice care program and the primary purpose behind its design. The intention here is to make the teachers aware of the importance of such a program and how it might positively affect their lives. Some worldwide data related to the positive impact of such programs will be presented to serve that purpose. During the workshop time, teachers will be asked to write down what they hope to learn and gain from the prevention program. A discussion will take place to reflect on what the teachers had written. Last, the session will conclude with what teachers should expect to learn during this program, detailed and divided into sessions.

Session 2

The second session will cover an overview of the anatomy and physiology of the speech mechanism, including the respiratory system, larynx, and vocal tract. A simplified version of how voice is produced, along with figures showing the involved body organs, will be presented and discussed. Concepts such as vibration, resonance, and articulation

will be explained. The purpose of explaining the anatomy and physiology of voice production is to increase awareness regarding some of the abusive behaviors that can lead to voice problems. Thus, teachers will be asked to list some of the problems that may interfere with their ability to produce a voice. They will then indicate where the problem may take place based on their understanding of the speech production process. Those lists created by teachers will be revisited again at Sessions 5 and 6 to introduce some tips on how to avoid voice-harming behaviors.

Session 3

The third session is dedicated to the prevalence and impact of voice problems in the teacher population worldwide and locally. Teachers in Kuwait need to know that they are not the only ones facing voice problems; this can be achieved by providing prevalence data regarding voice problems among teachers worldwide. Additionally, this session will cover the impact of voice problems on the lives of those affected teachers. Along with the prevalence and impact data, teachers will learn about the leading causes of voice problems among their population. Special attention will be paid to some of the unique causes of voice problems among teachers living in Kuwait, such as dust, and open-air school/classroom architecture, among others (Alsalimi & Mayo, 2017). The session will then dive into some of the environmental factors that are specific to Kuwait and how they may lead to voice problems. During workshop time, teachers will be allowed time to reflect on their teaching experiences and list some functional, social, or emotional impacts of voice problems on their lives and what they think had caused them.

Session 4

In this session, teachers will learn about phonotraumatic behaviors that can lead to voice problems. Some examples of phonotraumatic behaviors are yelling, talking over background noises, and, most importantly, talking for long periods without any vocal rest. Additionally, teachers will learn about high-risk vocal situations that occur during their teaching day. One example situation is teaching on a dusty day, which is very common in Kuwait. The third concept that will be introduced during this session is the warning signs of vocal fatigue that teachers may experience during their day, such as throat pain. Being mindful of those warning signs will allow teachers to take action to prevent their voices from fatiguing. As an activity, teachers will be given time to choose one of their busiest teaching days and identify some of their abusive voice behaviors, high-risk vocal situations, and warning signs they encountered.

Session 5

This session will commence by highlighting the most common phonotraumatic behaviors that teachers listed in Session 4 to introduce evidence-based strategies that can reduce, if not eliminate, voice problems caused by harmful vocal behaviors. The fifth session will thoroughly cover the concepts of vocal rest, hydration, and the use of amplification. Teachers will learn what is vocal rest, why it is effective, and when to apply it. Additionally, teachers will be introduced to the concepts of internal and external vocal folds hydration and how to achieve them. Teachers will learn about the ideal amount and frequency of drinking water and its positive effect on their voices. “Waterbalance” is an app that teachers will be encourage to download and use to keep

track of water consumption during the day. An alternative website will be shown for those who do not use smartphones that does the same job. Furthermore, teachers will listen to the results of some interesting studies that reflect the strong positive impact of amplification on teachers' voices (Roy et al., 2002). During the workshop time, portable amplification devices will be demonstrated, and teachers will receive guided practice and corrective feedback regarding their use.

Session 6

Concepts of physical and emotional health are the focus of this session. A discussion of lifestyle and diet factors that can support or interfere with the production of a healthy voice will take place in the sixth session. A poor diet and inadequate amounts of sleep and exercise are the most common factors associated with reduced general health and can lead to voice problems (Irish, Kline, Gunn, Buysse, & Hall, 2015). Most of the session time will be spent talking about specific illnesses that can contribute to the development of voice problems, including gastroesophageal reflux, allergies, and viral or bacterial infections affecting the respiratory system. Additionally, the session will cover topics such as stress, anxiety, and depression and their effects of voice quality (Marmor, Horvath, Lim, & Misono, 2016; Perrine, 2018). Tips on how to improve physical and emotional health will be discussed after allowing teachers time to come up with reasonable solutions to avoid lifestyle, emotional, and diet-related voice problems.

Session 7

Session 7 is one of the most important sessions where teachers get to learn about alternative and more voice-friendly strategies for managing students' behaviors in the

classroom. Instead of mainly depending on their voices to control their classes, teachers will learn about the use of visuals such as flashlights, gestures, or colored flashcards. Teachers will also learn how to use sounds such as whistles and bells to manage student behavior inside and outside of the classroom. During the workshop time, teachers will be encouraged to come up or share some other creative non-vocal ideas to manage the behavior of their students. Also, teachers will retake the Arabic version of the VHI before leaving the session in order to provide them with post-program assessment data during the eighth and last session.

Session 8

The last session will be used to review and highlight the main ideas covered in the voice care program. Then, teachers will be given time to reflect and comment verbally and in writing on their experience attending the program. Teachers will be asked to share what they wished the program covered and what topics they wished they spent more time covering. Additionally, the process of reporting voice problems will be communicated to school teachers as part of their workshop activities. Teachers will be provided with forms and resources as well as practice in how to complete the forms and register their voice complaints. At the end of this session, the results of both pre- and post-VHI data collected will be shared with the teachers in the form of figures illustrating the improvements in their voices. Hopefully, the results will motivate teachers to continue doing what they learned in the program to enjoy healthy voices throughout their careers.

CHAPTER V

IMPLEMENTATION PLAN OF THE VOICE CARE PROGRAM IN KUWAIT

Despite a robust body of literature supporting the high prevalence of voice problems among teachers around the world, teachers are still left with little in the way of a programmatic plan to maintain the health and vitality of their voices throughout their careers. Teachers have continuously reported absences from their jobs due to voice loss, negative feelings toward their jobs, and shared thoughts of changing their job due to the significant load placed upon their voices when teaching. This policy plan described in this dissertation calls for the implementation of a voice care program dedicated to preventing voice problems among public school teachers in Kuwait by aiding them with the knowledge and training needed to preserve healthy voices through their teaching career.

