VOICE AFTER STROKE

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VOICE AFTER STROKE

A Research presented to the

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APPROVAL

We the under signed certify that we have the carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled- **‘‘ Voice After Stroke. ’’**

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DECLARATION

I am Jerina Rimmin Sotota that the work presented here is my own. All sources used have been cited appropriately. Any mistake or inaccuracies are my own. I also want to make sure that any single discussion of the study will not be unsafe to any participants. Any mistake or inaccuracies are my own.

Signature:

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DEDICATION

Dedicated to my .....

Beloved Parents and siblings

Chapter- 1 Introduction

1.1 Introduction

Worldwide, Cerebrovascular Accidents (CVA) is the second leading cause of death and the third leading cause of disability. “Stroke” is also the sudden death of some brain cells due to lack of oxygen when the blood flow is lost by blockage or rupture of an artery to the brain. It is also a leading cause of dementia and depression. (World Health Organization,2016).It affects as many as 5% of the population over 65 years old, and this number is growing annually due to the aging population.(Altman et al., 2007).

According to WHO (2016) shows that Globally,70% of strokes and 87% of both stroke-related deaths occur in low and middle-income countries. The stroke incidence has more increased in over the last four decades.

A Stroke occurs when blood stops flowing to the brain and damaging brain cells. The effects of a Stroke depends on the part of the brain and amount of the damage occurred. Stroke is also called ‘brain attack’. It mainly occurs when the blood flow to an area is cut off and brain cells are deprived of oxygen.(Tai, Tan, & Sun,2014).

Prased, Vibha & Meenakasi (2012) state that the estimated annual incidence of stroke in Pakistan is 250 per 100,000 population which is projected to an estimate of 350,000 new cases every year. According to WHO estimates in 2001,86 % of deaths related to stroke worldwide which is occurred in developing countries (Wasay, Khatri, &Kaul,2014). It is present among the top four leading cause of death in Asian countries and 22-39 % of stroke happens in Asian and that is Hemorrhagic. There is little data on stroke prevalence, the prevalence of stroke in Vietnam 450/100000 and 690/100000 in Thailand. Estimates of the prevalence of stroke in India range from 44 to 843 per 100000 populations (Prased, Vibha&Meenakasi,2012)

A higher burden of risk factor and lack of preventive measures are the main cause of higher risk of death and disability. Elderly populations are particularly vulnerable.83% of stroke-related deaths and 56% of stroke-related daily loss in low- and middle-income countries occurred among people aged 60 years and older.

Hypertension, antihypertensive treatment, alcohol intake previous stroke, and a trial fibrillation are the most commonly known risk factors for stroke. Others risk factor are smoking, diabetes, previous coronary heart disease (CHD), electrocardiogram (ECG), excessive alcohol intake, and family history of Stroke. In urban Sri Lanka, the prevalence of stroke was found to be 10.4 per 1000 persons. (Saha et al., 2018)

In Bangladesh stroke has been ranked as the third leading cause of death after coronary heart disease and infectious disease such as influenza and pneumonia. According to WHO ranks mortality rate to stroke in Bangladesh as a number 84 in the world. The prevalence of stroke in Bangladesh is 0.3 %, although no data on stroke incidence has been recorded. (Islam et al.,2012).

World Health organization (2014) states that the most common symptom of a stroke 0is sudden weakness or numbness of the face, arm or leg, most often on one side of the body. Other symptoms include: confusion, difficulty speaking or understanding speech. The effects of a stroke depend on which part of the brain is injured and how severely it is affected.

Neurological dysphonia are vocal disorders followed by injuries or changes in the nervous system such as Stroke. After Stroke Dysarthria, Aphasia and communication difficulties are occurred. Dysarthria has occurred in 8–30% in a large number of stroke(Urban et al.,2006).Vocal disorders resulting from neurological lesions may be present in cases of dysarthria. The common symptoms are observed in breathing, phonation, articulation, resonance, and prosody difficulties. The voice problem are mostly seen in dysarthria after stroke. Impaired vocal quality, hyper nasality, difficulties in pitch and loudness are seen in dysarthria due to voice problem (Godoy, Brasolotto, Felix, & Fernandes , 2014).

According to Saha et al., (2018) "Stroke imposes a substantial impact on the physical and psychological well- being of both patients and their families.'' Stroke has a great impact on individual's life. But the impact depends on the severity of the patient. Stroke has a significant negative impact psychosocial and social interaction on individuals. This impairment impact upon the individual's ability and quality of life (Brady, Clark, Dickson, Paton & Barbour, 2011).

According to Robert & Sataloff (2013) speech quality would be characterized by a breathy voice quality with diminished loudness and air was stage. Vocal fold paralysis

as a direct result of stroke is rare, and is most commonly associated with brain stem stroke. Depression affects up to 40% of patients in the first two months after stroke, which can interfere with rehabilitation and has been associated with higher mortality rates. (Altman et al.,2007).

Vocal symptoms of fatigue, hypophonia, unsteady tone, tremor, and hyper nasality are occurred in stroke. Logemann (1998) state that Stroke has impact on multiple issues including “physical, spiritual, emotional, nutritional and social” aspects of life, which contribute to a patients overall quality of life perception.

1.2Literature review

‘Voice’ is the sound that is produced by using the lungs and the vocal folds in the larynx. If one or both of the vocal folds don't open or close properly then it’s defined as Vocal Cord Paralysis (VCP) that’s called voice disorder.(Mathieson, 2001).Voice disorder is characterized by the features of abnormal production or absences of vocal quality, pitch, loudness, resonance.(Mathieson, 2001).

Neurological dysphonia are vocal disorders followed by injuries or changes in the nervous system. In the study the researcher found that the changes in the vocal features caused by the lesion of the brain damage. In this study ten patient was observed by perceptual and auditory evaluation of voice and laryngeal diadochokinesis. On this study the results of subject’s voices showed the presence of roughness, breathiness, and instability, and change in laryngeal motor control, reduced speed .Actually this features presented in patients with extensive middle cerebral artery stroke and in patients with short strokes with varied location in the brain. (Godoy , Brasolotto, Felix, & Fernandes, 2014).

Voice disorder is followed by dysarthria in stroke. According to Godoy et.al (2014) among this studies also found that lesions responsible for dysarthria were located in the supratentorial region in 45.6% of the cases, and in the infratentorial region in 54.4% of the cases; the supratentorial strokes were found more often on the left (74.2%) than on the right (25.8%) hemispheres.

The production of speech relies on the left-sided dominance of the cortex but it has been recently recognized that the right side of the cortex plays important roles in prosody of speech (inflection, intonation, and timing). Corticobulbar tracts are responsible for communication from the cortex to the brain stem. The cerebellum plays a important role in the motor control that needed to produce speech.(Altman et al., 2007).

In the article according to Altman et. al (2007) ‘‘Voice and connected speech changes in CVA are dependent on the location of the cerebral event. Vocal fold immobility is presented 8% to 30% of dysarthria. Spastic voice changes are common with upper motor neuron lesion in bilateral CVA.As a result shows that Speech is characterized by strained voiced quality, and hyper nasality. In flaccid voice changes result from a

lower motor neuron lesion in the brain stem and In this case, speech quality would be characterized by a breathy voice quality with diminished loudness.

In the article another finding shows that Depression affects up to 40% of patients in the first two months after stroke. For this reason the patient shows a monotone voice quality. (Altman et al., 2007)

Another article reported that following a stroke some people have problems with their voice. This is known as vocal cord dysfunction or vocal cord paralysis. Laryngeal manifestations of stroke play a significant role in the morbidity and mortality among stroke patients and include vocal fold paralysis, The most common manifestations of this disorder are a hoarse or weakened voice. Sometimes, there is spontaneous recovery over time. However, there are many people for whom vocal cord dysfunction or vocal cord paralysis following stroke is a permanent condition. (Marom, Flaksman, David, Dabby, Gilad, Kedem, & Roth, 2013).

Dysarthria has a considerable impact on the individual that extends beyond the speech impairment. The article reported that data was collected from 24 individuals with stroke-related dysarthria through interviews. Some patient reported that sometimes it may be difficult or even impossible for others or close family members to understand their talk. Because as speech impairment, dysarthria is responsible for disrupted communicative interactions. For this reason some people complained that they avoided the situation to continue the conversation.(Brady, Clark, Dickson, Paton & Barbour,2011)

Brady et al. (2011) states that Others participants described a fundamental shift in their sense of identity related to the dysarthria. Sometimes they did not identify their own voice. For this reason sometimes they felt afraid or avoided the situation to continue conversation. The results of the study showed that the impact of stroke-related dysarthria clearly went beyond the physiological impairment and impacts upon individuals' psychosocial well-being that affecting in particular, their social participation and, even their sense of identity. Their sense of identity was threatened and altered because of their change of voice and speech.

