

**Patient's Awareness about their Eating and Drinking Skills pre and  
post Stroke Dysphagia Treatment**

**Md. Khorshed Alam**

4<sup>th</sup> Year B. Sc. in Speech and Language Therapy

Session: 2010 – 2011

University of Dhaka



**BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)**

(The Academic Institute of CRP)

BHPI, CRP, Chapain, Savar, Dhaka-1343, Bangladesh

**March, 2015**

# **Patient's Awareness about their Eating and Drinking skills pre and post Stroke Dysphagia Treatment**

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

**Md. Khorshed Alam**  
tutul.slt7@gmail.com

## **Supervisor**

**Sharmin Hasnat**

Lecturer & Acting Head of the SLT  
Department of Speech and Language Therapy  
BHPI, CRP, Savar, Dhaka-1343

**In partial fulfillment of the requirements for the degree of  
B. Sc. in Speech and Language Therapy**

**March, 2015**

**APPROVAL**

We the under signed certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled- **“Patient’s Awareness about their Eating and Drinking skills pre and post Stroke Dysphagia Treatment.”**

Submitted by- **Md. Khorshed Alam**

Bachelor of Science in Speech and Language Therapy (B. Sc. in SLT)

.....  
**Sharmin Hasnat**

Supervisor

Lecturer & Acting Head of the SLT

Department of Speech and Language Therapy

BHPI, CRP, Savar, Dhaka-1343

.....  
**Md. Jahangir Alam**

Assistant Professor & Head

Department of Speech and Language Therapy

BHPI, CRP, Chapain, Savar, Dhaka-1343

.....  
**Professor Dr. M. A. Quader**

Principal

BHPI, CRP, Chapain, Savar, Dhaka-1343

## **DECLARATION**

---

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

**Signature:**

**Date:**

**Md. Khorshed Alam**

Bachelor of Science in Speech and Language Therapy (B. Sc. in SLT)

Session: 2010-2011

BHPI, CRP, Savar, Dhaka – 1343

## DEDICATION

---

Honorable Parents.....

And

.....Beloved Siblings

## Table of Contents

---

<b>Contents</b>	<b>i-iii</b>
<b>List of Tables</b>	<b>iv</b>
<b>List of Figures</b>	<b>v</b>
<b>Glossary of the Terms</b>	<b>vi</b>
<b>Executive Summary</b>	<b>vii</b>
<b>Acknowledgement</b>	<b>viii</b>
<b>Chapter 1: Introduction</b> .....	<b>1-6</b>
1.1 Introduction.....	1
1.2 Background and Literature Review.....	2-3
1.3 Rationale.....	3-4
1.4 Operational Definition.....	4-5
1.5 Aim and Objectives.....	5-6
<b>Chapter 2: Methodology</b> .....	<b>7-14</b>
2.1 Study Design.....	7
2.2 Study Setting.....	7
2.3 Study Population.....	7
2.4 Sampling Selection Procedure.....	8
2.5 Sample Size .....	8
2.6 Sample Characteristics .....	9
2.6.1 Inclusion Criteria .....	9
2.6.2 Exclusion Criteria .....	9
2.7 Rationale for the Inclusion and Exclusion Criteria .....	9-10

2.8 Data Collection .....	10
2.8.1 Data Collection Tool.....	10
2.8.2 Data Collection Procedure.....	10-11
2.9 Treatment Process.....	11-13
2.9.1 Component of the Training Program.....	11
2.9.2 Evaluation.....	13
2.10 Data Analysis.....	13
2.11 Hypothesis.....	14
2.12 Ethical Consideration.....	14
<b>Chapter 3: Result.....</b>	<b>15-19</b>
3.1 Demographic Information of the Participants.....	15-16
3.2 Incidence of the Participant’s Stroke with Dysphagia According to Age.....	16-17
3.3 Participants Types of Dysphagia.....	17
3.4 Significance Level in Awareness Measure pre and post Stroke Dysphagia Treatment.....	18
3.5 Interpretation of the Result .....	18-19
<b>Chapter 4: Discussion.....</b>	<b>20-22</b>
4.1 Patient’s Awareness about their Eating and Drinking Skills before Treatment.....	21
4.2 Patient’s Awareness about their Eating and Drinking Skills after Treatment.....	22
<b>Chapter 5: Limitation.....</b>	<b>23</b>
<b>Chapter 7: Recommendation and Policy Implication.....</b>	<b>24</b>
<b>Chapter 8: Conclusion.....</b>	<b>25</b>

<b>References</b> .....	26-29
<b>Annexure 1</b> .....	30-33
<b>Annexure 2</b> .....	34-36
<b>Annexure 3</b> .....	37-38
<b>Annexure 4</b> .....	38-40



## List of the Tables

---

<b>Table 1:</b> Demographic Information of the Participants .....	15-16
<b>Table 2:</b> Incidence of the Participant's stroke with Dysphagia According to Age.....	17
<b>Table 3:</b> Percentage of the Participants Types of Dysphagia.....	17
<b>Table 4:</b> Shows the Variable Changes pre and post Stoke Dysphagia Treatment.....	18

## List of the Figure

---

<b>Figure 1:</b> Show the Mean Improvement in Patient's Awareness pretest and post-test.....	18
----------------------------------------------------------------------------------------------	----

## Glossary of the Terms

---

**BHPI**.....Bangladesh Health Professions Institute

**CVA**.....Cerebrovascular Accident

**CRP**.....Centre for the Rehabilitation of the Paralysed

**‘P’ Value**.....Probability Value

**SLT**.....Speech and Language Therapy

**CSLTs**.....Clinical Speech and Language Therapist

## **Executive Summary**

---

### **Introduction**

Eating and drinking problem is common after stroke. It may impact on normal swallowing function and may cause for death. Studies say that most of the patients reduce their awareness about their eating and drinking skills after stroke. Therefore this study was included multiple objectives to measure patient's awareness. It would be helpful for the clinician to understand patient's awareness about their swallowing function and it would be helpful toward assessment, diagnosis and treatment more accurately.

### **Objective**

The main objective of the study was to explore patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment.

### **Methodology**

The study design was pretest-posttest under pre-experimental research. Purposive sampling procedure was followed and used a structure questionnaire to collect data. The data was analyzed using the calculation of inferential statistics parametric related t-test. To support the hypothesis and/or reject the null hypothesis the investigator used related t-test to find out 'p' value so that the result can be significant.

### **Results**

The result shows participant's awareness was reduced before treatment. But after receiving treatment they increased awareness about their eating and drinking skills where the 'p' value ( $<.0005$ ) was significant.

### **Conclusion**

Studies show the majority of stroke patients are unlikely reduced awareness about their eating and drinking skills. But after treatment they acknowledge their eating and drinking problems. So, investigator intended to measure the patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment from this study.

### **Key Words**

Awareness, Eating and Drinking Skills, and, Dysphagia, Dysphagia Treatment

## **Acknowledgement**

---

At first I would like express my very special thanks to the Almighty 'ALLAH' to give me patience to complete the work. I would like to express my sincere gratitude to many people who contributed to the completion of my research project.

I would like to give thanks to my honorable teacher and supervisor Sharmin Hasnat for providing me good opportunity to complete the project study with excellent guidance. I would also like to give special thanks to my honorable teachers Md. Jahangir Alam, Sushama Kanan, Md. Sazzad Hossain, and Donata Frogplaten who helped me giving relevant information. I would also like to give thanks Silvea Chowdhury; Clinical Speech and Language Therapist, CRP, Savar, Dhaka and I would also like to give thanks Jannatul Ferdous; Incharge& Clinical Speech & Language Therapist, CRP, Mirpur, Dhaka. I want to give honor and special thanks to authority of CRP who helped me by giving relevant information.

My Gratitude to all of my friends and superior wisher always who were helped me to complete this study. My special thanks to the librarian of Bangladesh Health Professions Institute (BHPI) and their associate for their kind support to find out related book, journal and also access to internet especially HINARI.

Finally, I must pay a great honor & many thanks to my teacher Mohammad Morshedul Quadir to help in preparing & complete the whole project and lastly I would like to give thanks to all the participants of this study.