Voice Problems Among School Teachers

School teachers use their speaking voices as the primary tool of communication throughout their teaching careers. Previous studies suggested that professional voice users, especially teachers, are at more risk of voice disorders due to the extra demands of voice use required of them (Roy, Merrill, Thibeault, Gray, et al., 2004; Smith et al., 1998). Specifically, studies have reported that teachers experience voice problems more frequently than the general population (Charn & Mok, 2012; Roy, Merrill, Thibeault, Parsa, et al., 2004; Russell et al., 2005; Smith et al., 1998). Most of the previously cited

studies investigating the prevalence of voice disorders among classroom teachers have been conducted in Western nations. There is only one study of such nature that took place in the Middle East in Iran (Seifpanahi et al., 2015). This study of 104 teachers and 41 non-teachers found that 54.6% of teachers experienced a voice problem compared to 21% of non-teachers. Thus, due to the lack of data regarding the prevalence of voice problems in the Middle East, Alsalimi and Mayo (2017) conducted a study investigating the prevalence of voice problems among public school teachers in Kuwait. The results revealed that the prevalence of voice problems among school teachers (67.5%) was significantly higher than in the general population (53.4%). Additionally, 10% of the teachers who participated in the study reported missing between two to six days of school due to their voice loss. The study also found that 80% of the participating teachers reported having difficulty projecting their voices in the classroom, and 60% of them reported pain associated with speaking for long periods during the school day. The findings of this study demonstrate that teachers in Kuwait follow a similar trend to that reported in the literature. Thus, it is crucial to develop and implement a voice care program that can reduce, if not eliminate, voice-related problems that teachers are experiencing throughout their professional careers.

Current Implementation Efforts

In terms of implementation efforts of voice care programs in the Middle East, there is no single program aimed to educate teachers regarding occupational voice disorders in the region. However, a model of such a program exists in two Western countries. In 2009, a voice care program for school teachers was established in Victoria, a

state in southeastern Australia, as a collaborative effort between the Employee Health Unit and the Department of Education and Early Childhood in the state. The program is now available to the public on the Victoria State Government webpage under the Education and Training section ("Voice Care for Teachers," 2018). The implementation of the Australian voice care program has three sections: baseline assessment tools, action planning guide, and voice care information sheets. The program aims to make teachers aware of the different voice problems they may encounter when teaching, and to provide them with knowledge and tools to preserve healthy voices during their teaching journey. The responsibility of learning the concepts and materials of the voice care program is placed upon the teachers since there are no workshops or meetings conducted to explain the program to the teachers. Teachers are expected to evaluate their voices using the self-evaluation questionnaires provided in the voice care program kit and design their plan to change their voice habits based on the action planning guide and the information sheets included in the package.

Unfortunately, the Australia program lacks a monitoring and reporting mechanism when voice problems are identified by the teachers. The program advises school administrators and leaders to provide opportunities for teachers to discuss and share their voice problems. Also, the program recommends that school leaders make appropriate referrals when voice problems are identified. With that being said, the program sets no rules or policies to ensure school leaders' positive involvement in helping teachers maintain healthy voices. There are neither forms or protocols for leaders to follow when voice problems are reported, nor penalties or consequences for ignoring reported voice

problems. Even though the program is beneficial in helping teachers understand the concepts of voice problems, it lacks key components that are necessary in ensuring the success of the program among school teachers.

Additional to the Australian voice care program, the Industrial Injuries Advisory Council in the United Kingdom published a position paper on occupational voice loss, which considered the risk of voice loss for those employed in occupations with high levels of noise ("Occupational Voice Loss," 2006). The report concluded that although there are several research studies published, there is currently insufficient evidence for occupational voice loss to meet the council requirements to form a new policy. The position paper was very general, including all individuals working in environments with a great deal of noise. No policy is currently in place in the Middle East or any Western countries for implementing voice care programs specifically designed to prevent voice problems among school teachers.

A Call to Action

The implementation policy of the voice care program is suggested to be part of the workplace health promotion program. Workplace health programs refer to a coordinated and comprehensive set of strategies that include programs, policies, benefits, environmental supports, and links to the surrounding community designed to meet the health and safety needs of all employees ("Workplace Health Model," 2016). Implementation policy of a voice care program for teachers will be one of many policies that are designated to promote teachers' health and foster a healthy work environment for more than 86,000 school teachers in Kuwait (Saleh, 2019).

This policy is planned to be supported by the Ministry of Education of Kuwait and enforced by all the public schools in the country to provide the voice care program to teachers in their workplaces. The program will initially be mandated at all public elementary, middle, and high schools and will eventually cover the private schools as well as the public kindergarten schools in Kuwait. In order to implement the prevention program in the country, a collaboration must take place between the Department of Workplace Health Promotion at the Ministry of Education and the Department of Communication Disorders Sciences (CDS) at the College of Life Sciences at Kuwait University (KU). It is worth mentioning that the CDS department at KU is the only one in the country that has an undergraduate teaching program of communication sciences and disorders. Faculty members with experience in the areas of voice disorders, prevention, program implementation, and program evaluation will comprise the team that represents KU. The workplace health promotion team should include decisionmakers, administrators, program organizers, compliance officers, principals, and school-level heads of teaching departments from all school districts. It is important to give teachers input in the implementation planning phase of the program since they are the targeted population. Teachers can provide insights into how to best address some of the cultural and daily problems teachers encounter during their workday. Additionally, teachers' involvement in the planning phase can enrich the content of the workshop sessions by providing real-life case scenarios that can be used during small group discussions. All parties involved in program implementation must define and decide on the roles and responsibilities of each party in the implementation process. The policy planning process

must be carefully crafted to address sensitive and unique environmental and cultural issues affecting teachers' voices in Kuwait.

Program Service Approach

The voice care program will follow two approaches when providing services for teachers in the school system. The first will be an informational approach, which is directed at increasing knowledge and awareness about voice care as part of healthy lifestyles. The second approach will be a behavioral approach designed to address the teachers' personal behavioral management skills necessary for maintaining healthy voices during their professional careers.