In other literature showed that the purpose of the study was to experiences of people with dysarthria as a result of stroke in relation to their speech disorder and to explore the physical, personal and psychosocial impacts of living with dysarthria. The results

of the study indicated that the effects of dysarthria following stroke extend beyond the physiological characteristics of the impairment. In the study participants reported feeling embarrassed, angry, frustrated, upset when they communicating with others.(Dickson, Barbour, Brady, Clark, & Paton, 2008).

It also showed that more than two-thirds of participants had some degree of associated physical disability as a result of the stroke .And these physical problems generally had an impact on the individual's independence. This study suggested that overall, after stroke dysarthria had a greater effect on physical difficulties. (Dickson et al.,2008)

1.3 Significance of the study

Stroke is a major health problem in Bangladesh. This study aims to find out the socio demographic characteristics, to explore the presence of functional, physical and emotional voice impact after Stroke, to identify the severity of voice problem and association between the severity of the voice problem with variables (age, sex, onset of stroke). In Bangladesh many stroke patient are suffering from voice difficulties after stroke due to muscle weakness. But still there is no study explaining the prevalence of voice problem among patients treated for stroke in Bangladesh. After completing this study the patients and their will be benefited because after that they will be familiar about the Speech & Language Therapy services. By this study people will be know about voice treatment which provides by the Speech and Language Therapy and patient will also be aware about their condition.

This study will also be helpful for organizations working in this area for including Speech therapy service in their program for delivering a voice management treatment. Thus the study might create a future prospect of Speech & Language therapy profession patient who had dysarthria and will help to improve the referral system to Speech and Language therapy services in Bangladesh. This study will help to establish a collaborative treatment approach for stroke in Bangladesh.

The study will also provide a clear reflection of on voice problems after Stroke towards the SLT professionals. It will assist them to make voice therapy practice more holistic and effective for the Stroke patients that will reduce the morbidity and sufferings of the Stroke patients with voice difficulties.

To sum up, this study will create for the awareness about voice difficulties and voice management among professionals. SLT professional will concern about the voice area in addition to other difficulties.

1.4 Research question

What are the prevalence of voice problem after Stroke?

1.5 Objectives

1.5.1 General objective:

- To explore the prevalence of voice problem following stroke.

1.5.2 Specific objectives:

- To explore the socio-demographic status of respondent.
- To identify the functional voice impact.
- To identify the physical voice impact.
- To identify the emotional voice impact.
- To find out the severity of voice problem.
- To find out the association between severity and age category of the participants.
- To find out the association between severity and sex of the participants.
- To find out the association between severity and Onset of Stroke.

1.6 Operational definition

Key words-Voice, Stroke

1.6.1Voice

Voice (or vocalization) is the sound produced by using the lungs and the vocal folds in the larynx, or voice box (Colton and Casper, 1996). Vocal cord paralysis is a voice disorder or difficulty that occurs when one or both of the vocal folds don't open or close properly (Mathieson, 2001). Here investigator used voice as the consequences of problem and effects which was present after Stroke. Investigator used this term because the aim of the study is to explore the prevalence of voice problem after stroke.

1.6.2 Stroke

Stroke is a syndrome characteristic by the acute onset of a neurologic deficit that persists for at least 24 hours, reflects involvement of the central nervous system, and is the result of a disturbance of the cerebral circulation (Amionff,1993). In this study investigator used the stroke as a neurological condition where dysarthria were present and language was in normal function.Here, there were not present any history of previous voice problem and other neurological condition after stroke.

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Chapter- 2 Methodology

2.1 Study Design

The methodology is the way to collect a piece of research. The investigator conducted this study to identify the prevalence of voice impact after stroke. It was a quantitative study because according to Bailey (1997) quantitative research is used to establish facts. The study was cross-sectional as cross-sectional studies examine a phenomenon at one point of time (DePoy, 1998) and the investigator studied the samples within approximately 2 months. In this study, survey method was used to collect data from stroke people by face to face interview. Because Stein and Cutler (2000) & Frankel and Wallen (2000) said that the main function of the survey research is to obtain precise objective descriptions from a specific universe of people or entities by face to face interview about a particular topic or issue. There was a reason for choosing the cross-sectional survey because cross sectional survey is less expensive (Depoy and Gitlin, 1998).

2.2 Study Place

This study was conducted in the clinical department of Speech and Language Therapy at CRP in Savar and Mirpur & Shaheed Suhrawardy medical college and Hospital.

2.3 Study Population

The researcher deciding the suitable number of participants to take part in the study is necessary for good research (Hicks,2000).Data was collected from Stroke patients who had dysarthria and normal language functioning.

2.4 Sample Size

A sample is a group of subjects that will be selected from the population, who will be used in pieces of research (Hicks, 1999, p. 287).Though a larger sample is more likely to be representative of the population in a survey study, but in many situations, it will not possible for the researcher both for practical and financial reasons (Hicks**,** 2000).

So the investigator will use a sampling equation to determine the sample size.

$$n = \frac{z^2 \times p(1-p)}{d^2}$$

$$= \frac{1.96^2 \times 0.5 \times (1-0.5)}{(.05^2)}$$

$$= 384.16$$

Where,

Percentage of population, P= 0.5

Prevalence, q= 1-0.94 = 0.06

Confidence level, Z= 1.96 at 95% (Standard value)

Degree of accuracy, d =.05

Sample size n =?

From this calculation total sample size was 384 but investigator had found 70 samples. So, the sample size was 70.

2.5 Sampling Procedure

Finding the appropriate number and type of people take part in the study is called sampling (Hicks, 1999, p. 24). Subject was collected by using purposive sampling the population study who met all inclusion criterions. Here purposive sampling was used because the researcher could not find out whoever was available, but could use judgmental or inclusion and exclusion criteria to select a sample (Frankel and Wallen, 2000). The purposive sampling was used as its comparatively easy, cost effective and quickest sampling method (Bailey, 1997). According to Hicks (2000), purposive sampling is an easy way of accessing a sample from a population. It will save time of the investigator. Another reason for using purposive sampling was that it would be the easiest, cheapest and quicker method of sample selection.

2.6.1 Inclusion Criteria

- The patients who had diagnosed as stroke.
- Both male and female were selected who respond independently.
- Only speech was affected (who had dysarthria).
- Language with normal function

2.6.2 Exclusion Criteria

- The condition of Aphasia, apraxia after stroke were excluded.
- History of Previous voice problem.
- Other neurological condition was excluded in this study (Parkinson disease, head injury).

2.7 Data Collection Tools

A structured questionnaire- Voice Handicap Index (VHI-30) was used as a data collection instrument. Voice Handicap Index-30 (VHI-30) was used to measure the voice impairments of an individual. The VHI-30 is a 30-item self-administered questionnaire to assess the functional, emotional, and physical consequences of voice disorders and the impact of an individuals' voice disorder upon daily activities.VHI-30 was selected because it is validated, reliable, requires little time to administer, and easy to score and interpret (Jacobson et al., 1997). There are 5 points like never=1, 2= almost never, 3= sometimes, 4= almost always, 5= always are representing of the scale. The score is calculated 0-120. The higher score shows the highest problem and effects of individual. The score range is 0-30 indicated mild, 31-60 moderate and 60-120 indicates sever problem. The English questionnaires was converted into Bangla & ask the participants during the interview. The investigator took permission from each participant by using a written consent form.

2.8Data Collection Procedure

All participants were provided written consent prior to participating in the study. The written consent was read out loud for stroke patient. Data was collected by using voice handicap index.-30. Interview was used for data collection directly from the participants as one of the useful method of obtaining survey data is personal interviews (Shaughnessy, Zechmeister, & Zechmeister, 2003)and it was involved conversation between the investigator and the subject which aimed to elicit information relevant to the research topic (Hicks, 2000). Pen, papers were also used.

2.9 Informed consent

The investigator used a consent from both in English and Bangla to take participant's consent English and Bangla. The investigator had informed the participant about the study by the consent from. The consent from contained the consent of the participant that he/she was participating in the study and giving permission to the investigator to start the data collection sessions. Investigator was requested to the caregiver of illiterate participants or unable patient to sign in consent form.

2.10 Pilot Study

The investigator had accomplished the field test with six participants before starting the data collection. The investigator had informed the people about the purpose of the study during the interview session. It was important to carry out a pilot test before collecting the final data because it helped the investigator to refine the data collection plan.

2.11 Data analysis

Descriptive statistics is described, organize and summarize data (Bailey, 1997) and are commonly used for describing the survey data (Hicks, 2000). So investigator was used descriptive analysis to analyze the findings of this study. A computer program-"Statistical Package for the Social Sciences, version-22 (SPSS-22)" was used as a data analysis tool. In another study of Johansson and Kerstin (2013), here all statistical analysis was performed in Excel and in SPSS. The variables were labeled in a list and the investigator established a computer-based data definition record file that consists of a list of variables of order. The investigator put the name of the variables in the variable view of SPSS and defined the types, values, decimal, label alignment and measurement level of data. The next step was cleaning new data files to check the inputted data set to ensure that all data had been accurately transcribed from the questionnaire sheet to the SPSS data view. Then the raw data was ready for analysis in SPSS. Data was analyzed by descriptive statistics and calculated as percentages and presented by using a table, bar graph, and pie charts. At last, the result of this survey consisted of quantitative data.