**1.1 Introduction**

Stroke is the third leading cause of death and the leading neurological cause of dysphagia (eating and drinking problems, or swallowing difficulties) in the United States (Han and Haley, 1999; Donovan et al., 2013). The high incidence and high prevalence of stroke have a major impact on society after initial hospitalization and stroke rehabilitation (Han and Haley, 1999). 80% of stroke survivors return to the community, relying on their family member's emotional, informational, and instrumental support for daily living (Han and Haley, 1999). Swallowing dysfunction (dysphagia) is a common disabling issue after acute stroke (Mann, Hankey & Cameron, 1999). It should be assessed in all acute stroke patients because 42% to 67% patients are presenting with dysphagia after 3 days of stroke, 50% of these patients aspirate, and one third of patients who aspirate develop pneumonia that requires treatment (Mann, Hankey & Cameron, 1999; Donovan et al., 2013).

Findings of an objective swallowing assessment may subsequently confirm the patient's perception about their swallowing difficulty (Becker, 2011). Becker said (2011) in his study that individual who exhibit sign or symptoms of dysphagia such as coughing, silent aspiration, they were unaware about the problem until it is identified (Becker, 2011). Parker, Hamdy & Bowen (2004) demonstrate in their study that only 11% of patients acknowledged the presence of a swallowing problem; only 30% patients had been judged as having good awareness of their dysphagia symptoms, and 59% patients in their study demonstrated poor awareness of their dysphagia symptoms. Berti, Ladavas, & Della (1996) said when some individuals questioned about their dysphagia after the findings of the objective swallowing assessment reported that they do not have a swallowing problem. They also said such individuals subsequently refuse to follow prescribed diet recommendations, swallowing strategies or swallowing exercise regimens.

So, the core task of this study was to identifying awareness of patient's eating and drinking skills pre and post stroke dysphagia treatment.

## **1.2 Background and Literature Review**

Eating and drinking skills are part of an active, multisystem process that is reliant on an individual's oral motor functioning, physicality, oral sensation, and position in space (Fisher and Dusick, 2014). Eating and drinking problems may occur after stroke when the parts of the brain that control eating and drinking skills are affected (Fisher and Dusick, 2014). The medical term used to describe any difficulties or pain in eating, chewing, drinking or swallowing is dysphagia (Fisher and Dusick, 2014).

Dysphagia is known as a swallowing difficulty. It is a complex disorder that can lead to many other medical complications, including dehydration, malnutrition, airway obstruction, aspiration, and life-threatening pneumonia and death (Smithard et al., 1997). It is a common and distressing consequence of a stroke that increases the risk of death, mainly as a consequence of aspiration pneumonia which is implicated in one third of stroke deaths (Smithard et al., 1997). This consequence worsens the functional outcome post stroke, with swallowing recovery and leads to a longer hospital stay (Krueger, 2011; Parker, Hamdy & Bowen, 2004).

Dysphagia or difficulty swallowing is reported to occur in approximately 45% of patients with stroke (O'Loughlin and Shanley, 1998). It has been estimated that there are approximately 15 million Americans affected by dysphagia (Weihofen, Robbins & Sullivan, 2002). Approximately 3000 adults die every year because food gets stuck in their throats and blocks their airways, making it impossible to breathe (Weihofen, Robbins & Sullivan, 2002). 60% of deaths due to pneumonia are secondary to dysphagia-related aspiration (Smithard et al., 1997). Studies represent that 50% to 75% of nursing home residents have some difficulty with swallowing (O'Loughlin and Shanley, 1998).

There are different views concerning whether patients' awareness is necessary for effective rehabilitation. One perspective is that individuals with stroke have impaired swallowing awareness after the stroke, and they are less likely to participate in swallowing recommendations and therefore less likely to benefit from swallowing rehabilitation (Ownsworth and Clare, 2006). Patient's awareness about their disability after stroke represents an important aspect of functional recovery (Parker, Hamdy & Bowen, 2004). Parker, Hamdy & Bowen (2004), has established that dysphagic stroke

patients have a reduced awareness of their swallowing dysfunction and do not attempt to modify their swallowing dysfunction. Dysphagic stroke patients rarely perceive that they have a swallowing problem and many of them have a limited ability to follow the safe swallowing recommendations, for example due to cognitive impairment (Rosenvinge and Starke, 2005).

The clinical assessment has been reported in the literature that stroke patients with dysphagia have a poor swallowing awareness at the pharyngeal stage, and the clinicians detect only 40% to 60% who aspirates when they eat and drinks food (Cichero, 2006). Moreover the study showed that the majority of dysphagic stroke patients, who have good or poor awareness of dysphagia, are unlikely to acknowledge that they have a swallowing problem (Becker, 2011; Parker, Hamdy & Bowen 2004).

In a study by Parker, Hamdy & Bowen (2004), patients with dysphagia who were classified as demonstrating reduced awareness of dysphagia signs drank water significantly faster and took significantly larger volumes of water per swallow on a timed water test than individuals who demonstrated increased awareness of dysphagia signs. With improved understanding of impaired awareness of dysphagia, patients can better identify the nature of their swallowing dysfunction (Becker, 2011; Parker, Hamdy & Bowen 2004). With improved understanding of impaired patient awareness of dysphagia may also yield information on ways to improve patients' awareness (Becker, 2011). So they need for supervision so that they can regain independence with eating and drinking (Becker, 2011). So, it is very important to study patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment.

### **1.3 Rationale of the Study**

The aim of the study was to explore patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment. Patient's awareness about their eating and drinking problems after a stroke represents an important aspect of functional recovery (Parker, Hamdy & Bowen 2004). This study would be helpful to add knowledge about patient's own observation of their eating and drinking problems. It would be helpful for the Speech and Language Therapist (SLT) to understand their swallowing function, their own observation about their eating and drinking skills. It



would be helpful for the Speech and Language Therapist in making decision towards assessment, diagnosis and treatment. Patient's awareness about their eating and drinking skills would be valuable to improve their swallowing performance. Evidence suggests that patients with poor awareness of swallowing experience numerically more complications than stroke patient with increased awareness (Becker, 2011; Parker, Hamdy & Bowen 2004). If stroke patients gain awareness of their swallowing function, it would be effective in avoiding critical adverse health consequences (Becker, 2011). These adverse health consequences include not only aspiration and pneumonia but also dehydration, malnutrition, weight loss, and susceptibility to other illnesses, as well as death (Donovan, et al., 2013). Speech and Language Therapists can use this study information for doing best practice by concerning patient's awareness about their eating and drinking skills. As a result this study would be helpful to develop a treatment protocol for the patients with swallowing difficulties. Because this study had present clear evidence that patient's awareness about their eating and drinking skills has an important aspect of functional recovery. This study can be very helpful for the different professionals like SLT, doctor and others or organizations who are working or interested to work with patient's with swallowing problem after stroke. So, the core task of this study was to identifying awareness of patient's eating and drinking skills pre and post stroke dysphagia treatment.

#### **1.4 Operational Definition**

**Key word-**Awareness, Eating and Drinking Skills, Dysphagia and Dysphagia Treatment

##### **Awareness**

Awareness refers to neuro-cognitive, biopsychosocial and socio-environmental factors (Ownsworth and Clare, 2006). It is about individual self-perceptions may depend on the extent to which an individual's awareness is psychologically based and/or neurologically based (Ownsworth and Clare, 2006). In this study the investigator intended to find out the participant's awareness about their eating and drinking skills before treatment, and the improvement following post stroke dysphagia treatment.

## **Eating and Drinking Skills**

Eating and drinking skills are part of an active, multisystem process that is reliant on an individual's oral motor functioning, physicality, oral sensation, and position in space (Fisher and Dusick, 2014). Eating and drinking problems may occur after stroke when the parts of the brain that control eating and drinking skills are affected (Fisher and Dusick, 2014). In this study the investigator intended to find out the participant's awareness about their eating and drinking skills before treatment, and the improvement following post stroke dysphagia treatment.

