# Stroke cerebro vascular accident health and social care essay

# INTRODUCTION

Stroke or Cerebro Vascular Accident is the rapid loss of brain function(s) due to the disturbance in the blood supply. This is caused by ischemia resulted from the blockage of blood supply or a haemorrhage. The blockage can be due to any thrombosis or arterial embolism which results in lack of oxygen and glucose to the brain area and it can lead to death of brain cells and brain damage. This often results in an inability to move one or more limbs on one side of the body, inability to understand or formulate speech, inability to see one side of the visual field etc. Stroke is a medical emergency as it causes permanent neurological damage, complications and even death. (WHO, 2008)Stroke is a life changing event that not only affects the disabled person but also their family and care givers. Effective screening, evaluation and management strategies for stroke are well established in well developed countries, but these strategies have not been fully implemented in India. (American Health Association, 2009)Stroke incidence and prevalence are essential for calculating the burden of disease and for planning the prevention and treatment of stroke patients. WHO estimates the number of stroke events in some selected European countries such as, Iceland, Norway, and Switzerland is likely to increase from 1. 1 million per year in 2000 to more than 1. 5 million per year in 2025 solely because of the demographic changes. (Truelsen et al., 2006)The prevalence rate of stroke is higher among the Asians. In India it is about 250-300/10000 population per year. The National Commission on Macro-economic and Health estimated that, in India the number of stroke rate will increases from 1, 081, 480 in 2000 to 1, 667, 372 in 2015. In 1998, the overall age adjusted prevalence rate for

stroke is estimated to lie between 84-262/100, 000 population in rural and between 334-424/100, 000 populations in urban areas. The Global Burden of Disease Study estimated that the annual stroke incidence of India will increase from 91/100, 000 in 2015 to 98/100, 000 in 2030. (Ezzati et al 2004)It has been estimated that by 2021 the stroke related disability counts in 61 million, and 52 million of which would be in developing nations. According to recent studies, 55% to 70% of stroke survivors become fully independent by 1 year and 7% to 15. 7% remained completely disabled. Among those who had speech dysfunction, complete recovery was reported in 47% of cases, and there was no improvement in 12%. Dysarthria was commoner than dysphasia. Post Stroke seizure was observed in approximately 2% of cases. (Banerjee & Das, 2008)In 2005, 400 to 800 strokes per 100, 000 populations in globally. 5. 7 million Deaths and 15 million new acute stroke cases are reported annually. Globally, over the past four decades, the annual age- standardized stroke incidence rate has decreased by1. 1% in high income countries but it has been increased by 5. 3% in low to middle income countries. (Feigin 2009)The mortality rate of stroke is diminishing or stabilizing in developed countries. It was estimated in 2000 that, the stroke accounted for 0. 9-4. 5% of total medical admissions and 9. 2-30% admissions in neurological wards. 12% of all strokes occur in people less than 40 years. Previous stroke is the major reason for the stroke in those who aged more than 65 years. It is estimated that 2% reductions in overall stroke mortality in India will result in 6. 4 million fewer deaths over 10 year period. (Dalal et al., 2007)There are mainly two types of stroke such as ischemic and hemorrhagic stroke. Ischemic stroke accounts for about 75% of all strokes which occurs due to thrombus that blocks or diminishes the blood