2.12Ethical Consideration

Investigator maintain a manner to conduct the study. All steps of the study were supervised by the supervisor. At first the research proposal was submitted to the ethical board to approve the study. Then the investigator got the official permission from the approval committee of department of speech and language therapy and obtained permission from Bangladesh Health Professions Institute (BHPI) an academic institute of CRP to conduct the research project. After getting permission from the institute, investigator took an academic permission letter which was approved the principal of BHPI for Shaheed Shurawardy medical college and hospital, Savar and Mirpur CRP. Permission was also taken from to collect data. After getting permission investigator started data collection from the participants. The investigator gave detailed and clear information about the purpose of the study to the participant verbally in Bengali. The participants were informed that their participation will be fully voluntary and they have the right to withdraw. Investigator discontinue from the study at any time of the study. Confidentiality of information maintained during the research process.

Chapter- 3 Result

Data were analyzed by descriptive statistics and calculated as a percentages and presented by using bar grapes, pie charts and tables.

3.1 Demographic information of the participants:

3.1.1 Distribution of the Gender of the respondents

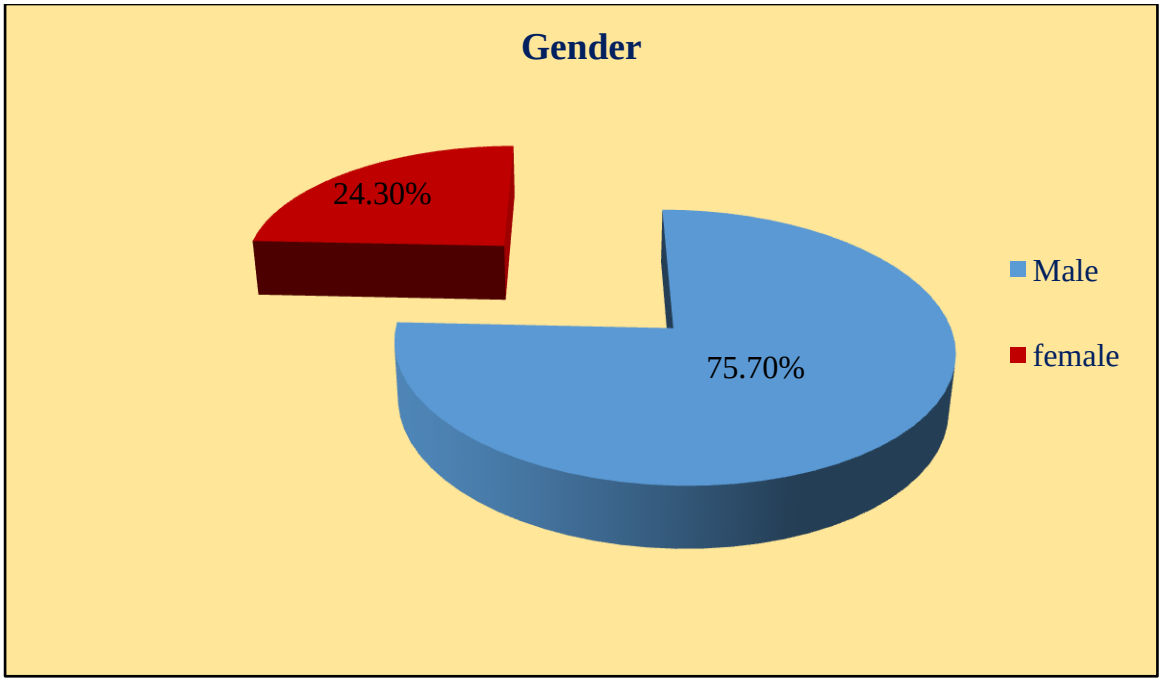
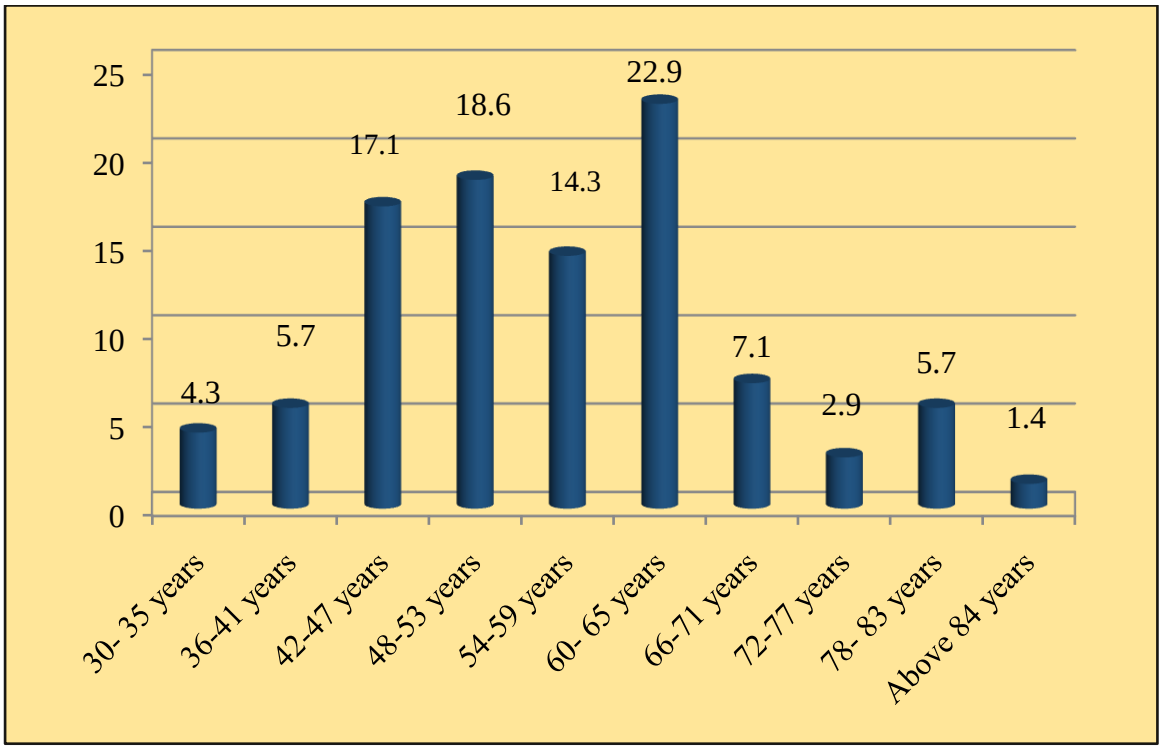


Figure 3.1.1: Gender of the participants

The pie chart shows that majority of participants 75.7 % (53) were male and others participants 24.3 % (17) were female.

3.1.2 **Distribution of respondents' Age :**



. **Figure-3.2: Age of the participants**

This bar graph shows that the maximum numbers of respondents 22.9 % (16) were in the age of 60-65 years. It is found that 17.1 % (12) were found in the age between 42-47 years and 14.3 % (10) were in the age between 54-59 years. The equal numbers of participants 5.7 % (8) found in the18. 6 % (13) participants those were in the age between48-53 years. Also, participants age between66-71 years and 78-83 years. The graph shows that age between30- 35 years were 4.3 % (3) participants. Only 2.9 % (2) were in the age of 72-77 years. Limited percentages of participants were found 1.4 % (1) in the age of above 84 years.

3.1.3: Distribution of respondents' education status:

