

**The Current Practice in Management of Paradoxical Vocal Fold Dysfunction
(PVFD) in Bangladesh.**

A research presented to the
Bangladesh Health Professions Institute (The academic institute of CRP)
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APPROVAL

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**In partial fulfillment of the requirements for the degree of B.Sc. in
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Dedication

To my beloved parents and elder sister...

Declaration

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also decline that for any publication, presentation or dissemination of information of the study, I would bind to take written consent of my supervisor.

Signature:

Date:

Acknowledgement

First of all, I would like to pay my gratitude to almighty Allah whose blessings enable me to complete this study. I would like to express my thanks to my family members who constantly inspire me to carry out my studies. I would also like to acknowledge that various people who have helped me along the way in order to complete this research. I would like to show my gratitude toward my tremendous and honourable supervisor Mr. Md. Shohidul Islam Mridha for helping me throughout this research project with his proficient guidance and valuable advice.

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Glossary of terms

ALS	Amyotrophic lateral sclerosis
COPD	<i>Chronic obstructive pulmonary disease</i>
CRP	Centre for the rehabilitation of the paralysed
FOL	Fiber Optic Laryngoscope
FVC	Forced Vital Capacity
GERD	Gastro esophageal reflux disease
IgE	Allergen specific immunoglobulin E
PEEP	Positive end expiratory pressure
PFT	pulmonary function test
PVFD	Paradoxical Vocal Ford dysfunction
PVFM	Paradoxical Vocal Ford motion
RS	Respiratory specialist
SAHIC	Society for Assistance to Hearing Impaired Children
SLT	Speech and Language Therapy/ therapist
VCD	Vocal cord dysfunction

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Flow-volume loop in a normal patient and extrathoracic airway obstruction .

Executive summary

Title: The current practice in management of paradoxical vocal fold dysfunction (PVFD) in Bangladesh.

Aim: The purpose of this study is to investigate the current practice in management of paradoxical vocal fold dysfunction (PVFD) in Bangladesh.

Objectives:

1. To explore the level of knowledge in management of paradoxical vocal fold dysfunction (PVFD) of the respiratory specialist, ENT specialist and speech & language therapist.
2. To investigate the common practice (Diagnosis, treatment and management, multidisciplinary approach.) in management the Paradoxical Vocal Fold Dysfunction.
3. To investigate the caseload and referral system practiced by respiratory specialist, ENT specialist, speech & language therapist in management of PVFD in Bangladesh.

Study Design: The study is based on a phenomenological qualitative research design paradigm.

Participants: MBBS doctors who have post graduation degree regarding respiratory disease condition and ENT specialists having at least 2 years clinical experience. Graduate SLTs having 1 years of experience. Participants who are willing to take part in this study.

Sampling: In this study 43 samples were selected using a purposive (non-probability) sampling technique in accordance with the inclusion and exclusion criteria.

Data Collection: Face-to-face, structured both close and open-ended interviews were conducted with transcripts and electronic voice recordings taken for further analysis.

Data Analysis: Content analysis specifically focused on keywords and themes was used to initially summaries the data for later analysis.

Results: Though 39 of the participants among 43 claimed that they know about the condition. But only very few overall 5 of them were able to demonstrate comprehensive idea about presentation, diagnosis and treatment. Most of them conflict it with differential diagnosis and some of them make diagnosis that doesn't have clinical evidence. Though due to lack of knowledge represent number of client has not been demonstrated but among the specialists who represents comprehensive idea about the condition overall get 50 to 100 client yearly in total where SLT do not get any. Instead of acknowledging SLT service to be effective referral is not satisfactory. Specialist still don't follow standard diagnosis protocol though all the settings are available in Bangladesh, more over due to lack of awareness effective MDT approach is not practice followed.

Keywords: PVFD, Management Strategies, Speech and language therapy role.

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1.1 Introduction

This research study aims at investigating what is the current practice in management of paradoxical vocal fold dysfunction in Bangladesh. In this study the investigator tries to explore the level of knowledge among different professionals like ENT specialist, respiratory specialist & speech & language therapist regarding Paradoxical Vocal Ford dysfunction (PVFD) management and to know their case load.

Paradoxical Vocal Fold Dysfunction is a newly recognized concept all over the world. Though several studies have been started over years, the concept is being changed frequently. According to Connell, Sklarew, Goodman, (1995) Paradoxical Vocal Ford dysfunction (PVFD), also recognized as vocal cord dysfunction (VCD), laryngeal dyskinesia, and vocal cord malfunction, is a condition where the larynx exhibits paradoxical vocal cord adduction during inspiration. But in the past it was considered to be purely psychogenic condition. But recent evidence shows that it is a condition which needs multi-factorial management program. A multi factorial management program is proposed utilizing principles of motor learning, neuro-linguistic programming model, respiratory and phonatory synchronization, relaxation techniques, concurrent monitoring of behavioral adjustments, and formal psychological counseling (Andrianopoulo' Gallivan, & Gallivan 2000). Treatment of acute episodes includes reassurance, breathing instruction by SLT and helium oxygen mixture (heliox). Long-term management strategies include treatment for symptom triggers and speech therapy (Decket, 2010). Literature shows that SLT has significant and unique role in management of PVFD. Speech and language therapy has been proven to be helpful in both acute and chronic cases which can be helpful to cut out extra medicine cost and surgery. According to Sullivan, Heywood, & Beukelman, (2001) 95% patients with PVFD are benefited by SLT management but unresponsive to aggressive medicine. Moreover the role of SLT is not only for treatment but also extends to assessment, diagnostic input, patient education, supportive counseling, PVFD symptom management, and possible voice therapy (Schmidt, 2001).

In Bangladesh Speech & Language Therapy is a new profession. It is not enough promoted countrywide either towards other health professionals or general people. Familiarization with and training in complementary and alternative medicine provides an opportunity to integrate different approaches into patient management and offers a framework to work with and develop other skills (Lewith, 2005). By conducting the study researcher aimed to know the specialists' current practice pattern and their preference that might be helpful to encouraging co-operation between health professionals' for the benefit of patients. In this way multi-disciplinary treatment is more likely to be achieved further.

1.2 Literature review

Vocal fold dysfunction is comparatively newly recognized condition so several studies has been done to reveal the accurate presentation of the condition, prevalence and most importantly for the most effective treatment approach. So the concept of the condition has been changed over time according to presentation of condition and outcome of treatment. Some of the recent research shows the prevalence of PVFD to be 40% (Newman, Mason, & Schmalig 1994) to 56 % (Connell,1995) among the patients having symptom of asthma that can be life threatening .10% of the emergency room visitors due to asthma symptom got PVFD diagnosis (Jain, Bandi, Zimmerman, Hanania, N.,& Guntupalli 1998). Due to the mysterious nature of presentation of the condition and conflict with several differential diagnoses it often thought to be purely psychogenic. According to Ibrahim, Gheriani Almohamed, & Raza (2007) Vocal cord dysfunction presenting as asthma was first described as disorders of the laryngeal muscles brought on by "hysteria". During this period the cause for PVFD was considered purely psychogenic, as it was only described in patients presenting with hysteria or during times of great stress. Because of the lack of a known organic etiology, PVFD was a topic confined to the psychiatric literature.