## **Dysphagia**

Dysphagia is a swallowing disorder characterized by difficulty moving food from mouth to stomach, including all the behavioral and physiological aspects of the process which may occur in all age groups and may result from a variety of structural or physiological abnormalities (Roth and Worthington, 2011). Dysphagia may result from many medical conditions including neurological disorders e.g. stroke and cancer of the larynx and the surgical removal of structures involved in swallowing (Weihofen, Robbins & Sullivan, 2002; Cichero and Murdoch, 2006).

## **Dysphagia Treatment**

Dysphagia treatment refers to management of swallowing problems by a variety of medical and nonmedical procedures (Hegde, 2001). In this study the investigator intended to find out the participant's awareness about their eating and drinking skills before dysphagia treatment, and the improvement following post stroke dysphagia treatment.

## **1.5 Aim and Objective**

### **Aim**

To explore patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment.

### **Specific Objectives**

- 1.** To identify the patient's awareness about their eating and drinking skills before dysphagia treatment.
- 2.** To identify the patient's awareness about their eating and drinking skills after dysphagia treatment.
- 3.** To identify the changes of patient's awareness about their eating and drinking skills after dysphagia treatment.

### **2.1 Study Design**

In this study, investigator followed pre experimental research study. In pre-experimental research study, it is possible to describe phenomena or relationships or to compares between variables (Hicks, 1999). In this study investigator aim was to explore patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment. The specific type of pre-experimental research which was used in this study was the pretest-posttest design. The pretest-posttest study design is a single case study observed at two time points, one before the treatment and one after the treatment (Hicks, 1999). In this study, a single experimental group was observed at two time points either lacking control group, one before the treatment and one after the treatment. In pretest-posttest study design, here the experimental group acted as their own control group, no control or comparison group is employed (Bailey, 1997; Hicks, 1999; Depoy and Gitlin, 1998; Bonate, 2000). According to Kothari (2004), in pre and post-test study design a single test group or area is selected and the dependent variable is measured before the introduction of the treatment. The treatment is then introduced and the dependent variable is measured again. Changes in the outcome are presumed to be the result of the intervention or treatment (Bailey, 1997). So, pretest-posttest study design would be appropriate to conduct the study.

### **2.2 Study Setting**

The study was conducted in two settings. The settings were the clinical department of Speech and Language Therapy at CRP in Savar and Mirpur. The investigator used these settings so that the investigator got number of samples and there have also Speech and Language Therapist (CSLT) available who works with stroke with swallowing difficulties.

### **2.3 Study Population**

The people (both male and female) who were diagnosed as stroke with dysphagia was selected as study population for this study.

## **2.4 Sampling Selection Procedure**

The investigator used purposive sampling procedure to collect data. The purposive sampling in every item of the universe has an equal chance of inclusion in the sample (Kothari, 2004). The sample design is to be used must be decided by the researcher taking into consideration the nature of the inquiry and other related factors (Kothari, 2004). It also gives each possible sample combination an equal probability of being chosen (Kothari, 2004). The purposive sampling technique is a type of non-probability sampling that represents a specific characteristic by following inclusion and exclusion criteria (Tongco, 2007). The purposive sampling strategies are designed to enhance understandings of selected individuals or groups understanding or for developing theories (Andrew, Edersen, & McEvoy, 2011). The participants were a small group and each participant had eating and drinking problems after having stroke.

## **2.5 Sample Size**

In this study, the total numbers of participants were 10. Becker (2011) had done same study with 21 participants and Parker, Hamdy & Bowen 2004 (2004), had done same study with 27 participants. But it is very difficult to establishing the best size of sample since this decision depends very largely on the research which is being undertaken (Hicks, 1999). The small sample size is beneficial because the small sample size would be corrected by an increase in the stringency with which the analysis will conduct (Hicks, 1999; Bailey, 1997)). According Laake, Benestad & Olsen (2007), this number provide an experience of planning and structuring interviews, conducting and partially transcribing these, and generating quotes for research papers. This study project was in course curriculum, and there were verities of limitations, for example unavailable participants of related condition, time length etc. and so the investigator completed this study with 10 (ten) participants.

## **2.6 Sample Characteristics**

### **2.6.1 Inclusion Criteria**

1. The patients who were diagnosed as stroke diagnosed by doctor with dysphagia diagnosed by SLT.
2. The patients who had either oral or pharyngeal dysphagia or both (oropharyngeal) dysphagia were included for this study.
3. The patients who received 4 sessions were selected for post examination.
4. Both male and female participant were selected for this study.

### **2.6.2 Exclusion Criteria**

1. The dysphageal patients who had stroke with multiple problems (e.g. oral cancer) were not selected for this study.
2. The dysphageal stroke patients who had cognitive problems were not selected in this study.

## **2.7 Rational of Inclusion and Exclusion Criteria**

The investigator followed inclusion criteria and exclusion criteria for this study. Because the inclusion and exclusion is a criterion that represent specific characteristic that save time and prevent unexpected situation (Tongco, 2007). In this study, the investigator selected the participants who had stroke with dysphagia diagnosed by Speech and Language Therapist (SLT) and excluded the participants who had stroke with multiple conditions. Because dysphagia is not a disease but it may be a symptom of multiple conditions e.g. Parkinson disease, head and neck cancer, ALS, stroke and others (Weihofen, Robbins & Sullivan, 2002; Cichero and Murdoch, 2006). The investigator was selected both male and female participants who had either oral or pharyngeal or both (oropharyngeal) dysphagia. Because same studies were done by Parker, Hamdy & Bowen (2004) and Becker (2011) where the both participants were male and female and their each had oral or pharyngeal or both (oropharyngeal) dysphagia. Becker (2011) also described in his study that the participants who received dysphagia treatment were selected for post examination after 4 sessions. In this study, the investigator also selected the participants who had received dysphagia

treatment and they were selected for post examination after 4 sessions. But Becker (2011) excluded the dysphageal stroke patients who had cognitive problem. Because they were not able to give either verbal or written consent. So, the investigator also excluded the dysphageal stroke patients who had cognitive problem in this study.

## **2.8 Data Collection**

### **2.8.1 Data Collection Tools**

To explore patient's awareness of their eating and drinking skills following pre and post stroke dysphagia treatment, the investigator used a structure questionnaire. Same studies were done by Parker, Hamdy & Bowen (2004) and Becker (2011). They used structure questionnaires in their study to find out patient's awareness of their eating and drinking skills. In this study, the investigator also used a structure questionnaire (Annexure 3) and it was modified from the M.D. Anderson Dysphagia Inventory Scale through a pilot study (Cleeland, 2014). This was a structured questionnaire asks for patients awareness about their eating and drinking skills which helps the clinicians to understand how patients feel about their eating and drinking skills following pre and post stroke dysphagia treatment (Cleeland, 2014).The structure questionnaire was close ended (yes/no) and the mean scores were compared in two times before and after treatment.

### **2.8.2 Data Collection Procedure**

The investigator assessed the participant's awareness about their eating and drinking skills pre and post stroke dysphagia treatment. Before starting the treatment, the investigator did an initial assessment (pretest) and after receiving 4 sessions, the investigator did a final assessment (posttest). Ownsworth & Clare (2006), Becker (2011) and Parker, Hamdy & Bowen (2004) also described this procedure to collect data in their studies. The data were collected from the participants by receiving consent (Annexure 4), face to face interview and using structured close ended (yes/no) questionnaire (Annexure 3). There were total 10 questions in the data collection tool. To score in the data collection tool, every question was 1 point for right answer. If the question answer is wrong, there were 0 points. For the initial assessment at first participant received thin, thick and some modified texture food in

the first session. Then at the same time investigator received the participant's and Speech Therapist response. If the participants and therapist response is same, then the participants got '1' point and if it is not same, then the participants got '0' point. Same procedure was followed when participants received 4 sessions and it was final assessment to explore patient's awareness about their eating and drinking skills pre and stroke dysphagia treatment. Same data collection procedure was done by Becker 2011; Parker, Hamdy & Bowen (2004).

## **2.9 Treatment Process**

The whole therapy procedures are as follows-

**Duration of therapy:** Each patient got 4 sessions of therapy

**Frequency of therapy:** 2 days per week

**Time of each session:** 40 minutes

**Therapy provider:** Clinical Speech and Language Therapist (CSLT)

**2.9.1 Component of the Training Program:** The component of the training program as bellow-

### **Environmental Modification**

- Quiet single room (patient-therapist)
- Minimizing background noise
- Quiet single room with low-level background noise (patient-therapist and another person-patient to concentrate on tasks while therapist and other person have intermittent conversation)

### **Bolus Type**

#### **Thin Liquid**

Thin liquid (i.e. water) was used in the study. Thin liquid should use when a patient has delayed pharyngeal swallow or reduced airway closure (Cichero and Murdoch, 2006). So, investigator used thin liquid in this study.



### **Thick Liquid**

It uses when a patient reduced tongue strength, range or coordination of movement or reduced pharyngeal wall contraction (Cichero and Murdoch, 2006). So, investigator used thick liquid to observe the participant's tongue strength, range or coordination of movement.

### **Texture Modified Foods**

Vitamised or puree food was trail. It is used when patient's reduced tongue strength, range or coordination of movement or reduced tongue base movement or reduced pharyngeal wall contraction (Cichero and Murdoch, 2006). So, investigator used texture modified food to observe the participant's tongue strength, range or coordination of movement.

### **Materials**

- **Cup size:** 250 ml small cup size
- **Spoon:** Spoon was used to food intake.

### **Positioning**

Full support for thorax, shoulder girdle, neck and head to provide stability (external)

### **Seating Situation**

- Dining room chair and wheelchair were used in therapy session

### **Muscle or Muscle Group Exercise/Therapy**

#### **Oral Motor Exercises**

- Masako manoeuvre
- Shaker or 'head lift' exercises
- Mendelsohn manoeuvre
- Effortful swallow manoeuvre
- Dry swallow

## **Combined Therapies**

- Diet modification exercises and counseling
- Diet modification & oral motor exercises
- Compensatory strategies

### **2.9.2 Evaluation**

In this study, each patient received 4 sessions. To measure patient's awareness about their eating and drinking skills before treatment, investigator used the data collection tool (Annexure 3) two times and compares their mean score to evaluate about their awareness. Same procedure was followed by Boczko (2006), Becker (2011), and Parker, Hamdy & Bowen (2004) in their study.

### **2.10 Data Analysis**

The investigator used statistical calculation using the inferential statistics parametric related t-test to find out patient's awareness about their eating and drinking skills following pre and post stroke dysphagia treatment. The inferential statistics tried to find out the differences between two sets of scores (Andrew, Edersen & McEvoy, 2011). In this study, investigator tried to find out difference between two set score. Generally t-test is used when subjects have been used as their own control group, to compare the mean score and small samples are available (Bailey, 1997; Andrew, Edersen & McEvoy, 2011). In this study, the mean score were compared, the small sample group of participants acted as their own control group. Hicks (1999) claimed that "the related t-test is especially suitable for 'before and after' type designs, for instance, when the investigator wish to compare the effects of a treatment on one group of subjects". In this study, to explore patient's awareness about their eating and drinking skills, the subject group was tested twice and study was before and after type design. So, to analyze patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment t-test, the investigator calculated the total score using inferential statistics parametric related t-test.

## **2.11 Hypothesis**

This study had the relationship between different variables. The post stroke dysphagia treatment increased patient's awareness and their eating and drinking skills. Before treatment introduction the participant's mean score in awareness were reduced about their eating and drinking skills. But after treatment participant's mean score in awareness were increased and helps to reduce their eating and drinking problems. It indicates their one tail hypothesis ( $H_1$ ) where null hypothesis was '0' ( $H_0$ ). Same study was done by Boczko (2006), Becker (2011), Ding and Logemann (2008), Dollaghan, (2007), Ownsworth and Clare (2006), Parker, Hamdy & Bowen (2004) and Weihofen, Robbins and Sullivan (2002) and they describe such kind of variables in their study.

## **2.12 Ethical Consideration**

At first when the investigator submitted the study proposal for approval from ethical board. Investigator took permission from the course coordinator of Speech & Language Therapy Department BHPI (Bangladesh Health Professions Institute) and the Clinical Head of the Speech and Language Therapy at CRP (Centre for the Rehabilitation of the Paralysed) which is given Annexure 1. The investigator informed to the participant by written consent in Bangla which was given to all participants/caregiver prior to the completion of the pre-test (Annexure 4). The investigator received a written form from every participant/caregiver including signature. Name and identity of the participants documented in this study by following confidentiality. All the data was stored in a secured place. Only selected persons were applicable to access of that information. Considering all those ethical norms and values no ethical problems were raised in this study. No compensation was provided for participating in this study and voluntary withdrawal without consequence was applicable. So every effort was made to keep information confidential. The investigator also was taken proper permission where it's necessary.

The main objective of this research was to find out the patient's awareness about their eating and drinking skills pre and post dysphagia treatment. The investigator selected 10 samples purposively for this study and the samples were assessed 2 times before and after implementing dysphagia treatment. The results were analyzed by statistical calculation using the inferential statistics parametric related t-test. After completing the statistical analysis of the data, the investigator found the mean scores and compare them before and after treatment where the investigator tried to define whether their awareness is reduced and increased. In this study, the numerical data is described statistically by the use of descriptive statistics (mean). Demographic data of the participants and the findings of the study in different target areas are also presented in this chapter by using table and bar chart.

### 3.1 Demographic Information of the Participants

10 participants with the condition of stroke with dysphagia were performed in this study. In the following table demographic characteristics of the participants is presented below.

**Table 1: Demographic characteristics of the participants**

Demography	Number	Percentage
<b>Gender</b>		
Male	9	90%
Female	1	10%
<b>Education</b>		
Illiterate	1	10%
Primary	2	20%

<b>Demography</b>	<b>Number</b>	<b>Percentage</b>
SSC	2	20%
HSC	3	30%
Graduate/Above	2	20%
<b>Occupational Status</b>		
Farmer	4	40%
Businessman	3	30%
Housewife	1	10%
Retired/Aged	2	20%
<b>Living Status</b>		
Urban	4	40%
Rural	6	60%

Among 10 participants 90% (9) were male and 10% (1) were female. Among 10 participants regarding educational status were illiterate 10% (1), primary 20% (2), SSC 20% (2), HSC 30% (3) and graduate/above were 20% (2). Their occupational status were 40% (4) farmer, 30% (3) businessman, 20% (2) retire/aged and 10% (1) female. Their most of participants were from rural area 60% (6) and 40% (4) from urban area.

### **3.2 Incidence of the Participant's Stroke with Dysphagia According to Age**

In this study, 10 participants were performed and their incidence of eating and drinking problem according to age is presented following the table.

**Table 2: Incidence of the participant's stroke with dysphagia according to age**

<b>Age (In Year)</b>	<b>Number</b>	<b>Percentage</b>
40-50	3	30%
51-60	2	20%
61-70	4	40%
71-80	1	10%

Table 2 present that among 10 participants 30% (3) age range were 40-50, 20% (2) age range were 51-60, 40% (4) age range were 61-70 and 10% (1) age range were 71-80. From this table it is found that between 61-70 age ranges is most prevalent 40% (4) for CVA (Cerebrovascular Accident) with dysphagia. The lowest prevalent of the participants found between 71-80 years 10% (1).

### **3.3 Participants Types of Dysphagia**

In this study every participant had stroke with different types of eating and drinking problem (dysphagia) that are presented following table.