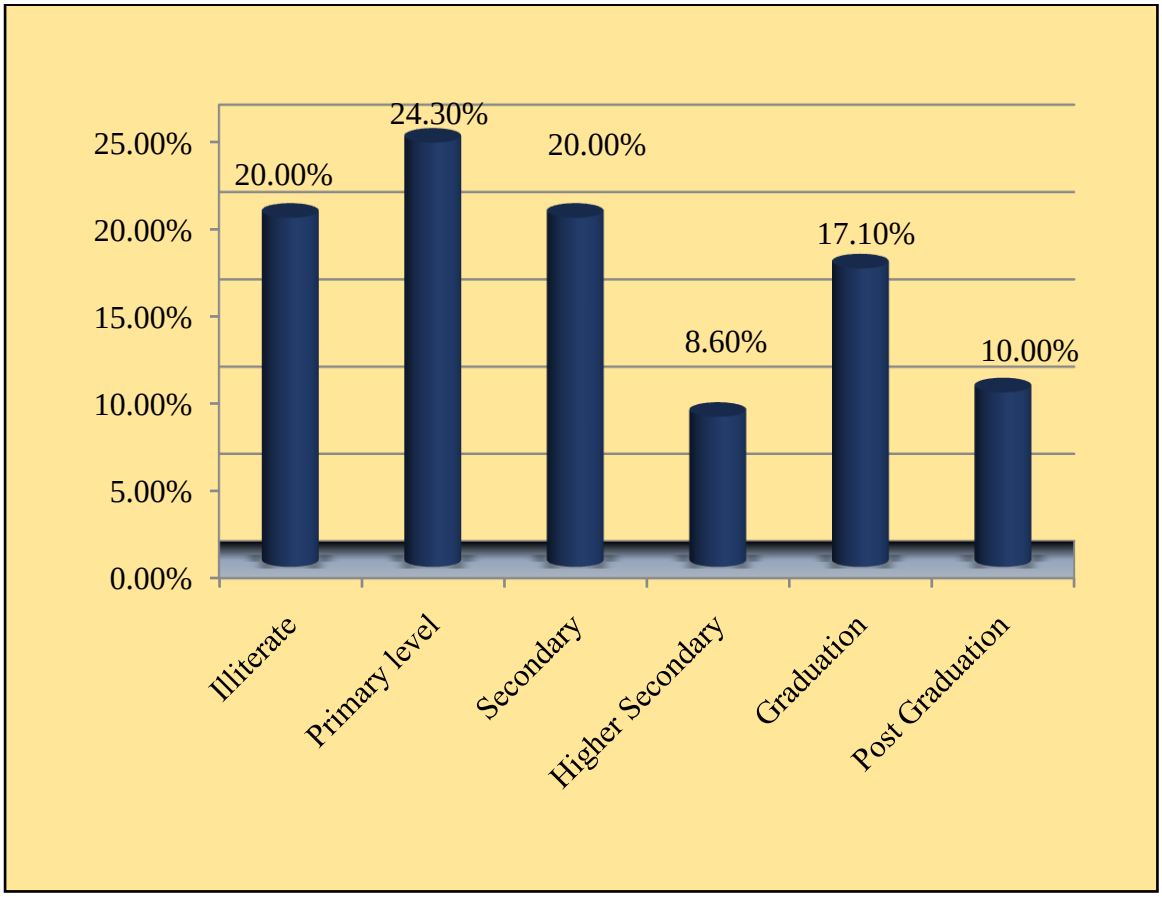


Figure 3.1.4: Educational status

This graph was about the distribution of respondents' educational status. Among all the respondents the maximum numbers of participant's 24.30 % (17) were in the primary education level. It was found that 20.0% (14) people had completed Secondary level. 20.0 % (14) people were Illiterate. The equal numbers of respondents found in Secondary level and Illiterate. Among all people 17.10 % (12) had completed graduation. Only 10.0% (7) people had completed post-graduation. Few numbers of participants 8.60 % (6) were completed higher secondary level

3.1.4 Distribution of respondents' occupational status:

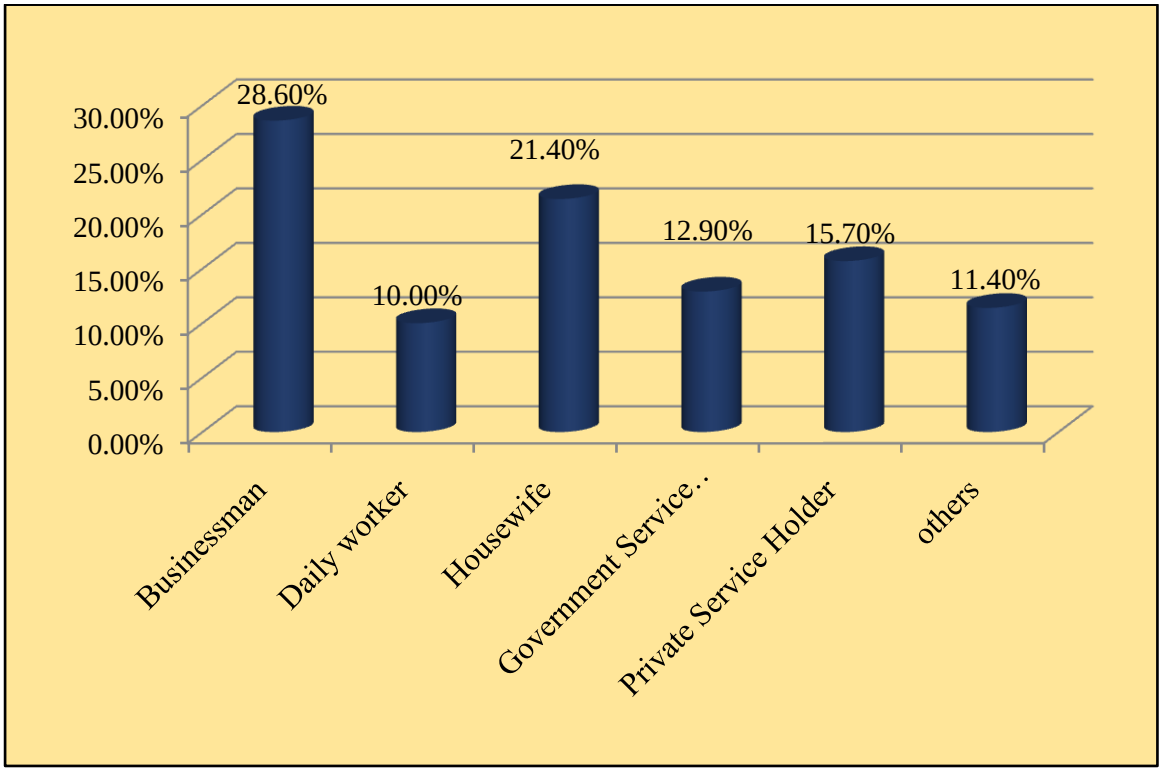


Figure 3.1.4 – occupation status

From this graph it is shows that among the participants a highest number of respondents 28.60 % (20) found those were Businessman. It was found that 21.4 % (15) participant's those were housewife. From the chart it was shown that 15.7% (11) were Private Service Holder. Also found that 12.9 % (09) were Government Service Holder. Among all respondents 11.4% (08)were others professions. Few numbers of people 10.0 % (07) were daily worker.

3.1.5 Distribution **of respondents' onset of Stroke:**

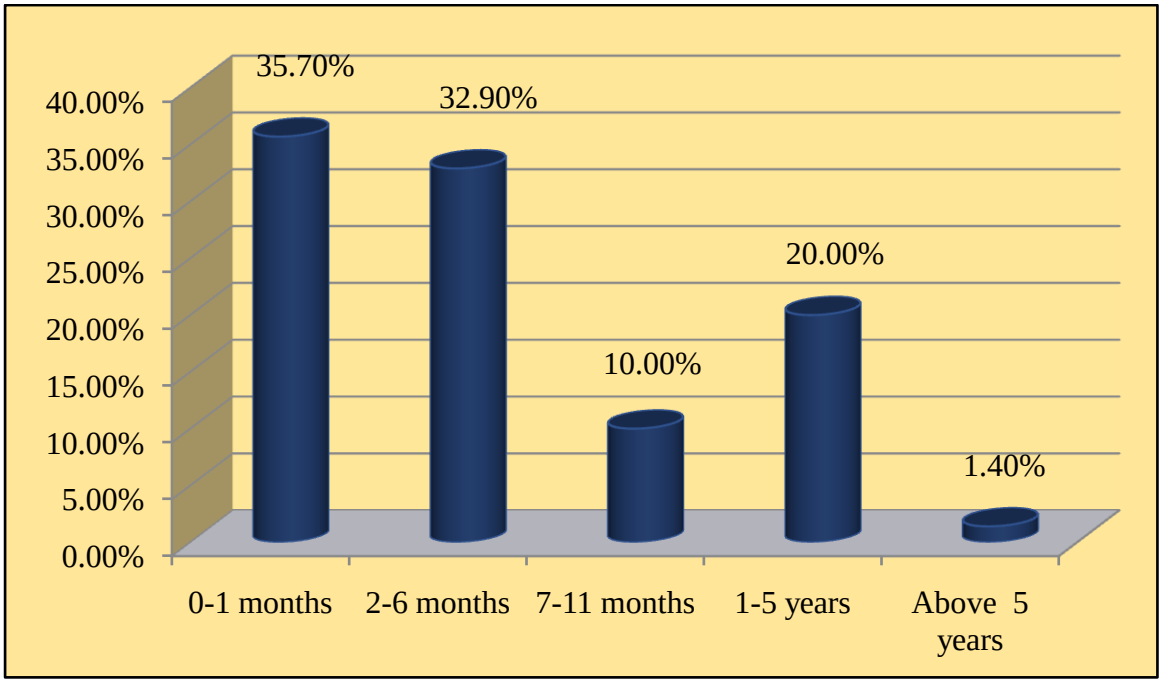


Figure – 3.1.6 Onset of Stroke

In this bar graph, it shows that among all the participants 35.70 % (25) had stroke in 0- 1 months earlier. It was found that 32.90 % (23) people had stroke in 2- 6 months earlier. In this graph it also found that 20.0 % (14) had onset of stroke in 1-5 years. Limited percentages of people had 10.0 % (7) stroke in 7-11 months. Lowest people only 1.40 % (1) had stroke in the above of 5 years