Implementation Process

Several steps must be taken to ensure the appropriate implementation of the voice care program. The first step is forming a written position statement that is designed to promote teachers' health through guaranteed access to the voice care program. This position statement must be formed collaboratively by the CDS Department at KU and the Department of Workplace Health Promotion at the Ministry of Education. The Ministry will then support the implementation of the program that will be enforced by all the public schools in the country. Based on this policy, all schools will be mandated to provide voice care services to their teachers as part of their workplace health promotion program. The policy will state that all schools are required to provide the voice care program to all current teachers for 5 years. New teachers must be offered the opportunity to attend the voice care workshops in their first 2 years of teaching. The principals of each school will have the right to choose who attends the workshops based on the needs

and availability of their teachers. They will have to submit a written justification document explaining their selections. This document will be reviewed by the faculty of CDS at KU to ensure that the selection decisions were appropriate.

Kuwait is divided geographically into six governorates. The six governorates host public schools from elementary to high schools within their geographic region. The workshops will take place at each governorate, making it easier for teachers to commute to the workshop locations. A school in each governorate will be identified and selected to host the workshop based on its location, size, and amenities and resources available at that school. For example, the school must have a stadium or coliseum that is big enough to host all the teachers that will be attending the workshop. Additionally, the selected site should have spaces such as small meeting rooms to conduct small group discussions.

The faculty of CDS at KU will be responsible for conducting the voice care program. Close communication between the Ministry of Education at each governorate and the CDS department at KU regarding the number of participants, location, and resources will ensure a seamless process. Students at the Department of CDS at KU will participate in the organization of the workshops. They will take part in distributing the assessment tools and handouts, and in running the small discussion groups during the workshops. Students will be trained to perform their tasks as part of the requirements of the voice disorders course in which they are enrolled. Their participation will provide them with an opportunity to communicate their knowledge and understanding of the concepts taught at the voice disorders course.

Assessment, Monitoring, and Reporting Mechanism

The policy will include criteria for reporting voice problems among school teachers. The Voice Handicap Index (VHI), a formal screening test, will be administered at the beginning and end of each academic year. Teachers will be asked to fill out the assessment form that addresses physical, emotional, and social issues related to their voice quality. Schools will be required to submit an annual report showing the results of this assessment to KU. Another form will be developed for teachers to use for reporting the existence of a voice problem during the school year. Schools will then be asked to respond to that form by providing support in the form of counseling with a speech-language pathologist (SLP) to assess the case and provide appropriate recommendations. For example, if a teacher is recommended to take a voice rest for 2 days, the school will have to find a replacement for that teacher to allow his/her voice to rest for the recommended period. If such accommodations were recommended by the counseling SLP and not followed by the school, the teacher should do the following:

1. Contact the Department of Workplace Health Promotion at the Ministry of Education and report the incident.
2. If there is no action taken by that department within two weeks, the teacher can fill out an online form to report the case to the Department of Compliance at the Ministry of Education. A compliance officer will then look at the case and plan a visit to the school to solve the problem.

This entire process of reporting voice problems will be communicated to school teachers during the voice care program. As part of their workshop activities, teachers will be

provided with the forms and resources as well as the chance to practice filling out the voice complaint form.

Impact of Program Implementation

The implementation of a voice care program as part of a workplace health promotion program can lead to changes at both the individual (i.e., school teachers) and the organizational levels in Kuwait. For organizations, the voice care program has the potential to positively impact areas such as health care costs, absenteeism, productivity, recruitment/retention, workplace culture, and employee morale. For teachers, the voice care program has the potential to impact their voice health, which will allow teachers to have fewer voice complaints, appropriately project their voices in classes, and engage in extracurricular activities that require further use of their speaking voices. Additionally, teachers will have more positive feelings related to their jobs and more confidence in their abilities to teach without worrying about voice loss. All of these potential outcomes will improve the school climate, which promotes a better learning environment for students. Studies have shown that schools with a more positive school climate have higher average academic performance (Voight & Hanson, 2017).

The positive school environment may lower the teacher turnover rates that are associated with high school financial costs and disruption to students learning. The impact on individual and organizational levels will lead to a more significant impact on the community as a whole. The increase in student achievement can create more positive feelings from students' parents regarding the schooling experience and greater trust in the educational system in the county. Additionally, the teachers will be able to engage in

more social activities knowing that their voices are safe, which will have a significant impact on their families and friends. Lower teacher turnover will decrease the financial and social stresses on the teachers' families. Parents of public school students and families of public school teachers will all enjoy the benefits of the implementation of the voice care program in Kuwait.

CHAPTER VI

EVALUATION PLAN OF THE VOICE CARE PROGRAM

Background and Context

Voice Problems Among School Teachers

As an occupational group, school teachers are at considerable risk for incurring voice disorders due to their sustained use of their speaking voices during the school term and over a professional career (Roy, Merrill, Thibeault, Gray, et al., 2004; Smith et al., 1998). Specifically, previous studies have reported that teachers experience voice problems more frequently than the general population (Roy, Merrill, Thibeault, Parsa, et al., 2004; Smith et al., 1998). The overall vocal load placed upon some teachers, coupled with limited knowledge of how to efficiently use their workplace voice, results in a "wearing down" of the vocal apparatus in the form of tissue changes to the vocal folds (e.g., swelling, drying of tissues, strained use of voice). These vocal symptoms can affect the teachers' ability to project their voices in class, cause more absences due to voice loss, and create emotional stress and negative feelings toward teaching.

The prevalence rate of voice disorders among teachers ranges from 11% to 81% of this occupational group (Devadas, Bellur, & Maruthy, 2017). In a study conducted by Alsalimi and Mayo (2017), the prevalence of voice problems among teachers in Kuwait (67.5%) was significantly higher than the general population (53.4%). The results of this

study demonstrate that teachers in Kuwait follow a similar trend to that reported in the literature.

The Current Voice Care Program

The voice care program is a new program developed as a result of a collaborative effort between the Department of Workplace Health Promotion at the Ministry of Education in Kuwait and the Department of Communication Disorders Sciences (CDS) at Kuwait University. The Ministry of Education funds the program to prevent voice-related problems among public school teachers in Kuwait. The target population of the program is public school teachers (elementary, middle, high) at the six governorates in the country. The program consists of eight workshop sessions, covered over 8 weeks, with each session lasting for 2 hours (16 hours in total). Faculty of CDS is responsible for conducting the sessions, and their students are responsible for running the small group discussions during the workshops. Once a year, the program is offered at a selected school in each governorate, covering three of the governorates in the Fall semester and the other three governorates in the Spring semester. The selected school in each governorate had to fit specific criteria like having enough space to host the participating teachers.

The program used a modified Vocal Hygiene (VH) approach to prevent voice problems among public school teachers in the country. The VH is an indirect preventive approach that is aiming to change the teachers' behaviors without directly addressing the voice production (Faham et al., 2016). Vocal Hygiene programs typically consider altering any behavior that influences the health of the vocal fold mucosa such as

phonotraumatic behaviors, laryngopharyngeal reflux, aggressive throat clearing, or phonatory onset type (Ziegler et al., 2010). The primary purpose of VH programs is to promote vocal well-being and improve communication effectiveness. The key objectives of the voice care program are:

- Increasing teachers' awareness of various aspects of voice production.
- Developing strategies to minimize personal and environmental risk factors that may lead to voice problems.
- Teaching the best practices and strategies for managing students' behaviors in the classroom to ensure vocal health.

Evaluation Overview

Program evaluation has been a popular field of investigation within the educational environments in the United States. However, program evaluation is not a common practice in Kuwait. Most of the educational programs in the country depend on one evaluation mode, such as participants' satisfaction surveys, to draw a conclusion about the effectiveness of a given program. Besides preventing voice-related problems among school teachers, the current program aims to inform the stakeholders about the significant impact of such a program on teachers' physical, functional, and emotional aspects of life. So, the aim of using a program evaluation is to inform the stakeholders about the objectives, processes, and outcomes of the voice care program. It is also aimed to assess and report on the effectiveness and quality of the components of the program. Such results and findings of the effectiveness can be used to make decisions regarding the sustainability of the program, and better interpretations of the program's generalization

capabilities. The section below describes the evaluation purpose, audience, approach, evaluation questions, and framework.

Evaluation Purpose and Audience

Evaluation is an essential component of the voice care program and is required by the Department of Workplace Health Promotion at the Ministry of Education. The purpose of the evaluation is to provide useful and valid information about the program's theory, communication, implementation, recruitment/diversity, effectiveness, outcomes, and sustainability. This evaluation will specifically assess the effectiveness of the program and its impact at the individual, organizational, and community levels. Given that the program evaluation will take place in the first year of implementation, the focus will be on summative evaluation. Thus, feedback and recommendations will be provided at the end of the year to make the necessary modifications to the program. The audience of this report includes:

- Kuwait University team consisting of the CDS faculty members, participating in the designing and conducting phases of the program.
- The Department of Workplace Health Promotion at the Ministry of Education.
- School principals and department head teachers who participated in the implementation planning phase.
- The Department of Educational Program Funds at the Ministry of Education.

Evaluation Approach

Given that the program's primary goal is to indirectly alter school teachers' behaviors to preserve healthy voices over the course of their teaching career, the Four-

Level model will be used in this evaluation. This model is most often used to evaluate training and development programs (Kirkpatrick, 2006). It focuses on four levels of training outcomes: reactions, learning, behavior, and results. The major question guiding this kind of evaluation is, "What impact did the training have on participants in terms of their reactions, learning, behavior, and organizational results?" Since the implementation plan is an essential piece of the program evaluated, an additional question regarding the implementation will be added to the evaluation questions.

The evaluation is designed to provide data to guide improvement and summative assessment of the program's quality, effectiveness, and impact. The evaluation will use multiple methods to monitor and evaluate the goals identified by the program team. Key questions at the level of communication, implementation, effectiveness (formative evaluation), and outcomes and sustainability (summative evaluation) have been developed to guide the evaluation.

Values and Aspirations

The evaluation team is committed to promoting a rich understanding of the voice care program evaluated and engaging with issues of culture and equity. Framed within these value commitments, the primary purpose of this evaluation is to assess the quality and importance of the voice care program concerning its ability to positively impact the lives of public school teachers by promoting healthy vocal strategies and behaviors. The evaluation team highly values the participants' input about the effectiveness and satisfaction with the strategies and modes used to deliver the program concepts.

Evaluation Questions and Framework

The following questions guide this evaluation:

- **Reactions:** What are the reactions of the participating teachers regarding the program's contents, strategies, implementation, and their overall experience of attending the workshop sessions? How do the participants feel regarding the sensitivity of the program to their culture?
- **Learning:** What knowledge and skills did school teachers gain as a result of participating in the voice care program? What attitudes and behaviors were changed among school teachers due to their participation in the program?
- **Behavior:** How and in what ways were school teachers able to apply and utilize new knowledge and skills as a result of their participation in the voice care program?
- **Results:** What are the short- and long-term impacts of the voice care workshops on the participating teachers, schools, students, and beyond? Are there unexpected impacts noted?
- **Implementation:** How and to what extent are the program activities and strategies being implemented on schedule and as planned? What challenges exist across governorates for implementation? What unique opportunities exist? To what extent is the program meeting its timeline for policy development?

The evaluation framework below includes evaluation questions, indicators, data sources, and data collection methods for each question.

Table 2

The Voice Care Program Initiative Evaluation Framework

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Reactions What are the reactions of the participating teachers regarding the program contents, strategies, implementation, and their overall experience of attending the workshop sessions? How does the participants feel regarding the sensitivity of the program to their culture?	• Level of satisfaction • # of participants completing the program • #/type of reflections • #/range of small group discussion participations • #/type of problem-solving ideas suggested by participating teachers	• Participants • CDS students • CDS faculty • Program documents	• Satisfaction survey • Document review • Focus groups with CDS students • Interviews • VHI
Learning What knowledge and skills did school teachers gain as a result of participating in the voice care program? What attitudes and behaviors were changed among school teachers due to their participation in the program?	• Range of knowledge and skills gained • Change in attitudes and behaviors • Change in skills • # and type of barriers identified	• Participants • CDS faculty • School principals • Program documents	• Observations • Post workshop questionnaires • Small group discussion notes • Surveys • Interviews/focus groups • Program/ workshop document analysis

Table 2

Cont.

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Behavior How and in what ways were school teachers able to apply and utilize new knowledge and skills as a result of their participation in the voice care program?	• Range of strategies utilized • # of amplification purchased	• Participants • School principals • The amplification seller staff	• Surveys • Staff questionnaire • Interviews
Results What are the short-and long term impacts of the voice care workshops on the participating teachers, schools, students, and beyond? Are there unexpected impacts noted?	• Changes in the teacher's attitudes and feelings toward teaching • Change in school climate • Change in student achievement • # of teachers' turnover • # of amplification users • # of referrals to a Speech-Language Pathologist (SLP)	• Participants • School principals • Parents • SLP • HR staff at the Ministry of Education • Program documents	• Surveys • VHI • Interviews/ focus groups • Document review • Observations
Implementation How and to what extent are the program activities and strategies being implemented on	• #/type of activities being implemented • #/type of small group discussions	• Participants • CDS faculty • School principals • Program documents	• Document review • Observations • Interviews/ focus groups

Table 2

Cont.

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Implementation (cont.) schedule and as planned? What challenges exist across governorates for implementation? What unique opportunities exist? To what extent is the program meeting its timeline for policy development?	• #/type of forms developed • #/type of strategies being taught		

Evaluation Method

Evaluation Design

A mixed methods approach will be used in the evaluation of the current program. Qualitative and quantitative data will be collected concurrently to enrich the evaluation team's understanding of the program. The mixed methods approach allows the evaluation team to collect a broader range of data to capture and reflect on the knowledge gained from the program. It also allows the evaluation team to capture the richness and diversity of the program's participant experiences.

Data Sources

Observations. Observations will be conducted during lectures and small group discussions. The purpose of these observations will be to generate data to describe activities, the level of engagement with the activities, and to collect artifacts distributed and samples of teachers' work. The information gained from these observations will be crucial when making statements regarding the teachers' reactions toward the program and their learning experiences.

Document Review. All the program documents will be included in the data analysis, such as the participants' information documents, their VHI pre-post assessments, attendance logs, and teachers' work at small group discussions. The information gathered from the program documents will help the evaluation team better understand the knowledge, skills, and the learning opportunities offered by the program.

Surveys. The evaluation team will survey the CDS faculty and their participating students as well as the participating staff at the Department of Workplace Health Promotion at the Ministry of Education. These surveys can help capture the participants' input regarding the communication strategies used as well as the challenges and opportunities they observed in the implementing process. Also, the participating teachers will be surveyed to report their thoughts and feelings regarding their experience in the program and their overall satisfaction with the lectures and activities. Survey data will first be cleaned and then analyzed using different statistical tests including: ANOVA, Chi-square, and *t*-tests.

Pre-/Post-assessments. The Arabic version of the VHI will be used as the pre-post assessment test that will help the evaluation team determine some of the effectiveness aspects of the program. The Arabic version of the test was tested and proved to be a valid and reliable measure.

Interviews and Focus Groups. Interviews and focus groups will be used to capture more detailed and rich information from both the program team and the participants regarding their experiences and roles in the program. The interviews conducted with school principals will be based on in-depth, semi-structured, and open-ended questions, and last approximately 30 minutes. Focus groups with CDS faculty, CDS students, and participating teachers who attended the workshop will also be in-depth, semi-structured, and have open-ended questions, and will last approximately 45 minutes. The interviews and focus groups will be audio-taped with the permission of participants and subsequently selectively transcribed. The evaluation team will develop all interview protocols and survey instruments. The information collected during the interviews and focus groups will be used to validate some of the previously gathered information related to satisfaction and communication.

Data Collection Methods

Data collection will include the following:

- Reviewing the existing program data and documents;
- Pre-/post-self-assessments tests (VHI, questionnaire);
- Selected observations of workshop sessions of different sites and governorates;

- Interviews and focus groups with participating teachers, school principals, and CDS faculty and students;
- Participant satisfaction survey.

Data Analysis

The purpose of the data analysis is to organize raw data, assess patterns, connections, trends, differences, and to support and validate conclusions (Greene, 2007). The evaluation questions will guide the data collection and data analysis that will occur concurrently. However, before the intensive data analysis takes place, the evaluation team will review all individual data, transcribe all interview and focus group conversations, and review all program artifacts for accuracy purposes. Interview and focus data will be checked for transcription accuracy. All survey data will be cleaned before being transported to SPSS. All the data collected will be used to answer the evaluation questions and to construct clear improvement recommendations and evaluation conclusions.

Validity of the Evaluation Method

To ensure the internal validity of the evaluation method, which relates to whether the program curriculum is responsible for causing the positive change in the participants' knowledge and skills, the evaluation team will triangulate with rich data sources, such as comparing program document and observation data with interviews and survey data. The team will also report any change that may affect the outcomes, such as changes in the number of participants from one site to another or changes of instructors.

The evaluation team will account for threats to the external validity that are related to the ability to generalize the results to other settings or populations by doing the following:

- Ensuring that the sample selected represents the population being evaluated, such as accounting for a male to female ratio and the representation of teachers in all the six governorates.
- Describing all the variables related to the program design and outcomes in detail.
- Identifying and reporting different patterns and group differences.

Additionally, the statistical conclusion validity describes the degree to which conclusions about the relationship among variables based on the data are correct. The evaluation team will address statistical conclusion validity by:

- Ensuring that the sample size selected is sufficiently large enough to determine whether the project contributed to producing identified impacts.
- Ensuring the use of adequate sampling procedures and appropriate statistical tests.

Reporting Plan and Timeline for the First Year

The evaluation team is planning to submit formative as well as summative evaluation reports throughout the year and at the end of the first year. The information included in the reports will provide the program staff with ongoing feedback for program modifications (i.e., formative) as well as periodic review of long-term progress on major

program goals and objectives (i.e., summative). The evaluation timeline will be based on weeks since the start date of the program is yet to be determined.

Table 3

Evaluation Timeline for Year 1

Date	Activity/Deliverable	Total Number of Days	Responsibility	Deliverable
	Evaluation Start Date		Evaluation Team	
Phase One: Evaluation Planning (Six weeks prior to the program start date)				
Week 1	First evaluation meeting	2	Program Team and Evaluation Team	
Week 1 & 2	Review all relevant literature/program documentation	4	Evaluation Team	
Week 3	Revise and resubmit evaluation plan	2	Evaluation Team and Program Team	
Week 3	Submit revised plan			• Evaluation Plan
Week 4 & 5	Develop, revise, and review data collection instruments	6	Evaluation Team and Program Team	
Phase Two: Data Collection (The eight weeks of the program)				
Week 1-8	Data collection	18	Evaluation Team	
Week 4	Prepare and write Interim report	4	Evaluation Team	
Week 5	Submit Interim report		Evaluation Team	• Interim Report
Phase Three: Putting it all Together (Week 5-8 of the program + 4 weeks after the program end date)				
Week 5- 9	Analyze data across all sources	12	Evaluation Team	
Week 9	Write final report	7	Evaluation Team	

Table 3

Cont.

Date	Activity/Deliverable	Total Number of Days	Responsibility	Deliverable
Phase Three: Putting it all Together (Week 5-8 of the program + 4 weeks after the program end date) (cont.)				
Week 10	Submit draft of final report		Evaluation Team	• Final Report Draft
Week 11	Revise final report	6	Evaluation Team	
Week 12	Submit final report		Evaluation Team	• Final Report • Visual Slideshow report

Evaluation Team Composition

The evaluation team proposed for this project will include:

- LATIFA ALSALIMI, MS.

  An internal Evaluator who will be responsible for data collection and data analysis.

- AYESHA BOYCE, Ph.D.

  An external evaluator that is responsible for developing the evaluation report regarding the effectiveness of the program.

CHAPTER VII

CONCLUSION AND IMPLICATIONS FOR FURTHER STUDY

Summary and Conclusion

It is well known that the prevention of communication disorders is one of the primary responsibilities of speech-language pathologists as they "present primary prevention information to groups known to be at risk for communication disorders and other appropriate groups" (ASHA, 1988). Given that definition, school teachers make up an occupational group that has been identified to be at risk of developing voice disorders due to job-related demands (Roy, Merrill, Thibeault, Parsa, et al., 2004; Smith et al., 1998). Thus, providing appropriate prevention of voice problems for the teacher population is a primary responsibility of speech-language pathologists (SLPs). Currently, the literature lacks the existence of a comprehensive voice care program that is focused on preventing voice disorders among the school teacher population. Educators, students, and SLPs do not have a systemic, well-structured model to follow when planning the prevention of voice problems among the teachers' group. Because of the absence of such a model in the literature, the author of this dissertation felt responsible as a researcher to develop a comprehensive voice care program to prevent voice problems among school teachers.

The current model presented in this dissertation is dedicated to preventing voice problems among public school teachers in Kuwait. The author developed a model that is

sensitive to the cultural and environmental factors that may influence the success of the prevention program in the county. Along with designing the voice care program, the author added two crucial components to the presented dissertation: an implementation plan and an evaluation plan. The term implementation refers to the process of turning strategies and plans into actions in order to accomplish objectives and goals. The author believes that the implementation plan is as important, if not more important, than the prevention model itself. The prevention model of voice care program will be all for naught if it is not successfully implemented, ensuring its maximum success serving its target population. Without an implementation plan of the designed model, the voice care program will remain to be simply a model that cannot be transformed into action to achieve its goals.

A third piece was added to the current dissertation, which was an evaluation plan of the designed model and its implementation process. The purpose of the evaluation is to provide valid and useful information to stakeholders and decision makers regarding the quality of the experiences of the participating teachers and their overall satisfaction with the program. In addition, the evaluation provides important information regarding the short- and long-term outcomes, as well as the impact of the program on the lives of its participants. The evaluation report presents recommendations for improvements and statements regarding the effectiveness and sustainability of the program. The report provides crucial information for decision makers to rely upon when determining their level of support to the program and craft their conclusion regarding the program's effectiveness, sustainability, and generalizability.

Clinical Implications

The content of this dissertation is solely dedicated to improving clinical practices of SLPs in the area of voice disorders prevention for at-risk populations such as school teachers. By designing the voice care program presented in Chapter IV, the author aims to aid professionals in communication sciences and disorders with the necessary knowledge and tools to work toward preventing voice problems among the teacher population in their communities. The current program can be cautiously adapted to suit teachers in different countries other than Kuwait, particularly in the Middle East, where similar cultures are shared.

Implementation Challenges and Future Directions

Kuwait, like any other country, has its unique culture, traditions, and social and community norms. Special care has been taken to adequately represent the Kuwaiti culture when designing the voice care program. However, some social and cultural issues may arise during the implementation phase of the program. The author anticipates some gender-related dilemmas to surface when implementing the program in the country.

The teaching field in Kuwait differs from that in the United States in that it is a segregated field whereby after kindergarten male students are separated from female students and located in separate buildings. In most cases, female teachers teach female students, and male teachers teach male students. Many teachers, especially female teachers, have selected this career because of their preference to have limited interactions with coworkers from the other gender in their workplace. With that being said, most of the teachers' workshops are co-ed. The author feared that female teachers might reserve

their participation during voice care workshops due to the presence of male teachers; this is where the input of the teachers representing the Ministry of Education is highly important during the implementation planning phase. Those teachers can provide the implementation team with insights and suggestions on how to go about implementing the program while taking into consideration the gender-related dilemma presented earlier.

When implemented, the voice care program will offer a rigorous dataset for researchers interested in the prevention of voice problems for at-risk populations. The current model provides opportunities for further studies investigating the generalizability of the program with different populations and in different regions. The program provides detailed sessions that can be easily followed and administered by SLPs interested in applying the program with school teachers in their country. The author recommends paying careful attention to the unique environmental and cultural factors influencing voice production for any population before administering the voice care program.

More investigations can be conducted regarding the quality of the experiences of the teachers participating in the program. Also, longitudinal studies can be carried out to assess the long-term effectiveness and impact of the program at individual, organizational, and community levels. Researchers can point out areas for improvements or modifications to the current program based on continuous evaluations and assessments. The data generated during the implementation of the program will be very valuable for researchers interested in the area of primary prevention of voice disorders for populations identified to be at risk of developing voice problems.

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APPENDIX A

THE ENGLISH VERSION OF THE VOICE HANDICAP INDEX (VHI)

VOICE HANDICAP INDEX

Name: _____ Date: _____

These are statements that many people have used to describe their voices and the effects of their voices on their lives. Circle the response that indicates how frequently you have the same experience.

0-never 1-almost never 2-sometimes 3-almost always 4-always

Part I-F

My voice makes it difficult for people to hear me.	0	1	2	3	4
People have difficulty understanding me in a noisy room.	0	1	2	3	4
My family has difficulty hearing me when I call them throughout the house.	0	1	2	3	4
I use the phone less often than I would like to.	0	1	2	3	4
I tend to avoid groups of people because of my voice.	0	1	2	3	4
I speak with friends, neighbors, or relatives less often because of my voice.	0	1	2	3	4
People ask me to repeat myself when speaking face-to-face.	0	1	2	3	4
My voice difficulties restrict my personal and social life.	0	1	2	3	4
I feel left out of conversations because of my voice.	0	1	2	3	4
My voice problem causes me to lose income.	0	1	2	3	4

SUBTOTAL _____

Part II-P

I run out of air when I talk.	0	1	2	3	4
The sound of my voice varies throughout the day.	0	1	2	3	4
People ask, "What's wrong with your voice?"	0	1	2	3	4
My voice sounds creaky and dry.	0	1	2	3	4
I feel as though I have to strain to produce voice.	0	1	2	3	4
The clarity of my voice is unpredictable.	0	1	2	3	4
I try to change my voice to sound different.	0	1	2	3	4
I use a great deal of effort to speak.	0	1	2	3	4
My voice is worse in the evening.	0	1	2	3	4
My voice "gives out" on me in the middle of speaking.	0	1	2	3	4

SUBTOTAL _____

Part III-E

I am tense when talking to others because of my voice.	0	1	2	3	4
People seem irritated with my voice.	0	1	2	3	4
I find other people don't understand my voice problem.	0	1	2	3	4
My voice problem upsets me.	0	1	2	3	4
I am less outgoing because of my voice problem.	0	1	2	3	4
My voice makes me feels handicapped.	0	1	2	3	4
I feel annoyed when people ask me to repeat.	0	1	2	3	4
I feel embarrassed when people ask me to repeat.	0	1	2	3	4
My voice makes me feel incompetent.	0	1	2	3	4
I am ashamed of my voice problem.	0	1	2	3	4

SUBTOTAL _____

TOTAL _____

Score Range	Severity	Common Association
0-30	Mild	Minimal amount of handicap
31-60	Moderate	Often seen in patients with vocal nodules, polyps, or cysts
60-120	Severe	Often seen in patients with vocal fold paralysis or severe vocal fold scarring.

APPENDIX B

THE ARABIC VERSION OF THE VHI

مؤشر الإعاقة الصوتية

اختر أحد الأرقام المقابلة لكل سؤال والذي يصف شدة المشكلة لديك:

صفر=أبدا. 1=نادرا. 2=أحيانا. 3=غالبا. 4=دائما.

الجزء الأول:

1. صوتي يصعب على الآخرين سماعه. صفر 1 2 3 4
2. يجد الناس صعوبة في فهمي**(سماع صوتي)** عندما أتحدث في غرفة كثيرة الضوضاء. صفر 1 2 3 4
3. تجد عائلتي صعوبة في سماع صوتي عندما أناديهم في المنزل. صفر 1 2 3 4
4. صوتي يجعلني أستعمل الهاتف بشكل أقل مما أحب. صفر 1 2 3 4
5. أميل إلى تجنب الاجتماع بالناس بسبب صوتي. صفر 1 2 3 4
6. صوتي يجعلني أتحدث مع الأصدقاء والمعارف بشكل أقل مما أحب. صفر 1 2 3 4
7. الناس تطلب مني أن أكرر ما أقول عندما أتحدث إليهم وجها لوجه. صفر 1 2 3 4
8. مشاكل الصوت لدي أثرت سلبا على حياتي الشخصية والاجتماعية. صفر 1 2 3 4
9. أحس بأنه يتم إهمالي في المناقشات **(السوالف)** بسبب صوتي. صفر 1 2 3 4
10. مشكلة الصوت لدي تسببت في تقليل دخلي المادي. صفر 1 2 3 4

المجموع =

الجزء الثاني:

1. أفقد الكثير من هواء التنفس عندما أتحدث. صفر 1 2 3 4
2. صوتي يتغير خلال اليوم. صفر 1 2 3 4
3. يسألني الناس دائما "ماذا حدث لصوتك ؟". صفر 1 2 3 4
4. صوتي ناشف وله صرير **(خشن)**. صفر 1 2 3 4
5. أحس أنه علي أن أضغط على حنجرتي **(أجهدها)** لإخراج صوتي. صفر 1 2 3 4
6. صفاء صوتي لا يمكن التنبؤ به. صفر 1 2 3 4
7. أحاول أن أغير صوتي ليبدو مختلفا **(أفضل)**. صفر 1 2 3 4
8. أقوم بكثير من الجهد لأتحدث. صفر 1 2 3 4
9. صوتي أسوأ في المساء. صفر 1 2 3 4
10. ينقطع صوتي أثناء الحديث. صفر 1 2 3 4

المجموع =

الجزء الثالث:

1. أكون متوترا عندما أتحدث مع الآخرين بسبب صوتي. صفر 1 2 3 4
2. ينزعج الناس بسبب صوتي. صفر 1 2 3 4
3. أجد أن بعض الناس لا تفهم طبيعة مشكلة صوتي. صفر 1 2 3 4
4. مشكلة صوتي تحزنني. صفر 1 2 3 4
5. أقلل الخروج من البيت بسبب مشكلة صوتي. صفر 1 2 3 4
6. صوتي يجعلني أحس بأني عاجز. صفر 1 2 3 4
7. أشعر بالانزعاج عندما يطلب مني الآخرون أن أكرر ما قلته. صفر 1 2 3 4
8. أشعر بالاحراج عندما يطلب مني الآخرون أن أكرر ما قلته. صفر 1 2 3 4
9. صوتي يجعلني أحس بأني غير مؤهل. صفر 1 2 3 4
10. أشعر بالخجل من مشكلة صوتي. صفر 1 2 3 4

المجموع =

المجموع الكلي =

APPENDIX C

TEACHERS' QUESTIONNAIRE

Section I: General Questions

- Your sex:
  - Male
  - Female

- Your age:
  - 18-29
  - 30-49
  - 50-69
  - 80 or older

- Do you smoke regularly?
  - Yes, average number of cigarettes you smoke per day____
  - No

- Do you drink tea or coffee?
  - Yes, a lot
  - Yes
  - No

- Have you had a throat/ neck surgery in your lifetime?
  - Yes
  - No

- Do you suffer from? (select all that apply).
  - Respiratory allergy
  - Asthma
  - Gastritis
  - Thyroid diseases
  - Gastroesophageal reflux
  - Hearing impairment?

- Did you suffer in the **past two years** from?
  - Cold
    - Never
    - Sometimes
    - Frequently

- Sinusitis
    - Never
    - Sometimes
    - Frequently
- Laryngitis
    - Never
    - Sometimes
    - Frequently

- What is the level of the school you are teaching at?
    - Kindergarten
    - Elementary
    - Middle
    - High

- What governorate is your school part of:
    - Hawalli
    - Asema
    - Mubarak Al-Kabeer
    - Ahmadi
    - Farwaniya
    - Jahra

- What subject do you teach (e.g. Math)? _____

- For how many years you have been teaching (e.g. 15 years)? _____

- How many classes are you teaching this year (e.g. 3 classes)? _____

- What are the grades you are teaching this year (e.g. Grade five and grade seven)? ____ _____

- How many class periods do you teach per week? _____

- What is the average number of students in each of your classes (per class)? _____

- What are the extracurricular activities you are engaged in at your school besides teaching? (please select all that apply).
    - General supervision
    - Corridor supervisor
    - Broadcasting supervisor
    - Olympics supervisor
    - Sport team coach
    - Cultural dancing team trainer
    - Scouts coach

- Holly Qura'an contest supervisor
- Poetry contest supervisor
- Recess monitors
- Other _____

Section II: Vocal Habits

- Do you have school age children of your own?
  - Yes, how many? _____
  - No

- If yes, do you teach them at home
  - Yes, on a daily basis
  - Yes, on a weekly basis
  - Yes, only during exams period
  - No

- Are you a professional singer?
  - Yes
  - No
  - Not a professional singer but I sing frequently for leisure

- Do you usually speak in a:
  - Soft voice
  - Normal voice
  - Loud voice
  - At the top of your lungs

- Beside your job, are you a/an:
  - Emam
  - Mua'thin
  - Team coach
  - Actor
  - Tutor /private lessons

- Do you use your voice in any other professional capacity not listed above?
  - Yes, please specify _____
  - No

Section III: Symptoms related to voice disorders

- Do you have a family history of voice problems?
    - Yes
    - No

- Have you ever had any of the following vocal symptoms **during your lifetime**? (please select all that apply).
    - Hoarseness
    - Voice tiredness
    - Difficulty projecting the voice
    - Voice related discomfort when talking
    - Increased effort to talk
    - Chronic throat dryness or soreness
    - Trouble speaking or singing
    - Constant throat clearing
    - Complete loss of voice
    - Other_____

- Did any of the symptoms you indicated above lasted for a month or more?
    - Yes
    - No

- Has your voice problem been?
    - continuous
    - on and off

- Do you **currently** have any of the following vocal symptoms? (please select all that apply).
    - Hoarseness
    - Voice tiredness
    - Difficulty projecting the voice
    - Voice related discomfort
    - Increased effort to talk
    - Chronic throat dryness or soreness
    - Trouble speaking or singing
    - Constant throat clearing
    - Complete loss of voice
    - Other_____

- Have you consulted a physician or other health care professional for your voice problem?
    - Yes
    - No

- For your voice problem, have you received voice therapy?
    - Yes
    - No

- Number of work days missed due to voice problem (in the past year):
    - It was _____ days
    - I haven't miss work because of a voice problem in the last year

- Number of work days you were not able to teach because of a voice problem in the last year
    - It was _____ days
    - none

APPENDIX D

THE PROGRAM LOGIC MODEL

Resources	Activities	Outputs	Short-Term Outcomes	Long- Term Outcomes	Impact
Department head teachers Compliance officers School principals CDS faculty CDS students Funding dep. representative Ministry of Education Kuwait University Decision makers at the Workplace Health Promotion dep. Counseling SLPs The prevention program Content of the lectures Content of the small group activities Literature review The schools The program budget Recruitment plan Selection criteria Pre-post assessments Surveys Reporting doc. Filing a complaint doc.	Recruiting teachers Selecting the schools Conducting the pre-post assessments Selecting students to participate in delivering the program content Training faculty and students to provide the workshops Developing the workshops content Developing the reporting doc. Developing a complaint doc. Preparing the PP slides Preparing the handouts	# of teachers # of program staff # of workshops Duration of each workshop session # of weeks # of hours of services Type of workshops Cost of the program Type of assessments # of assessments	# of teachers completed the program A significant difference between the participants' pre-and post-assess. tests A significant diff. in the content knowledge of teachers enrolled in program vs. the ones who are not Participants satisfaction	Less teachers' absences due to voice loss More use of vocal hygiene tips by participants Maintaining similar scores in the post assessment test The use of portable amplifications in and out of classrooms More teachers reporting voice problems More referrals to the counseling SLP More teachers are interested in attending the program	Increased self-confidence in teaching More positive feelings toward speaking in and outside of the classrooms Use of healthy projected voices in the classroom Less medical referrals due to voice problems Reduction in teacher turnover due to voice issues Increase in student achievement Job satisfaction