**Table 3: Percentage of the participants types of dysphagia**

<b>Types of dysphagia</b>	<b>Number</b>	<b>Percentage</b>
Oral	0	0%
Pharyngeal	4	40%
Oropharyngeal	6	60%

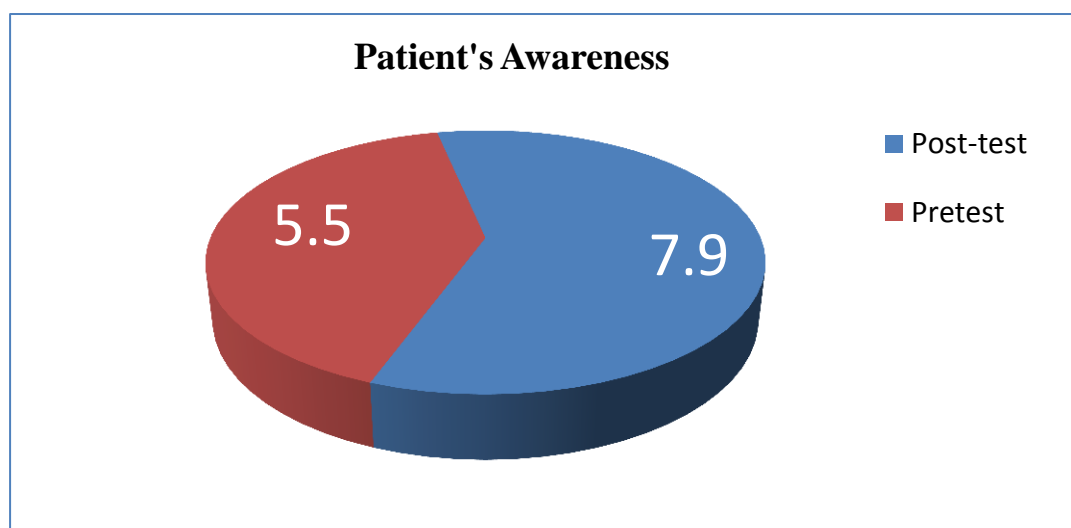
Table 3 present that 10 participants had different types of dysphagia. Among 10 participant 40% (4) had pharyngeal dysphagia, 60% (6) had oropharyngeal dysphagia and there no one had only oral dysphagia. In this study most prevalent was oropharyngeal dysphagia 60% and it provides clear information that after stroke most of the patients develop oropharyngeal dysphagia.

### 3.4 Significance Level in Awareness measure pre and post Stroke Dysphagia Treatment

**Table 4: Shows the variable changes pre and post stroke dysphagia treatment**

Variable	Mean Score		Mean Difference	't' Value	'p' Value
	Pretest	Post-test			
Awareness Level	5.5	7.9	2.4	6.466	.0005

From the table we can see the mean score of patient's awareness changes about their eating and drinking skills before and after receiving treatment.



**Figure 1:** Show the mean improvement in patient's awareness pre test and post-test.

From the Figure 1 we can see the mean score improvement in patient's awareness about their eating and drinking skills after receiving treatment.

### 3.5 Interpretation of the Result

In this study 90% were male and 10% were female. The investigator analyzed the data by using related 't' test and tried to measure patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment (Treatment Process 2.9). The changes of mean score before and after treatment calculation is presented in Annexure 2. The findings of the result in this study shows the mean score of the participant's is increased after receiving treatment (table 4 and Figure 1). Therefore it can be said that

before treatment participant's awareness about their eating and drinking skills were reduced. Bird, et al. 1994, Boczko, 2006, Ding and Logemann, 2008, Parker, Hamdy & Bowen 2004 provides evidence that patient's awareness of their swallowing function do not always agree with the findings of objective assessment. But they also said in their study that after treatment introduction most of patients increased awareness about their eating and drinking skills. In this study the statistical analysis of the data ( $t = 6.466$ ,  $df = 9$ ,  $p = <.0005$ ) represented that the probability of the random error and the usual cut-off point for claiming support for significant level of the experimental hypothesis is 5% (Hicks, 1999). Therefore it can be said that the findings of the result in this study was significant.



The purpose of this study was to explore patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment. The participants were selected after receive a formal diagnosis of oral, pharyngeal or both oropharyngeal dysphagia with stroke from SLT. Because dysphagia can be a symptom of multiple conditions e.g. Parkinson disease, head and neck cancer, ALS, stroke and others (Weihofen, Robbins & Sullivan, 2002; Cichero and Murdoch, 2006).

The data was analyzed by using inferential statistical analysis to find out the participant's changes of awareness (awareness increased or reduced) about their eating and drinking skills following post stroke dysphagia treatment (Treatment Process 2.9). The inferential statistical analysis is the process of generalization; use to compare the mean scores, testing the hypothesis and others (Kothari, 2004). It also helps to support for significant level of the experimental hypothesis (Hicks, 1999).

The overall results that were represented in this study showed positive changes of participant's awareness about their eating and drinking skills after treatment. After treatment, most of the participants increase their awareness in their swallowing performance and were able to reduce their dysphagia. Ownsworth and Clare (2006), Becker (2011), Parker, Hamdy & Bowen (2004) also described such kind of positive changes of patient's awareness about their eating and drinking skills after treatment. They described in their study that three of the 9 dysphagic patients were considered to have increased awareness six were considered to have reduced awareness of their eating and drinking skills. But after treatment their swallowing performance in awareness were increased at significant level.

This study shows when participants increase their awareness in swallowing performance, it helped them to reduce their eating and drinking problems. It indicates there is a relationship between patient's awareness and swallowing performance. Ownsworth and Clare (2006) also described such kind of relationship in their study.

In this study the variable testing by statistical analysis showed the difference means score (table 4) of experimental group in the pretest and post-test was statistically significant. Because Hicks (1999) said that if the experimental hypothesis is less than 5% then the usual cut-off point for claiming support for significant level. So the hypothesis was supported with the presented evidence of the current study. It means pre and post stroke dysphagia treatment increase patients awareness of their eating and drinking skills.

#### **4.1 Patient's Awareness about their Eating and Drinking Skills before Treatment**

This study shows patient's awareness before treatment. Most of the participants were reduced awareness about their swallowing performance after stroke. They cough, take a great effort, take long periods of time, did not have self-conscious and take huge amount of food to eat and drink. But they did not acknowledge their eating and drinking problem when they were asked do you have eating and drinking problems? Boczko (2006) demonstrated in his study that most of the dysphagic patients could not recognize their swallowing problems after onset diagnosis of stroke.

Becker (2011) found in his study that 40% patients were classified as reduced of their eating and drinking skills after acute stroke. Another study by Parker, Hamdy & Bowen (2004) said that stroke with dysphagic patients reduce their awareness in swallowing and do not made any attempt to modify their swallowing performance. Boczko (2006), Becker (2011), Ding and Logemann (2008), Ownsworth and Clare (2006) and describe in their study that patients who were reduced awareness in performance eating and drinking, they did not got significant improvement after treatment. In this study, the investigator also found such kind of findings where participants did not acknowledge their eating and drinking problem at the initial assessment.

## **4.2 Patient's Awareness about their Eating and Drinking Skills after Treatment**

This study shows patient's awareness were changed about their eating and drinking skills after receiving post stroke dysphagia treatment (Treatment Process 2.9). The participants were reduced their eating and drinking problems such as coughing, effortful swallow, taking long periods of time to eat and drink, reducing to take huge amount of food, and developed self-conscious skills about their swallowing performance. Becker (2011), Ding and Logemann (2008), Parker, Hamdy & Bowen (2004) and Ownsworth and Clare (2006) demonstrated in their study that patients with increased awareness are more sensitive about their swallowing problem and showed significant improvement of their eating and drinking skills after receiving treatment. In this study, the investigator also found such kind of findings where participants did acknowledge their eating and drinking problem at the final assessment and they attempt to reduce their eating and drinking problems.

In this study the investigator used pretest-posttest study design due to lack of control group. It means the study was done within same group at different time and the participants acted as their own control group. The research could explore more accurate information if there were a control group of participants (Hicks, 1999). But in the study settings it was not possible to arrange the consequences.

There was another limitation. Only ten participants were performed to measure participant's awareness of their eating and drinking skills pre and post stroke dysphagia treatment. The larger number of sample size provides representative picture of whole study (Hicks, 1999; Bailey 1997; Depoy and Gatlin 1998). So it was not easy to generalize the result for whole participants with stroke with dysphagia.

As there was limited number of participants, so the participant's external validity in this study was decreased and there might be lack of harmony about distributing of confounding variables such as socio-economic status, time of onset and severity of the condition. These unmeasured variables were not controlled in the analysis might have affect the outcome. However the study setting was need long time to complete this study. But the study was done within shorter time. At this time no financial support was given to conduct this study projects. As result it was not possible to move any other hospital to collect data.

Another limitation was lack of available literature. There was no available research done in Bangladesh. Bangladesh Health Professions Institute (BHPI) library, there was no relevant data found in this area. So there was lack access of book, research article and journal article.

From this study investigator found significant result in measure patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment. But this study had time limitation, lack of participants, and many others external variables like socio-economic status, time of onset. These variables did not measure. So another study may conduct with a longer duration, larger sample group and different variable for more valid result.

This study was done only in two settings. They were Speech and Language Therapy Dept. at Savar and Mirpur. So this study may conduct in different settings like hospital, different organizations, and rehabilitation settings. Because more significant result can be helpful for the clinician to understand patients own observation about their eating and drinking problems. This study can also be helpful for evidence based practice toward assessment, diagnosis and treatment in CRP, Bangladesh. As many other researchers like Boczko (2006), Becker (2011), Ding and Logemann (2008), Dollaghan, (2007), Ownsworth and Clare (2006), Parker, Hamdy & Bowen (2004) and Weihofen, Robbins and Sullivan (2002) did such kind of study.

Swallowing dysfunction in term of dysphagia is a common name after stroke. It may impact normal swallowing function and on long-term prognosis for potential complications. As a result the recovery from swallowing dysfunction may remain uncertain (Mann, Hankey & Cameron, 1999). So swallowing function should be assessed in all acute stroke patients.

In this study participants were assessed (Annexure 2) before and after implementation of the treatment introduction. This study represents that patient with dysphagia reduced awareness about their eating and drinking skills after stroke. At this time their mean score of the treatment lower than after treatment mean score. Study has established that individuals who exhibit signs or symptoms of dysphagia may subsequently are unaware about their swallowing problem exists until it is identified (Becker, 2011; Parker, Hamdy & Bowen 2004).

But after post stroke dysphagia treatment (Treatment process 2.9) they acknowledge their swallowing difficulties. At this time their mean score was better than before treatment. It indicates their increase awareness about their eating and drinking skills. Boczko (2006), Becker (2011), Ding and Logemann (2008), Ownsworth and Clare (2006), Parker, Hamdy & Bowen (2004) and Weihofen, Robbins and Sullivan (2002) also describe such kind of findings in their study.

Evidence based practice is important for treatment outcome (Dollaghan, 2007). This study shows patient's awareness makes an important aspect for functional recovery from swallowing difficulties (Becker, 2011; Parker, 2004). Speech and Language Therapy (SLT) is an innovative profession in Bangladesh. So, to make this treatment program for evidence based practice, this study was conducted with the aim to explore patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment.

## References

---

- Andrew, P. S. D., Edersen, Mark. P., & McEvoy, D. C. (2011). *Research methods and design in sport management*. Library of congress. USA. Retrieved 12 August 2014 from <http://www.books.google.com.bd/books>
- Bailey, D. M. (1997). *Research for the health professional: a practical guide (2nd ed.)*. Davis Company, USA.
- Becker, Lynn Sturtz. D. (2011). Patient awareness of dysphagia. *University of Iowa: Iowa research online*. Retrieved 18 July 2014 from <http://www.ir.uiowa.edu/etd/925>
- Berti, A., Ladavas, E., & Della Corte, M. (1996). Anosognosia for hemiplegia, neglect dyslexia, and drawing neglect: clinical findings and theoretical considerations. *J Int Neuropsychol Soc*, 2(5), 426-440. Retrieved 12 August 2014 from <http://www.ncbi.nlm.nih.gov/pubmed/9375168>
- Bird, M. R., Woodward, M. C., Gibson, E. M., Phyland, D. J., & Fonda, D. (1994). Asymptomatic swallowing disorders in elderly patients with Parkinson's disease: a description of findings on clinical examination and video fluoroscopy in sixteen patients. *Age Ageing*, 23(3), 251-254. Retrieved 15 August 2014 from <http://www.ncbi.nlm.nih.gov/pubmed/8085513>
- Boczko, F. (2006). Patient's awareness of symptoms of dysphagia. *J Am Med Dir Assoc*, 7(9), 587-590. Retrieved 17 August 2014 from <http://www.ir.uiowa.edu/cgi/viewcontent.cgi?article=2310&context=etd>
- Bonate, Peter L. (2000). *Analysis of pretest-posttest designs*. Library of Congress Cataloging in Publication Data. USA. Retrieved 12 August 2014 from <http://www.books.google.com.bd/books?>

- Cichero, J. Y., & Murdoch, B. (2006). *Dysphagia foundation, theory and practice*. USA: John Wiley & Sons Ltd.
- Cleeland, S. C. (2014). The m. d. anderson symptom inventory. *The University of Texas MD Anderson Cancer Center*. Retrieved 1 October 2014 from [http://www.mdanderson.org/education-and-research/departments-programs-and-labs/departments-and-divisions/symptom-research/symptom-assessment-tools/MDASI\\_userguide.pdf](http://www.mdanderson.org/education-and-research/departments-programs-and-labs/departments-and-divisions/symptom-research/symptom-assessment-tools/MDASI_userguide.pdf)
- Depoy, E., & Gitlin, L. N. (1998). *Introduction to research: understanding and applying multiple strategies, (2nd ed.)* Mosby. New York.
- Dollaghan, C. A. (2007). *The handbook for evidence based practice in communication disorder*. Baltimore: Paul H. Brookes.
- Donovan, J. N., Daniels, K. S., Jeff Edmiaston, J., Weinhardt, J., Summers, D., & Mitchell, H. P. (2013). Dysphagia screening: state of the Art: invitational conference proceeding from the state-of-the-art nursing symposium, international stroke conference 2012. *Paper presented at The American Heart Association*. Retrieved 18 September 2014 from <http://www.stroke.ahajournals.org/content/30/4/744.long.pdf>
- Fisher, F. T., & Dusick, A. (2014). Case study: caregiver perception of pediatric multidisciplinary feeding outpatient clinic. *The Open Journal of Occupational Therapy*. Retrieved 27 August 2014 from <http://www.scholarworks.wmich.edu/ojot/vol2/iss1/4>
- Han, B., & Haley, W. E. (1999). Family care giving for patients with stroke: review and analysis. *Stroke*, 30 (7), 1478-85. Retrieved 28 September 2014 from <http://www.ncbi.nlm.nih.gov/m/pubmed/10390326/>
- Hegde, M. N. (2001). *Hegde's pocket guide to treatment in speech-language pathology (2<sup>nd</sup> ed.)*. Canada: Delmar.



- Hicks, C. M. (1999). *Research methods for clinical therapists: applied project design and analysis (3<sup>rd</sup> ed.)*. Edinburgh: Churchill Livingstone.
- Kotharai, R. C. (2004). *Research methodology: methods & techniques*. New age international (p) limited, publishers. New Delhi. Retrieved 17 August 2014 from <https://www.books.google.com.bd/books?hl=en&lr>
- Krueger, H. (2011). The quality of stroke care in canada. *Canadian Stroke Network*. Retrieved 28 September 2014 from. Retrieved 17 July 2014 from <http://www.canadianstrokenetwork.ca/wp-content/uploads/2011/06/QoS-EN1.pdf>
- Laake,P., Benestad, Breien. H., & Olsen, Reino B. (2007). *Research methodology in the medical and biology science*. Gyldendal Norsk Forlag: UK
- Mann, G., Hankey, G. J., & Cameron, D. (1999). Swallowing function after stroke prognosis and prognostic factors at 6 months. *Stroke*, 30, 744–748. Retrieve 18 September 2014 from <http://www.ncbi.nlm.nih.gov/m/pubmed/1018787>
- O'Loughlin, G., & Shanley, C. (1998). Swallowing problems in the nursing home: a novel training response. *Dysphagia*, 13, 172-183. Retrieved 28 September 2014 from <http://www.ncbi.nlm.nih.gov/m/pubmed/9633159.pdf>
- Owensworth, T., & Clare, L. (2006). The association between awareness deficits and rehabilitation outcome following acquired brain injury. *Clinical psychology review*, 26, 783-795. Retrieved 10 August 2014 from <http://www.Sciencedirect.com>
- Parker, C. Power M., Hamdy, S., & Bowen, A. (2004). Awareness of dysphagia by patients following stroke predicts swallowing performance. *Springer Verlag*. New York. Retrieved 21 July 2014 from <http://www.dent.niigata-u.ac.jp/dysphagia/education/reading/3taniguchi.pdf>

- Rosenvinge, K. S., & Starke, D. L. (2005). Improving care for patients with dysphagia. *Oxford Journals Medicine & Health Age and Ageing*, 34, 587-593. Retrieved 12 August 2014 from <http://www.ageing.oxfordjournals.org/content/34/6/587.abstract>
- Roth, F. P., & Worthington, C. K. (2011). *Treatment resource manual: for speech and language pathology (4<sup>th</sup> ed.)*. USA: Delmar.
- Smithard, D. G., O'Neill, P. A., England, R., Park, C., Wyatt, R., Martin, D., & Morris, J. (1997). The natural history of dysphagia following a stroke. *Dysphagia*, 12, 188–193. Retrieved 10 August 2014 from <http://www.ncbi.nlm.nih.gov/pubmed/9294937>
- Tongco, M D C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research & Applications*, 5, 147-158. Retrieved 10 August 2014 from <http://www.scholarspace.manoa.hawaii.edu/handle/10125/227>
- Weihofen, D. L., Robbins, J., & Sullivan, P. A. (2002). *Easy-to-swallow, easy-to-chew cookbook*. Canada: Navata Associates, Inc.

## Annexure-1

### Permission letter to conduct the research project

Date: 15/09/2014

To

Head of the Department (Acting)

Department of Speech & Language Therapy

Bangladesh Health Professions Institute (BHPI)

CRP, Chapain,

Savar, Dhaka.

**Subject:** Prayer for seeking permission to conduct the research project.


Sir,

With due respect I state that I am a 4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy of BHPI, the academic institute of CRP. I am sincerely seeking permission to conduct the research project as the partial fulfillment of the requirements for the degree of B. Sc. in Speech and Language Therapy. The title of my research is 'Patients' awareness of their eating and drinking skills pre and post stroke dysphagia treatment.' The main objective of study is to explore patients' awareness of their eating and drinking skills pre and post stroke dysphagia treatment.

Now I am seeking your kind attention to approve me to conduct the research project and I would like to assure that anything of my research project will not be harmful for the participants.

So, I therefore pray and hope that your honor would be kind enough to grant me the permission of conduction the research project and will help me to conduct a successful study as a part of my course.

Your obediently,

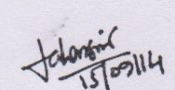
 15.09.14

(Md. Khorshed Alam)

4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy

Bangladesh Health Professions Institute (BHPI),

CRP, Savar, Dhaka.

Course Coordinator	Comments and Signature
Md. Jahangir Alam Head of the Department (Acting) Department of Speech and Language Therapy BHPI, CRP, Chapain, Savar, Dhaka-1343	Permitted to conduct the study  15/09/14

Permission Letter from BHPI for Data Collection

Date: 13/09/2014

To

Head of the Department (Acting)

Department of Speech & Language Therapy

Bangladesh Health Professions Institute (BHPI)

CRP, Chapain,

Savar, Dhaka.

**Subject:** Prayer for seeking permission to conduct the Data Collection.

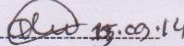
Sir,

With due respect I state that I am a 4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy of BHPI, the academic institute of CRP. I am sincerely seeking permission to conduct the data collection of the research project as the partial fulfillment of the requirements for the degree of B. Sc. in Speech and Language Therapy. The title of my research is 'Patients' awareness of their eating and drinking skills pre and post stroke dysphagia treatment.' The main objective of study is to explore patients' awareness of their eating and drinking skills pre and post stroke dysphagia treatment.

Now I am seeking your kind attention to approve me to start the data collection for research project and I would like to assure that anything of my research project will not be harmful for the participants.

So, I therefore pray and hope that your honor would be kind enough to grant me the permission of conduction the data collection and will help me to conduct a successful study as a part of my course.

Your obediently,

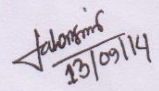


(Md. Khorshed Alam)

4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy

Bangladesh Health Professions Institute (BHPI),

CRP, Savar, Dhaka.

Course Coordinator	Comments and Signature
Md. Jahangir Alam Head of the Department (Acting) Department of Speech and Language Therapy BHPI, CRP, Chapain, Savar, Dhaka-1343	You can start your data collection.  13/09/14



**Permission Letter from Clinical Department of Speech and Language Therapy**

Date: 13/09/2014

To

Head of the Department

Department of Speech and Language Therapy

CRP, Savar, Dhaka.

**Subject:** Prayer for seeking permission to conduct data collection in Clinical Department of Speech and Language Therapy at Savar for the research project.

Sir,

With due respect I state that I am a 4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy of BHPI, the academic Institute of CRP. I am sincerely seeking permission to conduct the data collection of the research project as the partial fulfillment of the requirements for the degree of B. Sc. in Speech and Language Therapy. The title of my research is "Patient's awareness of their eating and drinking skills pre and post stroke dysphagia treatment." The main objective of study is to explore patients' awareness of their eating and drinking skills pre and post stroke dysphagia treatment.

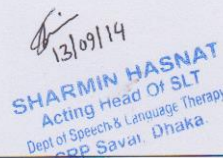
Now I am seeking your kind attention to approve me to start the data collection for research project and I would like to assure that anything of my research project will not be harmful for the participants.

So, I therefore pray and hope that your honor would be kind enough to grant me the permission of conduction the data collection from the Clinical Department of Speech and Language Therapy for the research and will help me to conduct a successful study as a part of my course.

Your Obediently,

-----  
(Md. Khorshed Alam)

4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy Department,  
Bangladesh Health Professions Institute (BHPI),  
CRP, Savar, Dhaka-1343

Coordinator	Comments and Signature
Sharmin Hasnat Lecturer & Acting Head of SLT, CRP Department of Speech and Language Therapy CRP, Chapain, Savar, Dhaka	 13/09/14 SHARMIN HASNAT Acting Head Of SLT Dept of Speech & Language Therapy CRP Savar, Dhaka

**Permission Letter from Clinical Department of Speech and Language Therapy**

Date: 14/10/2014

To

Incharge & Clinical Speech & Language Therapist

Department of Speech and Language Therapy

CRP, Mirpur, Dhaka.

**Subject:** Prayer for seeking permission to conduct data collection in Clinical Department of Speech and Language Therapy at Mirpur for the research project.

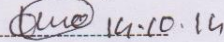
Madam,

With due respect I state that I am a 4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy of BHPI, the academic Institute of CRP. I am sincerely seeking permission to conduct the data collection of the research project as the partial fulfillment of the requirements for the degree of B. Sc. in Speech and Language Therapy. The title of my research is 'Patients' awareness of their eating and drinking skills pre and post stroke dysphagia treatment.' The main objective of study is to explore patients' awareness of their eating and drinking skills pre and post stroke dysphagia treatment.

Now I am seeking your kind attention to approve me to start the data collection for research project and I would like to assure that anything of my research project will not be harmful for the participants.

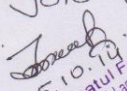
So, I therefore pray and hope that your honor would be kind enough to grant me the permission of conduction the data collection from the Clinical Department of Speech and Language Therapy for the research and will help me to conduct a successful study as a part of my course.

Your Obediently,

 14.10.14

(Md. Khorshed Alam)

4<sup>th</sup> year student of B. Sc. in Speech and Language Therapy Department,  
Bangladesh Health Professions Institute (BHPI),  
CRP, Savar, Dhaka-1343

Coordinator	Comments and Signature
Jannatul Ferdous Incharge & Clinical Speech & Language Therapist Department of Speech and Language Therapy CRP, Mirpur, Dhaka.	Approved for data collection.  15.10.14 Jannatul Ferdous Clinical Speech & Language Therapist & Incharge Speech & Language Therapy Dept CRP, Mirpur

## Annexure 2

### 2.1 Significance Level in Awareness Measure Pre and Post Stroke Dysphagia Treatment

Awareness measure pre and post stroke dysphagia treatment

Patients Code	Pre-test x1	Post-test x2	Difference between pretest and post test	
			d= x2-x1	d <sup>2</sup> =
P1	4	8	4	16
P2	6	9	3	9
P3	7	9	2	4
P4	5	7	2	4
P5	7	8	1	1
P6	7	8	1	1
P7	5	6	1	1
P8	4	8	4	16
P9	4	7	3	9
P10	6	9	3	9
	$\sum x_1 = 55$	$\sum x_2 = 79$	$\sum d = 24$	$\sum d^2 = 70$
	$\bar{x}_1 = 5.5$	$\bar{x}_2 = 7.9$		

## 't' Formula

To find out the value of 't' the investigator has used the following formula.

$$'t' = \frac{\sum d}{\sqrt{\frac{N \sum d^2 - (\sum d)^2}{N-1}}}$$

$\sum d$  = The total of differences.

$(\sum d)^2$  = The total of the differences squared.

$\sum d^2$  = The total of squared differences.

N = Number of the subject.

N-1 = degree of freedom.

The sign is df. A complex concepts involved in some statistical tests which refer to the extent to which data have the capacity to vary one certain limit have been imposed (Hicks, 1999).

$\sqrt{\quad}$  = the square root of the final calculation of everything under the square root sign. In this study, the hypothesis was one tailed as it was predicting a specific direction to the results (Hicks, 1999). To support the hypothesis and/or to reject the null hypothesis the investigator used related t-test to find out the 'p' value so that the result can be significant.

$$'t' = \frac{24}{\sqrt{\frac{10 \times 70 - (24)^2}{10-1}}}$$

$$'t' = 6.466$$

Calculating the degree of freedom (df) from the formula,

$$df = N-1$$

$$= 10-1$$

$$= 9 \text{ Now 't' value for significance,}$$



Nine numbers of critical values of 't' =

1.833      2.262      2.822      3.250      4.297      4.780

Here the 't' value is larger than 4.780. This means that for this study's one-tailed hypothesis, the probability associated with this 't' value of 6.446 comes somewhere for 't' = 6.446 is less than 0.05% (P value:  $P < 0.0005$ ).

### Annexure 3

#### Swallowing Questionnaire

The detailed question based assessment used on all dysphagic patients to explore patient's awareness about their eating and drinking skills pre and post stroke dysphagia treatment.

**Patient Name:**

**Occupation:**

**Age:**

**Contact No:**

**Sex:** Male/Female

**Diagnosis:**

**Living Status:** Urban/Rural

#### Please Follow the Guideline

Patient and therapist response = (√)

If response same = 1 point

If response not same = 0 point

#### Before/After Treatment

No	Questions	Patient Response		Therapist Response		Point
		Yes	No	Yes	No	
01.	Do you think you have swallowing difficulties?					
02.	Do you think you need to be worked on swallowing?					
03.	Do you think you cough when you try to drink liquids?					
04.	Do you think you take great effort to eat and drink?					
05.	Do you think you take long periods of time to eat?					
06.	Do you think you food spillage when you eat and drink?					

No	Questions	Patients Response		Therapist Response		Point
		Yes	No	Yes	No	
07.	Do you think you need to be modification of food?					
08.	Do you think you have self-conscious when you eat and drink?					
09.	Do you think you swallow a huge amount of food?					
10.	Do you think you are working for swallowing improvement?					
<b>Total Score</b>						

**Thanks for participation!!!**

## Annexure 4

### Consent Form

**Research title:** “Patients awareness about their eating and drinking skills pre and post stroke dysphagia treatment.” I am Md. Khorshed Alam (investigator) is a 4<sup>th</sup> year student of B. Sc. in Speech & Language Therapy of Bangladesh Health Professions Institute (BHPI). This study is a part of course curriculum of Speech & Language Therapy. All participants/caregivers are informed about the advantages and disadvantages of the study. The participants are invited to participate in the study after knowing the following information.

- ✓ Investigator will receive permission of participants/caregivers to take in the study.
- ✓ Participants will take therapy from Clinical Department of Speech and Language Therapy for 4 sessions.
- ✓ Participant’s job will not address in the study project.
- ✓ Transcription and field note will not be shared with others.
- ✓ The study project and also the participation in the study will not cause any harm to the participants.
- ✓ Investigator will be available to answer any question related to the study of the participants/caregivers.
- ✓ Investigator will maintain confidentiality of the participants.
- ✓ Participants/caregivers can withdraw from the study at any time.

I am.....a participant/caregiver of this study is clearly informed about the aim of the study. I am participating willingly in this study and I have right to withdraw from this study and I am not to answer anyone to withdraw from the study at any time. So I am agreeing to participate willingly with my full satisfaction in this study.

**Signature:**

Sign of researcher:

Date:

Sign of witness:

Date:

## সম্মতি পত্র

গবেষণার শিরোনাম: “Patient’s awareness about their eating and drinking skills pre and post stroke dysphagia treatment.” অর্থাৎ চিকিৎসার আগে ও পড়ে খাবার খওয়া ও গেলার সমস্যা নিয়ে স্ট্রোক আক্রান্ত রোগীদের সচেতনতা। আমি মোঃ খোরশেদ আলম (গবেষক) বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউটের (বি.এইচ.পি.আই) বি এসসি ইন স্পীচ এ্যান্ড ল্যাঙ্গুয়েজ থেরাপি কোর্সের ৪র্থ বর্ষের ছাত্র।

এই গবেষণা স্পীচ এ্যান্ড ল্যাঙ্গুয়েজ থেরাপি বিভাগের অধ্যয়নের একটি অংশ। সকল অংশগ্রহণকারী/অভিভাবক গবেষণার সুবিধা এবং অসুবিধা সম্পর্কে অবগত আছেন। নিম্নোক্ত তথ্যাদি সম্বন্ধে অবগত হওয়ার পর অংশগ্রহণকারী গবেষণায় অংশ গ্রহণের জন্য আমন্ত্রিত।

- ✓ গবেষক গবেষণায় অংশ গ্রহণের জন্য অংশগ্রহণকারী/অভিভাবকদের অনুমতি নিবেন।
- ✓ অংশগ্রহণকারীকে ৪ সেশন থেরাপি নিতে হবে।
- ✓ অংশগ্রহণকারীর নাম এবং কর্ম দায়িত্ব উক্ত গবেষণায় উল্লেখ করা হবেনা।
- ✓ গবেষণায় প্রাপ্ত তথ্যাদি এবং অনুলিপিকারও সাথে আদান-প্রদান করা হবেনা।
- ✓ উক্ত গবেষণা এবং গবেষণায় অংশগ্রহণ, অংশগ্রহণকারীদের কোন ক্ষতি হবেনা।
- ✓ গবেষক অংশগ্রহণকারীর/অভিভাবকের গবেষণা সংক্রান্ত যেকোন প্রশ্নের জবাব দেওয়ার জন্য বাধিত থাকবেন।
- ✓ গবেষক অংশগ্রহণকারীদের গোপনীয়তা রক্ষা করবেন।
- ✓ অংশগ্রহণকারী/অভিভাবক যে কোন মুহুর্তে গবেষণা থেকে তার সম্মতি প্রত্যাহার করতে পারবেন।

আমি.....উক্ত গবেষণায় অংশগ্রহণকারী/অভিভাবক। গবেষণার লক্ষ্য সম্পর্কে আমি স্পষ্টভাবে অবগত আছি। আমি উক্ত গবেষণায় অংশগ্রহণ করতে ইচ্ছুক এবং আমার গবেষণা থেকে সম্মতি প্রত্যাহারের অধিকার আছে এবং যে কোন সময় সম্মতি প্রত্যাহারের জন্য কারো কাছে জবাব দিতে বাধ্য নই। তাই আমি উক্ত গবেষণায় অংশগ্রহণ করতে স্বতঃস্ফূর্ত সম্মতি জ্ঞাপন করছি।

স্বাক্ষর:

গবেষকের স্বাক্ষর:

অংশগ্রহণকারীর স্বাক্ষর:

তারিখ:

তারিখ: