MASTER YOUR CONCEPTS IN VOCAL FOLD PARALYSIS : A QUESTION BANK FOR THE LEARNER

Ms. Aiswarya Sooraj

20SLP001

II M.Sc. (Speech-Language Pathology)

A Dissertation Submitted in Part Fulfillment of

Degree of Master of Science (Speech-Language Pathology)

University of Mysore

Mysuru

ALL INDIA INSTITUTE OF SPEECH AND HEARING

MANASAGANGOTHRI

MYSURU- 570006

AUGUST, 2022

CERTIFICATE

This is to certify that this dissertation entitled **"Master Your Concepts in Vocal Fold Paralysis : A Question Bank for the Learner"** is bonafide work submitted in part fulfillment for the degree of Master of Science (Speech-Language Pathology) of the student with Registration Number 20SLP001. This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other university for the award of any other Diploma or Degree.

Dr. M Pushpavathi

Director

All India Institute of Speech and Hearing

Manasagangothri, Mysuru- 570006

Mysuru,

August, 2022

CERTIFICATE

This is to certify that this dissertation entitled **"Master Your Concepts in Vocal Fold Paralysis : A Question Bank for the Learner"** is bonafide work submitted in part fulfillment for the degree of Master of Science (Speech-Language Pathology) of the student with Registration Number 20SLP001. This has been carried out under my guidance and has not been submitted earlier to any other university for the award of any other Diploma or Degree.

Guide

Mysuru,

August, 2022

Dr. R. Rajasudhakar

Associate Professor

Department of Speech-language Sciences

All India Institute of Speech and Hearing

Manasagangothri, Mysuru- 570006

DECLARATION

This is to certify that this dissertation entitled **"Master Your Concepts in Vocal Fold Paralysis : A Question Bank for the Learner"** is the result of my own study under the guidance of Dr. R. Rajasudhakar, Associate Professor in Speech-Sciences, Department of Speech-Language Sciences, All India Institute of Speech and Hearing, Mysuru and has not been submitted earlier to any other university for the award of any other Diploma or Degree.

Registration No: 20SLP001

Mysuru,

August, 2022

Dedicated to Achan, Amma & Anu

For always loving and supporting me….

ACKNOWLEDGEMENT

Thanks to God Almighty, for his uncountable blessings and for bestowing me with good health and patients to complete this dissertation.

Without the commitment and effort of many people around me, I must admit that I could not have finished this dissertation. Completing this dissertation without the help of you all is no easy feat and I would like to thank all of you with utmost deference.

Dear **Acha**, you will always be admired, and my love for you will always live on.

Amma, even though my words will never do enough in thanking you for the great contributions you made in my life, I want you to know that I am deeply grateful for you. You have supported me and encouraged me throughout my entire life. You are the pillar that holds me….You are the best among the rest!

Anu, no matter how much we fought and annoyed each other, you were always my biggest support. You unwittingly cheered me up when I needed it with your deeds.

Maama, thank you for always inspiring and guiding me in my life. You always trusted my choices and encouraged me to achieve them.

I am thankful that I am to have such a caring and compassionate family who I can always count on. I thank all my family member's for always being there for me especially my sweetest **Ammama.**

Dr.Rajasudhakar, Sir, you are a true inspiration; being under your supervision has been an amazing experience. Thank you for all your support and guidance in every phase of this work amidst your busy schedule. Sir, thank you for being the coolest guide and, making this dissertation journey so smooth and enjoyable.

Thank you, **Dr. Pushpavathi.M ma'am**, for providing me the opportunity to carry out this research work.

My sincere thanks to all my beloved teachers at AIISH right from my Bachelor's for all their support and guidance throughout the course of my study and for helping me become the person I am today.

Jesnu sir, Words can't explain how grateful I am to you. Thank you for always being there to answer my silly questions, for your constant assistance, and for being a good role model.

I would like to express my sincere gratitude to **Dr. Gopisanker Sir, Dr. Gayathri ma'am, Dr. Mahesh Sir, Dr. Reuben Vargeese Sir, Ms. Prathima ma'am, Gunasagar Sir, Vasuprada ma'am, Ranjitha ma'am, Darshan sir, Revathi chechi & Neeraja chechi** for volunteering your time to participate in this study. I want to thank you all for your insightful and valuable contribu tions to this study.

Delvin, Alfi, and **Swathi. C**, I sincerely thank your valuable effort spent participating in this study.

Special thanks to **Alfi**, my study partner for consistently offering the tips and technical support I've needed and for being a wonderful friend and standing by me and for tolerating all my childishness.

Devika, my sweet dissertation partner, we had a good mutual understanding; thanks for sharing the works and for being a helpful partner. Always thankful for reminding me to save the stuffs properly and the last minute helps. I also thank my dissertation partner **Darshitha**.

Thank you, **Ponnu, Achu, Chandhu, Guru, & Ameera** for the emotional supports when I most needed it.

Vaishnav, despite the fact that you are overseas, you have helped me through difficult moments and helped me to relax when I was stressed. I am very grateful for your unwavering support.

Thank you, **Sougu,** for helping me approach things and boosting my self-confidence. You are my best partner in crime.

I would like to mention my **"Relax group," Sru** (sticking to me since childhood), **Chandu, Athira, Alfi, and Devika,** for all the relaxation that happened in the whole journey of M.Sc. life, our chit chats during tea time, our trips together, eating together, you guys were awesome!!!

Audrey, Snehachechi, Swathi S, Delvin, thanks for being wonderful friends throughout the M.Sc. journey.

Ann , you were my forever caretaker during B.Sc days, thankyou so much for maintaining being such a good friend and staying in touch even if you live far away.

Theertha & Hina, though we all are at different places you have been really caring! Thank you.

Heartfelt thanks to my amazing juniors **Shalaba, Nahra** and **Dilsha** for the chottu chottu helping hands when necessary.

A list of people to acknowledge goes on and on! Thank you all my teachers, seniors, batchmates and juniors for making all these years at AIISH so memorable.

TABLE OF CONTENTS

LIST OF TABLES

Chapter I

INTRODUCTION

Voice disorders arise when an individual's, pitch, loudness and/or quality of voice differs from that of typical speakers of similar age, gender, cultural background, and geographic location. Etiologies arise from many possible factors including structural, medical, and neurologic alterations of the respiratory, laryngeal, and vocal tract mechanisms. Other pathologies develop following maladaptive or inappropriate voice use. Other voice disorders originate in direct response to psychological factors (Rubin et al., 2005). The most common clinical pathologies of the laryngeal mechanism are organized into eight major groups: (1) Structural pathologies; (2) Inflammatory conditions; (3) Trauma or injury; (4) Systemic conditions affecting voice; (5) Aerodigestive conditions affecting voice; (6) Psychiatric or psychological disorders affecting voice; (7) Neurologic voice disorders; and (8) Other disorders of voice. Vocal fold paralysis is a peripheral and/or central nervous system pathology that's comes under Neurogenic disorders affecting voice (Verdolini, 2006).

Vocal fold paralysis is a neurogenic voice pathology caused directly by an interruption of the nerve innervation supplied to the larynx, including both central and peripheral insults. Vocal fold paralysis is the most common neurologic voice disorder, and is typically caused by peripheral involvement of the recurrent laryngeal nerve and, less commonly of the superior laryngeal nerve (Stemple et al., 2018). There are many possible etiologies of vocal fold paralysis including surgical trauma, cardiovascular disease, neurologic diseases, and accidental trauma (Wilatt, 1991; Benninger et al., 1998). Historically, estimates of idiopathic unilateral vocal fold paralysis have been as

high as 30% to 35%, but two more recent reports of 117 and 159 patients each reported that idiopathic (unknown) etiologies were identified in unilateral vocal fold paralysis as 16.3% (Roy et al., 2009) and 23% (Benninger et al., 1998) of the time. In patients with vocal fold paralysis, loss of vocal power and quality occurs because of inadequate closure of the vocal folds and loss of vocal fold bulk and tonicity resulting in bowing, flaccidity, and weakness of the paralyzed vocal fold. Changes in vocal fold level and shape may also affect vocal quality in the presence of paralysis (Ballenger, 1985). Patients with vocal fold paralysis present with mild to severe dysphonia depending on the degree of glottal incompetence. When the paralysed vocal fold is located near the midline, the voice is less breathy and hoarse; conversely, the vocal fold is located further from the midline, the breathier and weaker the voice becomes.

Vocal fold immobility is caused by various conditions, including damage of the recurrent laryngeal nerve (RLN), vagus nerve, or motor neurons and central nervous system, fixation or subluxation of the cricoarytenoid joint, adhesion of the posterior part of the vocal folds, tumor invasion into the intrinsic laryngeal muscle(s), and severe laryngeal edema (Yumoto, 2015).

Patients with unilateral vocal fold paralysis present with varied vocal symptoms, ranging from mild to severe dysphonia depending on the resting position of the paralyzed fold. When the paralyzed fold is located near the midline, voice quality is less impaired. The impairment increases when the paralyzed fold is located farther from the midline. Treatment choices for unilateral vocal fold paralysis include voice therapy, phonosurgical management, reinnervation, or a combination of these approaches. The selection of treatment is dependent on several factors. These factors include whether the cause for the paralysis is known or unknown (idiopathic), presence

or absence of aspiration, the immediate voice needs of the patient, distance from the time of onset of the paralysis, and the resting position of the paralyzed fold to the midline, and the presence or absence of vocal fold bowing (Stemple et al., 2018).

When there is a plethora of literature on a subject, it becomes necessary to condense and consolidate the available information, especially for educational and training purpose. Hence, the present study is aimed to prepare a question bank on "Vocal Fold Paralysis".

A question bank is a planned library of questions designed to meet some predefined goal. It should be based on ideas, goals, adapted to the specific goals of the mind. It should be within the experience and knowledge of the learners. It stores any number of questions with their answers. A pool of ready-made quality questions is provided to teachers and examiners. The question bank will be useful for practising and revising what student/ learner has studied on a concept. It would enhance the individual's knowledge on a particular topic and also would induce the reader/learner a new sense of confidence, clarity and competence. It can be used to monitor students' knowledge in understanding of the subject as well as it can be used as a reference for examinations and interviews. That is, instructors can use/reuse the database of questions on the topic in multiple assessments. The specified questionnaire should serve both as a guide for self-study and as a supplementary text for information on the topic.