3. 2. Distribution of Functional impact

Table 3.2.– Functional impact

Functional Impact	Participant's response				
	Never	Almost never	sometimes	Almost always	Always
My voice makes it difficult for people to hear me.	5.7 %	31.4%	25.7%	10.0%	27.1%
People have difficulties understanding me in a noisy room.	5.7 %	31.4%	25.7%	11.4%	25.7%
My family has difficulties hearing me when I Call them throughout the house.	5.7%	31.4%	27.1%	11.4%	24.3%
I use the phone less often than I would like to	2.9%	32.9%	34.3%	8.6%	21.4%
I tend to avoid groups of people because of my voice.	2.9%	28.6%	31.4%	12.9%	24.3%%
I speak with friends, neighbors, or relatives less often because of my voice	2.9%	30.0%	31.4%	11.4%	24.3%
People ask me to repeat myself when speaking face to face.	5.7%	27.1%	37.1%	10.0%	20.6%
My voice difficulties restrict my personal and social life.	4.3%	32.9%	35.7%	8.6%	18.6%
I feel left out of conversation because of my voice.	2.9%	7.1%	34.3%	18.6%	37.1%
My voice problem causes me to lose income.	4.3%	40.0%	24.3%	12.9%	18.6%

From the table shows, among all participants 27.1 % respond always their voice made it difficult to hear people. 25.7 % respond as sometimes their voice made it difficult to hear people and less participant 10.0 % answered their voice made it difficult to

hear people. The equal number of 25.7 % respond always and sometimes People had difficulties understanding them in a noisy room. Less 11.4 % participants respond almost always people faced difficulties to understand them in a noisy room.27.1 % people rating that sometimes their family had difficulties when they called them. Less participants claimed that their family had never difficulties when they called them. But 24.3 % people answered that always their family had difficulties when they called throughout the house. In using of phone 34.3 % answered sometimes they used phone less often than before. And 21.4 % people used less phone than earlier due to voice problem.

The majority number of people 31.4 % respond that sometimes they avoid groups of people. 24.3 % complained that always they avoid groups of people and less people said that they never avoid groups of people. The equal number of participants 31.4 % also sometimes spoke less often with their family, neighbors and relatives. The majority of people 37.1 % sometimes faced difficulties to repeat in face to face speaking. 35.7 % people complained that sometimes their voice difficulties restrict their personal and social life. The majority of people 37.1 % always feel felt out of conversation due to voice problem. 40.0 % people said that almost never their income was lose. But 24.3 % people complained that sometimes their income was lose due to voice difficulties.

3. 3 Table 1- Distribution of Physical impact

Physical Impact	Patients response				
	Never	**Almost never**	**Sometimes**	**Almost always**	**Always**
I run out of air when I talk	4.3%	8.6%	18.6%	8.6%	60.0%
The sound of my voice varies throughout the day	8.6%	30%	27.1%	7.1%	27.1%
People ask, what wrong with your voice?	11.4%	21.4%	37.1%	8.6%	21.4%
My voice sound creaky and dry.	4.3%	5.7%	24.3%	4.3%	61.4%
I feel as though I have to strain to produce voice	8.6%	4.3%	30%	15.7%	41.4%
The clarity of my voice is unpredictable	5.7%	4.3%	35.7%	12.9%	41.4%
I try to change my voice to sound different	4.3%	28.6%	35.7%	7.1%	24.3%
I use a great deal of effort to speak	5.7%	8.6%	27.1%	11.4%	47.1%
My voice worse in the evening	10.0%	48.6%	14.3%	7.1%	20%
My voice ‘gives out’ on me in the middle of speaking.	8.6%	5.7%	28.6%	20.0%	37.1%

From the table shows that in physical impact, among all participants 60.0 % complained always run out of air when they talk. The equal percentage of participant 27.1 % complained that always and sometimes the sound of their voice varies throughout the day. 31.7% people respond sometimes people ask ‘what’s wrong with their voice.?’ The majority of participants answered that always their voice were sound creaky and dry. 41.4% people complained always they feel as though they had to strain to produce voice. 41.4 % people respond that always their voice was unpredictable and 35.7 % respond as sometimes their voice was unpredictable. 35.7 % People respond as sometimes they try to change their voice to sound different. In using a great deal effort to speak 47.1 % people respond as sometimes. 48.6 % people answered almost never their voice was in the evening. Only few 20.0 % complained that their voice was worse in the evening. The majority of people 37.1% always complained as their voices gave out in the middle of speaking. Only few 5.7 % respond as almost never their voice gave out in the middle of speaking.

3.4- Distribution of emotional impact:

Emotional Impact	Patients response				
	Never	Almost never	Sometimes	Almost always	Always
I am tense when talking to others because of my voice.	7.1%	20.0%	30.0%	15.7%	27.1%
People seem irritated with my voice.	7.1 %	24.3%	28.6%	15.7%	24.3%
I find other people don't understand my voice problem	7.1%	27.1%	27.1%	15.7%	22.9%
My voice problem upset me	4.3%	18.6%	35.7%	15.7%	25.7%
I am less outgoing because of my voice problem	5.7%	24.3%	31.4%	12.9%	25.7%
My voice makes me feels handicap	10.0%	32.9%	27.1%	12.2%	17.1%
I feel annoyed when people ask me to repeat	7.1%	24.3%	37.1%	10.0%	21.4%
I feel embarrassed when people ask me to repeat.	10.0%	22.9%	37.1%	10.0%	20.0%
My voice makes me feel incompetent	11.4%	28.6%	31.4%	8.6%	20.0%
I am ashamed of my voice problem.	10.0%	21.4%	42.9%	7.1%	18.6%

Table 3. 4- the presence of emotional impact

From the table in emotional impact shows that the majority of 30.0 % people respond as sometimes they were tense when talking to others due to their voice. 28.6 % People complained that sometimes people seem irritated with their voice. Only 24.3 % people answered always people seem irritated with their voice.27.1 % participants complained that sometimes they found other people did not understand their voice. The majority of 35.7 % respond as their voice problem upset them. Only 15.7 % people complained almost always their voice problem upset them.31.4 % participants respond that sometimes they were less outgoing because of their voice.

Among all participants 32.9 % said their voice did not make them feel handicap. Only 27.1 % people complained sometimes their voice made them feel handicap. The participants37.1 % sometimes felt annoyed when people ask them to repeat. The equal percentage also showed 37.1 %in feeling embarrassed when people ask them to repeat and 31.4% people complained that sometimes their voice made them feel incomplete. 42.9 % people respond that sometimes they feel ashamed due to their voice problem.

3.5 Severity of the voice problem

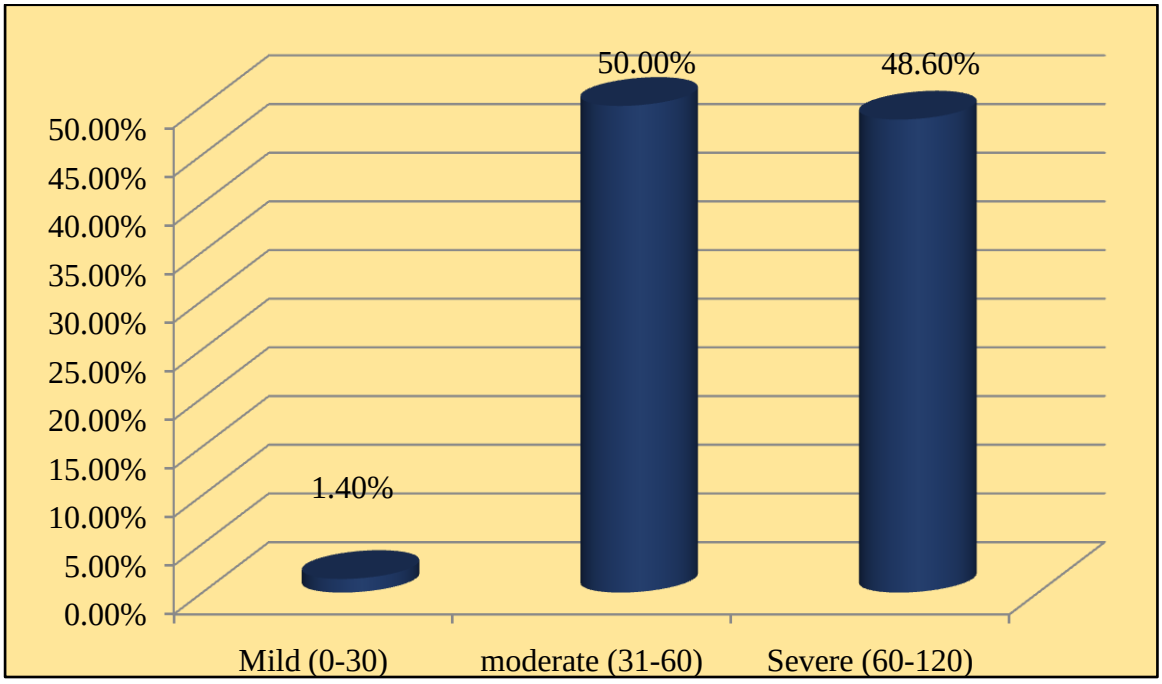


Figure 3.5 – Severity of the participants

In this bar graph, it shows the maximum participants, 50.0 % (35) had in moderate voice problem. It was found that 48.60% (34) had Severe voice problem. Only 1.40% (1) participants had found in mild voice problem.

3.6 Association between Severity and age category of the participants

		Severity			Total	Chi-square	P value
		Mild	Moderate	Severe			
Age category	30-35 years	0	1	2	3	9.079	.958
	36-41 years	0	1	3	4		
	42-47 years	0	5	7	12		
	48-53 years	1	7	5	13		
	54-59 years	0	6	4	10		
	60-65 years	0	8	8	16		
	66-71 years	0	3	2	5		
	72-77 years	0	1	1	2		
	78-83 years	0	3	1	4		
	Above 84 years	0	0	1	1		
Total		1	35	34	70		

Table –3. 6: Association between age category and severity

Among the 70 participants, voice problem occurrences were severe found highest in 8 participants in the age range of 60-65 years and the equal lowest 1 participants were shown in 72- above 84 years. Moderate voice problem found highest in 8 participants in the age range of 60- 65 years. And lowest equal number of participants were found in age range 30-35 years, 36-41 years and 72- 77 years. Mild voice problem found in 48- 53 years.

In this cross tabulation chi square test shows the p value is .958. So it is not significant because p> 0.05. So there is no association.

3.7Association between sex and severity of the voice problems

		Severity			Total	Chi-square	P value
		Mild	Moderate	Severe			
Gender	Male	1	28	24	53	1.156	.561
	Female	0	7	10	17		
Total		1	35	34	70		

Table –3.7Association between sex and severity of the voice problem.

Among the 70 participants, It was found that severe voice problem occurred in 24 male and 10 female, moderate problem seen in 28 male and 7 female. Mild problem occurred in 1 male participants.

In this cross tabulation chi square test shows the p value is .561. So it is not significant because p> 0.05. So there is no association.

3.8 Association between onset of stroke and severity of voice problem

		Severity			Total	Chi-square	P value
		Mild	Moderate	Severe			
Onset of stroke	0-1 months	0	17	8	25	7.893	.449
	2-6 months	1	10	12	23		
	7-11 months	0	3	4	7		
	1-5 years	0	5	9	14		
	Above 5 years.	0	0	1	1		
Total		1	35	34	70		

Table – 3.8: Association between Onset of stroke and severity of the voice problem.

Among the 70 participants, onset of stroke the highest severe problem was found in 2-6 months. And in the moderate problem occurred in 0-1 months.

In this cross tabulation chi square test shows the p value is .561. So it is not significant because p> 0.05. So there is no association

Chapter- 4 Discussion

In this study, investigator selected 70 participants who had stroke where majority of participants 75.7 % male and 24.3 % were female. According to Hiraga (2017) Stroke affects both men and women but the incidence rates and outcomes differ between the two genders. Stroke rates are higher in men. **S**arkar, Halder, Saha, & Biswas (2016) , found in a study that 265 (52.9%) were male and 236 (47.1%) were female Out of 501 patients.

Among the respondents, the maximum participants 22.8 % (16) with voice problem were in the age range of 60-65 years and 18.5 % (13) people in the age of 48-53 years that was greater than above 84 years. **S**arkar, Halder, Saha, & Biswas (2016) also reported stroke occurred in 501 participants and among them 90 patients were of young age group (≤40 years), 175 (34.9%) of middle age group (41-60) and 236 (47.1%) of elderly (>60 years).Voice problem occurred was not significant (X2=9.079, p= .958, P>0.05) at 5 % significant level. So there is no association between age category and severity.

Education level is an important issue for the socio- demographic characteristics from 70 respondents, major group participants 24.30 % (17) were in the primary education level and maximum respondents 20.0% (14) were found those were Secondary level. The equal numbers of respondents found in Secondary level and Illiterate. So the incidence of voice problem is higher among those who were less educated. In this study among total participants, maximum number of respondents found 28.60% (20) found those were Businessman. The percentage 21.4 % (15) those were housewife. So, the voice problem was higher among those who were Businessman. Among total participants 35.70 % (25) had stroke in 0- 1 months earlier. Bahceci, Umay, Gundogdu, Gurcay, Ozturk, & Alicura, (2017) showed in their study that they evaluated 72 patients for a mean period of 16.51 ± 8.32 days after stroke and they found dysphagia in oral phase (n = 69, 95.8%). As they had oral phase dysphagia, they may have grather possibility of muscles weakness. So, they might have mild to moderate voice problem. So, in the study result showed most of the patients onset of Stroke was 0-1 months. In this study showed that at 0-1 months earlier voice problem occurred which was found statistically non significant. (p =.449, p> 0.05) at 5 % significant level. So there was no association.

Results from this study, under Functional impacts suggested that participants with stroke experience a range of common problems. 19 people respond always their voice makes it difficult to hear people. The equal number of 36 people respond always and sometimes People have difficulties understanding them in a noisy room. 27.1 % people rating that sometimes their family has difficulties when they call them. In using of phone 34.3 % answered sometimes the use phone often than before. The majority number of people 31.4 % respond that sometimes they avoid groups of people. The majority of people 37.1 % sometimes faced difficulties to repeat in face to face speaking. 35.7 % people complained that sometimes their voice difficulties restrict their personal and social life. The majority of people 37.1 % always feel felt out of conversation due to voice problem. 24. 3 % people complained that sometimes their income is lose due to voice difficulties. Brady, Clark, Dickson, Paton & Barbour, (2011) explained that as a speech impairment, dysarthria after stroke is responsible for disrupted communicative interactions. For this reason some people complained that they avoided the situation to continue the conversation. So, it is indicate the presence of functional impact that affects quality of life.

In physical impact, participant explores that 60.0 % always run out of air when they talk. The majority of participants answered that always their voice were sound creaky and dry. The majority of people 37.1% always complained as their voices gave out in the middle of speaking. Only few 5.7 % respond as almost never their voice gave out in the middle of speaking. Altman et. al (2007) state that Stroke is a highly prevalent disease that has significant potential to adversely affect the voice. Speech and voice quality would be characterized by a breathy voice quality with diminished loudness and air wastage. So, it explores the presence of physical impact on voice.

In the result found of emotional impact, the majority of 30.0 % people respond as sometimes they were tense when talking to others due to their voice wherever 28.6 % sometimes people seem irritated with their voice. The majority of 35.7 % respond as their voice problem upset them. The equal percentage also showed 37.1 % in feeling embarrassed when people ask them to repeat and 30 people respond that sometimes they feel ashamed due to their voice problem. Dickson, Barbour, Brady, Clark, & Paton, (2008) also state that the effects of dysarthria following stroke extend beyond the physiological characteristics of the impairment and participants reported feeling embarrassed, angry and upset when communicating with others. So this study

described the presence of emotional impact of participants. Result was found that the highest number of participants 50.0 % had in moderate voice problem. Jacobson et.al (1997) also showed in a study between relationship of VHI Score and Voice Disorder Severity, among 63 participants 27 participant rating their voice as moderate level.So it can be concluded that nearly maximum participants have moderate voice problem after stroke. All this evidences indicated that the prevalence of voice problem is moderate in people with stroke in worldwide. So, it can be inferred that stroke patient might be the moderately vulnerable for presence of voice problem.

Chapter- 5 Policy Implications Introduction

- This study will help Speech and Language therapy service providers to start new practice of voice management and assessment for the people with stroke patient who had present dysarthria.
- This study can be implicated during teaching students that patients with stroke may have voice difficulties and the percentage of voice difficulties among them.
- In future, this study will influence the policymakers to make policy to refer the Stroke patients with voice difficulty to SLTs for voice treatment.

Chapter- 6 Limitation & Recommendation

6.1 Limitation

There were some situational limitation and barriers while considering the results of study in different aspects. Those are following below-

- 70 participants were selected to conduct the whole study for short period of time. It was a small number of participants to conduct a survey to find out the prevalence of voice problem after stroke.

- The investigator only questioned a small number of subject that was small to generalized the results.

- Due to lack of number of participants, the external validity of the study reduced.

- Some recently stroke patient were the participants of my study for this reason the caregiver were not generalized the question about patient difficulties.

- The study was conducted only 3 setting in Dhaka. The data cannot therefore be generalized for practice of documentations by all Speech and Language Therapy in Bangladesh.

- Time and resources were limited that have a great deal of impact of the study

- Another limitation was lack of available literature. There was no available research done in Bangladesh.

6.2 Recommendation

This is the first primary study on the prevalence of voice problems after stroke in Bangladesh. So there were some limitations and barriers during conducting the study. These are-

- The study was done within a short period of time and only 70 participants were selected to conduct the whole study. It was a small number of participant conduct a survey to explore the prevalence of voice problems after stroke due to lack of a number of the participants. So the external validity of the study decreased and further study can be conducted with a wide range and large participant size.
- Purposive sampling was used to select participants and study place. So further study can be conducted by simple random sampling.
- Including Speech therapy services in different organization where working in this area for their program for delivering a voice management treatment services, also include the SLT service in health care service delivery system in Bangladesh.

Further research should investigate-

- Speech characteristics following stroke.
- Voice impact on dysarthria.
- The effects of speech pathology intervention on voice function ,voice fatigue, and communicative participation in individuals with CVA.
- The same study can be done by other researcher increasing number of participants and change the study location.

Chapter- 7 Conclusion

Voice difficulty is a life-threatening problem including functional, physical and emotional problems that can be happened after Stroke. The investigator explored the prevalence of voice problems after Stroke. In this study, the total respondents were 70 whereas 75.7% (53) were male and 24.3% (17) were female. The result showed that the highest number of participants 22.9% (16) were in the age range of 60-65 years. The education level of the participants found that maximum numbers of participants 24.30 % (17) were in the primary education level. It was found that 20.0 % (14) people were Illiterate. Among the participants a highest number of respondents 28.60 % (20) found those were Businessman. Few numbers of people 10.0 % (07) were daily worker. It shows that among all the participants 35.70 % (25) had stroke in 0- 1 months earlier. This study explored the presence of voice impact that maximum participants, 50.0 % (35) rated their voice had in moderate level (VHI= 31-60). It was found that 48.60% (34) faced voice problem at Severe level (VHI= 60-120) after stroke. Only 1.40% (1) participants found voice problem in mild level. (VHI=0-30). So, it can infer that stroke patient might be moderate presence of voice problem after stroke.

Thus, professionals working with Stroke (Doctors, physiotherapists, occupational therapists) need to remain alert to the presence of voice difficulty in their clients and refer to SLTs for diagnosis and treatment of voice difficulties; which will increase the quality of life of people with Stroke and will also decrease morbidity.

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Annexure- 1 (A)

Socio-Demographic Information

Code no: Data:

Patient's Name

Sex:

Age:

Occupation:

Diagnosis:

Educational level:

Onset of Stroke:

Contract:

Annexure- 1 (B)

Voice Handicap Index Questionnaires- 30

Instructions: These are statements that many people have used to describe their voices and effects of their voices on their lives. Circle the response that indicates how frequently you have the same experience. 0 = never 1 = almost never 2 = sometimes 3 = almost always 4 = always

Part 1- (F)

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

Part- 2 (P)

I run out of air when I talk.	0	1	2	3	4
The sound of my voice varies throughout the day.	0	1	2	3	4
People ask, “What’s wrong with your voice?”	0	1	2	3	4

My voice sounds creaky and dry.	0	1	2	3	4
I feel as though I have to strain to produce voice.	0	1	2	3	4
The clarity of my voice is unpredictable.	0	1	2	3	4
I try to change my voice to sound different.	0	1	2	3	4
I use a great deal of effort to speak.	0	1	2	3	4
My voice is worse in the evening.	0	1	2	3	4
My voice “gives out” on me in the middle of speaking.	0	1	2	3	4

PART -3 (E)

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

Total / 120

Annexure- 1 (C)(Translated)

ডেমোগ্রাফি

কোডনং : তারিখ :

নাম: লিঙ্গ :

পেশা :

শিক্ষাগত যোগ্যতা

বয়স:

মোবাইল নং:

কখন স্ট্রোক হয়ে ছিলো:

ডায়াগনোসিস:

1 (F)

আপনার কণ্ঠস্বরের সমস্যার জন্য কি অন্যদের আপনার কথা শুনতে সমস্যা হয়?	০	১	২	৩	৪
কোলাহলপূর্ণ কক্ষে অন্যদের আপনার কথা শুনতে কি সমস্যা হয়?	০	১	২	৩	৪
যখন আপনি আপনার পরিবারের সদস্যদের ডাকেন তাদের আপনার কথা শুনতে কি সমস্যা হয়?	০	১	২	৩	৪
আপনার গলার সমস্যার জন্য আপনি ফোনে যতটা কথা বলতে চান তার থেকে কি কম কথা বলেন ?	০	১	২	৩	৪
আপনার কণ্ঠস্বরের সমস্যার জন্য কি আপনি অন্যদের সাথে মেলামেশা থেকে বিরত থাকেন?	০	১	২	৩	৪
আপনার কণ্ঠস্বরের সমস্যার জন্য কি আপনি বন্ধু, প্রতিবেশী ও আত্নীয়দের সাথে কম কথা বলেন ?	০	১	২	৩	৪
আপনি যখন কারো সাথে সামনা- সামনি কথা বলেন তখন কি অন্যরা একই কথা বার বার বলতে বলে?	০	১	২	৩	৪
আপনার কণ্ঠস্বরের সমস্যাকি আপনার সামাজিক ও ব্যক্তিগত জীবনে বাধা হয়ে দাঁড়াচ্ছে ?	০	১	২	৩	৪
অন্যদের সাথে কথা বলার সময়কি অনেক কথা বাদ যায় যেটা আপনি বলতে চান ?	০	১	২	৩	৪
আপনার গলার স্বরের সমস্যার জন্য কি আপনার উপার্জন কমে যাচ্ছে?	০	১	২	৩	৪

2 (P)

যখন আপনি কথা বলেন তখন কি আপনার শ্বাস শেষ হয়ে যায় বলে মনে হয় ?	০	১	২	৩	৪
দিনের বিভিন্ন সময় আপনার কণ্ঠস্বর কি ভিন্ন রকম অনুভব হয় ?	০	১	২	৩	৪
অন্যরা কি জিজ্ঞাসা করে আপনার কণ্ঠস্বরের কি হয়েছে ?	০	১	২	৩	৪
আপনি যখন কথা বলেন তখন আপনার গলার স্বর কি ক্যাঁচক্যাঁচে আওয়াজ হয় বা গলা শুকিয়ে আসে ?	০	১	২	৩	৪
আপনি যখন কথা বলেন তখন কথা বলার সময় কি গলায় টান লাগে?	০	১	২	৩	৪
কথা বলার সময়কি আপনার গলার স্বর অস্পষ্ট শোনা যায় ?	০	১	২	৩	৪
বিভিন্ন শব্দ বা কথা বলার সময় আপনিকি আপনার গলার স্বর পরিবর্তনের চেষ্টা করেন ?	০	১	২	৩	৪
কথা বলার সময়কি আপনি জোর দিয়ে কথা বলেন ?	০	১	২	৩	৪
আপনার গলার স্বরকি সন্ধ্যায় খারাপ হয়ে যায় ?	০	১	২	৩	৪
অন্যদের সাথে কথা বলার সময় আপনার কথা কি মাঝ খানে বন্ধ হয়ে যায়?	০	১	২	৩	৪

3(E)

যখন আপনি অন্যদের সাথে কথা বলেন তখনকি আপনি আপনার কণ্ঠস্বরের সমস্যার জন্য অনেক চিন্তিত থাকেন ?	০	১	২	৩	৪
আপনার গলার সমস্যার জন্য কি অন্যরা বিরক্ত হয়?	০	১	২	৩	৪
আপনার কণ্ঠস্বরের সমস্যাকি অন্যরা বুঝতে চায়না বলে আপনি মনে করেন ?	০	১	২	৩	৪
আপনি যে অন্যদের সাথে ঠিকভাবে কথা বলতে পারছেন না তার জন্যকি আপনার মন খারাপ হয় ?	০	১	২	৩	৪
আপনিকি কণ্ঠস্বরের সমস্যার জন্যে কম বাহিরে যেতে চান?	০	১	২	৩	৪
আপনিকি আপনার কণ্ঠস্বরের সমস্যার জন্য নিজেকে প্রতিবন্ধি মনে করেন ?	০	১	২	৩	৪
অন্যদের সাথে কথা বলার সময় যখন তারা একই কথা আবার বলতে বলে তখন কি আপনার বিরক্ত বোধ হয় ?	০	১	২	৩	৪
কথা বলার সময় অন্যরা একই কথা আবার বলতে বললে কি লজ্জা বোধ করেন ?	০	১	২	৩	৪
আপনার গলার স্বরের সমস্যার জন্যে নিজেকে কি অসম্পূর্ণ মনে হয় ?	০	১	২	৩	৪
আপনার কণ্ঠস্বরের সমস্যার জন্যকি আপনি লজ্জা বোধ করেন ?	০	১	২	৩	৪

Total / ১২০

Annexure-2

Result (chi-square tests)

2.1 **Association between age category and severity of voice problem**

Chi- Square test

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.079	18	.958
Likelihood Ratio	18.6	18	.970
Linear-by-Linear Association	.646	1	.422
N of Valid Cases	70		

a. 23 cells (76.7%) have expected count less than 5. The minimum expected count is .01

Association between age and severity of voice problem and this association has no significant.

2.2 Association between sex and severity of voice problem

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.156[a]	2	.561
Likelihood Ratio	1.387	2	.500
Linear-by-Linear Association	1.087	1	.297
N of Valid Cases	70		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .24.

Association between sex and severity of voice problem and this association has no significant.

2.3 Association between onset of stroke and severity of voice problem

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.839[a]	8	.449
Likelihood Ratio	8.426	8	.393
N of Valid Cases	70		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .01**.**

There is no association between onset of stroke and severity of voice problem. And this association was not significant.

Annexure- 3 (A)

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)

BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)

(The Academic Institute of CRP)

CRP-Chapain, Savar, Dhaka, Tel: 7745464-5, 7741404 , Fax: 7745069

BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178,8053662-3, Fax: 8053661

তারিখ ঃ ০১.১০.২০১৮

প্রতি
বিভাগীয় প্রধান
স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি বিভাগ,
সিআরপি, সাভার, ঢাকা।

বিষয় ঃ রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,

বিএইচপিআই'র বিএসসি ইন স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি কোর্সের ৪র্থ বর্ষের ছাত্রী জেরিনা রিম্মিন সততা তার রিসার্চ সংক্রান্ত কাজে তথ্য সংগ্রহের জন্য আগামী ১০.১০.২০১৮ তারিখ থেকে৩০.১২.২০১৮ তারিখ পর্যন্ত সময়ে আপনার নিকট প্রেরন করা হলো।

তার রিসার্চের বিষয় হলো- "Voice after stroke."

তাই তাকে সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ সাজ্জাদ হোসেন
বিভাগীয় প্রধান
এসএলটি, বিএইচপিআই।

Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Permission given. Thanks.
24/10/18
SHARMIN HASNAT
Acting Head Of SLT
Dept of Speech & Language Therapy
CRP Savar, Dhaka.

Annexure 3(B)

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)

BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)

(The Academic Institute of CRP)

CRP-Chapain, Savar, Dhaka, Tel: 7745464-5, 7741404 , Fax: 7745069

BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178,8053662-3, Fax: 8053661

তারিখ ঃ ০১.১০.২০১৮

প্রতি
ইনচার্জ
স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি বিভাগ,
সিআরপি, মিরপুর , ঢাকা।

বিষয় ঃ রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,
বিএইচপিআই'র বিএসসি ইন স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি কোর্সের ৪র্থ বর্ষের ছাত্রী জেরিনা রিম্মিন সততা তার রিসার্চ সংক্রান্ত কাজে তথ্য সংগ্রহের জন্য আগামী ১০.১০.২০১৮ তারিখ থেকে৩০.১২.২০১৮ তারিখ পর্যন্ত সময়ে আপনার নিকট প্রেরন করা হলো।
তার রিসার্চের বিষয় হলো- "Voice after stroke."

তাই তাকে সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ সাজ্জাদ হোসেন
বিভাগীয় প্রধান
এসএলটি, বিএইচপিআই।

Bangladesh Health Professions Institute (BHPI) CRP, Chapain, Savar, Dhaka-1345

02.12.18
Geetashree Das
Junior Consultant & In-Charge
Speech & Language Therapy Department
CRP-Mirpur

Annexure -3 C

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
পরিচালকের কার্য্যালয়
শহীদ সোহরাওয়ার্দী মেডিকেল কলেজ হাসপাতাল
শেরে বাংলা নগর, ঢাকা।
www.shsmch.gov.bd

স্মারক নং- শসোমেকহা/প্রশাঃ/১৮/ ৬৪১০ তারিখঃ-২৪ /১১ /২০১৮ ইং

প্রাপকঃ- মোঃ সাজ্জাদ হোসেন
সহকারী অধ্যাপক ও বিভাগীয় প্রধান
স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি বিভাগ
বিএইচপিআই।

বিষয়ঃ- রিসার্চ প্রজেক্ট এর জন্য তথ্য সংগ্রহ করার অনুমতি প্রদান প্রসঙ্গে।
সূত্র নং-সিআরপি-বিএইচপিআই/১০/১৮/৬৮ তারিখঃ ০২/১০/২০১৮ ইং

আপনার ১৪/১০/২০১৮ ইং তারিখের পত্রের প্রেক্ষিতে বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি কোর্সের ছাত্রী জনাবা জেরিনা রিম্মিন সততা, ডিইউ রেজি নং-১৮১৮ শিক্ষাবর্ষঃ ২০১৪-২০১৫ কে শহীদ সোহরাওয়ার্দী মেডিকেল কলেজ হাসপাতালে ১০/১০/২০১৮ ইং তারিখ হইতে ১০/১২/২০১৮ ইং তারিখ পর্যন্ত ০২ (দুই) মাস "Voice After Stroke" বিষয়ে তথ্য উপাত্ত (Data) সংগ্রহ করার নিমিত্তে অনুমতি প্রদান করা হইল।

(অধ্যাপক ডাঃ উত্তম কুমার বড়ুয়া)
পরিচালক
শহীদ সোহরাওয়ার্দী মেডিকেল কলেজ হাসপাতাল
শেরে বাংলা নগর, ঢাকা-১২০৭।
ফোন নং-৫৮১৫২৮৩২, ফ্যাক্স নং-৫৮১৫৬৭৪৪।
ই-মেইলঃ ssh@hospi.dghs.gov.bd
তারিখঃ- /১১ /২০১৮ ইং

Annexure – 4

(A)……

Consent form

This research is part of Speech & Language Therapy course and the name of the researcher is Jerina Rimmin Sotota. She is a 4th year student of B. Sc in Speech & Language Therapy in Bangladesh Health Professions Institute (BHPI). The study will entitle as "**VOICE AFTER STROKE.**

In this study I am ….....……..... a participant and I have been clearly informed about the purpose of the study. I am willingly participating in this study. I will have the right to withdraw from this study at any stage and I will not be bounded to answer to anybody. I understand that there will be no impact receiving treatment at present or in the future by participating in this study.

I am also informed that, all the information will collect from the interview that use in the study will be kept safe and maintain confidentiality. Only the researcher will be eligible to access in the information for his publication of the research result. My name and address will not published anywhere in this study. I can consult with the researcher and the research supervisor about the research process or get answers to any questions regarding the research project. I have been informed about the above-mentioned information and I am willing to participate in the study with consent.

Signature of the study Participate:	Date:
Signature of the Witness	Date:
Signature of the Researcher	Date :

Annexure 4 (B)

.....

সম্মতিপত্র

এই গবেষণা স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি বিভাগের অধ্যয়নের একটি অংশ এবং গবেষকের নাম জেরিনা রিম্মীন সততা। তিনি বাংলাদেশ হেলথ প্রফেশনস ইন্সটিটিউটের বিএসসি ইন স্পীচ এন্ড ল্যাঙ্গুয়েজ থেরাপি বিভাগের ৪র্থ বর্ষের অধ্যয়নরত একজন ছাত্রী এবং তার গবেষণার বিষয় স্ট্রোক পরবর্তী কণ্ঠস্বর (VOICE AFTER STROKE)

এই গবেষণার আমি ---------- একজন অংশগ্রহণকারী এবং আমি এই গবেষণার উদ্দেশ্য পরিষ্কারভাবে জানতে পেরেছি। আমি যেকোন সময় এবং গবেষণার যেকোন পর্যায়ে আমার অংশগ্রহণ প্রত্যাহার করতে পারি। এইজন্য আমি কারো কাছে জবাবদিহি করতে বাধ্য থাকব না। আমি অবগত হয়েছি যে, এই গবেষণায় অংশগ্রহণ করার ফলে বর্তমান ও ভবিষ্যতে তা আমার ও অংশগ্রহণকারীদের কোন প্রকার প্রভাব ফেলবে না।

এইগবেষনার সাক্ষাত কারের সকলতথ্য যেগুলো গবেষণার কাজে ব্যবহৃত হবে, সেগুলো সম্পুর্ণভাবে গোপনীয় থাকবে। শুধুমাত্র গবেষক এতথ্য সমূহের প্রবেশাধিকার পাবে। গবেষকের নাম, পরিচয় ছাপা হবেনা।

আমি গবেষণার পদ্ধতি এবং জটিলতা অথবা সুফলের ব্যপারে বা গবেষণা সংক্রান্ত যেকোনো প্রশ্নের উত্তর দানের জন্য এ গবেষনার তত্ত্বাবধায়কের সহিত আলোচনা করতে পারব।

আমি উপরোক্ত সকল তথ্যগুলো সম্পর্কে জানি এবং আমি এই গবেষণায় অংশগ্রহণে সম্মতি জ্ঞাপন করছি।

অংশগ্রহকারীর স্বাক্ষর/ টিপসই:	তারিখ:
সাক্ষীর স্বাক্ষর :	তারিখ:
গবেষকের স্বাক্ষর:	তারিখ: