

*"Development of a Voice Disorder
Outcome Profile (Voice-DOP) for an
Indian Population"*

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M.Sc (Speech and Hearing), University of Mysore, Mysore

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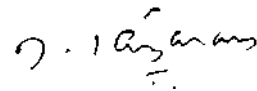
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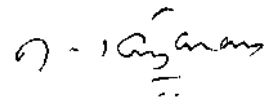
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This is to certify that this dissertation entitled "*Development of a Voice Disorder Outcome Profile (Voice-DOP) for an Indian Population*" has been prepared under my supervision and guidance. It is also certified that this has not been submitted earlier in any other University for the award of any Diploma or Degree.

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Declaration

This dissertation entitled "*Development of a Voice Disorder Outcome Profile (Voice-DOP) for an Indian Population*" is the result of my own study under the guidance of Dr. M. Jayaram, Director, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier at any other University for the award of any Diploma or Degree.

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*Dedicated to
AIISH
with gratitude ...*

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CHAPTER 1

INTRODUCTION

Traditional clinical voice evaluation includes measures such as perceptual judgements of voice characteristics, video-stroboscopic visual perceptual findings, perceptual acoustic judgements, and objectively obtained physiological measurements. These provide some information about the type and severity of the voice impairment compared with a normal voice. They do not assess a person's level of handicap resulting from a voice disorder or outcome from a treatment for the disorder.

It is well recognized that the significance of a voice disorder for an individual goes beyond the anatomical and physiological deviations that instrumentation can capture. Data generated through objective assessment of the physical and physiological aspects of a voice disorder undoubtedly help in defining the problem as well as in deciding the management strategies for a given individual with a voice problem. However, there is a 'functional' aspect too. One should consider the 'handicap' that an individual with a voice disorder experiences or the impact that a voice disorder has on the daily activities and social function of the affected individual. Therefore, an outcome measure that considers individual factors will undoubtedly provide a more accurate assessment of the total significance of a voice disorder.

'Quality of life' is one way to assess the overall outcome of the physical, mental and social well being of a patient following a health related problem. Outcome studies measure an individual's quality of life, ability to continue with current employment, satisfaction of treatment regardless of the disease state, or the cost of treatment. Dysphonic individuals demonstrate the impact of their voice disorder in professional, communication, social and psychological domains (Benniger et al., 1998; Jacobson et al., 1997; Raajimakers et al., 1998; Ramiz and Verdolini, 1998; Smith et al., 1998). The dysphonic severity per se may not be a good indicator of the degree of impact voice problems on life quality. Many facets of voice disorders, such as endurance, acceptance of a new voice, and vocal effectiveness cannot be easily measured in the voice laboratory. Hence, the traditional assessment procedures that focus merely on the impairment level should be expanded to assess the functional impact of the impairment.

Treatment outcome studies have been very rare in the Indian context, and when carried out, they have invariably concentrated on measuring the physical aspect of the impairment. For example, measurement of FO, intensity of voice, etc. However valid is this focus, there is a need to go beyond this to assess the satisfaction of a given client. Whether the client perceives improvement in his voice, and voice related severity, handicap or quality of life, etc should be the focal point for the clinician to evaluate the effectiveness of his therapeutic methods and in deciding to terminate treatment. A voice disorder outcome profile

such as the one proposed to be developed here will be very useful in determining the effectiveness of therapy.

The concept of evaluation of the 'totality' of the significance of a voice disorder for the affected individual has been recently recognized and is being considered in clinical voice evaluation battery (Smith et al., 1996). Voice Handicap Index (Jacobson et al., 1997), Voice Related Quality Of Life (Rosen and Murry, 2000) and Voice Activity and Participation Profile (Ma & Yiu, 2001) are some of the instruments available for this purpose. These different instruments deal with activity limitation and participation restriction (VAPP) or quality of life (V-RQOL), or Voice Handicap Index (VHI). These different aspects of the same voice disorder are interrelated and therefore, there is a need to develop one instrument or index, which reflects the totality of the voice problem in the functional domain. Also, these instruments are meant for the Western society. There is reasonable justification to say that the perception of the disability and its impact on social and daily activities of an individual in the population of the less developed Asian and African countries are different from those of the highly developed Western nations. The threshold of tolerance seems to be much higher in the Indian population than in the Western, and, therefore, the applicability of these instruments to our context is suspect.

In the clinical realm, there is a need for an understanding of the effect of voice disorders on quality of life, and how quality of life can be best measured in these populations. By making our understanding and knowledge explicit, we will be better able to assist our clients in achieving their ultimate goal of rehabilitation and improve quality of life. Therefore, the study is undertaken to develop and validate a clinically useful tool for assessing voice disorder outcomes.

Purpose of the Study

Therefore, the purpose of this study is to develop a voice disorder outcome profile to assess voice disorder outcomes.

Objectives of the Study

The objectives of this study are to

- a) develop a voice disorder outcome profile encompassing the physical, emotional and functional aspects of the voice disorder, and
- b) to establish its reliability and validity on an Indian population with dysphonia.

CHAPTER 2

REVIEW OF LITERATURE

According to the World Health Organization (WHO), health is a multidimensional concept that encompasses physical, mental and social states of being. The amount of change in any of these states as a result of treatment or non-treatment is an outcome.

One patient-based measure of outcomes is 'Quality Of Life' (QOL). Quality of life essentially represents the challenge of defining and measuring a nebulous construct. The subjectivity of this phenomenon is displayed in the variety of definitions reported in the literature. For example, QOL reflects any of the following:

- Modern counterpart of the notion of good life (George & Bearon, 1981).
- Maximize function in everyday life and achieve the highest level of well being (Pit, Schurink, Nair, Byles, & Heller, 1996).
- The satisfaction of an individual's values, goals and needs through actualization of his/her abilities on life style (Emerson, 1995).
- The absence of difficulty using arms, legs, seeing, hearing, talking, preparing meals, cleaning house and grocery shopping (Dixong, 1997).

- Dynamic interaction between external conditions of life and the internal perception of those conditions for the individual (Browne et al., 1994).
- Personal indulgence, luxury, pleasurable sensory experience, privilege, choice not change, access, universal opportunity, shared goals, social responsibility, effective communication, give and take, devotion and sacrifice (Seed & Lloyd, 1997).
- Both objective and subjective, each axis being the aggregate of seven domains: material well being, health, productivity, intimacy, safety, community, and emotional well being (Cummins, 1995).

WHO defines QOL as follows:

- an individual's perception of his/her position in life in the context of the culture and value systems in which he/she lives and in relation to his/her goals, expectations, standards and concerns (WHO, 1993).

The most salient feature of QOL is that it is composed of a number of separate domains of being or functioning. These domains can usually be classified under either the health or well being conceptualization of QOL, and can be viewed from an objective or subjective perspective.

Health Conceptualization of QOL

QOL has been most commonly understood in terms of health, leading to the coinage of the term Health-related Quality of Life (HRQOL). The following

are three levels in the health conceptualization of QOL commonly employed in research and reported in literature (Spitzer, 1987 & Barr, 1995).

- 1) Global conceptual level - overall health level measured with multidimensional scales. For example, medical outcomes study 36-item Short Form General Health Survey (SF-36)
- 2) Middle operational level - domain health level including physical, psychological, social domains etc.
- 3) Lowest target level - factor health level. Factors within the above domains are measured with unidimensional scales. For example, social support questionnaire.

The health conceptualization of QOL lends itself well to objective perspective on QOL measurement and has dominated over the subjective. This is possibly due to reasons of ease of identification and quantification, and the perception of objectivity as more favourable than self reported data. While specific domains are usually assessed objectively, for example, general health, functional, socio-economic, physical and mental and social status (George and Bearon, 1981; Fletcher et al., 1992), there is acknowledgement that subjective assessment of the same domains is recommended for a balanced understanding of a person's QOL (Fuhrer, 1996). The WHO provides an interesting combination of health and subjectivity in the QOL assessment. The WHO-QOL (WHO, 1997) assesses essentially health domains, but via subjective self-report thus challenging the standard objective assessment approach to health.

Quality of Life Measurement in Speech Pathology and Audiology

QOL has seen only recent introduction to the health and social sciences (Katz and Gurland, in Birren et al., 1991), and then to differing degrees among the different professional fields. QOL research in population with communication disabilities is limited and QOL instruments are used infrequently in clinical practice (ASHA, 1996; Hesketh & Hopcutt, 1997). However, this is a rapidly evolving area of research in speech pathology and audiology and the methods are being continually updated. Currently, populations that have documented QOL measurement include head and neck surgical procedures for cancer of larynx (Desanto et al., 1995; Clements et al., 1997; Morton, 1997; Stewart et al., 1998), oesophagus (O'Hanlon et al, 1995), and tongue (Ruhl et al., 1997), aphasia (Records and Baldwin, 1996, Sarno, 1997) and traumatic brain injury (Webb et al., 1995).

The measurement of outcomes following voice disorders is still in its infancy. The interest in voice outcomes stems from the fact that many facets of voice disorders, such as endurance, acceptance of a new voice, and vocal effectiveness cannot be easily measured in voice laboratory. Moreover, treatment of voice disorders, which involves either surgery, pharmacological agents, or behavioural management with voice therapy, requires the patient's full cooperation throughout the course of treatment. The quality and accuracy of surgery or the level of voice therapy may not necessarily reflect the long term outcome if the patient does not cooperate with the treatment procedure.

Assessment of outcome of voice therapy involves the patient's ability to use the voice in normal social and work- related circumstances. The extent to which the voice is usable in these situations will be reflected in the outcome measure.

There are also a few standardized methods for assessing the psychosocial consequences of voice disorders. Llewellyn-Thomas et al. (1984) developed a linear analog scale that was an attempt to quantify self-assessment of voice quality and daily functioning for patients with laryngeal cancer. Although this scale was designed for use with a select group of patients, it represents the first attempt to produce a statistically valid instrument for assessment of functional impact of alteration in voice quality.

Smith et al. (1994) designed a questionnaire to elicit information from patients regarding the functional impact of voice disorders in various aspects of their lives, the effects of vocal symptoms specifically on employment, symptoms, risk factors and family history. Data were collected from 113 patients. In an initial analysis, work related effects for patients with voice disorders were apparent, as were effects on social interaction reported by older patients. This as the first study to evaluate the impact of voice disorders on quality of life dimensions and provided direction as well as impetus for further studies.

Voice Handicap Index

In 1997, Jacobson and his colleagues proposed a measure of voice handicap known as the Voice Handicap Index (VHI). This patient self-

assessment tool consisted of 30 items under three domains: emotional, physical, and functional aspects of voice disorders. Initially, this was an 85-item test consisting of questions selected primarily from patient reports to ensure that the scale had both content and face validity. The original 85-item test was reduced through item analysis, paired test of items, and a statistical coefficient to demonstrate internal consistency of the test. A 30-item test which the patient answered on a 5-point scale from '0' indicating the patient 'never' felt the problem to '5' where the patient 'always' felt the problems. This 30-item test was then assessed for test-retest stability, both for the overall and the three subscales. From the test-retest data, a 95% confidence interval for critical difference scores was derived. Each subscale was found to be significantly different if it differed by eight points, whereas the total VHI score was found to be significantly different if it varied by 18 points. Thus, a shift in the total score of 18 points or greater was required to make sure that the change was caused by intervention and not by the unexplained variability inherent in such tests. The authors also studied the relationship of VHI score to patient's self-rated severity of voice disorder and found a moderate relationship between the two measures. The VHI was designed to assess all types of voice disorders.

Murry and Rosen (2000) evaluated the VHI in three group of speakers to determine the relative severity of voice disorders in patients with muscular tension dysphonia, benign vocal fold lesions (polyps or cysts), and unilateral vocal fold paralysis. In this study, patients were evaluated before and after

treatment. Patients with benign vocal fold lesions had the lowest perception of handicap severity before and after treatment compared to the other two clinical conditions.

Rosen and Murry (2000) examined the use of VHI in a specific group of subjects, namely singers. Singers represent a unique group of individuals with voice problems. Although they may present with hoarseness or other voice quality disorders in the speaking voice, most singers are seen because of some difficulty specifically related to the singing voice. For example, singers may complain of difficulty specifically in the passagio, lack of vocal endurance during prolonged singing, diminished range (especially at high frequencies), and difficulty singing softly. Thus, the voice patterns of singers may be quite different from the voice problems experienced by nonsingers with dysphonia. Subjects consisted of two groups of professional singers and nonsingers with vocal complaints. Rosen and Murry (2000) reported a significant low VHI scores in singers compared to nonsingers. The low VHI scores in singers may be because, it was hypothesized, of the nonaddressal of the different aspects of a singer's voice in the VHI. Therefore, the results of this study suggested are inclusion of items relating to the specific needs of the singer in the VHI.

Stewart, Chen & Stach (1998) did an outcome analysis of voice and quality of life in patients with laryngeal cancer. They assessed relationships between voice satisfaction and global quality of life in patients who have been treated for laryngeal cancer. The subjects included 80 patients who had

completed treatment for laryngeal cancer with either total laryngectomy, radiotherapy or both. The results indicated that the self-rated global health (the Medical Outcomes Study - 36-item Short Form Health Survey: SF-36) did not correlate significantly with the emotional, functional, or physical subscales of VHI. Physical voice handicap scores did not differ significantly between those who underwent TEP and those who had radiotherapy, but emotional and functional handicap scores were lower in patients treated with radiotherapy compared to patients who underwent TEP.

Courey et al. (2000) did an outcome assessment following treatment of spasmodic dysphonia. VHI & 36-item Short Form (SF-36) surveys were administered on 38 patients before and after treatment. On the VHI, improvements in the patients' perception of their functional, physical and emotional voice handicap reached statistical significance. On the SF-36, patients had statistically significant improvements in mental health and equal functioning. Treatment of spasmodic dysphonia with botulinum toxin type A significantly lessened the patients' perception of dysphonia. In addition, treatment improved the patients' social functioning and their perception of mental health. Thus, these outcome measures well with the treatment.

Voice Outcome Survey

Glicklich, Glovsky, & Montgomery (2000) examined outcomes in patients with vocal fold paralysis. They used the Voice Outcome Survey (VOS), a brief,

reliable, and sensitive tool, to evaluate clinical change in patients with unilateral vocal fold paralysis. In the VOS, the patient answered five questions. The VOS was administered before and 6 months after medialization laryngoplasty for unilateral vocal fold paralysis. Voice analysis results were also obtained. The overall reliability of the VOS was related to the subscales of SF-36. The VOS was the most sensitive instrument for recording clinical change after surgery. The authors concluded that VOS is a brief, valid, reliable, and highly sensitive measure of disease specific health in patients with unilateral vocal fold paralysis.

Benninger et al (1998) evaluated a disease specific outcome measure for patients with selected voice disorders and to relate this instrument to measures on a standardized instrument. 260 adult patients evaluated for alterations of voice completed a general quality of life measure (SF-36) and a voice specific instrument like VHI. High correlation was obtained between the scores on SF-36 and the total score on VHI as well as between SF-36 and the physical, emotional, and functional subscales of the VHI. Patients with vocal fold paralysis had the highest level of pretreatment disability, as measured on both the VHI & SF-36, among voice patients.

Voice Related Quality of Life

Hogikyan & Sethuraman (1999) have presented a measure of Voice Related Quality of Life (V-RQOL). VRQOL consists of a total of 10 items in the physical functioning and social-emotional domains. The subjects included 109

patients presenting with a voice complaint and 22 normal individuals. Mean increments of 15-20 points separate different stages in the degree of self-perceived voice quality improvement following treatment. The authors reported that V-RQOL was reliable, valid and responsive, and that it carried a low burden.

Voice Activity and Participation Profile

Ma & Yiu (2001) developed a Voice Activity and Participation Profile (VAPP). The 28-item assessment tool was designed to evaluate the perception of voice problem, activity limitation, and participation restriction based on the International Classification of Impairments, Disabilities and Handicaps - 2 Beta - 1 Concept (WHO, 1997). The questionnaire was administered on 40 subjects with dysphonia and 40 control subjects with normal voices. Results showed that the dysphonic group reported significantly more severe problem, limitation in daily voice activities, and restricted participation in these activities than the control group. The study also showed that the perception of a voice problem by the dysphonic subjects correlated positively with the perception of limitation in voice activities and restricted participation. However, the self perceived voice problem was poorly correlated with the degree of voice quality impairment measured acoustically and perceptually by speech pathologists. The data also showed that the aggregate scores on activity limitation and participation restriction were positively correlated.

In outcomes research, treatment efficacy, which is the ability of an applied treatment to produce a desired result can also be assessed. Treatment efficacy is what drives controlled clinical trials, and information from these studies is used to structure clinical measures of treatment outcome. Treatment effectiveness, however, is one of the major goals of research for outcomes, and these studies often do not incorporate experimental research designs because their focus is on the influence of the treatment administered over numerous facets of the patient's life that typically cannot be experimentally controlled. Treatment effectiveness pertains to more than improvement in biological and physiologic status. It also involves the patient's subjective opinion about the changes that have taken place in his or her life because of treatment. Outcome research attempts to demonstrate treatment effectiveness by relating clinical and more objective measures of treatment results to the patient's subjective experiences and responses.

Need for the Study

As can be seen from this survey, there are different tools for assessing handicap of a voice disorder - Voice Handicap Index (Jacobson et al., 1997), Voice Outcome Survey (Glicklich, Glovsky, & Montgomery, 2000), Voice Related Quality of Life (Hogikyan and Sethuraman, 1998), Voice Activity and Participation Profile (Ma & Yiu, 2001) and voice severity (Wyuts et al., 2000). Some of these tools assess the intended outcome under the physical, emotional and social dimensions. An analysis of these tools indicate that there is a lot of commonality in the items employed, although worded differently. The same

items are used to reflect either handicap or severity or participation restriction. This suggests that the development of a single voice disorder outcome tool is possible which can reflect on handicap or severity or treatment effectiveness.

There are no tools available in the Indian context which assess either handicap or severity associated with voice disorders. The available tools in the Western context cannot be used on Indian population for obvious reasons. A multiplicity of tools relating to handicap or severity or other voice outcome is not practicable in Indian context as the large number of patients who seek a speech pathologist services put a lot of pressure on the latter's time. There is a need to develop a single comprehensive voice disorder outcome index which reflects on several aspects of the problem associated with voice and its disorder, including treatment efficacy.

CHAPTER 3

METHOD

The objectives of this study were to

- (i) develop a comprehensive tool for assessing voice disorder specific outcomes, and
- (ii) establish the reliability and validity of the instrument developed.

Subjects

Three sets of subjects participated in the study.

- i) Ten speech pathologists, ten postgraduate students of speech pathology and five individuals with dysphonia participated in the developmental stage of the Voice Disorder Outcome Profile (Voice-DOP).

The speech pathologists had a minimum experience of five years in the field working with individuals with dysphonia. The postgraduate students had four years of exposure in the field. The five individuals with dysphonia had different vocal pathologies for at least 6 months and were attending voice therapy at AIISH clinic, Mysore

A second set of ten speech pathologists and five postgraduate students were consulted for a review of the draft Voice-DOP. The speech pathologists had a minimum experience of five years in the field. The postgraduate students had four years of exposure in the field.

A third set of (a) thirty normal individuals with no history of any voice problem or any vocal complaint, and (b) forty-two individuals with dysphonia who were diagnosed to have a broad range of voice disorders (Table 1) in the following clinics were selected for administration of the developed Voice-DOP. The subjects with dysphonia came from voice clinics at

- a) All India Institute of Speech and Hearing, Mysore
- b) St. Johns Medical College & Hospital, Bangalore and
- c) Government ENT Hospital, Hyderabad.

The subjects in set 3 were in the age range of 18-60 years with a mean age of 34 years. Fifteen males and fifteen females constituted the group of normal subjects while 35 males and 7 females constituted the dysphonic group.

Table 1: Dysphonia types in the patients who participated in the study

Diagnosis	Number of patients		
	Males	Females	Total
Vocal nodule	4	2	6
Glottic chink	3	3	6
Carcinoma of larynx	6	-	6
GERD	6	-	6
Puberphonia	7	-	7
Vocal cord palsy (unilateral)	4	-	4
Laryngitis	2	-	2
Atypical	3	2	5
Total	35	7	42

The subjects in the atypical group included vocal cord keratosis, ulcer at the posterior end of the vocal folds, edema of left thyroid, thickening of vocal folds and tonsillitis.

Procedure

Development of Voice-DOP

The tool was constructed by consulting fifteen speech pathologists, ten postgraduate students of speech pathology and five individuals with dysphonia. These subjects were asked to list situations that they think an individual with dysphonia will have problems and the voice aspects on which 'outcomes' can be

assessed. Following the suggestions received, the draft profile of the instrument was compiled.

The instrument had the following three sections with subsections under the functional domain:

2. Physical domain (10 items): This included the patient's perception of phonatory and related problems on voice output and usage characteristics.
3. Functional domain (12 items): This included questions related to voice disorder outcomes pertaining to:
 - a) daily living situations (6 items)
 - b) job activities (3 items)
 - c) social activities (3 items)
4. Emotional domain (10 items): This included questions related to the patient's affective responses to the disorder.

The functional domain had more questions than the other sections because the functional aspect of voice has many dimensions like job, social situations, and day-to-day life aspects in which individuals with dysphonia may face difficulty. This was also the major focus of the subjects who participated in the development of Voice-DOP.

After the construction of the questionnaire, it was presented to subjects of the second set (ten speech pathologists and five postgraduate students of speech pathology) for a review. They were asked to comment on the

- representativeness of the situations reflected by the items in the questionnaire,
- adequacy of the items, and
- clarity of the wording of each question.

Following the suggestions given, changes were made in the wordings of the questions. The face and content validity of the items was established in this manner.

Voice-DOP was made available in English and Kannada (Appendix A & B). It was initially developed in English and translated into Kannada by a linguist who is a native speaker of Kannada. Both the Kannada and English versions of Voice-DOP were given to five normal speakers of Kannada, but who were proficient in both languages, for their opinion on the translation of English questions into Kannada. They reported no variability in the content of the items. Voice-DOP includes the multifaceted aspects of voice disorder such as handicap, effects on quality of life, and severity of the disorder.

Administration of Voice-DOP

The questionnaire was administered to forty-two individuals with dysphonia and thirty age matched control subjects.

Visual Analog Scale

The subjects scored each question on a visual analog scale. The visual analog scale employed in this study was a 100 mm long undifferentiated line with both extremes marked. The left end of the scale represented "never" affected while the right end represented "always" affected.



Instructions

The instruction to the patients were as follows:

'Please answer the following questions by putting a 'x' on the 100 mm line depending on the extent of the problem you face. For example, a cross towards the extreme left side means you are never affected, while a cross towards the extreme right side means you are always affected. If you have 50% problem, the cross should be in the centre of the line.'

The subjects were told the purpose of the study and assured of confidentiality of their responses.

Scoring

The distance (in centimeters) measured from the left end of the scale to where the subject placed a cross on the line was used as the patient's score for each question. Thus the scores for all the items in each domain were obtained.

The total Voice-DOP score was obtained by summing the scores of the three domains.

Self Perceived Severity of Voice Disorder

Along with Voice-DOP, the subjects were also asked to rate the severity of their voice problem on a visual analog scale with left extreme marked as 'normal' and right extreme as 'severe'. Instruction to the patients were as follows:

'Please rate, the severity of your voice problem as perceived by you, and put a cross on this 100 mm line to reflect it. A cross 'x' towards the extreme left means you have normal voice and to the extreme right means you have 100% problem. If you have 50% problem, then the cross should be at the center of the line'.

The distance (in centimeters) measured from the left end of the scale to where the subject placed a cross on the line was used as the subjects score for his/her self-perceived severity of the voice disorder.

Internal Consistency

The internal consistency of the preliminary version of Voice-DOP was evaluated using Cronbach's alpha coefficient. Cronbach's alpha coefficient is the

most widely used measure of reliability. It describes how much each item correlates with other items and thus the overall consistency of the test.

Item to total correlations and inter-item correlations were computed using Cronbach's alpha coefficient and these results contributed to arrive at the final version of the Voice-DOP.

Test-retest Reliability

Voice-DOP was readministered on 25 patients, 15 days after the initial administration. All the forty-two subjects who participated initially could not be called back due to unavoidable reasons.

Table 2: Dysphonia types in patients who participated in the second investigation (test- retest reliability)

Diagnosis	Number of subjects		
	Males	Females	Total
Vocal nodule	2	1	3
Glottic chink	1	2	3
Carcinoma of larynx	3	-	3
GERD	3	-	3
Puberphonia	3	-	3
Vocal cord palsy (uni lateral)	3	-	3
Laryngitis	2	-	2
Atypical	3	2	5
Total	20	5	25

Concurrent Validity

- Patient's Voice-DOP score was compared to his or her own perceptual rating of severity of voice problem.

Construct Validity

- Each item of a given domain was correlated with the summary score of that particular domain. This was done for all the three domains.
 - The summary scores of all the three domains (physical, emotional and functional) were correlated with each other as well as with the Voice-DOP score.
- > A comparison was made between the normal individuals and the individuals with dysphonia to see if the Voice-DOP developed here could differentiate the two groups.
- > A comparison of the scores of the male and female subjects was done to see if the responses of males and females were different on the Voice-DOP.

CHAPTER 4

RESULTS

The objectives of this present study were to

- i) develop a comprehensive tool for assessing voice disorder specific outcomes, and
- ii) establish the reliability and validity of the instrument developed.

Experimental Version of Voice Disorder Outcome Profile (Voice-DOP)

The preliminary version of Voice-DOP was a result of exhaustive discussion with, and suggestions from a group of speech pathologists, speech pathology students, dysphonics and the experimenter. As a result, no new suggestions were received from the second set of subjects (speech pathologists and postgraduate students of speech pathology) when it was presented for a review. However, their suggestions in framing the questions were incorporated in the draft profile. The final profile consisted of 32 items.

Voice-DOP was administered to forty-two individuals diagnosed with a variety of vocal pathologies. The mean, and the minimum and maximum values of the scores for each item is given in Table 3.

Table 3: Minimum, maximum and mean ratings (in cm) of the individuals with dysphonia on individual items in the Voice-DOP

	Physical			Emotional			Functional		
	Mini.	Max.	Mean	Mini.	Max.	Mean	Mini.	Max.	Mean
1.	0.00	9.9	4.80	0.00	10.00	4.76	0.00	10.00	4.03
2.	0.00	10.00	4.28	0.00	10.00	6.16	0.00	7.2	1.75
3.	0.00	9.8	4.52	0.00	10.00	5.75	0.00	10.00	1.34
4.	0.00	9.5	4.66	0.00	10.00	3.93	0.00	10.00	2.26
5.	0.00	9.6	4.76	0.00	10.00	2.45	0.00	10.00	2.42
6.	0.00	9.8	4.60	0.00	10.00	3.64	0.00	10.00	3.92
7.	0.00	10.00	5.01	0.00	10.00	3.65	0.00	10.00	4.35
8.	0.00	9.8	5.58	0.00	10.00	4.61	0.00	10.00	2.91
9.	0.00	9.8	4.99	0.00	10.00	5.08	0.00	10.00	3.24
10.	0.00	10.00	3.26	0.00	10.00	3.16	0.00	10.00	3.26
11.	-	-	-	-	-	-	-	10.00	3.86
12.	-	-	-	-	-	-	-	10.00	3.23

Reliability of Voice-DOP

The reliability of Voice-DOP was tested by establishing the internal consistency of the items and test-retest reliability.

a) Internal Consistency

The internal consistency of the preliminary version of Voice-DOP was evaluated using Cronbach's alpha coefficient. Items within a scale that have high item to total correlations contribute to the scales overall reliability and are more representative of scale content than items with low item to total

correlations. Nunally (1978) suggests that Cronbach's alpha coefficient of 0.5 and above for a single item in the scale indicates good internal consistency. The results of alpha coefficient analysis for internal consistency are given in Table 4. An item-to-total correlations of 0.03 to 0.84 were obtained for different items of the Voice-DOP developed here.

Table 4 : Internal consistency of Voice-DOP using Cronbach's alpha coefficient

Items	Physical		Emotional		Functional	
	Item to total correlation	Values when the item was deleted	Item to total correlation	Values when the item was deleted	Item to total correlation	Values when the item was deleted
1.	0.84	0.90	0.74	0.90	0.73	0.90
2.	0.64	0.90	0.69	0.90	0.03	0.90
3.	0.82	0.89	0.24	0.91	0.60	0.90
4.	0.70	0.90	0.59	0.91	0.76	0.90
5.	0.68	0.90	0.78	0.90	0.76	0.90
6.	0.63	0.90	0.69	0.90	0.77	0.90
7.	0.83	0.90	0.82	0.89	0.83	0.89
8.	0.65	0.90	0.83	0.89	0.69	0.89
9.	0.49	0.90	0.51	0.90	0.84	0.89
10.	0.65	0.90	0.79	0.90	0.81	0.89
11.	-	-	-	-	0.81	0.90
12.	-	-	-	-	0.83	0.89
Total	0.88		0.75		0.89	

The value of 0.84 (under column 2, row 1) reflects the relationship of item 1 to all the other 31 items in the profile. As said earlier, an alpha value of greater than 0.5 reflects greater internal consistency. Thus, it points to the fact that the profile has greater number of homogeneous items, and is more reliable than a

profile which has a greater number of heterogeneous items. The value of 0.9 (under column 3, row 1) indicates alpha value of the profile when a particular item (item 1 here) is deleted. It indicates how the internal consistency of the profile is affected when an individual item is deleted. The value of 0.90 here again points to the homogeneity of the items of the profile.

Two questions - 'Do people understand your voice problem?' under the emotional domain and 'Did you have to frequently change your job to another which required comparatively less use of voice?' under the functional domain had low correlations of 0.24 and 0.03, respectively. However, both these questions were retained as they were judged by the speech pathologists to have high face validity. Hence, the final version of Voice - DOP was the same as the preliminary version.

An inter-item correlation was also computed using Cronbach's alpha coefficient. A negative correlation -0.003 to -0.2 was obtained between the subscales. This again proved that all the three domains measured different aspects and that there was no overlap of items between the domains.

b) Test-retest Reliability

A Pearson's Product Moment correlation coefficient was used to determine the test- retest reliability of Voice-DOP. As seen from the results tabulated in Table 5, there was a high correlation between the test-retest scores, and the correlation coefficients were all significant at 0.001 level.

Table 5 : Pearson's Product Moment correlation measuring test-retest reliability

Voice-DOP	Pearson Product Moment correlation
Physical	0.99
Emotional	0.96
Functional	0.98
Total	0.99

VALIDITY OF VOICE-DOP

Correlation of Voice-DOP Score to Voice Disorder Severity

Pearson's Product Moment correlation was used to find the relationship between the scores of each of the three subscales of Voice-DOP and the total Voice-DOP, between each of the subscales and the patient's self perceived severity of the voice disorder, and between total Voice-DOP and perceived severity. Results are shown in Table 6.

Table 6: Pearson Product Moment correlation between Voice-DOP total, subscale, and voice severity scores

	Physical	Emotional	Functional	Total Voice-DOP	Severity
Physical	1.00	0.49**	0.49**	0.79**	0.46**
Emotional		1.00	0.69**	0.86**	0.36**
Functional			1.00	0.87**	0.47**
Severity				0.51**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

The correlation between scores of patients' self-perceived severity of dysphonia and the total Voice-DOP score was 0.514 (0.01 level of significance).

Also, the score on self-perceived severity of dysphonia correlated significantly (0.01 level of significance) with scores of each of the subscales of Voice-DOP (physical, emotional and functional).

A similar correlation matrix was computed after the deletion of the second item in the functional domain, and the deletion of both the second item of the functional domain and the third item of the emotional domain which had low item-to-total correlation of 0.03 and 0.24, respectively. This was done to find if their deletion made any difference in the correlation scores. Results are shown in Table 7.

Table 7 : Correlation between Voice-DOP and self perceived voice severity after the deletion of the second item of functional domain. The scores, in italics, in the second row of each domain, are the correlations obtained after the deletion of the second item of functional domain and the third item of emotional domain.

	Physical	Emotional	Functional	Total Voice-DOP	Severity
Physical	1.00	0.49**	0.49**	0.79**	0.46**
	-	0.49**	0.49**	0.80**	0.46**
Emotional		1.00	0.69**	0.86**	0.36*
		-	0.74**	0.86**	0.39*
Functional			1.00	0.87*	0.48**
			-	0.88*	0.48**
Severity				0.52**	1.00
				0.53**	

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

The results in Table 7 indicated that deletion of the two items did not make any significant difference in the correlation scores of Voice-DOP and voice severity.

Comparison of Voice-DOP Scores in Males and Females

A comparison was made between the Voice-DOP scores of the thirty five males and seven females with dysphonia using independent t-test. The results are shown in Table 8. The mean Voice-DOP scores of males and females were not significantly different. As the sample size of males was five times larger than that of females (35 males and 7 females), the mean score of females on Voice-DOP was compared with that of seven randomly selected males (Table 9), but, the difference between the two means were again statistically not significant. Both the males and females performed similarly on Voice-DOP as well as on its subscales.

Table 8 : Comparison of Voice-DOP scores of thirty five males and seven females using Independent t - test.

Voice-DOP	Sex	Mean	S.D	t
Physical	Male	48.14	25.75	0.948
	Female	38.15	23.57	
Emotional	Male	43.79	23.38	0.335
	Female	40.21	28.56	
Functional	Male	37.04	26.22	1.512
	Female	21.22	18.87	
Total	Male	128.98	64.47	1.131
	Female	99.6	51.66	

Table 9 : Comparison of Voice-DOP scores of seven males and seven females using Independent t - test.

Voice-DOP	Sex	Mean	S. D.	t
Physical	Male	54.68	21.35	1.375
	Female	38.15	23.57	
Emotional	Male	43.42	18.40	0.250
	Female	40.21	28.56	
Functional	Male	32.82	17.34	1.197
	Female	21.22	18.87	
Total	Male	130.94	43.64	1.226
	Female	99.60	51.66	

Performance of Normals and Individuals with Dysphonia on Voice-DOP

The mean Voice-DOP scores of normals and individuals with dysphonia were significantly different, in that, all the normal subjects answered on the left end of the scale (mean = 0, standard deviation = 0). Mean scores of individuals with dysphonia was 124 with a standard deviation of 62.93. Thus, Voice-DOP developed here sufficiently differentiates normals from individuals with dysphonia.

CHAPTER 5

DISCUSSION

The purpose of this study was to develop a Voice Disorder Output Profile (Voice-DOP) and establish its reliability and validity. The profile was compiled and sequenced following exhaustive discussion with speech pathologists, graduate students of speech pathology and dysphonics. The draft profile was again reviewed by a group of speech pathologists and students of speech pathology. The inclusion of three groups of subjects with a variety of backgrounds, in the development of the profile, it was assumed, would ensure the content validity of the profile. However, it is not a very satisfactory procedure.

Voice-DOP was administered on forty-two individuals who were diagnosed with different vocal pathologies. This was done intentionally as Voice-DOP could then be generalized to other clinics and would have widespread application.

The construct validity of the profile developed here could not be established as there are no comparable tools available in the Indian context. However, the relationship observed between the total Voice-DOP score and the patients' self-perceived severity of dysphonia (as well as between scores of subscales and severity) was very significant. It is a pointer to the good construct validity of the instrument developed. The correlation between self-perceived severity rating and Voice-DOP score ($r = 0.512$) is similar to that reported by Jacobson et al. (1997), and Ma and Yiu (2001). However, comparison of Voice-

DOP of the present study with the Voice Handicap Index of Jacobson et al (1997), or with the Voice Activity and Participation Profile of Ma and Yiu (2001) is fraught with limitations as the three instruments attempt to investigate seemingly different aspects associated with dysphonia, though there is some commonality in the method of all these studies. Therefore, there is a need for better method of establishing the construct and criterion validity of the Voice-DOP developed in this study.

Another method was employed to test the construct validity of the Voice-DOP. The Voice-DOP was administered to a group of persons without any voice disorder. The present study on forty-two dysphonics and thirty normal subjects showed that the Voice-DOP can differentiate normal from dysphonics, thus pointing to the construct validity of the profile developed here.

Internal Consistency

The high internal consistency of the Voice-DOP here indicated that the items of the profile were highly homogeneous, and that they were all measuring themes of the same category. Two items, item number 3 under the emotional domain (Do people understand your voice problem?) and item 2 under the functional domain (Did you have to frequently change your job which required comparatively less use of voice?) resulted in very low Cronbach's alpha coefficients (0.24 and 0.03, respectively). Item number 2 under the functional domain seems to be not context related, especially in the Indian context, as people

very rarely change jobs because of a voice problem. However, these items were retained in the draft version of the profile as the subjects in the first set (speech pathologists, students of speech pathology, and dysphonics) felt that the items have face validity. Also, as can be seen in Table 1, by deleting these items from the profile, the alpha value would only slightly be increased by 0.01.

Test-retest Reliability

The test-retest reliability of the Voice-DOP was very high ($r = 0.99$ for the entire profile) for the entire profile as well as its subscales. Therefore, the profile can be considered a reliable tool. However, the test to retest gap was only 15 days. Ideally, test-retest reliability should be established after a longer gap. Also, test-retest reliability should also be tested independently which was not done in this study. In other words, high test-retest correlations obtained in this study should be supported with measures on whether there was any change in the voice status of the individual (severity, or nature of the problem) in the intervening period. If there was any change in the severity of the voice problem during this intervening period, for whatever reason, then a high test-retest correlation simply means that the profile was not sensitive enough to detect the change in the severity of the problem. Such an independent test would also conclusively show that the profile developed here could be used to evaluate the effectiveness of the intervention procedures for voice disorders.

Correlation between Voice-DOP and Perceived Severity

As briefly mentioned earlier, there was a moderate correlation, but statistically significant (at 0.01 level), between the three subscales of the Voice-DOP, between each of three subscales of the profile and total Voice-DOP, between each of the three subscales of the profile and severity of the voice problem, and between the entire Voice-DOP and perceived severity of the voice problem. This implies that the subscales measure different aspects of the same problem.

Performance of Male and Female Subjects

It is generally perceived, in the Indian context, that females have a greater degree of tolerance for their problems than their male counterparts, and that they are less complaining in nature. Also, it can be expected that, because of the different nature and degree of responsibility on males and females in Indian situations, the perception of a voice problem by females might be different from that of males. However, the results revealed that there was no difference, between males and females, in the perception of their voice problems. Contrary to the popular perception, a voice disorder will have the same implications and problems for female subjects as for males, but it may be that females are less vocal in expressing their problems than males are.

Some Observations

Special attention needs to be paid to the framing of questions of the profile, especially in the Indian context. It was observed that most of the subjects found it difficult to answer the questions, particularly on the emotional domain with the standard instructions given before the beginning of the test administration. Most of the subjects needed additional instructions.

Also, most of the subjects found it difficult to visualize their responses on the Visual Analog Scale. The subjects had to be instructed to visualize the 100 mm line as reflecting 100% of the problem, and then to indicate the degree of their perceived problem on the scale accordingly. Perhaps some intervening markings, as in an ordinal scale, would help the subjects in indicating the degree of their problem.

CHAPTER 6

SUMMARY AND CONCLUSION

The study of 'outcome' is quite new in the area of voice. For many years, investigators have focused on perceptual, acoustic and aerodynamic measurements for assessing voice. These measurements have a different implication than the patients' perception of their disorders. Studies of outcome measures in voice have been developed in the West such as Voice Handicap Index (Jacobson et al., 1997), Voice Related Quality of Life (Hogikyan & Sethuraman, 1999), Voice Activity and Participation Profile (Ma & Yiu, 2001). However, no such instrument is available in the Indian context. Thus, the present study was carried out with the objective of developing a statistically robust tool for measuring voice disorder outcomes in the Indian population.

The Voice-DOP developed here was administered to a diverse sample of patients with voice disorders. The reliability was checked using measures of internal consistency and test-retest reliability. Content and construct validity were established to a certain extent. The voice-DOP can distinguish normal subjects and individuals with dysphonia.

The Voice-DOP allows us to compare and contrast patients as individual and as subgroups of patients with particular vocal problems. The Voice-DOP measures the impact of voice disorders on patient's quality of life. Treatment effectiveness or responsiveness can be determined depending on whether or not

there is a change in the Voice-DOP score before and after treatment. Treatment can be directed in a more specific manner or treatment course can be varied based on the Voice-DOP scores. Outcomes do not lead to concessions, at least for now. The anticipated middle ground is likely to be care that is both cost effective and of high quality. It is hoped that, in future, the results of outcome studies will take their rightful place and influence policy makers who are responsible for crafting legislation, regulations, concession policies and guidelines.

Given the current state of knowledge in measuring functional outcomes, research efforts should be directed towards developing better measures that are validated on large populations of dysphonics and to explore the interrelationships within and between these and other classes of measure.

Given these suggested research directions, we can offer a final caveat. In the enterprise of measuring outcomes, even the most sensitive and validated outcome measures may fail to detect that which can be uncovered only by a clinician's observational skills. Hence, a speech pathologist's observations and clinical skills play a vital role in interpreting such outcome measures.

Future Research

Many applications of the profile developed are indicated. The Voice-DOP can be used to measure the self-perceived severity of the voice problem, compute handicap index, assess treatment outcomes, assess voice related quality of life, and treatment effectiveness. However, this calls for future research on

independent proof that the profile can indeed measure these. Also, the profile developed should be administered on a larger sample of dysphonics, with different vocal pathologies, than done here to assess the sensitiveness of this tool. Further refinement in the framing of items of the profile as well as the visual analog scale as many patients of the present study had problems in visualizing their problems on the undifferentiated 100 mm line. The influence of patient related variables, such as age, duration of the problem, duration of the treatment, psychological variables, educational level, etc., needs exploration.

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APPENDIX A
PATIENT HISTORY

Date:

Please fill in the following details. Answers to this questionnaire would be kept confidential and would be used only for research purpose.

Client name

Age/Sex :

Address :

Phone number:

Occupation :

Provisional Diagnosis :

Complaint :

Duration of voice problem :

Any treatment undertaken:

Medical

Behavioural

Surgical

Duration of treatment:

VOICE DISORDER OUTCOME PROFILE

INSTRUCTION: Please answer the following questions by putting a 'x' on the 100 mm line depending on the extent of the problem you face. For example, a cross towards the extreme left means you are never affected, while a cross towards the extreme right side means you are always affected. If you have 50% problem, the cross should be in the centre of the line.

SELF-PERCEIVED SEVERITY OF VOICE PROBLEM

How severe is your voice problem now?

Normal

Severe

1) PHYSICAL

1) Do you get tired when you speak for long?

Never	_____	Always
-------	-------	--------

2) Do you run short of breath when you speak?

Never	_____	Always
-------	-------	--------

3) Do you have to strain to produce your voice?

Never	_____	Always
-------	-------	--------

4) Does your voice vary throughout the day?

Never	_____	Always
-------	-------	--------

5) Do you have difficulty in speaking loudly?

Never	_____	Always
-------	-------	--------

6) Do you lose your voice after prolonged speaking?

Never	_____	Always
-------	-------	--------

7) Does your voice lack clarity?

Never	_____	Always
-------	-------	--------

8) Do you need to frequently clear your throat?

Never	_____	Always
-------	-------	--------

9) Does your throat feel dry after continuous speaking?

Never	_____	Always
-------	-------	--------

10) Does your throat pain while speaking?

Never	_____	Always
-------	-------	--------

2) EMOTIONAL

1) Does your voice problem upset you?

Never	_____	Always
-------	-------	--------

2) Are you worried because of your voice problem?

Never	_____	Always
-------	-------	--------

3) Do people understand your voice problem?

Never	_____	Always
-------	-------	--------

4) Do you lack self confidence because of your voice problem?

Never	_____	Always
-------	-------	--------

5) Do you feel less worthy because of your voice problem?

Never	_____	Always
-------	-------	--------

6) Do you become conscious when speaking to others because of your voice problem?

Never	_____	Always
-------	-------	--------

7) Do you feel embarrassed when people ask you to repeat?

Never	_____	Always
-------	-------	--------

8) Do you get annoyed because of your voice problem?

Never	_____	Always
-------	-------	--------

9) Do you feel ashamed of your voice problem?

Never	_____	Always
-------	-------	--------

10) Does your voice problem affect your personality ?

Never	_____	Always
-------	-------	--------

3) FUNCTIONAL

A) JOB

1) Is your job performance affected because of your voice problem?

Never	_____	Always
-------	-------	--------

2) Did you have to frequently change your job to another which required comparatively less use of voice?

Never	_____	Always
-------	-------	--------

3) Do you feel that you are earning less because of your voice problem?

Never	_____	Always
-------	-------	--------

B) DAILY COMMUNICATION

4) Do you avoid speaking to people because of your voice problem?

Never	_____	Always
-------	-------	--------

5) Do people ask you to repeat what you have said ?

Never	_____	Always
-------	-------	--------

6) Do people have difficulty in understanding you on phone?

Never	_____	Always
-------	-------	--------

7) Does your voice problem affect your communication in noisy environment?

Never	_____	Always
-------	-------	--------

8) Does your voice problem affect your communication in silent environment?

Never	_____	Always
-------	-------	--------

9) Do people ask you to speak louder?

Never	_____	Always
-------	-------	--------

C) SOCIAL COMMUNICATION

10. Does your voice affect you in social activities?

Never	_____	Always
-------	-------	--------

11. Does your voice problem annoy your family, friends or co-workers?

Never	_____	Always
-------	-------	--------

12. Do you feel your voice restricts your personal and social life?

Never	_____	Always
-------	-------	--------

APPENDIX B
PATIENT HISTORY

ಈ ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ವಿವರಗಳನ್ನು ಭರ್ತಿ ಮಾಡಿ. ಪ್ರಶ್ನಾವಳಿಯ ಉತ್ತರಗಳನ್ನು ಭರವಸೆಯಿಂದಿಡಲಾಗುವುದು ಹಾಗೂ ಇದನ್ನು ಸಂಶೋಧನೆಗೆ ಮಾತ್ರ ಉಪಯೋಗಿಸಲ್ಪಡುತ್ತದೆ.

ಹೆಸರು :

ನಂಬರ್ :

ವಯಸ್ಸು : ಲಿಂಗ :

ವಿಳಾಸ

ಫೋನ್ ನಂಬರ್

ಉದ್ಯೋಗ

ಕಂಪ್ಲೆಟ್

ಧ್ವನಿ ತೊಂದರೆಯ ಅವಧಿ :

ಯಾವುದಾದರೂ ಚಿಕಿತ್ಸೆಯನ್ನು ತೆಗೆದುಕೊಂಡಿದ್ದೀರಾ :

ವೈದ್ಯಕೀಯ

ಧ್ವನಿ ತರಬೇತಿ

ಶಸ್ತ್ರ ಚಿಕಿತ್ಸೆ

ಚಿಕಿತ್ಸೆಯ ಅವಧಿ :

ಪ್ರಾವಿಷನಲ್ ಡಯಾಗ್ನಾಸಿಸ್:

VOICE DISORDER OUTCOME PROFILE

ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಯ ಕೆಳಗೂ 100 mm ಉದ್ದದ ಒಂದು ಗೆರೆ ಕೊಟ್ಟಿದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಸಂಬಂಧಿಸಿದ ಹಾಗೆ, ನಿಮಗಿರುವ ತೊಂದರೆಯನ್ನು, ಆ ಗೆರೆಯ ಮೇಲೆ ಒಂದು 'x' ಗುರುತು ಹಾಕಿ ತೋರಿಸಿರಿ. ಆ ಗೆರೆ ಪ್ರತಿಶತ 100ರಷ್ಟು ತೊಂದರೆಯನ್ನು ತೋರಿಸುತ್ತದೆ ಎಂದು ಭಾವಿಸಿ. ನಿಮ್ಮ ತೊಂದರೆ ಕಡಿಮೆ ಇದ್ದರೆ, 'x' ಗುರುತನ್ನು ಗೆರೆಯಲ್ಲಿ ಎಡಕ್ಕೆ ಹಾಕಿ. ತೊಂದರೆ ಜಾಸ್ತಿ ಇದ್ದರೆ, 'x' ಗುರುತು ಗೆರೆಯ ಬಲಕ್ಕೆ ಬರಬೇಕು. ನೆನಪಿಡಿ : ತೊಂದರೆ ಕಡಿಮೆ ಇದ್ದಷ್ಟು 'x' ಗುರುತು ಎಡಕ್ಕೆ ಬರಬೇಕು. ತೊಂದರೆ ಜಾಸ್ತಿ ಇದ್ದಷ್ಟು 'x' ಗುರುತು ಬಲಕ್ಕೆ ಬರಬೇಕು. ಪ್ರತಿಶತ 50ರಷ್ಟು ತೊಂದರೆ ಇದ್ದಲ್ಲಿ 'x' ಗುರುತು 100 mm ಗೆರೆಯ ಮಧ್ಯದಲ್ಲಿ ಬರಬೇಕು.

SELF-PERCEIVED SEVERITY OF VOICE PROBLEM

ನಿಮ್ಮ ಧ್ವನಿತೊಂದರೆ ಈಗ ಎಷ್ಟಿದೆ ?

ಕಡಿಮೆ _____

ಹೆಚ್ಚು

1) ಭೌತಿಕ

1) ನೀವು ತುಂಬಾ ಹೊತ್ತು ಮಾತನಾಡುವಾಗ ನಿಮಗೆ ಆಯಾಸವಾಗುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

2) ನೀವು ಮಾತನಾಡುವಾಗ ನಿಮಗೆ ಉಸಿರು ಸಾಕಾಗುವುದಿಲ್ಲ ಅನ್ನಿಸುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

3) ನೀವು ಧ್ವನಿಯನ್ನು ಹೊರಡಿಸಲು ಶ್ರಮ ಪಡುತ್ತೀರಾ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

4) ನಿಮ್ಮ ಧ್ವನಿ ದಿನವಿಡೀ ಬದಲಾಗುತ್ತಾ ಇರುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

5) ನಿಮಗೆ ಚೋರಾಗಿ ಮಾತನಾಡಲು ಕಷ್ಟವಾಗುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

6) ನೀವು ಸ್ವಲ್ಪ ಹೆಚ್ಚಾಗಿ ಮಾತನಾಡಿದಾಗ ನಿಮ್ಮ ಧ್ವನಿಯು ನಿಂತು ಹೋಗುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

7) ನಿಮ್ಮ ಧ್ವನಿಯಲ್ಲಿ ಸ್ಪಷ್ಟತೆ ಇಲ್ಲವೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

8) ನೀವು ಪದೇ ಪದೇ ಗಂಟಲನ್ನು ಸರಿಮಾಡಿಕೊಳ್ಳುತ್ತೀರಾ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

9) ನೀವು ಒಂದು ಹತ್ತು ನಿಮಿಷ ಮಾತನಾಡಿದಾಗ ನಿಮ್ಮ ಗಂಟಲು ಒಣಗುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

10) ನೀವು ಮಾತನಾಡುವಾಗ ಗಂಟಲು ನೋಯುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

2) ಮನೋಭಾವ

1) ನಿಮ್ಮ ಧ್ವನಿಯ ತೊಂದರೆಯಿಂದ ನಿಮಗೆ ಬೇಜಾರಾಗಿದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

2) ನಿಮ್ಮ ಧ್ವನಿಯ ತೊಂದರೆಯಿಂದ ನಿಮಗೆ ಚಿಂತೆ ಆಗಿದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

3) ನಿಮ್ಮ ಧ್ವನಿಯ ತೊಂದರೆಯನ್ನು ಬೇರೆಯವರು ಅರ್ಥಮಾಡಿಕೊಳ್ಳುತ್ತಾರೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

4) ಧ್ವನಿಯ ತೊಂದರೆಯಿಂದ ನೀವು ನಿಮ್ಮಲ್ಲಿ ಆತ್ಮವಿಶ್ವಾಸ ಕಳೆದುಕೊಂಡಿದ್ದೀರಾ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

5) ಧ್ವನಿಯ ತೊಂದರೆಯಿಂದ ನಿಮಗೆ, ನೀವು ಸ್ವಲ್ಪಮಟ್ಟಿಗೆ ಸಮರ್ಥರಲ್ಲ ಎಂದೆನಿಸುತ್ತದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

6) ನಿಮ್ಮ ಧ್ವನಿಯ ತೊಂದರೆಯ ಕಾರಣ, ನೀವು ಬೇರೆಯವರ ಚಿಂತೆ ಮಾತನಾಡುವಾಗ ಎಚ್ಚರದಿಂದಿರುತ್ತೀರಾ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

7) ಬೇರೆಯವರು ನೀವು ಹೇಳಿದುದನ್ನೇ ಇನ್ನೊಂದು ಸಲ ಹೇಳು ಎಂದಾಗ ಪೇಚಾಟಕೊಳ್ಳಲಾಗುತ್ತೀರಾ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

8) ನಿಮ್ಮ ಧ್ವನಿ ತೊಂದರೆಯು ನಿಮಗೆ ಕಿರುಕುಳವಾಗಿದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

9) ನಿಮ್ಮ ಧ್ವನಿಯ ತೊಂದರೆಯಿಂದ ನಿಮಗೆ ನಾಚಿಕೆ ಆಗುತ್ತದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

10) ಧ್ವನಿಯ ತೊಂದರೆಯು ನಿಮ್ಮ ವ್ಯಕ್ತಿತ್ವಕ್ಕೆ ಹಾನಿ ಉಂಟುಮಾಡಿದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

3) ಕಾರ್ಯಸಂಬಂಧಿ

A) ಉದ್ಯೋಗ

1) ಧ್ವನಿ ತೊಂದರೆಯು ನಿಮ್ಮ ಕೆಲಸದ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರಿದೆಯೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

2) ಧ್ವನಿ ತೊಂದರೆಯಿಂದ ಆಗಾಗ್ಗೆ ನೀವು ನಿಮ್ಮ ಕೆಲಸವನ್ನು ಕಡಿಮೆ ಧ್ವನಿ ಉಪಯೋಗವಿರುವ ಕೆಲಸಕ್ಕೆ ಬದಲಾಯಿಸಬೇಕಾಯಿತೇ ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

3) ನಿಮ್ಮ ಧ್ವನಿಯ ತೊಂದರೆಯಿಂದ ನೀವು ಮೊದಲಿಗಿಂತ ಈಕೆ ಕಡಿಮೆ ಸಂಪಾದಿಸುತ್ತೀರಾ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

B. ದೈನಂದಿಕ ಸಂಪರ್ಕ

4) ಧ್ವನಿ ತೊಂದರೆಯಿಂದ ನೀವು ಬೇರೆಯವರ ಜೊತೆ ಮಾತನಾಡುವುದನ್ನು ತಪ್ಪಿಸಿಕೊಳ್ಳುತ್ತೀರಾ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

5) ನೀವು ಮಾತನಾಡುವಾಗ ಹೇಳಿದುದನ್ನೇ ಪುನಃ ಹೇಳಲು ಬೇರೆ ಜನರು ಕೇಳುತ್ತಾರೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

6) ನೀವು ಫೋನಿನಲ್ಲಿ ಮಾತನಾಡುವಾಗ ಬೇರೆಯವರಿಗೆ ಅರ್ಥವಾಗುವುದು ಕಷ್ಟ ಆಗುತ್ತದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

7) ನಿಮ್ಮ ಧ್ವನಿ ತೊಂದರೆಯು, ನಿಮಗೆ ಶಬ್ದ ಇರುವ ಜಾಗದಲ್ಲಿ ಬೇರೆಯವರ ಜೊತೆ ಮಾತನಾಡಲು ತೊಂದರೆ ಉಂಟುಮಾಡುತ್ತದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

8) ನಿಮ್ಮ ಧ್ವನಿ ತೊಂದರೆಯು, ನಿಮಗೆ ಶಬ್ದ ಕಡಿಮೆ ಇರುವ ಜಾಗದಲ್ಲಿ ಬೇರೆಯವರ ಜೊತೆ ಮಾತನಾಡಲು ತೊಂದರೆ ಉಂಟುಮಾಡುತ್ತದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

9) ಜನರು ನಿಮಗೆ ಚೋರಾಗಿ ಮಾತನಾಡಲು ಹೇಳುತ್ತಾರೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

C) ಸಾಮಾಜಿಕ ಸಂಪರ್ಕ

10) ಧ್ವನಿಯ ತೊಂದರೆಯು ನಿಮ್ಮ ಸಾಮಾಜಿಕ ಚಟುವಟಿಕೆಗಳಲ್ಲಿ ತೊಂದರೆ ಉಂಟುಮಾಡಿದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

11) ಧ್ವನಿಯ ತೊಂದರೆಯು ನಿಮ್ಮ ಮನೆಯವರಿಗೆ, ಸ್ನೇಹಿತರಿಗೆ ಮತ್ತು ಜೊತೆಯಲ್ಲಿ ಕೆಲಸ ಮಾಡುವವರಿಗೆ ಕಿರಿಕಿರಿ ಮಾಡುತ್ತದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ

12) ಧ್ವನಿಯ ತೊಂದರೆಯು ನಿಮ್ಮ ಸ್ವಂತ ಹಾಗೂ ಸಾಮಾಜಿಕ ಬದುಕಿನ ಮೇಲೆ ಕಟ್ಟುಪಾಡು ಹಾಕಿದೆಯೇ?

ಇಲ್ಲವೇ ಇಲ್ಲ _____ ಯಾವಾಗಲೂ