There are few question banks already developed in the field of audiology as Independent Project (IP), namely, Question Bank on Hearing Aids (Srinivas, 1986), Question Bank on Ear Protective Devices (Barman, 1990), Question Bank on Tests

Differentiating Cochlear and Retrocochlear Pathology (Snehalatha, 1995), Question Bank on Assistive Listening Devices (Mathew 1995), Everything You Ought to Know on BSERA - A Question Bank (Sheeja 1995), Insight into Oto-Acoustic Emissions: A Question Bank (Mahendra, 1995), Master Your Concepts in Central Auditory Processing Disorders: A Question Bank (Archana, 1999), Computer Based Question Bank on Otoacoustic Emissions (Mathew, 2002). In the field of speech and language related topics, there are limited question banks developed. So, the present question bank can be used to receive collective information on 'Vocal Fold Paralysis'. Hence, the developed question bank may provide a holistic approach to learning and thereby enhance the students/learners learning experience.

Need for the study

Question bank on speech or voice topics would augment students or learner's knowledge, critical thinking, problem solving and questioning skills. Such a kind of ready-made database of questions in the area of voice science or voice pathology is very limited. Hence, the present study made an attempt to prepare a pool of questions on the topic- 'Vocal Fold Paralysis'.

Aim of the study

The aim of the study was to develop a database of questions on 'Vocal Fold Paralysis'.

Chapter II

REVIEW OF LITERATURE

Srinivas, in the year 1986, have prepared a question bank on hearing aid, with information on many aspects of hearing aids organized into several chapters. A general introduction was presented first, followed by questions organized under several sections, starting with the historical evolution of hearing aids and ending with 13 subsections in total. The first section was under the heading historical development of hearing aids, which constituted of 7 questions. The second section contains questions on electroacoustic characteristics of hearing aids, which constituted 18 questions. The third section contains questions on couplers and ear moulds for hearing aid, which constituted 16 questions. The fourth section includes questions on the receivers, cords, and batteries for hearing aids which constitute 13 questions. The fifth section consists of 17 questions pertaining to hearing aid selection and evaluation. The sixth section, which consisted of 21 questions, focused on special applications of the amplification system. There were 13 questions in the seventh section, which dealt with binaural hearing aids. The eighth section consists of 9 questions regarding amplification in the educational system. The ninth section has 8 questions on the topic auditory trainers. The tenth section had 15 questions on hearing aid orientation and counseling. The eleventh section consisted of 24 questions grouped under the category miscellaneous. The twelfth section included 72 questions regarding hearing aid acronyms. The thirteenth section consisted of questions under the heading names in a jumbled fashion with 37 questions.

In total, there were 270 questions in the question bank. The given sets of questions are designed to function as a self-study guide as well as a supplemental text for courses on hearing aids. It can be used as a source of information for exams and interviews, and it can be used to keep track of a student's knowledge and comprehension of a subject, it can be used to assess students ability in different aspects of hearing aids. The author has not provided the answers to the questions. The author suggested that this can be used to get comprehensive information regarding different aspects of hearing aid.

An insight into the ear protective devices as a question bank, including 13 sections, was developed by Barman (1990). The aim of the question bank was to solidify and provide a strong understanding of ear protective devices. The questions were organized into 13 sections, namely 1) sound transmission, which constitutes eleven questions, 2) definition containing twelve questions, 3) general questions on ear protective devices with thirty-three questions, 4) classification or types of ear protective devices comprising eight questions, 5) material section, which contains nine questions, attenuation section with eighteen questions, 6) methods of measuring attenuation with twenty questions, 7) effects on speech containing fourteen questions, 8) miscellaneous conditions contains fifty-seven questions, 9) few questions or complaints which have been asked by the ear protective device users which contain twenty-nine questions,10) fill in the blanks section with thirty-one questions, 11) acronyms section with thirty questions, 12) match the following section containing fourteen questions and 13) the miscellaneous conditions section. The miscellaneous conditions section was again divided into six subsections, specifically earplugs, semi-

inserts, ear muffs, helmets, other types of ear protective devices, and infrasonic and ultrasonic sounds, each containing 27, 7, 8, 8, 2, and 5 questions, respectively. The question bank contained a total of 286 questions. The author concluded that this question bank would help solidify and give a substantial body to the misunderstanding, and ignorance in-ear protective device question.

Snehalatha (1995) developed a question bank to distinguish between cochlear and retro-cochlear pathology. A brief introduction on the topic was given at the outset. According to the author, this question bank can be used to verify a basic understanding of the various tests used to differentiate between cochlear and retro-cochlear pathology. Subjective and objective tests were the two main topics in the question bank. The subjective test consisted of questions under nine sections: 1) Word search puzzle, 2) Match the following, 3) Match the audiogram, 4) Indicate whether the statement is true or false, 5) Identify the tests that use the following presentation level as a starting point, 6) Fill in the blanks, 7) Match the following (terminology & authors), 8) Tick the correct option and 9) History of Audiological tests, each comprising of 16, 10, 7, 7, 8, 12, 10, 16 and 21 questions. The Objective test consisted of 8 sections: namely 1) Match the following (Founder and Tests), 2) Match the audiogram, 3) Indicate whether the statement is true or false, 4) Fill in the blanks, 5) Tick the correct one, 6) Labelling, 7) Locate the words in the puzzle, and 8) Unscramble the letters in the given words to form the appropriate one, each of which contains 5, 6, 23, 6, 7, 3, 20 and 5, respectively. The total number of questions in the question bank was 182. The answers to all of the questions were given at the end of the question bank.

Mathew (1995) developed a question bank on assistive listening devices. The goal of the research was to familiarise the reader with the fundamental concepts and principles of ALDs, as well as to provide an overview of ALD history, an understanding of the many types of ALDs, their functions, and benefits and drawbacks, and to keep the reader up to date on recent breakthroughs in the field of ALD. The pattern of the question bank was comprised with an introduction to the topic followed by the series of questions. There were a total of six sub-sections, namely 1) history of aids containing 19 questions, 2) devices that use auditory mode with 39 questions, 3) devices that use visual mode containing 106 questions, 4) devices that use tactile mode which includes 62 questions, 5) telecommunication aid for the deaf with 46 questions and 6) mix-match on recent development in ALDs with 13 questions. Match the following, fill in the blanks, true or false, name the following, descriptive type questions, acronyms, choose the correct answer, distinguish the following, and reasoning were the types of questions involved. Answers were provided at the end of the question bank. The question bank included a total of 285 questions.

Sheeja (1995) developed a question bank on brain stem evoked response audiometry. The author highlighted the reader on the history, basic principles, procedure to be used, application of evoked potentials in audiological assessment and diagnosis, and recent breakthroughs in the field of evoked potentials. After a brief introduction to the topic, the questions were presented, which were divided into subtopics such as history, instrumentation, normative aspects, clinical application, and interpretation. The first section was history: an overview of the auditory brainstem response audiometry, which consisted of 47 questions arranged in subsections, namely

fill in the blanks, choose the right answer, puzzle, match the following, and expand the abbreviations with 7, 4, 7, 13 and 16 questions, respectively. Instrumentation was the second section with questions organized into subsections such as puzzle with 8 questions, label the picture with 3 questions, crossword puzzle containing 11 questions, scrambled letters with 7 questions, fill in the blanks which include 10 questions, answer in two or three sentences subsection which contains 6 questions, choose the correct answer with 6 questions. The third section was on normative aspects of the ABR, containing questions arranged in different subsections, namely label the picture, scrambled letters, match the following, fill in the blanks, expand the following, true or false, what does the below graph show, answer the following, puzzle, choose the right answer and discuss the following with 3, 5, 5, 17, 11, 6, 1, 4, 10, 9 and 1 questions, respectively. The fourth section was on clinical applications of the ABR containing questions arranged in subsections such as match the following with 5 questions, puzzle with 15 questions, unscramble the letters with 6 questions, true or false with 16 questions, complete the following with 12 questions, match the following with 6 questions, fill in the blanks containing 22 questions, expand the acronym with 11 questions and graphs with 7 questions. The fifth section was an interpretation: problems and pitfalls with 25 questions. The total number of questions in the question bank was 295. Each section concluded with the answers to the questions.

A question bank on Central Auditory Processing Disorders was developed by Archana (1999). An overview of the disorder was presented first, followed by the questions. The purpose of the question bank was to provide basic knowledge about central auditory processing and disorders, the history, development, and adjustments of

the various tests used to study central auditory disorders, and recent improvements in central auditory testing. It also intends to help speech and hearing students improve their understanding of central auditory test principles, administration, and interpretation. In the question bank, there were both subjective and objective questions. The first section was neuroanatomy and neurophysiology of the central auditory nervous system, which contained questions arranged in different subsections, namely, fill in the blanks with 18 questions, choose the correct answer with 5 questions, expand the abbreviations with 17 questions, complete the sentences with 5 questions, complete the picture with 2 questions, label the picture with 2 questions, match the following with 10 questions and separate the following with 16 questions. Introduction to central auditory processing disorders was the second section with questions arranged in different subsections such as label the picture, match the following, unscramble the words, expand the following, fill in the blanks, describe the following, multiple-choice questions, complete the diagram and subjective questions with 5, 6, 18, 5, 16, 8, 2, 1 and 3 questions, respectively. The third section was monoaural speech tests with questions arranged in different subsections, namely, complete the diagram with 1 question, know your numbers with 10 questions, expand the abbreviations with 7 questions, crossword puzzle containing 10 questions, fill in the blanks with 6 questions, match the following with 8 questions, multiple-choice questions with one question, true or false with 5 questions and two subjective questions. The fourth section was binaural interaction task with questions arranged in subsections such as fill in the blanks containing 19 questions, multiple choice with 5 questions, complete the table containing 4 questions, expand the term with 6 questions, label the diagram with 6 questions, true or false with 8 questions, match the following containing 7 questions

and 16 subjective questions. The fifth section was on sequencing and temporal ordering tests with questions arranged in subsections; namely, fill in the blanks containing 10 questions, puzzles containing 10 questions, choose the right answer with 5 questions, know your number with 12 questions, true or false containing 5 questions, complete the table with 5 questions and 7 subjective type questions. Dichotic speech tests were the sixth section containing questions arranged in subsections, namely, fill in the blanks with 10 questions, match the following with 9 questions, expand the abbreviations with 8 questions, complete the table with 2 questions, puzzle with 20 questions, represent the following in diagram with 5 questions, name the site of lesion with 8 questions, true or false with 6 questions, complete the term with 5 questions and 4 subjective type questions. The seventh section was physiological and electrophysiological tests containing subsections such as expand the abbreviation containing 20 questions, know your number with 8 questions, fill in the blanks with 10 questions, complete the table with 1 question, represent in tabular column with 9 questions, name the following with 5 questions, match the following with 7 questions, label the diagram with 6 questions, represent the following in diagram with 9 questions and 10 subjective type questions. The eighth section was on central auditory processing disorders in children contain subsection namely, expand the abbreviation with 15 questions, match the following with 28 questions, fill in the blanks with 10 questions, subjective type with 3 questions and one complete the table question. Management of central auditory processing disorders was the ninth section with subsections, namely fill in the blanks containing 10 questions, give a terminology for the following statements with 5 questions, one complete the diagram, and 18 subjective type questions. The last section was central auditory processing disorders in

a nutshell containing subsections, namely, bonus questions, mega bonus questions, and case reports questions with 3, 30, and 12 questions, respectively. Totally, there were 612 questions in the question bank. At the end of each section, there were answers to all of the questions.