Literature that published virtually nothing on the topic until the 1980's when the first case reports and case series began to emerge. Christopher et al (1983) et al published a comprehensive description of a syndrome of vocal cord adduction with a posterior chink (glottic opening) presenting as asthma with symptoms of dyspnea and noisy breathing. Mackenzie (1869) actually visualized the vocal cords in hysteric adults with stridor and saw them paradoxically close during

inspiration. He elicited this closure as the cause of the stridor. Later this condition was defined by describing patients with “Spasms of laryngeal muscles” occurring during inspiration and at the time of great distress. described patients as presenting with “extraordinary inspiratory or expiratory cries”, and often with cyanosis. Particular cause of the condition has not been described rather several causes has shown to be responsible but among them upper airway obstruction, or functional and organic voice disorders are thought to be significant (Andrianopoulo· Gallivan, & Gallivan 2000). Though PVFD conflicts with many differential diagnoses but the treatment approach is totally different. This is why wrong diagnosis can be harmful even life threatening. Many patients with PVFD are wrongly diagnosed with refractory asthma and suffer morbidity from unnecessary treatment such as high dose exogenous steroid and bronchodilator use. Most severely, during acute episodes patients have received intubation and/or tracheostomy (Ibrahim, Gheriani, Almohamed& Raza 2007). But for PVFD such treatment can be avoided when a knowledge of and high suspicion for PVFD is present within the treating physician. For diagnosing PVFD knowledge about the presentation of the condition is necessary. A high index of suspicion derived from an awareness of the disease is necessary for making the diagnosis of PVFD, as its presenting symptoms are very non-specific. Patients with Paradoxical Vocal Fold Dysfunction exhibit a wide variety of symptoms ranging from cough, inspiratory/expiratory wheeze, dyspnea with/without exertion, stridor, hoarseness, throat tightness, and reflux (Newman Mason, &Schmaling, 1998) to no symptoms at all. According to (Andrianopoulos et al, 2000) during the past 10 years, 27 subjects, ages 15-79 years, were identified to have paroxysms of inspiratory stridor, acute respiratory distress, associated aphonia and dysphonia, resulting in misdiagnosis and unnecessary emergency treatments, including endotracheal intubation, cardiopulmonary resuscitation, massive pharmacotherapy, or tracheostomy. To avoid unnecessary treatment approaches overall list of differential diagnosis is important. When a patient presents with wheezing, stridor and/or dyspnea, a thorough list of differential diagnoses for upper airway obstruction must be suspected. The site of obstruction is more specific to the presenting symptoms than the actual cause of the obstruction; it is helpful to develop a differential diagnosis according to age group and location of obstruction. Pediatric and adult airways account for differences in etiology. Structurally, the narrowest point in an adult airway is the glottis, while in the child it is the subglottis. Knowing that the diameter of a pediatric airway is much less than an adult’s, even minimal inflammation of a child’s subglottis

can cause marked symptomatic airway obstruction. In adult airways the inflammation or obstruction must be much more severe before the patient will be symptomatic. This is why an infection of the subglottic area, is a common cause of stridor in children, although it is not an actual laryngeal cause of dyspnea.

Anatomic locations for extra thoracic airway obstruction include the trachea, larynx, glottis, and thyroid. Endobronchial obstruction must also be suspected as a foreign body, bronchial adenoma, bronchial carcinoid, or bronchogenic carcinoma can all present with dyspnea and/or wheezing. Eliciting this infectious cause can be helpful to covert the suspicion of PVFD into confirmation. Several different causes have been described all resulting in the same presentation that includes cortical injury involving either upper or lower motor neurons, brainstem compression, conversion disorder, malingering, and irritant induced. (Parker, Mooney, & Berg 2002) reported eleven cases of PVFD in which there was a temporal relationship between the onset of the PVFD and environmental or occupational irritant exposure such as ammonia, cleaning chemicals, organic solvents, flux flames, and smoke were linked to the onset of PVFD. Lower motor neuron injury resulting in PVFD is seen with diseases such as myasthenia gravis, medullary infarction, and amyotrophic lateral sclerosis (Maschka et al,1997). Appropriate treatment of Patients with Paradoxical Vocal Fold Dysfunction begins with an accurate diagnosis adhering to the previous mentioned criteria. Many patients have undergone unnecessary intubation and tracheostomy procedures secondary to misdiagnoses. Arriving at a correct diagnosis also allows cessation of all unnecessary medications. Once the correct diagnosis is established, treatment can accordingly.

During respiration Patients with Paradoxical Vocal Fold Dysfunction there is adduction of the vocal cords and narrowing of the rima glottidis during inspiration causing a functional extra thoracic airway obstruction. A classic finding of the paradoxical adduction on laryngoscopic examination is an inspiratory anterior vocal cord closure with posterior chinking, or diamond-shaped margination between the posterior vocal cords and the corniculate tubercles.

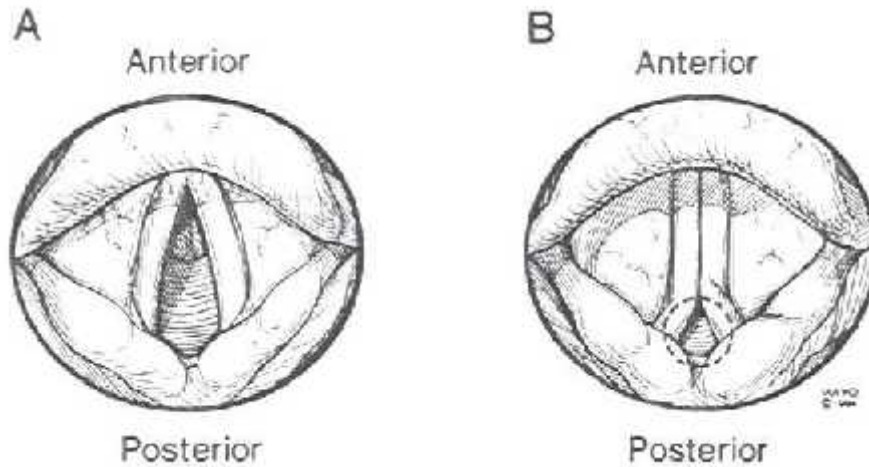


Figure 2. 1

Illustration of vocal cords during inspiration in both the normal patient (A) and the patient with VCD (B). Note the characteristic posterior chinking in the vocal cords of patient B. Illustration taken from (Patterson, Schatz, & Horton 1974).

This obstruction decreases laminar airflow through the glottis and produces an inspiratory wheeze or stridor sound similar to that heard in asthmatics, making the two entities difficult to differentiate symptomatically. Physical exam, however, reveals that patients with only asthma do not exhibit posterior chinking. Patients with asthma alone can also exhibit adduction of the vocal cords during inspiration. Higenbottam experimentally induced broncho constriction in study patients revealed a decrease in the glottic aperture during quiet respiration. This glottic narrowing allows for a certain amount of positive end expiratory pressure (PEEP) to maintain airway patency preventing alveolar collapse from the broncho constriction. Such a physiologic response is suspected to be therapeutic, not pathologic (Ramirez, Leon I & Rivera, 1986) as pursed-lip breathing almost always relieves asthmatic wheezing. In patients with PVFD the wheezing is usually greatest over the larynx (Craig et al, 1992) and is less evident over the rest of the lung fields. There can be constant flexion of the anterior neck muscles and tachypnea. Their lungs reveal auscultatory absence of hyperinflation presuming COPD and/or asthma is not also present (Goldman & Muers, 1991). Patients with or without concurrent asthma are often hypoxic and therefore may appear cyanotic during exacerbations. Laryngoscopy will show evidence of vocal cord adduction during inspiration, expiration, or both.

Many patients with PVFD have been previously diagnosed with asthma although different laboratory tests can be performed to distinguish the two. There is much controversy as to whether or not patients with only PVFD actually undergo respiratory compromise during acute exacerbations. The literature does show evidence of patients exhibiting no respiratory distress and presenting without hypoxemia, though such a presentation seems less common. Typically patients have arterial blood gas values with normal a gradients and no evidence of hypercapnia or acidosis, but do show evidence of hypoxemia during exacerbations (Christopher et al,1983) , Normal alveolar-arterial oxygen-tension gradients are not expected in asthmatics during an acute attack. During periods when patients are asymptomatic they have a tendency to show normal laboratory values. Physicians have therefore begun to stress patients during testing, exposing them to the same elements which typically initiate attacks. Attacks are commonly exercise induced or irritant induced, and both methods are used for provocative testing. Because as many as 50% of patients with PVFD also have asthma, methacholine challenges are used to detect bronchial hyper responsiveness when pulmonary function tests (PFT's) are inconclusive. This test can determine the patient's asthma status and is useful for guiding treatment regimens, but alone cannot diagnose PVFD. PFT's with flow-volume loops have also been used to support the diagnosis of PVFD in symptomatic patients. Flow-volume loops of patients with PVFD often show flattening of the inspiratory curve, or a decrease in maximal inspiratory flow during acute attacks, and are normal while asymptomatic (Ramirez, Leon & Rivera, 1986).

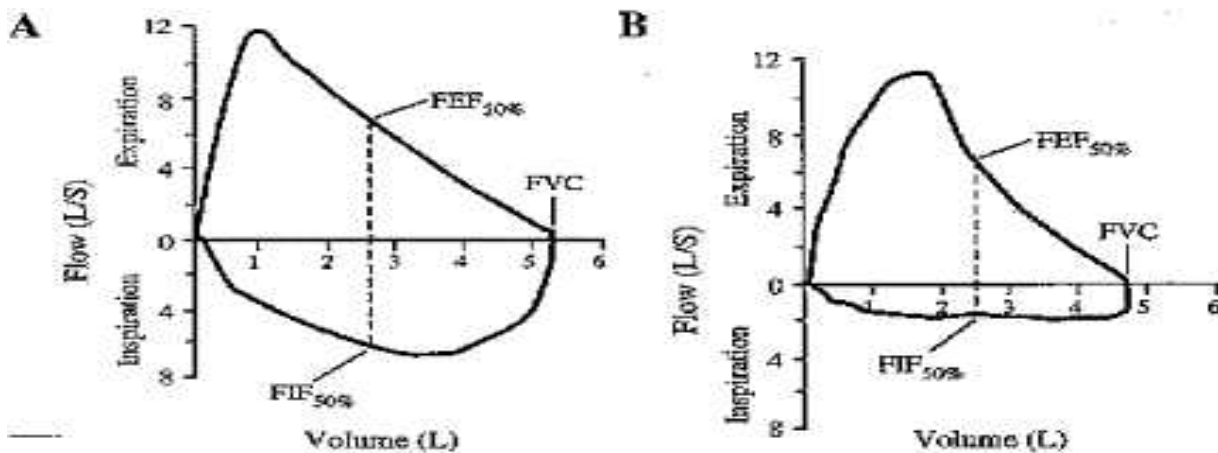


Figure 2.2

Flow-volume loop in a normal patient (A) and in a patient with extrathoracic airway obstruction(B). Note the blunting of the inspiratory portion in the patient with extrathoracic airway obstruction. Illustration taken from Parker & Berg (2002).

Although inspiratory blunting is common in patients with Patients with Paradoxical Vocal Fold Dysfunction, it is not specific for VCD and may be produced by most types of extra thoracic airway obstruction. Pulmonary function testing in patients with only PVFD reveals normal total lung capacity without evidence of lung hyperinflation during acute attacks (Morris , Deal, Bean, Grbach & Morgan, 1999). Chest x-rays also show no evidence of lung hyperinflation This is in contrast to asthmatics. Other PFT parameters including FEF50/FIF50, FEV1/FVC, and S Raw (specific airway resistance) are shown to have a high sensitivity and specificity for detecting extra thoracic airway obstruction but again are not specific for PVFD (Patterson Schatz, & Horton , 1974). Nonetheless, PFT's should be performed on all patients in whom PVFD is suspected (Morris et al, 1999) as they are useful in distinguishing PVFD from its most common masquerader, asthma.

The diagnosis of PVFD is difficult due to its episodic nature and presentation. Some authors have considered PVFD a diagnosis of exclusion (Gaskill, 2007). This observation is turning out not to be the case, as making the diagnosis is currently an active process involving clearly defined criteria. While other types of vocal cord disease must still be excluded, PVFD itself has specific distinguishing physical characteristics. To make the diagnosis, direct visualization of the cords must be obtained while patients are experiencing their symptoms. Because their symptoms are often unpredictable, bronco provocative, irritant associated, and exercise stress tests (Wood Jafek, & Cherniack 1986) have been used to induce symptoms. Hypnotic suggestion has also been used to induce symptoms in patients. Laryngoscopy performed with a flexible fiber optic laryngoscope can be performed in the office and has shown good results with few complications and minimal patient discomfort (Wood Jafek, & Cherniack 1986). Current criteria for diagnosis in adults includes direct visualization of vocal cord adduction with posterior “chinking” during either inspiration, early expiration, or both inspiration and expiration while the patient is experiencing symptoms (Newman et al,1994) . Powell et al have shown that a majority of juveniles with PVFD exhibit PVCMD during normal quiet respiration and that they do not require

provocative testing. However, if the patient is asymptomatic, negative laryngoscopic findings due not exclude the diagnosis.

Vocal cord adduction occurring during only the last half of expiration is not pathologic and has been shown to be a normal variant (Wood Jafek, & Cherniack 1986) While inspiratory vocal cord adduction is always pathologic, vocal cord adduction during only expiration is a normal variant in asthmatics and is an adaptation to their obstructive disease (Collett, Brancatisano, & Engel,1983). This should not be confused with PVFD. Careful observation must also be made to not confuse PVFD with vocal cord motion produced by a laryngoscope induced gag reflex. This is reportedly prevented by exercising good technique (Wood Jafek, & Cherniack 1986) Nasal endoscopy has produced more accurate results than oral endoscopy, as the latter technique can distort the appearance of the epiglottic position and may interfere with the interpretation of the endoscopic data. For best treatment outcome at first the cause of the Patients with Paradoxical Vocal Fold Dysfunction must be elicited. With PVFD secondary to pre existing organic disease states such as brainstem compression, encephalopathy, stroke, ALS, myasthenia gravis, GERD, etc. the underlying disorder should be treated appropriately. A history of previous exposure to irritants should also be obtained. With no obvious source of causative organic disease, acute treatment is henceforth symptomatic. Heliox therapy is recommended for immediate relief of respiratory distress in most patients with PVFD (Murray et al). Heliox is a gaseous mixture of oxygen and helium often found in ratios of 20/80 and 30/70 respectively. Because this mixture is less dense than air, inhalation reduces turbulence in the airway and eliminates respiratory noise. This reduces anxiety that is often the predisposing factor to many attacks (Gavin,Wamboldt, Brugman, Roesler, & Wamboldt, 1998). It provides short-term relief of dyspnea to patients with both PVFD and other forms of upper airway obstructive disease. Heliox treatment is however not effective for relief of symptoms due to asthma or other lower airway disease (Weir, 1997).

Optimum management of PVFD requires the identification of factors (underlying medical problems and psycho-logical factors) and treating these optimally. In addition teaching patients various laryngeal exercises is a task typically conducted by speech and language therapists in the USA and/or respiratory therapists in Europe. Understanding the complex nature of the pathophysiology of VCD and laryngeal dysfunction underscores the need for a multidisciplinary

approach. Physicians who may include pulmonologists, general internists, otolaryngologists, allergists, occupational medicine specialists and/or psychiatrists, speech therapists, psychosocial medicine, rehabilitation medicine and vocational counselors may all play useful roles in treating these patients.

Speech and language therapists or respiratory therapists provide instruction in techniques of throat relaxation, cough suppression and throat clearing suppression and play a central role in the management and follow-up of Patients with Paradoxical Vocal Fold Dysfunction. Speech and language therapists or respiratory therapists can coach the patient during controlled irritant challenges with a provocative agent to bring out PVFD/VCD symptoms, on how to control their laryngeal response or how to abort an acute attack. By learning to detect increased tension, the patient can implement easier breathing behaviors before an acute PVFD episode occurs. Brugman, & Simons (1998). The relaxed-throat breathing technique consists of a few simple steps that focus attention away from the larynx and emphasize control of diaphragmatic breathing or lower chest wall expansion during inhalation. suggest that the patient should be taught to focus on exhalation, thereby lessening the patient's tendency to hold his or her breath and then struggle to inhalation and then struggle to inhale. Instruct the patient to count silently while exhaling, gradually increasing the count to facilitate exhaling to a lung volume around resting exhalatory level. Exhaling to an appropriate lung volume establishes pressure-volume relationships that are conducive to optimal respiratory patterns.

Input from psychologists and/or psychiatrists regarding evidence of conversion, panic, anxiety, affective, personality or post-traumatic stress disorders and patient education and reassurance help to reduce anxiety and are extremely important in managing these patients. In addition, follow-up with supportive counseling and the teaching of relaxation and/or biofeedback techniques may also be beneficial. Clinicians should discontinue unnecessary medications, such as bronchodilators and steroids, if coexistent asthma has been ruled out. Treatment for associated GERD disease and/or rhinosinusitis may reduce symptoms.

The long-term outcome of patients with Patients with Paradoxical Vocal Fold Dysfunction is unknown as most of the literature consists of case reports and retrospective studies.

In contrast to long-term outcomes, the initial response to standard treatment such as speech therapy and psychotherapy is reported to be good (Mobeireek, Alhamad Al-Subaei, & Alzeer, 1995). Link, Stillwell, Jensen, & Laskowski (1998) recently conducted an interview with 15 patients all diagnosed with PVFD who had received prior therapy. The interview took place an average of 20 months (range 11-62) after initial diagnosis of the disorder. The results showed that most responded well with improved functioning and fewer symptoms after intervention. Others studies indicate that a good prognosis relies upon a positive reaction to the initial explanation of the diagnosis (Goldman & Muers 1991), placing a heavier emphasis on patient education as a means to therapy.

Speech and Language therapy is comparatively new profession in Bangladesh so evidence of practicing in this condition has not been revealed yet. So these studies have given to this research lots of ideas about what approaches should be followed by specialists for fruitful outcome in management of paradoxical vocal fold dysfunction.

1.3 Rationale

In Bangladesh Speech & Language Therapy is a new profession. It is not enough promoted countrywide either towards other health professionals or general people. Though SLT has significant and unique role in management of PVFD, it is still beyond question whether the current referral from other specialists to speech therapist is adequate or not; and what management procedure is being practiced in Bangladesh for the condition Paradoxical vocal fold dysfunction. By this study it will be possible to determine whether the current practice in management of paradoxical vocal fold dysfunction is satisfactory or not. Moreover, needed necessary changes can be marked to enhance service quality. In future further research on the tertiary level of the topic will be helpful for all to get an overall treatment approaches that are practicing in Bangladesh. Moreover the research should be helpful to promote the SLT profession with evidence based practice. By satisfying objectives of the study several outcomes can be found which are as follows:

Firstly, by exploring the level of knowledge in management of paradoxical vocal fold dysfunction (PVFD) of the respiratory specialist, ENT specialist and speech & language therapist This will also be helpful for them to get an idea about whether it is needed to educate or aware

the other professional or not. So the research should be a source of knowledge about such quires though it is a small part.

Secondly, by conducting the study researcher aimed to know the specialists' current practice pattern and their preference that might be helpful to encourage co-operation between health professionals' for the benefit of patients. In this way multi-disciplinary treatment is more likely to be achieved. Specialists has established their practice, so, as it is important for SLTs to know that what are the treatment approaches that are provided by the specialists or other professionals in besides and/or absence or limited number of them.

Thirdly, by investigating the caseload and referral system practiced by respiratory specialist, ENT specialist, speech & language therapist in management of PVFD in Bangladesh this study will help to know the case loads of professionals who take part in management of PVFD and necessary steps could be taken by analyzing gap of knowledge for increase the number of PVFD referral for SLT service.

1.4 Operational definition

1.4.1. Current practice

According to Lewith (2005) Current means belonging to the present time; happening or being used or done now. Practice means the actual application or use of an idea, belief, or method, as opposed to theories.

Here in this study, current practice means recent method or application of the theory or belief. In this study current practice means not only the actions or methods in management of PVFD but also the idea or knowledge about the condition.

1.4.2. Management

According Hicks(1999) to The process of dealing with or controlling things or people is called management. In this study management refers to all the activities by specialist in treatment of PVFD which includes diagnosis, treatment, follow up and referral.

1.4.3. Paradoxical vocal fold dysfunction

Paradoxical Vocal Fold Dysfunction (PVFD) is a respiratory condition characterized by abnormal closure of the vocal cords during inspiration, expiration or both. During normal respiration the vocal cords move away from the midline during inspiration and slightly back towards the midline during expiration. However, in symptomatic patients with VCD, the vocal cords move paradoxically toward the midline during inspiration or excessively so during expiration, resulting in airflow obstruction. (Mobeireek, Alhamad Al-Subaei, & Alzeer, 1995)

1.5 Research question and objectives of the study

The purpose of this study is to investigate the current practice in management of paradoxical vocal fold dysfunction (PVFD) in Bangladesh.

1.5. 1. Specific objectives

1. To explore the level of knowledge in management of paradoxical vocal fold dysfunction (PVFD) of the respiratory specialist, ENT specialist and speech & language therapist.
2. To investigate the common practice (Diagnosis, treatment and management, multidisciplinary approach.) in management the Paradoxical Vocal Fold Dysfunction.
3. To investigate the caseload and referral system practiced by respiratory specialist, ENT specialist, speech & language therapist in management of PVFD in Bangladesh.

2.1 Study Design

This study aims at finding the current practice of paradoxical vocal fold dysfunction (PVFD) in Bangladesh. In this study the questionnaire explores the understanding of the professionals (respiratory specialist, ENT specialists, SLT) knowledge about the condition named paradoxical vocal fold dysfunction and the current diagnostic, management, referral practice and their case load situation. To do this, a qualitative design was selected. According to Hick's (2000), "qualitative techniques can be very usefully employed to describe phenomena of hospitals or health care centre or their practices and/or practitioner etc." This design was used to find out in-depth information such as professionals' facial expressions for example confused or confident. After looking into a variety of different methods (such as- ethnography, grounded theory, historical, case study) researches decided that the use of phenomenological design to be most appropriate for this study because a qualitative design is exploratory by nature and allows the researcher the to gain insights into another person's views, opinions, feelings and beliefs on the topic at hand and phenomenological design was selected as it is the best approach that explores people's experiences (Depoy & Gitlin, 1998). This study design suits the study most because the aim of the study was to explore the understanding of the professionals (respiratory specialist, ENT specialists, SLT) about the condition named paradoxical vocal fold dysfunction (PVFD) and current practice in management of PVFD.

2.2 Study population

The participants of the study were respiratory specialists, ENT specialists and speech & language therapist.

2.3 Sampling**2.3.1 Study Population and Participants**

Respiratory specialist, ENT specialists, Speech and language therapists.

2.3.2 Sample size

43 participants have been selected as the sample of the study that includes respiratory specialist, ENT specialist and SLT. A small number of potential study participants are appropriate for qualitative methodology that shows a representative picture of the study. According to Depoy & Gitlin (1998) 10 participants is sufficient in propelling a representative sample for such a study. As in this study 3 different professionals had been included so more than 10 participants from each profession could make it representative. So 15 respiratory specialists, 13 ENT specialists and 15 Speech and language therapist had been taken as participants. The small number of participants provides a representative picture of the responsible professionals for management of PVFD.

2.3.3 Sampling Procedure

All the participants were from Dhaka division because these participants are more available and they were registered professionals who work around the country. Moreover considering study benefit (e.g. transport, time, cost). On this regard purposive sampling method has been used for the study because purposive sampling is based on pre-defined criteria. As a result samples were selected by considering pre-defined inclusion criteria. According to Wallen and Frankel (2000), “Qualitative research design most often uses purposive sampling method than random sampling strategies. Purposive sampling strategies are designed to enhance understanding of selected individuals or groups’ experiences or to develop theories and concepts. So it facilitates to select actual participants represent the event according to study.

2.4 Sample Selection

According to the inclusion and exclusion criteria and those are given below.

2.4.1 Inclusion Criteria

- i. MBBS doctors who have post graduation degree regarding respiratory disease condition and ENT specialists having at least 2 years clinical experience.
- ii. Graduate SLTs having 1 years of experience.
- iii. Participants who are willing to take part in this study.

2.4.1 Exclusion Criteria

- i. MBBS physicians but doesn't have any subsequent full completed Post graduation degree regarding respiratory disease condition and ENT specialists or who are not on clinical practice.
- ii. Undergraduate SLT or graduate but doesn't have 1 year experience.
- iii. Participants who are not willing to take part in this study.

2.5. Data Collection

2.5.1. Data collection tools

According to Hicks (1999) "the researcher is the main 'tool' that is needed to collect data in a qualitative study". In this study the researcher collected all the data without any assistants, a structured questionnaire with both close and open-ended was used for this study. Open-ended questioners allowed for more individual answers or responses which are exactly what is needed in this research. And the close ended questions had been asked to facilitate open ended questions. In the case of the study a structured questionnaire was helpful for the researcher as it allowed the researcher to find out answers specially related to research objectives. Face-to-face interview was conducted because "Interviews conducted face to face is more innovate allowing the interview to interact directly and develop rapport with the interview" (Bailey, 1997). Physical instruments for the interview such as- pen, ink-pad, audio recorder, tape recorder was used to notes others important things such as participants facial expression or emotion were noted on the survey during interview time. A consent form was signed before starting the interview where participants were given an explanation of the confidentiality and anonymity of the study as well as a clear understanding of the purpose of the study.

2.9.2. Data collection procedure

At first the investigators collected the permission letter from the BHPI of CRP. and then phone numbers and address of all the participants were collected . Then the participants were informed about the study and described the purpose of the study to take the permission from the participants face to face. Only willing participants took part in the study in comfortable environment. Questionnaires were based on investigating the current practice of paradoxical

vocal fold dysfunction (PVFD) in Bangladesh. Interview was conducted in English as all the participants were professional and they preferred to answer in English. It took 15-20 minutes for each interview. In this study there was conducted face to face interview. According to Baily (1997), “Interview conducted face to face is more innovative allowing the interviewer to interact directly and develop rapport with the interviewee”. Through face to face interview the researcher can develop rapport with the interviewee.” Building rapport with the participant is very much essential in this research process. During interview session observation method has also been used to read non verbal cues such as participant’s appearance and manner indicate their level of understanding.

2.6 Field Test

A field test was conducted with four participants. Before beginning the final data collection, it was very necessary to carry field test that help to conduct the study to refine the questionnaire. During the interview, participants were informed about the aim and objective of the study. From the field test it was possible to understand in which part most of the participants can face difficulty. The answer that comes out from these selected questions that helped the researcher to modify the questions where necessary. This was very helpful to remove those questions which gave overlapping information and to determine time limit. These things also help to structure the questionnaire.

2.7 Data Analysis

Obtained data was analyzed through content analysis. It is a procedure by which the data were categorized through classification, summarization and tabulation. In this study the field notes were systematically organized; transcription of interviews and other associated materials was made. The information unit was identified and coded the data into broad categories as dictated by the research question. The coded major information was identified from each interview and finally analyzed the data which began by analyzing text from the categorized data and coded themes.

2.8 Ethical Consideration

The research proposal was submitted to the ethics committee at BHPI which was returned with no concerns. Then it was applied for official permission for study from head of the Speech and Language Therapy Department. The ethical consideration ensured by an informed consent letter to the participant. Consent obtained by provide each participant a clear description of the study purpose, the procedures involved in the study and also informed them that if they wish they can withdraw themselves anytime from the study. The codename was used to separate the interview transcripts from each other. Participants were well informed that their information might be published anywhere in the research project, thus maintain confidentiality. The field notes was not shared and discussed with others. The researcher elucidated the role of the participants in the study and ensured that it will not cause any harm.

The total participants of the study were 43 professionals among them 15 were respiratory specialist, 13 ENT specialists, and 15 Speech and language therapist. All of them are qualified professionals.

3.1 Theme 1: Knowledge about the presentation and management of PVFD.

3.1.1 Code 1: Knowledge about the presentation of the condition

3.1.2 Code 2: Knowledge about the diagnosis of PVFD

3.1.3 Code 3: Knowledge about the treatment of PVFD

3.2 Theme 2: Knowledge about the role of different professionals in MDT approach and their availability.

3.2.1 Code1: Perception towards MDT approach understanding of different professionals' role regarding PVFD.

3.2.2 Code 2: Differential idea towards SLT role in management of PVFD

3.2.3 Code3: Knowledge about the of speech and language therapy service availability.

3.3 Theme 3: Caseload of different specialist (ENT specialist, Respiratory Specialist, Speech and Language therapist).

3.3.1 Code 1: Caseload of ENT

3.3.2 Code 2: Caseload of Respiratory Specialists

3.3.3 Code 3: Caseload of SLT

3.4 Theme 4: Current referral system practiced by specialist (respiratory specialist, ENT, SLT) in management of PVFD in Bangladesh.

3.4.1. Code 1: Referral system and cause

3.4.2. Code 2: Professionals included in referral system

3.5 Theme 5: Current common practice in management of PVFD by specialist.

3.5.1. Code 1: Described diagnostic procedure used by specialists.

3.5.2. Code 2: Described treatment procedure used by specialists.

3.5.3. Code 3: Described MDT currently used approach used by specialists.

3.1 Theme 1: Knowledge about the presentation and management of PVFD.

3.1.1 Discussion of Code 1 : Knowledge about the presentation of the condition

From the results of the study it appears that the majority of the participants claims that they know about the presentation of the condition but they are expressing various understanding of the condition where some of them does not support literature and indicates poor understanding of the condition. 39 of the participants among 43 claimed that they know about the condition. 10 of the participants reported, *“unilateral/ partial/ bilateral vocal cord palsy which neurogenic, myopathic, vocal papilloma, nodule”* which represents the lack of knowledge about the condition. These are the differential diagnosis of the condition that professionals think to be the condition itself and it resembles the possibility of misdiagnosis of the condition.” 9 of them claimed that they cannot remember due to lack of practice. 8 of the participants reported it to be a condition where they can see vocal wheezing not chest wheezing in asthma. They reported, *“Unusual sharp vocal wheezing not chest wheezing”* but they could not describe the condition further, which demonstrates low understanding of the condition. 7 of them reported that, *“it is vocal cord adduction and vocal wheezing during respiration causes from psychogenic cause but no pathogens.”* which resembles a better understanding about the presentation of the condition. With this information 1 of them added information that, *“female and specially teens are mostly affected and nasal breathing is better than oral in this condition”*. 2 of the participants told *“it is psychogenic, no pathogen but cannot talk.”* That actually means conversion dysphonia. 2 of the participants told, *“abnormal vocal cord movement causes into pitch break called dysphonia”*. that these resembles that 4 of the specialists identified it to be conversion dysphonia and the reported that, Totally this different condition is not a differential diagnosis either. One of the respiratory physicians claimed that, *“it is the condition of recurrent laryngeal nerve compression resulting in aphasia.”* Which is completely irrelevant and the information is not clinically right. 7 of the participants told it to be *“abnormal vocal cord movement”* but cannot explain the condition,

which resembles poor knowledge about the condition. 1 of them defined it to be “*asthma like feature but not asthma.*” This shows a little understanding about the presentation of the condition. 1 of them shows clear idea about the condition of them reported that, “*it is vocal cord adduction or inadequate opening during respiration but no pathogens.*” which resembles a better understanding about the presentation of the condition. Along with this, 1 of them claimed, “*it should be identified in collaboration of SLT whether it is anatomic or functional and if it is functional voice therapy is best option to treat.*” This represents clear idea about the presentation of the disease. Some of the Speech and Language therapist also consider it as dysphonia, which shows that they are unknown of the condition. Some of them also reported they could not remember the condition due to lack of practice. Though most of the participants claims to know about the presentation total 5 of them shows comprehensive idea about the presentation.

3.1.2 Discussion of Code 2: Knowledge about the diagnosis of PVFD

13 among 15 of the respiratory specialist says that they go through fiber optic bronchoscope and refer for fiber optic laryngoscope (FOL) to determine the condition where their aim is to see whether there is any pathogen or not. 17 among overall 43 participants suggest for FOL. Literature shows that FOL is a gold standard to determine PVFD. But unfortunately most of the respiratory specialist and ENT specialist do not demonstrate the understanding of FOL view of PVFD rather they just go for it to eliminate differential diagnosis like vocal nodule, papilloma or other pathogens. Most of the SLT also demonstrate the same understanding, as they are concern about other voice disorder they refer for FOL to eliminate vocal pathogen but not for visualizing typical paradoxical movement of Vocal cord. Only one of the respiratory specialists demonstrated the idea of posterior glottic chink during inhalation or exhalation is the expected FOL view for PVFD. Literature shows that this is the exact finding of PVFD to diagnose the disease everyone should know otherwise this condition could be easily misdiagnosed. Like one of the participants claimed that the condition to be psychogenic in women and they often do this for blackmailing. If poor understanding of the condition and its diagnosis persists, this kind of belief in professionals can increase. A lot of respiratory specialists (8 out of 15) prefer multiple diagnostic criteria to come to the confirmation diagnosis by eliminating differential diagnosis. 8 of them have said, “*Auscultation, spirometry, IgE test, 6 min walk test, skin pricing allergy test,*

optional FOL are the diagnostic criteria we use.” Auscultation helps determine the source of wheezing which can give an indication. Skin pricking allergy test helps to identify allergy asthma, allergen-specific immunoglobulin E (IgE) blood test represent if the blood antigen is responsible for asthma or not, 6 min walk test helps to identify exercise-induced asthma. Spirometry is good to see the Lungs vital capacity and more. All are these diagnostic criteria is being practiced is very much useful to eliminate the differential diagnosis of PVFD. For diagnosing PVFD Spirometry flow volume loop both inspiratory and expiratory is an essential indicator and FOL is the confirmation diagnostic criteria. However, in Bangladesh inspiratory flow volume loop is not tested reported the specialists. . Therefore, PVFD often remains beyond attention. 4 among 43 participants claimed the diagnostic criteria to be *clinical investigation* but could not explain further. This shows the lack of knowledge in diagnostic criteria. 13 of among 15 Speech and Language Therapists uses case history, specific assessment and for confirmation diagnosis, they refer to the ENT for FOL and further more investigation that is clinical. But only elimination of pathogens does not indicate PVFD. Same as respiratory specialist and ENT specialist they also need they be more clear what they are looking for in those investigations. Only 2 SLT among 15 focused on breathing pattern and quality of voice, which is an important concern of speech and language therapists. They also shared that posterior glottic chink during in FOL resembles the PVFD, but during cough, vocal fold works properly. Both of them have also mentioned spirometry to be an effective diagnostic procedure. Therefore, only the few of them could represent the specific or gold standard of diagnostic idea. However, none of them showed the idea of /s/, /z/ ratio that is a very important and effective diagnostic criterion for SLT. Participants shows different idea about diagnosis and most of them use wide range of investigation but none of them accurate idea about diagnosis.

3.1.3 Discussion of Code 3: Knowledge about the treatment of PVFD

7 among 43 of the participants claimed that *they have no idea about the treatment* and 2 said that they refer senior respiratory specialist for better understanding. 2 of them said that they prefer SLT but as they cannot access them so, they do counseling themselves. But most of them go for medication, nebulization, and steam inhalation. And 9 out of 43 participants prefer “is effective for treatment outcome”. 4 of them prefers psychotherapy for this condition because 4 of them have identified this condition to be conversion dysphonia (as shown in 3.1.2). 7 among 28

specialists including respiratory specialist and ENT specialist said, “ steam inhalation, nebulizing and counseling is all what we prefer” As some of them believe it to be organic cause like nodule, polyp or papilloma 2 of even said surgery as the treatment procedure. One of the respiratory specialists defined the condition to be aphasia and that is why he prefers SLT intervention. Where 15 out of 15 SLT prefers ENT for diagnosis and treatment if there is pathogen but functional problem they prefer vocal hygiene and possible voice therapy. Only 2 of 15 SLTs had specified it as breathing relaxation, phonation, whispering like techniques. Vocal hygiene program is a universal intervention technique for voice therapist and it benefits everyone whether anyone has voice disorder or not. Therefore, it automatically benefits clients but so far if it is about specific PVFD treatment SLTs has to improve their knowledge and practice about the condition. As effective treatment procedure though speech and language therapy has been accepted by one fourth of the specialist but no referral is made. None of the speech and language therapist were able to show idea of treatment approach either.

3.2 Theme 2: Knowledge about the role of different professionals in MDT approach and their availability.

3.2.1 Discussion of Code 1: Perception towards MDT approach understanding of different professionals’ role regarding PVFD.

All the 43 specialists support MDT approach in management of this condition. But the professionals they think to be important in MDT differ from each other point of view. Overall, 28 professional prefers ENT specialist. As they consider ENT specialist to be the most important professional for confirmation diagnosis. Another general believe has been seen, which is ENT specialist are the professionals who works with vocal cord function. A large number of specialists think s it to be neurogenic origin so neurologist has been suggested by 7 participants whether it is for treatment or management. 26 out of 43 have recommended respiratory medicine specialists because PVFD has asthma like manifestation. 2 of the respiratory specialists also think that thoracic surgeon to be important but none of them could clear the reason. 13 specialists, especially ENTs prefer psychologist for counseling to remove trigger cause and some prefers psychotherapy for the same reason and treatment. 11 of specialist preferred voice therapy for treatment purpose but among them 5 were SLTs themselves. They have also mentioned it to be breathing therapy or breathing relaxation. 1 of them told it can also be done by chest

physiotherapist. Several professional role had been claimed and psychologist got preference but instead of having unique role speech and language therapy did not get emphasize.

3.2.2. Discussion of Code2: Differential idea towards SLT role in management of PVFD

Different specialists had shown different idea about SLT service regarding PVFD. 22 among 43 participants told, “*Voice therapy and SLT intervention is necessary* but 13 of them were SLTs themselves”. One third of the other professionals showed awareness of effectiveness of SLT. 6 of them told “*SLT has vital role*” and they extended it to be important “*both in chronic and acute condition.*” 2 of them thought SLT can be helpful in some cases. However, none of them could demonstrate specific reason and way that SLT works with. Where 2 of them told *it is very much useful but don't know how it works.* 11 of them means almost one fourth told that they actually know *nothing about SLT role.* 7 of them told *SLT does not have any role.* 1 of them told *SLT only works with speech.* One of them told “breathing relaxation is very much effective but can be done by chest physiotherapist also”. This resembles the idea of SLT intervention and the alternative service, as many of them are not aware of availability of SLT service in Bangladesh. Here 13 of the 15 SLTs says, “*Assessment, possible Voice therapy*” to be the intervention protocol but none of them specified which intervention protocols should be used. only one of the told whisper voice, phonation to be effective which do not show any evidence to be effective. Total 11 of the specialists claimed that they are not concern about SLT role in this condition, 7 of them claimed that SLT does not have any role. One of them told chest physiotherapist can do the role of SLT. But the speech and language therapist didn't demonstrate their role and treatment protocol very well .Very few of participants mentioned SLT role and among them only one demonstrated that SLT is important for breathing relaxation where most of the SLT is unknown to their role.

3.2.3. Discussion of Code 3: Knowledge about the of speech and language therapy service availability.

Among 27 participants who were respiratory specialist and ENT , 13 told they know that SLT service is available in Bangladesh and 15 told they don't know. They know various organization like *CRP, SAHIC ,PROYAS.* According to SLT association there are 63 qualified SLTs working in various organization. Moreover, not all of the above-mentioned organization works with voice

therapy rather they work in school settings. 4 of the specialists also mentioned they *didn't know voice therapy is included in SLT service*. It resembled that being unknown about SLT service were not the only cause that hindered referral rather lack of knowledge about SLT work dimension and referral to the wrong place is also a reason. Almost half of the participant excluding SLTs knows the availability of SLT in Bangladesh. But most of them either don't know SLT role.

3.3 Theme 3: Caseload of different specialist (ENT specialist, Respiratory Specialist, Speech and Language therapist).

3.3.1. Discussion of Code 1: Caseload of ENT

Only 4 among 13 of the ENT specialists said that they did not have any patient ever. They mentioned it to be “Nill.” 3 of them told “Rarely I get.” 2 of them told, “I get 1 or 2 every month.” but some of them actually represents this condition to be dysphonia results from psychogenic reason. 3 of them told they had got 1 patient ever. This represents ENT specialists get very few patients of this condition. The reason of getting fewer patients is not only that this condition is unavailable but also for poor understanding of the presentation. Most of the ENT specialists told the condition to be psychogenic dysphonia and some of them told it to be organic dysfunction. For these it doesn't show the representative amount of case load. Though 2 of the ENT specialists who demonstrated comprehensive idea told that they get 1 or 2 patient every month. This means they get 12 to 24 patients yearly.

3.3.2. Discussion of Code 2: Caseload of Respiratory Specialists

Same as ENT 5 of respiratory specialists also told this condition to be “Nill.” And 5 of them told “Rarely I get.” But not all of them show understanding of this condition. Rather some of them said the same but they understand the condition to be vocal cord paralysis Two of the respiratory specialist who told, “I get 1 or 2 every month.” actually shows clear idea about the condition from presentation to management.. 1 of them told “*I get 3 or 4 yearly.*” They also show good understanding of the condition. 2 of them told, “*I get a lot.*” However, almost all of them show different understanding of the condition. Some of them said it to be vocal cord paralysis.

3.3.3. Discussion of Code 3: Caseload of SLT

12 among 15 of the SLT told it to be *Nil*, both who shows understanding of this condition and who shows differential idea about the condition. “*I have got 2/3 patient in total.*” Said one of the SLT and two of them told, “*I have got one patient.*” but continuation of treatment was not good at any of these case. Thy SLT told that they refer to ENT specialist for confirmation diagnosis but usually patient does not come back. Many of them told they get a lot of patient but most of them think this condition to be other voice disorders like dysphonia or vocal cord nodule or paralysis.

Though 2 of the ENT specialists and 2 of the respiratory specialists who demonstrated comprehensive idea told that they get 1 or 2 patient every month. This means they get 12 to 24 patients yearly and total 48 to 96 patients yearly. But according to SLTs they have never get any referral. This hinders SLT to get the client and practice their professional knowledge. So, this condition is being out of concern thus referral and treatment chain is being broken down.

3.4 Theme 4: Current referral system practiced by specialist (respiratory specialist, ENT, SLT) in management of PVFD in Bangladesh.

3.4.1 Discussion of Code 1: Referral system and cause

37 among 43 participants told that they refer to other professionals.

Though 37 of the participants told that they know what is PVFD only 15 shows the understanding in reality. Among them 7 gets patient. Some of them told they get patient very rare but 4 of them told that they get 1 or 2 patient every month. This means they get 12 to 24 patients yearly. And 11 of them thought SLT But according to SLTs they have never get any referral. Though they have considered chest physiotherapy as compensatory treatment but they actually have not referred yet. But the entire professional told they refer to ENT and ENT specialist also agrees that they get referral, especially from the respiratory medicine specialist for FOL. Moreover respiratory medicine specialist also gets referral for treatment purpose. 13 of the specialists refer to the psychologist for psychotherapy which is almost 1/3rd of the professionals.

Though one fourth of the specialist thinks SLT treatment to be important but do not refer but one third of the referral goes to psychologist though evidence shows psychotherapy can be helpful to remove trigger cause where SLT is effective for long term management.

3.4.2 Discussion of Code 2: Professionals included in referral system

26 including both respiratory specialist and SLT told they refer to ENT because of confirmation diagnosis and treatment and ENT specialists agreed it to be right. The professional who thinks it to be organic origin also refers to ENT surgeon. 13 of them also refer to psychologist. 11 of them think SLT to be important. However, SLT have not got any referral yet. They also refer to neurologist.

3.5 Theme 5: Current common practice in management of PVFD by specialist.

3.5.1 Described diagnostic procedure used by specialists.

Almost all of the respiratory specialist says that they go through *fiber optic bronchoscope* and refer for *fiber optic laryngoscope (FOL)* to determine the condition where their aim is to see whether there is any pathogen or not. Literature shows that FOL is a gold standard to determine PVFD. But unfortunately most of the respiratory specialist do not demonstrate the understanding of FOL view of PVFD rather they just go for it to eliminate differential diagnosis like vocal nodule, papilloma or other pathogens. Most of the SLT also demonstrate the same understanding, as they are concerned about other voice disorder. Only one of the respiratory specialists demonstrated the idea of posterior glottic chink during inhalation or exhalation is the expected FOL view for PVFD. Literature shows that this is the exact finding of PVFD to diagnose the disease everyone should know otherwise this condition could be easily misdiagnosed. Like one of the participants claimed that the condition to be *psychogenic in women and they often do this for blackmailing*. If poor understanding of the condition and its diagnosis persists, this kind of belief in professionals can increase. ENT specialist also prefers *FOL along with indirect laryngoscopy* and they demonstrate same understanding as the respiratory specialist. A lot of respiratory specialist prefers multiple diagnostic criteria to come to the confirmation diagnosis by eliminating differential diagnosis. They have said, "*Auscultation, spirometry, IgE test, 6 min walk test, skin pricking allergy test, optional FOL are the diagnostic criteria we use.*" Auscultation helps determine the source of wheezing which can give an indication. Skin pricking allergy test helps to identify allergy asthma, IgE blood test represents if the blood antigen is responsible for asthma or not, 6 min walk test helps to identify exercise-induced asthma. Spirometry is good to see the Lungs vital capacity and more. All these diagnostic criteria is

being practiced is very much useful to eliminate the differential diagnosis of PVFD. For diagnosing PVFD Spirometry flow volume loop both inspiratory and expiratory is an essential indicator and FOL is the confirmation diagnostic criteria. However, in Bangladesh inspiratory flow volume loop is not tested. Therefore, PVFD often remains beyond attention. A lot of specialist claimed the diagnostic criteria to be clinical investigation but could not explain further. This shows the lack of knowledge in diagnostic criteria. Speech and Language Therapists uses case history, specific assessment and for confirmation diagnosis, they refer to the ENT for FOL and further more investigation that is clinical. Only elimination of pathogens does not indicate PVFD. But same as respiratory specialist and ENT specialist they also need they be more clear what they are looking for in those investigations. Very few of them focused on breathing pattern and quality of voice, which is an important concern of speech and language therapists. They also shared that posterior glottic chink during in FOL resembles the PVFD, but during cough, vocal fold works properly. They have also mentioned spirometry to be an effective diagnostic procedure. Therefore, only the few of them could represent the appropriate diagnostic idea. However, none of them showed the idea of /s/, /z/ ratio that is a very important and effective diagnostic criterion for SLT.

3.5.2 Described treatment procedure used by specialists.

Some of the respiratory specialist claimed that they have no idea about the treatment and some said that they refer senior respiratory specialist for better understanding. Some of them said that they prefer SLT but as they cannot access them so, they do counseling themselves. But most of them go for medication, nebulization, and steam inhalation. As many of them believe it to be organic cause like nodule, polyp or papilloma they even said surgery as the treatment procedure. ENT specialists also show same kind of idea but many of them prefers psychotherapy for this condition where a lot of them have identified this condition to be conversion dysphonia. One of the respiratory specialists defined the condition to be aphasia and that is why he prefers SLT intervention. Where SLT prefers ENT, treatment if there is pathogen and for functional problem they prefer vocal hygiene and possible voice therapy. Very few of them have specified it as breathing relaxation, phonation, whispering like techniques. Vocal hygiene program is a universal intervention technique for voice therapist and it benefits everyone whether anyone has

voice disorder or not. Therefore, it automatically benefits clients but so far if it is about specific PVFD treatment SLTs has to improve their knowledge and practice about the condition.

3.5.3 Described MDT currently used approach used by specialists.

Both respiratory specialist and SLT told they refer to ENT because of confirmation diagnosis and treatment and ENT specialists agreed it to be right. The professional who things it to be organic origin also refers to ENT surgeon. They also refer to psychologist. However, SLT have not get any referral yet. They also refer to neurologist .Though 27 of them told that they know what is PVFD only 15 shows the understanding in reality. Among them 9 gets patients. Some of them told they get patient very rare but 5 of them told that they get 1 or 2 patient every month. This means they get almost 12 to 24 patients yearly. But all the professional told they refer to ENT and ENT specialist also agree that they get referral, specially from the respiratory medicine specialist for FOL. A wide range of specialist refers to the psychologist. However, they have considered chest physiotherapy as compensatory treatment but they actually have not referred yet. So, there is collaboration among ENT, respiratory specialist and psychologist is being currently practiced. However, for SLT they don't have any collaboration rather it is just a one way referral.

3.6 Findings

Though 39 of the participants among 43 claimed that they know about the condition. But only very few overall 5 of them were able to demonstrate comprehensive idea about presentation, diagnosis and treatment. Most of them conflict it with differential diagnosis and some of them make diagnosis that doesn't have clinical evidence. Though due to lack of knowledge represent number of client has not been demonstrated but among the specialists who represents comprehensive idea about the condition overall get 50 to 100 client yearly in total. Instead of acknowledging SLT service to be effective referral is not satisfactory. Specialist still don't follow standard diagnosis protocol though all the settings are available in Bangladesh, more over due to lack of awareness effective MDT approach is not practice followed.

4.1 Limitations of the study

The study is only a qualitative study and purposive sampling used to select the participants for the study, it could have been better if it was possible to make quantitative comparison. In addition, with the kind of in depth information required a small sample size was preferred. Moreover, the participants may not reflect accordingly as they feel inferior to the investigator to show their lack of idea, so, some data could even contains error. The time limitation was a fact here. Although some international literatures has found in this field on the internet accessing this study was not always possible to find the relevant study. Shortage of book the PVFD in the library had a little effect through the study.

5.4 Implication

It will be helpful for the related professionals (Respiratory Specialist, ENT specialist, Speech and Language therapist) to provide better comprehensive service. It will aware about the current knowledge so that we can take necessary steps to promote our quality of service. Speech therapist is the main focus in this study so SLT can give more emphasizes to obtain more knowledge regarding PVFD. Necessary measures including diagnosis, treatment and multidisciplinary team approach can improve regarding this condition.

5.1 Recommendation

Raising awareness about the actual diagnosis and treatment approaches of PVFD among the professionals is recommended. Further research needed on the client satisfaction about the intervention of the PVFD. Also further study or research needed on differential diagnosis of PVFD and on treatment approaches. Further study and research needed on the prevalence of the PVFD. In future the study could be following mixed methodology that will be more specific. After few years the same study can be replicated with upgraded questionnaires to identify the any changes of knowledge for management of PVFD.

5.2 Implication

It will be helpful for the related professionals (Respiratory Specialist, ENT specialist, Speech and Language therapist) to provide better comprehensive service. It will aware about the current knowledge so that we can take necessary steps to promote our quality of service. Speech therapist is the main focus in this study so SLT can give more emphasizes to obtain more knowledge regarding PVFD. Necessary measures including diagnosis, treatment and multidisciplinary team approach can improve regarding this condition.

6.1 Conclusion

Throughout the study various information and perception have come out of the participants that reflect on their practice and understanding of the condition. Which overall represented that very few of the specialist are concern of the condition and their diagnostic procedure is not sufficient. Though they have mentioned about spirometry flow volume loop but none of them is aware of the necessity of inspiratory flow volume loop which can be a great identification. Most of the specialist is unaware of the condition and very few know about the unique SLT role. A significant number of specialists not only misdiagnose but also indentifies other conditions to be PVFD which makes it difficult to assume the representative number of client of this condition. Moreover, the specialists who were demonstrated comprehensive idea and gets patients had never referred any SLT.

When it comes to speech and language therapists though very few of them were able to demonstrated comprehensive knowledge about the condition, they have never got any referral. This also lags them behind in practice of this condition. This highlights shows that more awareness need to rise in professionals and general people about the presentation and responsible professionals for PVFD. This possibly can increase the case load. Thus professionals can work collaboratively and the clients may get help from relevant professionals which would ensure that better service in our county.

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