Two question banks were developed on the topic OAE by Mahendra (1995) and Mathew (2002). The most recent version was a computer-based question bank with more information on the topic than the previous one.

A question bank titled an insight into otoacoustic emission was prepared by Mahendra (1995). The potential use of this question bank was that it could be used in the short term and refresher courses and to evaluate and monitor the students or trainees understanding of the subject. There are questions with both short answers and objective answers. The author provided a quick overview of OAEs in the beginning of the question bank. The question bank was divided into nine chapters, each with multiple subsections containing various questions. The question bank was divided into nine chapters, namely 1) Introduction, 2) A closer look at OAE, 3) OAEs the beginning, 4) The secret of OAEs- OHC Electromotility, 5) The OAE family and its members, 6) Instrumentation in OAEs, 7) Normative finding of OAEs, 8) Clinical application of OAEs, and 9) Let's get OAE oriented. Beginning with the third chapter, that was comprised of multiple questions organized into separate subsections. The chapter three included questions under the headings, Do it yourself crossword, expand the abbreviations, Match the following, and State true or false with 11, 8, 8, 6 questions, respectively. The questions in Chapter four were categorized as follows: Match the following, Fill in the blanks, find the missing people, State true or false, and

multiple-choice questions with each section containing 6, 6, 9 and 9 questions, respectively. The chapter five was divided into Part A and Part B, in which part A consisted of questions under the heading 1) What's missing, 2) Multiple choice questions, 3) match the following, and 4) Fill in the banks, with 1, 6, 7and 8 questions respectively. Whereas Part B consisted of questions under the heading, 1) What's missing, 2) Multiple choice questions, and 3) Do it yourself, with 1, 25, and 16 questions respectively. The chapter six was divided into different subsections, namely- 1) Match the following, 2) Know your numbers, 3) State true or false, 4) Match the following (OAE Testing equipment with characteristic features), and 5) Multiple choice questions which included 7, 10, 8, 5and 10 questions, respectively. The questions in Chapter seven were divided into three sections: 1) Look and learn, 2) Know Your Numbers, and 3) Multiple Choice Questions, each with six questions. The chapter eight consisted of questions under the headings - 1) Match the following, 2) Scrambled word game, and 3) Multiple choice questions with 6, 4, and 12 questions, respectively. There were 40 questions in Chapter nine under the heading, let’s get OAE oriented. Overall, the question bank consisted of 253 questions. After each chapter ended, the answers to the questions were given in the question bank.

Mathew (2002) developed a computer-based question bank on otoacoustic emission. The aim of the study was to create a software program that can be used by students, practicing clinicians, or allied professionals to get adapt with OAE. The information was collected from various references such as textbooks, journals, and internet. Articles from 1980s to 2001 were also considered. The questions were administered to ten students of graduate and undergraduate levels who were selected

randomly. They were asked to rate each question for ambiguity and difficulty. The questions marked as ambiguous were corrected and clarified.

The software includes a question bank that assesses the user's knowledge of OAE and suggests ways to improve it. When a user initially signs on to the software, he/she will be familiarised with the program's purpose and instructions. After that, user data will be collected, and he/she will be able to choose between the chapters and begin answering the questions. It is possible to respond to each question only once. Following each question, it was determined if the answer was correct or incorrect, and the correct answer was given, along with a brief explanation of the answer. Additionally, there were references provided. Final scoring of the number of correct responses upon the total number of questions was also given. The author attempted to consolidate a majority of the information on OAEs and present it in the form of a self-assessment question bank with the construction of this question bank. At the start of the question bank, an overview of otoacoustic emission was provided. Multiple-choice, true/false, fill in the gaps, fill in the missing letters, and fill in the missing block were among the types of questions in the question bank. The complete question bank was divided into eight sections: introduction and basic physiology, instrumentation, SOAEs, TEOAEs, DPOAEs, and SFOAEs, suppression, application, and interpretation of OAEs. Each section contains 16, 10, 24, 19, 31, 12, 17, and 11 numbers of questions, respectively. In each section, the questions were arranged from simple to complex. A total of 140 questions were included in the question bank.

The above literature review shows that there is a limited bank of questions on speech and language related topics. Question bank on speech or voice topics would

augment students or learner's knowledge, critical thinking, problem solving and questioning skills. Such a kind of ready-made database of questions in the area of voice science or voice pathology is very limited. Hence, the present study made an attempt to prepare a pool of questions on a topic- 'Vocal fold paralysis.'

Chapter III

METHOD

The study aimed to develop a database of questions on the topic "Vocal Fold Paralysis." This chapter provides an overview of the methodology, including the different stages involved in the preparation of questions and the content validation of the developed questions. The study was carried out in different phases.

Phase I: Focus group discussion

A Focus group discussion was conducted to identify the topics and subtopics. Furthermore, an explanation regarding the aim of the study was informed to the group. The focus group discussion lasted for 15 minutes with the participation of four Speech Language Pathologists (SLPs) working in the field of speech or voice disorders with three years of experience. The focus group discussion was conducted at a convenient date and time of SLPs. The discussion was audio taped with the permission of the participants who were identified in Phase I. The topics and subtopics for the development of the question bank were based on the suggestions offered in the group discussion.

Phase II: Question bank preparation

The question bank was developed in the English language with an assumption that most of the student and practicing professionals are famed to the same language. The question bank comprised of different topics and subtopics based on directions from group discussion. All the questions in the question bank were multiple-choice questions (MCQ). A total of one hundred and twenty five (125) questions were framed by collecting the information from journal articles, books, internet websites, and grey literature. Another set of three SLPs with three years of experience in the field of voice

disorders were asked to provide pre-content validation by rating each of the questions as appropriate, inappropriate, and need to be revised; if any, please suggest revision. The questions that are marked as "appropriate" were retained, and revisions suggested by the SLPs for few questions in this phase, were incorporated.

Phase III: Content validation

The questions that were finalized in Phase II were subjected to Phase III. The questions in Phase III were given to six SLPs/voice experts with five years of experience in the field of voice disorders for content validation. The questions at this phase were rated on a 4-point Likert scale, where 1 stands for extremely irrelevant, 2, 3, and 4 means irrelevant, relevant, and extremely relevant, respectively. Item-Content validity index was calculated for each question by taking the ratio among the number of experts who rated the question as "3" or "4" and the total number of experts involved in validation. The questions for which the item-content validity index was 0.7 and above were included in the question bank (Polit and Beck, 2006). In addition, the prepared questions were given to three MSC SLP students who were in their final semester to rate the questions as ‘easy’, ‘difficult’, and ‘very difficult’. Further at the end of the question bank, the answer keys were provided for better understanding for the readers/learners along with references.

Chapter IV

RESULTS

The present study aimed to develop a database of questions on the topic 'Vocal Fold Paralysis.' The development of the question bank involved three different phases: Focus group discussion, Question bank preparation, and Content validation. The results of the present study are explained under the following sections:

a) Focus group discussion

Four SLPs working in the area of speech and voice disorders with an experience of three years offered their opinions on the various sections into which the question bank should be constructed during the focus group discussion held. According to the suggestions offered in the group discussion by SLPs, the question bank was constructed into five sections; 1) Introduction - Incidence and prevalence, 2) Causes, 3) Signs & Symptoms, 4) Assessment and, 5) Management.

b) Question bank preparation

A total of one hundred and twenty five (125) questions were framed by collecting the information from journal articles, books, internet websites, and grey literature. The question bank was developed in English language with an assumption that most of the student and practicing professionals are famed to the same language. The questions in the question bank were divided under five different sections; 1) Introduction - Incidence and prevalence, 2) Causes, 3) Signs & Symptoms, 4) Assessment and 5) Management. The first section comprised of 21 questions, the second section comprised of 25 questions, the third section comprised of 17 questions and fourth section comprised of 22 questions, and the fifth section comprised of 40

questions. All the questions in the question bank were multiple-choice questions (MCQ). Four options were provided for each question. Out of the four, there would be only one correct answer and remaining 3 options are distractors (wrong options). At the end of the question bank, the answer keys were provided for better understanding for the readers/learners along with references.

c) Pre-content Validation

The prepared question bank consisted of one hundred and twenty five (125) questions which were given to another set of three SLPs with three years of experience in the area of voice disorders and were asked to provide pre-content validation by rating each of the questions as "appropriate", "inappropriate", and "need to be revised; if any, please suggest revision". The judge I rated 92 questions as appropriate, 18 questions as inappropriate and 15 questions as to be modified. The judge II rated 109 questions as appropriate, 2 questions as inappropriate and 14 questions as to be modified. The judge III rated 118 questions as appropriate, 1 question as inappropriate, and 6 questions as to be modified. The questions which were rated as "appropriate" were retained in the question bank as it is. The questions which were rated as "inappropriate" by two out of the three judges were removed from question bank. The modifications recommended for various questions by three judges (SLPs) were incorporated. A total of 111 questions were rated appropriate, so they were retained in the question bank, and 22 questions that required modifications, were modified and retained in the question bank. In the pre-content validation stage, seven questions got the rating as "inappropriate" by the judges as those questions were of core ENT based questions. Hence, only seven questions were eliminated in this phase. The question bank had a total of 118 questions following the pre-content validation phase. The first

section comprised of 21 questions, the second section comprised of 24 questions, the third section comprised of 17 questions and fourth section comprised to 19 questions, and the fifth section comprised of 37 questions. Following the pre-content validation phase, the question bank totally consisted of 118 questions which were subjected to content validation.

d) Content validation

The questions finalized in the pre-content validation phase were given to six SLPs/voice experts with five years of experience in the area of voice disorders for content validation. The questions at this phase were rated on a 4-point Likert scale, where 1 stands for extremely irrelevant, 2, 3, and 4 means irrelevant, relevant, and extremely relevant, respectively. The item- content validity index was calculated for all questions. The item-content validity index calculated for each question is provided in the appendix A. Four questions were eliminated from the question bank after the content validation as their item-content validity index was less than 0.7. One hundred and fourteen (114) questions were having item-content validity index of 0.7 and above, that were retained in the question bank. At the end of the content validation, the first section comprised of 20 questions, the second section comprised of 24 questions, the third section comprised of 17 questions and fourth section comprised to 18 questions, and the fifth section comprised of 35 questions. At the end of third phase, content validation, the question bank had one hundred and fourteen (114) questions in total. The final version of the question bank is shown in appendix B.

e) Rating by M.Sc. (SLP) Students

Following the content validation, the one hundred and fourteen (114) questions were given to three M.Sc. (SLP) students of 4^{th} semester to rate the questions as Easy,

Difficult and Very Difficult. The complexity of each question was determined. Out of the 3 SLP students, agreement between two students was considered at this phase. The student I rated 79 questions as ‘easy’, 34 questions as ‘difficult’ and 2 questions as ‘very difficult’. The student II rated 47 questions as ‘easy’, 53 questions as ‘difficult’, and 14 questions as ‘very difficult’. The student III rated 72 questions as ‘easy’, 30 questions as ‘difficult’ and 12 questions as ‘very difficult’. There was a disagreement for 15 questions between the students. Therefore, another experianced researcher assessed the complexity of those 15 questions. Finally, there are 64% questions rated as ‘easy’, 32% of questions rated as ‘difficult’ and 4% of questions rated as ‘very difficult’ among the 114 questions in the question bank. Table 1 shows the results of complexity-rating by M.Sc. (SLP) students on the questions in the question bank.

Table 1:

Complexity rating of questions by M.Sc. (SLP) students

Sl. No.	Complexity of questions	No. of questions
1	Easy questions	73
2	Difficult questions	37
3	Very difficult questions	04
	Total	114

Chapter V

DISCUSSION

A question bank is a planned library of questions designed to meet some predefined goal. In the field of speech-language pathology related topics, this is the first attempt to develop a question bank on specific topic. There are few question banks in the field of audiology available which are done as independent project, namely, Question Bank on Hearing Aids (Srinivas, 1986), Question Bank on Ear Protective Devices (Barman, 1990), Question Bank on Tests Differentiating Cochlear and Retrocochlear Pathology (Snehalatha, 1995), Question Bank on Assistive Listening Devices (Mathew 1995), Everything You Ought to Know on BSERA - A Question Bank (Sheeja 1995), Insight into Oto-Acoustic Emissions: A Question Bank (Mahendra, 1995), Master Your Concepts in Central Auditory Processing Disorders: A Question Bank (Archana, 1999), and Computer Based Question Bank on Otoacoustic Emissions (Mathew, 2002). Hence, the present study was aimed to prepare a question bank on "Vocal Fold Paralysis".

In contrast to the prior question banks developed in the field of audiology, the present study was carried out in a systematic manner that encompassed multiple phases, which includes focus group discussion, pre-content validation, and content validation. The item to content validity index was calculated at the content validity stage, and only questions with an item to content validity index of 0.7 or above were kept in the question bank. All other questions were eliminated. While these stringent procedures were not incorporated in the selection of questions in the prior question banks. After a thorough process from Phase I through Phase III, this question bank eventually had 114 questions. The total number of questions in the earlier question

banks ranged from 140 to 612. There are fewer questions in this question bank as a result of the stringent methodology used in question bank development and the fact that only multiple choice patterns were included. Fill in the blanks, match the following, name the following, puzzle-solving, acronyms section, true or false, labelling, multiple choice questions, and so on were the objective-type of questions included in the previous question bank.

In any question bank, majority percentage of questions must be easy and less percentage of questions must be very difficult. All the questions in this question bank were rated for complexity as easy, difficult and very difficult by the M.Sc. (SLP) students. The present question bank has succeeded this criterion but in the previous question banks this kind of complexity rating were not done.

Question bank developed by Snehalatha (1995), Mathew (1995), Sheeja (1995), Mahendra (1995), Archana (1999), and Mathew (2002) contained answers in their question bank, whereas the question bank developed by Sreenivas (1986) and Barman (1990), answer keys to the questions were not provided at the end of the question bank. In agreement with earlier question banks developed by Snehalatha (1995), Mathew (1995), Sheeja (1995), Mahendra (1995), Archana (1999), and Mathew (2002), the present question bank on vocal fold paralysis, included answers to the questions. In this question bank, along with the solutions to each question, references were also included for learners/readers.

The question bank developed by Sreenivas (1986), Barman (1990), Snehalatha (1995), Mathew (1995), Sheeja (1995), Mahendra (1995), and Archana (1999) were pen-paper based whereas, question bank developed by Mathew (2002) was computer

assisted. In accordance with all prior question banks made, excluding the one by Mathew (2002), the present question bank is also pen-and-paper based.

For inclusion of questions in the question bank, the present study employed "Item-Content Validity Index" in the content validity phase. As per the direction of Polit and Beck (2006), questions were selected if item-content validity index for questions equal or above 0.7. The present study used six voice experts in content validity phase. The question banks developed previously (Sreenivas (1986), Barman (1990), Snehalatha (1995), Mathew (1995), Sheeja (1995), Mahendra (1995), Archana (1999), and Mathew (2002)) did not consider item-content validity index for validating the questions.

Chapter VI

SUMMARY AND CONCLUSIONS

A question bank is a planned library of questions designed to meet some predefined goals. It would enhance the individual's knowledge on a particular topic and also would induce the reader/learner a new sense of confidence, clarity and competence. The available question banks are in the field of audiology. There is a need to develop question bank in speech-language related topics. The present developed question bank can be used to receive collective information on 'Vocal fold paralysis' so that it can serve as an orientation aid for the students/ learners.

In the development of the present question bank, different phases were included; a focus group discussion was carried out to determine the construction of the question bank into different sections. The questions were compiled by collecting information from literature, and it was divided into various sections as per the directions of the focus group discussion. Following the construction of the question bank, it was given to three SLPs to rate each question as 'appropriate', 'inappropriate', and 'to be modified; if so, please suggest modification'. To finalize the questions, suggested changes as opined by the three SLPs were taken into consideration. The finalized questions were then given to six SLPs for content validation. In the content validity index phase, Item-Content validity index (I-CVI) was calculated for each of the question, and the questions that had a I-CVI value of 0.7 and above were retained in the question bank, and the others were discarded. The questions were further given to M.Sc. (SLP) students to rate the complexity of questions as 'easy', 'difficult' and 'very difficult'.

Finally the question bank had 114 questions which is constructed under five sections namely, Introduction-Incidence & Prevalence, Causes, Signs & Symptoms, Assessment and Management. The question bank contains only multiple-choice questions. The keys or solutions for each and every question are provided at the end of the question bank along with reference for the better understanding of student learners.

Implications of the study

- ✓ The developed question bank will be useful for practising and revising what student/ learner has studied on a concept (vocal fold paralysis).
- ✓ Question bank would enhance the students/learners knowledge on vocal fold paralysis.
- ✓ Question bank could pave the way for training students.
- ✓ Question bank can be used as a reference for examinations and interviews. That is, instructors can use/reuse the database of questions on the topic (vocal fold paralysis) in multiple assessments.
- ✓ The developed question bank can serve both as a guide for self-study and as a supplementary text for information about vocal fold paralysis.
- ✓ This can be used to receive collective information on vocal fold paralysis so that it can serve as an orientation aid for the students/ learners.

Future Directions

- Question banks can be developed in other speech and language related topics.
- Question banks can be field tested on students/learners to find the efficacy.
- More number of questions and variety of question types can be included in the question bank.

References

Archana, G. (1999). *Master your concepts in central auditory processing disorders: a question bank* [Unpublished Master's Independent Project]. University of Mysore.

Barman, A. (1990). *Question bank on ear protective devices* [Unpublished Master's Independent Project]. University of Mysore.

Benninger M.S, Gillman J.B, Altman J.S.(1998) Changing etiology of vocal fold immobility. *Laryngoscope*;108:1346–1350. https://doi.org/10.1097/00005537-199809000-00016

Ballenger, J. J., & Cole, R. I. (1985). *Diseases of the nose, throat, ear, head, and neck.* Lea & Febiger. Philadelphia.

Mahendra, N. (1995). *Insight into oto-acoustic emissions: a question bank* [Unpublished Master's Independent Project]. University of Mysore.

Mathew, P. (1995). *Question bank on assistive listening devices* [Unpublished Master's Independent Project]. University of Mysore.

Mathew, V.M. (2002). *Computer based question bank on otoacoustic emissions* [Unpublished Master's Independent Project]. University of Mysore.

Polit, D. F., & Beck, C. T. (2006). The content validity index: are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health*, *29*(5), 489-497.

https://doi.org/10.1002/nur.20147

Rubin J.S, Sataloff R.T, Korovin G.S, eds.(2003). Diagnosis and Treatment of Voice Disorders. 2nd ed. Clifton Park, NY: Thomson Delmar Learning.

Roy N, Dromey C, Smith ME, Redd J, Neff S, Grennan D.(2009) Exploring the phonatory effects of external superior laryngeal nerve paralysis: an in vivo model. *Laryngoscope*. 119(4):816–826. https://doi.org/10.1002/lary.20143

Snehalatha. (1995). *Question bank on tests differentiating cochlear and retrocochlear pathology* [Unpublished Master's Independent Project]. University of Mysore.

Sheeja, G. (1995). *Everything you ought to know on BSERA - a question bank* [Unpublished Master's Independent Project]. University of Mysore.

Srinivas, N.C. (1986). *Question bank on hearing aids* [Unpublished Master's Independent Project]. University of Mysore.

Stemple, J. C., Roy, N., & Klaben, B. K. (2018). *Clinical voice pathology: Theory and management*. Plural Publishing. San Diego.

Verdolin, K., Rosen, C. A., & Branski, R. C. (2006). Classification manual for voice disorders–I. Mahwah. LEA.

Wilatt D, and Stell P. (1991). *Vocal cord paralysis*, 3rd ed. WB Saunders. Philadelphia,

Yumoto, E. (2015). *Pathophysiology and Surgical Treatment of Unilateral Vocal Fold Paralysis* (pp. 21-44). Springer Publishers. Tokyo.

APPENDIX –A

Item-Content validity index

Question number	No of judges rated 3 or 4	Total no of judges	Item-Content Validity Index
1	6	6	1
2	6	6	1
3	5	6	0.83
4	6	6	1
5	5	6	0.83
6	6	6	1
7	6	6	1
8	6	6	1
9	6	6	1
10	5	6	0.83
11	6	6	1
12	6	6	1
13	6	6	1
14	6	6	1
15	5	6	0.83
16	6	6	1
17	6	6	1
18	6	6	1
19	6	6	1
20	6	6	1
21	6	6	1
22	6	6	1
23	6	6	1
24	6	6	1
25	6	6	1
26	6	6	1
27	6	6	1
28	6	6	1
29	6	6	1
30	6	6	1
31	5	6	0.83
32	6	6	1
33	5	6	0.83
34	6	6	1
35	5	6	0.83
36	4	6	0.66

37	6	6	1
38	6	6	1
39	4	6	0.66
40	6	6	1
41	5	6	0.83
42	6	6	1
43	6	6	1
44	6	6	1
45	5	6	0.83
46	6	6	1
47	6	6	1
48	6	6	1
49	6	6	1
50	6	6	1
51	6	6	1
52	6	6	1
53	6	6	1
54	6	6	1
55	6	6	1
56	6	6	1
57	6	6	1
58	5	6	0.83
59	6	6	1
60	6	6	1
61	6	6	1
62	6	6	1
63	6	6	1
64	5	6	0.83
65	6	6	1
66	6	6	1
67	6	6	1
68	6	6	1
69	6	6	1
70	6	6	1
71	6	6	1
72	5	6	0.83
73	5	6	0.83
74	6	6	1
75	6	6	1
76	6	6	1
77	6	6	1

78	6	6	1
79	6	6	1
80	6	6	1
81	6	6	1
82	6	6	1
83	6	6	1
84	6	6	1
85	6	6	1
86	6	6	1
87	6	6	1
88	6	6	1
89	6	6	1
90	6	6	1
91	6	6	1
92	6	6	1
93	6	6	1
94	4	6	0.66
95	3	6	0.5
96	6	6	1
97	5	6	0.83
98	6	6	1
99	6	6	1
100	6	6	1
101	6	6	1
102	6	6	1
103	6	6	1
104	6	6	1
105	6	6	1
106	6	6	1
107	6	6	1
108	6	6	1
109	6	6	1
110	6	6	1
111	5	6	0.83
112	6	6	1
113	6	6	1
114	6	6	1
115	6	6	1
116	6	6	1
117	6	6	1
118	6	6	1

APPENDIX- B

QUESTION BANK

I. INTRODUCTION, INCIDENCE & PREVALENCE

1) Vocal fold paralysis is included under which classification of a voice disorder?
   a) Systemic conditions affecting voice
   b) Aero-digestive conditions affecting voice
   c) Psychiatric or psychological disorders affecting voice
   d) Neurologic voice disorders

2) Galen's anastomosis is the well-known communication among laryngeal nerves; it occurs between
   a) Dorsal branch of RLN and posterior branch of SLN
   b) Dorsal branch of ELN and posterior branch of SLN
   c) Dorsal branch of SLN and posterior branch of RLN
   d) Dorsal branch of SLN and posterior branch of ELN

3) …….. is a condition that affect nerve.
   a) Apraxia
   b) Dyspraxia
   c) Neurapraxia
   d) Asphyxia

4) Who was the first to propose that aberrant regeneration of nerve fibers was responsible for VF paralysis following RLN injury?
   a) Boles and Frizell, 1980
   b) Crumley, 2000
   c) Murakami and Kirchner, 1976
   d) Siribodhi et.al 1963

5) The right recurrent laryngeal nerve arises from the vagal trunk in front of the …… artery
   a) Aorta
   b) Common carotid artery
   c) Subclavian artery
   d) None of the above

6) Cell bodies of the vagus nerve, which supply the larynx and pharynx, are found deep within the reticular formation of the medulla in the ……..
   a) Nucleus tractus solitaris
   b) Dorsal motor nucleus
   c) Nucleus ambiguous
   d) Both a and c

7) RLN innervates intrinsic muscles of the larynx except cricothyroid and sensation at and …….. the glottis whereas SLN innervates cricothyroid muscle and sensation …….. the level of the true vocal folds.
   a) Below, below
   b) Above, below
   c) Below, above
   d) Above, above

8) If superior laryngeal nerve innervation is affected, the ..... functions of the upper larynx (vocal folds and above) and .....control of the cricothyroid muscles are affected.
   a) Motor, motor
   b) Sensory, sensory
   c) Motor, Sensory
   d) Sensory, motor

9) Which nerve provides the motor supply to the cricothyroid muscle?
   a) Internal branch of SLN
   b) Left RLN nerve
   c) External branch of SLN
   d) Right RLN nerve

10) Which branch of the Vagus nerve emerges from the inferior ganglion and descends alongside the pharynx, first posterior to the internal carotid artery and then medial to it?
   a) Pharyngeal nerve
   b) Superior laryngeal nerve
   c) Both a and d
   d) Recurrent laryngeal nerve

11) Which statement is true?
   a) Bilateral VF paralysis is more common than Unilateral VF paralysis
   b) Unilateral VF paralysis is more common than Bilateral VF paralysis
   c) Both are common
   d) None of the above

12) The superior laryngeal nerve provides primary sensory innervation to which areas of the larynx?
   a) Glottic and subglottic region
   b) Glottic only
   c) Supraglottic, subglottic region
   d) Glottic, supraglottic, posterior subglottic regions

13) The …….. is the sole abductor of the vocal folds during inspiration, and ……. muscle is the principal adductor and intrinsic tensor of the vocal folds.

a) TA, PCA
b) PCA, TA
c) CT, PCA
d) CT, TA

14) The terminal motor branch of RLN innervates the ..... muscle
a) Cricothyroid
b) Thyroarytenoid
c) Interartytenoid
d) Both a and c

15) The penultimate landmark before the RLN enters the larynx is the ……. articulation.
a) Thyroarytenoid
b) Cricothyroid
c) Interartytenoid
d) None of the above

16) ……. refer to an involuntary movement that occurs in conjunction with a voluntary movement and results when a damaged nerve regenerates and re-innervates an incorrect muscle.
a) Myoclonus
b) Ballismus
c) Chorea
d) Synkinesis

17) Choose the wrong statement.
a) If the vocal fold is paralyzed at or just lateral to the midline, phonatory capacities are not preserved, and there may be audible dysphonia
b) When the VF is paralyzed in a highly open or abducted position, the individual may produce a voice that is excessively breathy and weak.
c) Dysphagia for liquid consistencies is a common side effect of VF paralysis due to difficulty closing the glottis.
d) Both a and c

18) The position in which the folds are adducted but slack allows minimal separation during respiration.
a) Median
b) Paramedian
c) Intermediate
d) Glottic chink

19) According to Thomson, Negus, and Bateman 1995, how many different types of positions can vocal folds adopt.
a) 5
b) 6
c) 4

d) 7

20) **……..** is a brief lateral movement of the arytenoid on the immobile side during glottic closure due to contact from the mobile arytenoid.
a) Abadie's sign
b) Becker's sign
c) Auspitz's sign
d) Jostle sign

II) CAUSES

21) Which are the neurological conditions leading to neurogenic dysphonia?
a) Vocal fold paralysis
b) Parkinson's disease
c) Myasthenia gravis
d) All of the above

22) Vocal fold paralysis is mainly associated with which type of dysarthria?
a) Flaccid dysarthria
b) Ataxic dysarthria
c) Spastic dysarthria
d) Mixed dysarthria

23) Ninety percent of vocal fold paralysis that occurs unilaterally is caused by the damage to …….
a) Central and peripheral nervous system
b) Central nervous system
c) Peripheral nervous system
d) None of the above

24) Lesions that damage vagal nuclei within the brainstem are called …….. and when the nerve trunk just outside the brainstem but still within the cranial cavity is damaged, the lesion is called …….
a) Intramedullary, extramedullary
b) Extra cranial, intracranial
c) Extramedullary, intramedullary
d) Intra cranial, extra cranial

25) What is the major cause of unilateral VF paralysis?
a) Viral infections
b) Head trauma
c) Surgery in the area close to RLN
d) Infectious diseases

26) Choose the wrong statement.
a) Unilateral lesions below the bifurcation of the pharyngeal nerve cause unilateral VF paralysis and produce severe breathiness.

b) In Bilateral VF paralysis, where both the vocal folds are abducted, the voice will be virtually whispered.
c) Unilateral soft palate paralysis will produce mild-moderate hypernasality and nasal emission, which will be more severe if the paralysis is bilateral.
d) Both a and b

27) Incomplete lesion of the recurrent laryngeal nerve results in which paralysis?
a) Adductor paralysis
b) Both adductor and abductor paralysis
c) Abductor paralysis
d) Neither abductor nor adductor paralysis

28) If the superior laryngeal nerve is affected, which muscle will be paralyzed and what is the effect
a) Inter-arytenoid, resulting in hyper-nasality
b) Cricothyroid muscle, resulting in hyper-nasality
c) Soft palate elevators, resulting in restricted pitch range
d) Cricothyroid muscle, resulting in restricted pitch range

29) Complete laryngeal nerve paralysis results in …….
a) Adductor and abductor paralysis
b) Adductor paralysis
c) Abductor paralysis
d) None of the above

30) Which of the following is the cause of VF paralysis?
a) Thyroid surgery
b) Viral infections
c) Stroke
d) All of the above

31) Choose the wrong statement.
a) Nuclear level causes like Parkinson's Disease, stroke, and multiple sclerosis often result in unilateral rather than bilateral paralysis.
b) Carcinoma of the larynx, pharynx, nasopharynx, thyroid, or esophagus, and secondaries in the base of the skull, neck, or hilar lymph nodes also give rise to palsies.
c) Surgical trauma during thyroidectomy, endotracheal intubation, and bronchoscopy can lead to VF paralysis.
d) VF paralysis can have toxic and infective causes also.

32) In infants, which among the following is not a reason for unilateral vocal fold paralysis include
a) Birth trauma
b) Congenital heart problem
c) Surgery
d) Febrile seizures

33) Pulmonary resection surgery will lead to which of the following?
a) Usually SLN injury
b) Usually left upper lobe/RLN injury
c) Both a and b
d) None of the above

34) Which is the most common paralysis which has an idiopathic cause?
a) Unilateral and incomplete (abductor) paralysis
b) Bilateral and complete (adductor)
c) Unilateral and complete (abductor)
d) Bilateral incomplete (adductor) paralysis

35) Which are the factors that influence the position of the paralyzed vocal folds?
a) Position of arytenoid cartilage
b) Muscle atrophy
c) Joint fibrosis
d) All of these

36) Injury to the Vagus nerve at a level superior to the branching results in
a) Loss of innervation to pharyngeal branch only
b) Loss of innervation to the pharyngeal, superior laryngeal, and recurrent laryngeal nerves
c) Loss of innervation to the pharyngeal and superior laryngeal nerve
d) Loss of innervation to the superior and recurrent laryngeal nerve

37) For which condition, the common presentation is idiopathic mononeuritis
a) Unilateral incomplete (abductor) paralysis
b) Bilateral incomplete (abductor) paralysis
c) Unilateral complete paralysis
d) Unilateral superior nerve paralysis

38) Bilateral paralysis of the vocal folds in an abducted position is called ……..
a) Abductor paralysis
b) Adductor paresis
c) Abductor paresis
d) Adductor paralysis

39) Unilateral superior nerve paralysis results in the unequal rocking of which cartilages
a) Cricoid and arytenoid
b) Cricoid and thyroid cartilage
c) Thyroid and arytenoid cartilage
d) Both a and c

40) A bilateral abductor paralysis with both folds in the midline is most frequently caused by ……..

a) Partial thyroidectomy
b) Total thyroidectomy
c) Medial thyroplasty
d) Subtotal thyroidectomy

41) Occasionally patients may present with symptoms suggesting bilateral abductor vocal fold palsy, which are subsequently found to be psychogenic. This condition is termed as ……
a) Munchausen's stridor
b) Psychogenic dysphonia
c) Spasmodic dysphonia
d) Ventricular fibrillation

42) Individuals with unilateral paralysis of the SLN may exhibit true vocal fold movement described clinically as ……. wherein the right and left true vocal folds were observed vibrating 90 degrees out of phase.
a) Tics
b) Tremor
c) Gegenschlagen
d) None of the above

43) Which disease is presented with bilateral VF paralysis along with deafness, diaphragmatic weakness and cerebellopontine weakness?
a) Charge syndrome
b) Gullian Barrie syndrome
c) Charcot-Marie-Tooth Disease
d) None of the above

44) Choose the correct statement
a) unilateral and bilateral lesions of VF are frequently accompanied by recurrent laryngeal nerve paralysis
b) unilateral and bilateral lesions of VF are frequently accompanied by pharyngeal nerve paralysis
c) unilateral and bilateral lesions of VF are frequently accompanied by superior laryngeal nerve paralysis
d) None of the above

III) <u>SIGNS AND SYMPTOMS</u>

45) Among the following which is true
a) Hypo functional pattern – symptoms directly related to VF paralysis
b) Hypo functional compensation includes supraglottic activity
c) Hypo functional patterns emerge as a counterpart response to the underlying disorder
d) Hyper functional pattern – symptoms not directly related to VF paralysis

46) Which is the symptom of unilateral VF paralysis?

a) Airway reduced
b) Dizziness with prolonged talking
c) Weak cough
d) Breathy voice quality

47) Besides the propensity in many cases for the paralyzed vocal fold to move towards the centre, the healthy fold has a natural tendency, when unopposed, to pass over the midline. This is known as …….
a) Compensation
b) Reinnervation
c) Deprivation
d) None of the above

48) When both the recurrent laryngeal nerves are paralyzed, the VF adopts which position?
a) Median
b) Lateral
c) Paramedian
d) Any

49) Extracranial lesion of the superior and recurrent laryngeal nerve but not the pharyngeal nerve will have which among the following-
a) The muscles of the soft palate will be normal
b) Cricothyroid and remaining intrinsic muscles of the larynx will be paralyzed
c) Cricothyroid and remaining intrinsic muscles of the larynx will be spared
d) Both a and b

50) Injury to recurrent laryngeal nerve results in …….
a) Hypernasality
b) Restricted pitch range
c) Problems with VF adduction and abduction
d) Reduced-intensity

51) When there is a complete loss of vagal motor input, the vocal fold has been reported to assume …… position?
a) Glottic chink
b) Cadaveric position
c) Median position
d) Paramedian position

52) Choose the true statement
a) When only RLN affected, abduction and adduction are disordered, but pitch control is relatively intact.
b) If the pharyngeal branch is damaged, the patient may be mildly hypernasal, and phonation is impacted.
c) When RLN is damaged, the patient demonstrates restricted pitch range.
d) When RLN is damaged, the function of interartytenoid is not affected.

53) Choose the effects when the VF is in the median position
a) Slight breathiness
b) Ineffective cough
c) Dysphagia
d) Severe breathiness

54) Choose the effects when the VF is in a paramedian position
a) Dysphagia
b) Mild stridor
c) Severe breathiness
d) Both a and c

55) Both vocal folds assume a paramedian position initially, and the patient is aphonic. Aspiration of fluids may be severe, and the patient may eventually need a laryngectomy to protect the lungs. This is true for which type of paralysis.
a) Unilateral superior nerve paralysis
b) Bilateral complete paralysis
c) Unilateral complete paralysis
d) Bilateral superior nerve paralysis

56) Which of the characteristics are true for complete unilateral paralysis ?
a) The affected cord assumes a paramedian position somewhat lateral to the midline
b) Marked degree of air wastage and voice will be weak and breathy
c) No complaint of fatigue is seen
d) Greater difficulty in swallowing present

57) What is the most salient feature of unilateral SLN injury?
a) Reduced loudness
b) Severe breathiness
c) Harsh voice
d) Reduced pitch range

58) Which condition is presented with immediate breathing concerns due to obstruction of the airway, and immediate surgical solutions are typically warranted?
a) Abductor unilateral VF paralysis
b) Abductor bilateral VF paralysis
c) Adductor unilateral VF paralysis
d) Adductor bilateral VF paralysis

59) Which statements regarding childhood vocal palsies are true
a) Vocal palsies in children are the second most common laryngeal abnormality of the newborn
b) Most of the conditions were unilateral with congenital and acquired origin.
c) Inspiratory stridor will be present when speaking also
d) All statements are true

60) In which position the fold lies in a position which is between paramedian and gentle abduction.
   a) Full abduction
   b) Median position
   c) Intermediate position
   d) Glottic chink

61) Injury to the LMN of the tenth nerve nucleus results in flaccid laryngeal paralysis and hypo adduction. This vascular accident when associated with symptoms of dysphagia and dysarthria, ipsilateral Horner's syndrome, ipsilateral face, and contralateral body pain-temperature impairment. This is known as ……. Syndrome
   a) Arnold chiari malformation
   b) Gilles de la Tourette syndrome
   c) Gullian -Barré
   d) Wallenberg's Syndrome

1V) <u>ASSESSMENT</u>

62) Choose the wrong statement.
   a) Loss of vocal fold tension in the affected side will show decreased traveling wave velocity and excursion.
   b) The uninvolved fold will be positioned higher than the paralyzed fold
   c) The vocal fold assumes a paramedian position on the side of SLN paralysis, and posterior shifting is noted toward the side of RLN paralysis with an attempt at phonation
   d) All are false.

63) During visual examination in which paralysis, the following will be seen, VF bowing and shortening, height asymmetry of the vocal processes, and ipsilateral hyper-adduction of false vocal folds.
   a) Superior laryngeal nerve paralysis
   b) Recurrent laryngeal nerve paralysis
   c) Both a and b
   d) None of the above

64) The perceptual voice characteristics of SLN paralysis exist as an extension of the disruption in vocal fold ability to …….. and ……
   a) Abduct, shortens to increase pitch
   b) Adduct, shortens to decrease pitch
   c) Adduct, elongate to increase pitch
   d) Abduct, elongate to increase pitch

65) Which statement is true regarding bilateral incomplete (abductor) paralysis
   a) VF adopts a position near the midline
   b) No complaint of dyspnoea and stridor

c) Tracheostomy is the best solution
d) Both a and c

66) Upon Laryngoscopic examination, the features that can be observed in affected vocal folds include
a) Only b
b) Slow initiation of mucosal wave
c) Slower period and reduced amplitude of vibration
d) Both b and c

67) The perceptual qualities observed in patients with unilateral vocal fold paralysis include
a) Breathiness, reduced loudness, diplophonia, low pitch
b) Reduced loudness, low pitch
c) High pitch, reduced loudness, diplophonia
d) Breathiness, low pitch

68) Endoscopic examination of which conditions include asymmetry of arytenoid adduction with the strong side rotating past midline toward the weak side, a flaccid vocal fold with increased mucosal wave during vibration, a vertical level difference between left and right VF during adduction, and possible bowing
a) Unilateral RLN injury
b) Bilateral SLN injury
c) Unilateral SLN injury
d) Bilateral RLN injury

69) Choose the statements that are true for LEMG?
a) It is the best method of diagnosing vocal fold paralysis
b) It shows increased activity in affected nerves.
c) The degree of reduction can be quantified in terms of percentage to determine the severity of the paresis.
d) Myopathy from neuropathy cannot be differentiated using LEMG.

70) Choose the statements that are true regarding LEMG.
a) LEMG stands for laryngeal electromyography
b) It is of great diagnostic value in assessing the residual functional electrical potential of laryngeal muscles.
c) Both a and b
d) None of the above

71) The presence and absence of the mucosal wave over the surface of the paralyzed VF is a good diagnostic indicator. When the mucosal wave is ……., the paralysis is ……, and chances of recovery are…….
a) Present, severe, minimal
b) Present, severe, good
c) Absent, severe, minimal
d) Absent, not severe, good

72) The impact of a voice disorder on the quality of life of a patient can be assessed using ……..
a) LPR-HRQL
b) VHI
c) OASES
d) None of the above

73) …….help in evaluating phonatory and non-phonatory laryngeal maneuvers and …….. allows assessment of supraglottic constriction.
a) CT, FEES
b) Naso-endoscopy, Flexible endoscopy
c) Flexible endoscopy, Naso-endoscopy
d) FEES, CT

74) ……. can be used to detect masses impinging on the RLN, and …….. can be used to assess parameters like vibratory symmetry, periodicity, and amplitude.
a) CT, Videostroboscopy
b) Flexible endoscopy, Naso-endoscopy
c) FEES, CT
d) Flexible endoscopy, Videostroboscopy

75) Glottal closure and mucosal wave can be assessed using ……..
a) Naso endoscopy
b) Flexible endoscopy
c) FEES
d) Videostroboscopy

76) What will come under the acoustic profile of a person with paralysis of the cricothyroid muscle?
a) Reduced harmonics-to-noise ratio, intensity reduced, Jitter and shimmer increased, reduced pitch range
b) Increased harmonic-to-noise ratio, the intensity increased, Jitter and shimmer increased, reduced pitch range.
c) Reduced harmonic-to-noise ratio, the intensity increased, Jitter and shimmer increased, reduced pitch range.
d) Reduced harmonic-to-noise ratio, the intensity increased, Jitter and shimmer decreased, reduced pitch range.

77) Which statement is false regarding laryngeal electromyography?
a) Myopathy from neuropathy cannot be differentiated using this.
b) The degree and extent of paralysis are identifiable, and the information provided is useful as a basis for various surgical procedures.
c) It is diagnostically valuable in the assessment of the residual, functional, electrical potential of laryngeal muscles
d) All of the above

78) Which are the statements that are true regarding the physical examination of the VF paralysis case?
   a) Vocal fold position should be assessed in axial planes
   b) Vocal fold position should be assessed in both axial and coronal plane.
   c) Anterior closure refers to contact at the vocal process, whereas posterior closure refers to contact between the vibrating edges of the membranous vocal folds.
   d) VF position should be assessed in coronal plane.

79) Unilateral vocal fold paralysis is characterized by …… and ……
   a) Increased airflow rate, lengthened phonation times
   b) Reduced airflow rate, lengthened phonation time
   c) Reduced airflow rate, shortened phonation times
   d) Increased airflow rate, shortened phonation times

V) <u>MANAGEMENT</u>

80) Static surgical procedures consist of using some substances are used to better position the VF; which are they?
   a) Teflon only
   b) Teflon, Gel foam, collagen, Gore-Tex
   c) Teflon, Gel foam
   d) Collagen, Gore-Tex

81) If the VF is in ……. position, the greater the action potential of the neuromotor unit and better chances of spontaneous recovery.
   a) Paramedian
   b) Median
   c) Glottic chink
   d) Intermediate

82) To improve the glottal closure in vocal fold paresis, which of the following method can be adopted?
   a) Medialization thyroplasty
   b) Injection augmentation
   c) Both a and b
   d) None of the above

83) Which procedure involves reinnervation or electrical pacing of immobile VF?
   a) Dynamic procedure
   b) Static procedure
   c) Temporary procedure
   d) Permanent procedure

84) Electrical pacing can be used in which paralysis?
   a) Unilateral abductor paralysis
   b) Bilateral adductor paralysis
   c) Unilateral adductor paralysis

d) Bilateral abductor paralysis

85) Choose the statements that are true regarding the prognosis of VF paralysis.
a) Intratracheal intubations paralysis has a good prognosis
b) Paralysis due to pressure or contusion of the RLN has a poor chance of recovery
c) The more paramedian the VF position, the chance of spontaneous recovery is less
d) If EMG reveals no electrical activity during volitional phonation soon after paralytic trauma, that is a favorable sign for recovery.

86) In the electric pacing approach, electrical stimulation is given to the paralyzed ……..muscle, which causes it to contract and open the airway.
a) Interartytenoid
b) Thyroarytenoid
c) Cricothyroid
d) Cricoarytenoid

87) Botox injection has shown a good result in improving airway function in …… paralysis
a) Bilateral adductor paralysis
b) Bilateral abductor paralysis
c) Unilateral adductor paralysis
d) Unilateral abductor paralysis

88) In which all muscles Botox injection can be given?
a) Cricothyroid, sternothyroid, sternohyoid
b) Cricothyroid, sternothyroid, sternohyoid, thyroarytenoid, lateral cricoarytenoid
c) Sternohyoid, thyroarytenoid, lateral cricoarytenoid
d) Sternothyroid, lateral cricoarytenoid

89) Choose the statements that are true for unilateral vocal fold paralysis.
a) "ee-sniff" maneuver is useful in evaluating UVFP
b) The RLN sectioning leads to paralysis of the contralateral thyroarytenoid, posterior cricoarytenoid, and lateral cricoarytenoid, but not the inter arytenoid.
c) Interartytenoid receive innervation from only ipsilateral RLN
d) All of the above

90) …… is the first option for unilateral VF paralysis.
a) Laryngoplasty
b) Surgery followed by therapy
c) Behavioural voice therapy
d) Medialization thyroplasty

91) What is the use of laryngeal innervation procedure over Medialization thyroplasty in unilateral VF paralysis?
a) It prevents atrophy of the paralyzed vocal fold and provides vocal fold tone, bulk, tension, and position stability
b) Results in improved pitch and loudness control compared to thyroplasty

c) Medialization procedures can be used in conjunction with laryngeal reinnervation.
d) All of the above

92) What is the important goal of surgery in case of bilateral abductor paralysis
a) To establish a patent airway
b) To establish a patent airway and safe swallowing
c) To improve voice quality
d) To improve the pitch range

93) Which are the surgical procedures used in the treatment of bilateral abductor paralysis?
a) Total arytenoidectomy
b) Medial arytenoidectomy,
c) Transverse cordotomy
d) All of the above

94) Arytenoid abduction can be used as a surgical option for which paralysis.
a) Adductor paralysis
b) Abductor paralysis
c) Both a and b
d) None of the above

95) What is the arytenoid abduction method?
a) Rotating the arytenoid anteriorly to abduct the vocal folds
b) Rotating the arytenoid cartilage anteriorly to adduct the vocal folds
c) Rotating the arytenoid medially to adduct the vocal folds
d) Rotating the arytenoids laterally to abduct the folds

96) Arytenoidectomy with retention of the vocal process, which is moved laterally and, together with fibers of the thyroarytenoid muscle, is then sutured to the inferior cornu of the thyroid cartilage. Which surgical procedure comprises these steps?
a) Medialization thyroplasty
b) Woodman procedure
c) Arytenoid Adduction
d) None of the above

97) Teflon paste is injected into the paralyzed cord to add bulk. The increased bulk has several effects, which include-
a) The cordal margin becomes -smoother
b) The bulk adds thickness to the cordal edge
c) The cord is moved slightly towards the midline
d) All of the above

98) Teflon injection procedure is best suitable for which paralysis?
a) Bilateral RLN paralysis
b) Unilateral SLN paralysis

c) Bilateral SLN paralysis
d) Unilateral RLN paralysis

99) In which condition ‘wait and see ' approach is preferred?
a) When direct trauma to the SLN is suspected as the cause of the unilateral abductor paralysis
b) When direct trauma to the SLN is suspected as the cause of the unilateral adductor paralysis
c) When direct trauma to the RLN is suspected as the cause of the unilateral abductor paralysis
d) When direct trauma to the RLN is suspected as the cause of the unilateral adductor paralysis

100) …… can be used as an alternative to Teflon, which is abundant in supply and is a homograft
a) Gel foam
b) Fat
c) Collagen
d) None of the above

101) Which statement is false regarding the management of RLN paralysis?
a) “Wait and see” approach is first recommended, wherein major medical or surgical interventions are deferred for a period of 2-3 months
b) In some cases of bilateral abductor RLN paralysis, arytenoidectomy and cordectomy are the necessary surgical procedures for airway restoration.
c) Surgical vocal fold lateralization or cordopexy is an additional treatment option available to permanently widen the glottis
d) Surgical abduction of the arytenoid cartilages is a procedure used to widen the glottis in cases where the true vocal folds are paralyzed in a paramedian position.

102) Which statement is true regarding arytenoid abduction?
a) Arytenoid abduction is most effective in patients with bilateral adductor paralysis
b) Used to widen the glottis in cases where the true vocal folds are paralyzed in a paramedian position
c) A suture is placed in the muscular process of the arytenoid cartilage, which is then rotated to increase the glottal opening
d) b and c

103) ……. refer to a class of interventions that use implantable electrical stimulators to trigger vocal fold abduction for respiration.
a) Arytenoid abduction
b) Pacing strategies
c) Cordopexy
d) Reinnervation procedure

104) Which statement is false regarding collagen injected implants?

a) Teflon is more easily and accurately administered than liquid collagen, which is a thick paste
b) Collagen has the additional advantage of softening and reducing scar tissue in the treated area.
c) The implant of collagen into the existing collagen layer of the lamina propria augments normal collagen and stimulates replacement.
d) All are false statements

105) When is the Medialization procedure carried out?
a) When the vocal fold shows no sign of normal movement after about one month
b) When the vocal fold shows no sign of normal movement after about six months
c) When the vocal fold shows no sign of normal movement after about four months
d) When the vocal fold shows no sign of normal movement after about one week

106) Medialization is achieved by making a window in the ……. cartilage on the affected side so that a wedge of silicon or cartilage can be inserted between the thyroid cartilage and the perichondrium of the larynx
a) Ala of the thyroid
b) Arytenoid
c) Cricoid
d) None of the above

107) To exploit the natural sphincter action of the larynx, which idea is better?
a) Pushing exercises
b) Lifting exercise
c) Forcing exercises
d) Both a and b

108) Choose the statement that is false regarding vocal rehabilitation.
a) Isometric exercises such as interlocking the hands and trying to pull them apart, producing /i: / will encourage compensatory adduction.
b) Hard glottal attack on short stressed syllables can be used instead of pushing exercises
c) Turning the head to increase tension and digital manipulation of the thyroid cartilage can also be used.
d) Isotonic exercises such as interlocking the hands and trying to pull them apart, producing /i: / will encourage compensatory adduction.

109) The …….. surgical procedure put the immobile VF in the midline so that the mobile VF may approximate it.
a) Permanent procedure
b) Static procedure
c) Dynamic procedure
d) Temporary procedure

110) Relaxation exercises are frequently essential to……..
a) Improve breath capacity and control

b) To reduce general musculoskeletal tension
c) To increase the specific neck tension
d) Both a and b

111) What findings on LEMG predict a favorable prognosis for return of function?
a) Activation of motor unit potentials during an appropriate task, absence of fibrillation potentials, preservation of motor unit morphology
b) Polyphasic motor unit potentials and decreased recruitment pattern
c) Bilateral mildly diminished recruitment
d) Electrical silence

112) Which are the behavioural voice therapy approaches that can be used for RLN paralysis?
a) Yawn sighs
b) Half swallow boom
c) Both a and b
d) None of the above

113) Choose the statements that are not true for injection laryngoplasty
a) Teflon can be injected transorally or transcutaneously
b) Teflon is not a quick and effective way of improving the voice.
c) Teflon promotes foreign body reaction
d) The surgical removal of Teflon is difficult because of its infiltration into the muscle fibers.

114) ……. is a temporary injectable substance that is used in patients with acute needs for Medialization where VF movement may return, and a permanent procedure is not necessarily indicated.
a) Teflon
b) Gel foam
c) Collagen
d) Fat

##

ANSWERS

1) **d** (Stemple, J. C., Roy, N., & Klaben, B. K. (2020). *Clinical voice pathology: Theory and management*. 6th edition Plural Publishing. Chapter 4, Page no 87).
2) **c** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter, Page no 13).
3) **c** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 2, Page no 21).
4) **d** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 2, Page no 21).
5) **c** (Aronson, A. E. (1980) Clinical voice disorders. *An interdisciplinary approach*. Thieme Inc. Chapter 5, Page no 80).
6) **c** (Aronson, A. E. (1980) Clinical voice disorders. *An interdisciplinary approach*. Thieme Inc. Chapter 5, Page no 79).
7) **c** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 1, Page no 3).
8) **d** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr, 5th edition Chapter 16, Page no 293).
9) **c** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr, 5th edition Chapter 16, Page no 293).
10) **b** (Aronson, A. E. (1980) Clinical voice disorders. *An interdisciplinary approach*. Thieme Inc. Chapter 5, Page no 80).
11) **b** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 306).
12) **d** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 1, Page no 5).
13) **b** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 2, Page no 17).
14) **b** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 1, Page no 11).
15) **b** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 1, Page no 10).
16) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 287).
17) **a** (Sapienza, C., & Hoffman, B. (2020). *Voice disorders*. Plural Publishing. 3rd edition Chapter 6, Page no 200).
18) **d** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*, 5th edition, Whurr Chapter 16, Page no 298).
19) **b** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*, 5th edition, Whurr Chapter 16, Page no 298).
20) **d** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 4, Page no 58).
21) **d** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 261).

22) **a** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 304).
23) **c** (Sapienza, C., & Hoffman, B. (2020). *Voice disorders*. Plural Publishing, Chapter 6, Page no 200).
24) **a** (Aronson, A. E. (1980) Clinical voice disorders. *An interdisciplinary approach*. Thieme Inc. Chapter 5, Page no 84).
25) **c** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition Chapter 9, Page no 306).
26) a (Aronson, A. E., & Bless, D. (2008) Clinical voice disorders. *Vorschau*, *45*, Chapter 5, Page no 77).
27) **c** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 261).
28) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 288).
29) **a** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 260).
30) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 289).
31) **a** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 263).
32) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 289).
33) **b** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 4, Page no 56).
34) **a** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 261).
35) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 288).
36) **b** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 292).
37) **a** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 261).
38) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 292).
39) **b** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 264).
40) **b** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr. Chapter 16, Page no 299).
41) **a** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*, 5th edition, Whurr, Chapter 16, Page no 299).

42) **c** (Sapienza, C., & Hoffman, B 2009. *Voice disorders*. Plural Publishing Chapter 6, Page no 283).
43) **c** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 27, Page no 444).
44) **a** (Stockley, M, D. (1991). The vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 260).
45) **a** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 7, Page no 90).
46) **d** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr, 5th edition Chapter 16, Page no 311).
47) **a** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr, 5th edition Chapter 16, Page no 312).
48) **c** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 259).
49) **d** (Aronson, A. E., & Bless, D. (2008) Clinical voice disorders. Vorschau, 45, Chapter 5, Page no 77).
50) **c** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 288).
51) **b** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 27, Page no 437).
52) **a** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Second edition. Chapter 7, Page no 288).
53) **a** (Sapienza, C., & Hoffman, B. (2020). *Voice disorders*. Plural Publishing. 3rd edition. Chapter 6, Page no 201).
54) **d** (Sapienza, C., & Hoffman, B. (2020). *Voice disorders*. Plural Publishing. 3rd edition. Chapter 6, Page no 202).
55) **b** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 264).
56) **b** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 263).
57) **d** (Watts, C. R., & Awan, S. N. (2019). *Laryngeal Function and Voice Disorders: Basic Science to Clinical Practice*. Thieme Chapter 2, Page no 49).
58) **b** (Watts, C. R., & Awan, S. N. (2019). *Laryngeal Function and Voice Disorders: Basic Science to Clinical Practice*. Thieme Chapter 2, Page no 49).
59) **d** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*, 5th edition, Whurr. Chapter 16, Page no 296).
60) **c** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*, 5th edition, Whurr. Chapter 16, Page no 298).
61) **d** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 26, Page no 414).

62) **c** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 27, Page no 439).
63) **a** (Sapienza, C., & Hoffman, B. (2020). *Voice disorders*. Plural Publishing, Chapter 6, Page no 204).
64) **c** (Sapienza, C., & Hoffman, B. (2020). *Voice disorders*. Plural Publishing, Chapter 6, Page no 204).
65) **d** (Stockley, M, D. (1991). Vocal fold paralyzes. In M. Fawcus (Editor). Voice disorders and their management (2nd Edition). Chapman & Hall Publisher, London. Chapter 12, Page no 262).
66) **d** (Sapienza, C., & Hoffman, B. (2020) 3rd edition *Voice disorders*. Plural Publishing Chapter 6, Page no 201).
67) **a** (Watts, C. R., & Awan, S. N. (2019). *Laryngeal Function and Voice Disorders: Basic Science to Clinical Practice*. Thieme chapter 2, Page no 48).
68) **c** (Watts, C. R., & Awan, S. N. (2019). *Laryngeal Function and Voice Disorders: Basic Science to Clinical Practice*. Thieme Chapter 2, Page no 49).
69) **c** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 305).
70) **c** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders* 5th edition, Whurr, Chapter 16, Page no 301).
71) **c** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*, 5th edition ,Whurr, Chapter 16, Page no 301).
72) **b** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 308).
73) **c** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 308 & 309).
74) **a** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 309).
75) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 309).
76) **a** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr . Chapter 16, Page no 307).
77) **a** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr Chapter 16, Page no 316).
78) **b** (Merati, A. L., & Bielamowicz, S. A. (Eds.). (2007). *Textbook of voice disorders*. Plural Pub Chapter 11, Page no 146).
79) **d** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 27, Page no 442).
80) **b** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 26, Page no 443).
81) **b** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*, 5th edition, Whurr, Chapter 16, Page no 301).
82) **c** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 305).

83) **a** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 26, Page no 443).
84) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 313).
85) **a** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr . Chapter 16, Page no 301).
86) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 313).
87) **b** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 312).
88) **b** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 9, Page no 313).
89) **a** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg Chapter 4, Page no 57).
90) **c** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 7, Page no 290).
91) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 7, Page no 291).
92) **b** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 7, Page no 293).
93) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 7, Page no 293).
94) **b** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 7, Page no 293).
95) **d** (Ferrand, C. T. (2011). *Voice disorders: Scope of theory and practice*. Pearson Higher Ed. Chapter 7, Page no 293).
96) **b** (Freeman, M. E., & Fawcus, M. E. (2000). *Voice disorders and their management*. Whurr Publishers. Chapter 12, Page no 265).
97) **d** (Freeman, M. E., & Fawcus, M. E. (2000). *Voice disorders and their management*. Whurr Publishers. Chapter 12, Page no 266).
98) **d** (Freeman, M. E., & Fawcus, M. E. (2000). *Voice disorders and their management*. Whurr Publishers. Chapter 12, Page no 266).
99) **d** (Sapienza, C., & Hoffman, B 2009. *Voice disorders*. Plural Publishing Chapter 6, Page no 201).
100) **b** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 26, Page no 444).
101) **a** (Sapienza, C., & Hoffman, B 2009. *Voice disorders*. Plural Publishing Chapter 6, Page no 203 & 204).
102) **d** (Sapienza, C., & Hoffman, B 2009. *Voice disorders*. Plural Publishing, 3rd edition, Chapter 6, Page 204).
103) **b** (Sapienza, C., & Hoffman, B 2009. *Voice disorders*. Plural Publishing,3rd edition, Chapter 6, Page 204).
104) **a** (Mathieson, L. (2013). *Greene and Mathieson's the Voice and its Disorders*. Whurr. Chapter 16, Page no 320).

105) **b** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr . Chapter 16, Page no 318).
106) **a** (Mathieson, L. (1995). *Greene and Mathieson's the Voice and its Disorders*. Whurr. Chapter 16, Page no 318).
107) **d** (Freeman, M. E., & Fawcus, M. E. (2000). *Voice disorders and their management*. Whurr Publishers. Chapter 12, Page no 268).
108) **d** (Freeman, M. E., & Fawcus, M. E. (2000). *Voice disorders and their management*. Whurr Publishers. Chapter 12, Page no 268 & 269).
109) **b** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 26, Page no 443).
110) **d** (Freeman, M. E., & Fawcus, M. E. (2000). *Voice disorders and their management*. Whurr Publishers. Chapter 12, Page no 269).
111) **a** (Merati, A. L., & Bielamowicz, S. A. (Eds.). (2007). *Textbook of voice disorders*. Plural Pub Chapter 11, Page no 156).
112) **c** (Sulicia, L., Blitzer, A., (Eds.).(2006). *Vocal fold paralysis*. Springer, Berlin, Heidelberg. Chapter 7, Page no 90).
113) **b** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural Publishing. Second Edition Chapter 27, Page no 443).
114) **b** (Rubin, J. S., Sataloff, R. T., & Korovin, G. S. (Eds.). (2014). *Diagnosis and treatment of voice disorders*. Plural publishing. Second edition Chapter 27, Page no 444).