flow to the part of the brain. A hemorrhagic stroke occurs when a blood vessel on the brain surface ruptures and fills the space between the brain and skull with blood (subarachnoid haemorrhage) or when defective artery in the brain bursts and fills the surrounding tissue with blood (cerebral haemorrhage). Both result in lack of blood flow to the brain and a buildup of blood that put too much of pressure on the brain. (Swadron, 2010)The clinical consequences of stroke can be named based on the artery involved. This includes infarct in the anterior cerebral artery (ACA), middle cerebral artery (MCA), posterior cerebral artery (PCA) and basilar/vertebral artery. Middle cerebral artery and basilar artery are most often involved in stroke. Total Anterior Circulation Infarcts (TACI) had 100% incidence of Dysphagia, followed by Partial Anterior Circulation Infarcts (PACI-36%), Posterior Circulation infarcts (POCI-33%), and Lacunar infarcts (LACI-18%). 67% of hemorrhages had post-stroke Dysphagia. (Sundar et al., 2008)Dysphagia (difficulty in swallowing) is resulted if the strokes occur in the middle cerebral artery or internal carotid artery or vertebral or basilar artery. Dysphagia can be seen in 65% of the patients with stroke. If not identified and managed it can lead to poor nutrition, pneumonia and increased disability. Aspiration is the major problem associated with Dysphagia. (Stroke connection magazine July/august 2003)Approximately 30% of the patients who had unilateral stroke have dysphagic symptoms and a similar percentage have been reported in brain injury patients. It is estimated that between 29 and 50% of acute stroke survivors are dysphagic. Early bedside assessment of Dysphagia is essential to prevent aspiration risk in stroke patients. (Smithard et al., 2003)Asians are more likely to develop Dysphagia after stroke. In the stroke group, the adjusted odds ratio (OR) with 95%

confidence interval (CI) for Dysphagia was significantly higher for Asians than whites in New York (OR= 1. 64; 95% CI, 1. 50–1. 79) and California (OR= 1. 69; 95% CI, 1. 34–2. 13). The adjusted OR was slightly but significantly higher for blacks than whites in New York (OR= 1. 15; 95% CI, 1. 03–1. 28). (Fernandez et al., 2008)The persistent dysphagia can lead to malnutrition in the stroke patients. The presence of malnutrition in post stroke Dysphagia is ranging high. The overall odds of being malnourished were higher among subjects who were dysphagic compared with subjects with intact swallowing (odds ratio: 2. 425; 95% confidence interval: 1. 264-4. 649, p <0. 008). (Foley et al., 2009)The higher incidence of Dysphagia increases the risk of aspiration. In a prospective study sixty patients were assessed clinically and underwent a bedside water-swallowing test and videofluoroscopy within 72 hours of stroke. Twenty-five patients were seen to aspirate in the videofluoroscopy; of these 20% did not have overt Dysphagia as detected by a simple water-swallowing test. Aspiration is most common in the early period following acute stroke as a result of Dysphagia. (Kidd et al., 1993)According to American Health Association (2006), the primary prevention of stroke is important because more than 70% of strokes are primary events. This includes behaviour modification such as reduced smoking, alcohol and salt consumption patterns, increasing fruits and vegetable consumption and physical activity. (Gupta et al, 2008)

## NEED FOR THE STUDY

Stroke is one of the leading causes of death and disability in the world. Approximately 20 million people in each year will suffer from stroke and 5 million of these will not be survive. Community surveys from many regions

show crude prevalence rates for stroke in the range of 90-222 per 100, 000 persons. In 1990, the Global Burden of Disease (GBD) Study reported 9. 4 million deaths in India, of which 619, 000 deaths were due to stroke, suggesting a mortality rate of 73 per 100, 000 persons. The worldwide incidence has been quoted as 2 per 1000 population per year, and about 4 per 1000 population in the people aged 45-84 years. The developing countries accounts for 85% of global deaths from stroke. With reference to the functional impairments, 20% of the people will require institutional care after 3 months and 15 to 30% being permanently disabled. (Bhat et al., 2007)Analysis of early deaths after stroke is important, as some deaths may be preventable. A study on 1073 consecutive stroke patients showed 212 deaths within the first 30 days, leads to a mortality rate of 20%. Early mortality after stroke exhibits a bimodal distribution. One peak occurs during the first week, and a second during the second and third weeks. The high proportion of deaths in the first week is due to transtentorial herniation. After that, deaths are due to relative immobility (pneumonia, pulmonary embolism and sepsis) predominate, striking towards the end of the second week. (Silver et al., 1984)Dysphagia is common after stroke. The assessment of Dysphagia was made by using standardized clinical methods in patients with acute stroke. Frequently dysphagia occur in patients with hemorrhagic stroke (31/63 vs. 110/343; $p = 0.01$). But the involvement of the arterial territory of the total middle cerebral artery was more frequently associated with Dysphagia (28. 2 vs. 2. 2%; $p < 0.0001$) in ischemic stroke. Multivariate analysis disclosed that stroke mortality and disability were independently associated with Dysphagia ($p < 0.0001$). The frequency of Dysphagia was relatively high. Dysphagia assessed clinically was a significant variable

predicting death and disability at 90 days. (Paciaroni et al., 2004)In acute ischemic stroke the Dysphagia occurred within 48 hours after the onset of the first symptoms. After emergency hospital admission, three patients underwent neurological clinical evaluation and clinical assessment of swallowing. One of the patients presented functional swallowing, while the other two had mild and moderate oropharyngeal Dysphagia. The findings substantiate the literature data regarding the severity of the neurological condition and the manifestation of Dysphagia. (Favero et al., 2011)Dysphagia and poor nutritional status occur frequently after stroke. On clinical examination 52. 6% of study patients' demonstrated Dysphagia and 26. 3% were identified with poor nutritional status. Dysphagia, based on clinical assessment, was associated with stroke severity (National Institutes of Health Stroke Scale, OR 4. 6, 95% CI 1. 6-13. 1; modified Rankin Scale, OR 12. 3, 95% CI 3. 2-47. 4) and with functional oral intake (OR 29. 2, 95% CI 8. 4-101. 8), but not with measures of nutritional status (Mini Nutritional Assessment, OR 1. 0, 95% CI 0. 4-2. 8). Nutritional measures did not correlate with swallowing or stroke severity measures. It confirms that dysphagia and poor nutritional status are prevalent in patients with acute ischemic stroke. (Crary et al., 2006)A long term follow up study was conducted to determine the Dysphagia present in the first week of acute stroke associated with long term outcome. Dysphagia was assessed within 1 week in the stroke patients and they were followed up yearly at 3 months for 5 years. And they found that the presence of Dysphagia during the acute phase of stroke associated with poor outcome during the following years, especially at 3 months. The study related the dysphagia with increased institutionalization rate. (Smithard et al., 1997)An observational prospective

study on 87 patients admitted with acute stroke in the University hospital of South Manchester to find out the relationship between the side of stroke and the presence of aspiration on videofluoroscopy. They undertook the patients for brain CT scanning and repeated videofluoroscopy. The study concluded that the continuing aspiration might be related to the side of cerebral lesion. (O'Neill, 2000)A study conducted to find out the incidence of Dysphagia in stroke patients who were admitted in neuro rehabilitation unit. The study compared the clinical bedside assessment and videofluoroscopy to define any correlation between Dysphagia and clinical characteristics of the patients. They enrolled both ischemic and hemorrhagic stroke. They concluded that Dysphagia is seen in one third of the stroke patients who admitted in nuero rehabilitation unit. The grade of Dysphagia correlated with the dysarthria, aphasia, low FIM and level of cognitive functioning. They found that the large cortical strokes of non dominant side were associated with Dysphagia. (Caterina 2009)A prospective study in 121 patients using standardized bedside assessment and videofluoroscopic examination was done to predict the relationship between Dysphagia with the outcome and complications after stroke. The presence of aspiration, mortality, functional outcome, length of stay, place of discharge, occurrence of chest infection, nutritional status and hydration were the main outcome measures. It was found that the abnormal swallow on assessment had a higher risk of aspiration and poor nutritional status. The presence of Dysphagia was associated with an increased risk of death, disability, length of hospital stay and institutional care. (Morris, 2000)Various swallowing techniques have effect on the nutritional outcome of the stroke patients. The treatments such as oral motor exercise, different swallowing techniques, positioning, and diet

modification help to improve the nutritional pattern depend on the patient condition. About 38 stroke patients between 53 to 89 years of age with subjective complaints of Dysphagia and oral/pharyngeal dysfunction were underwent swallowing treatment. The result revealed that the improvement in swallowing function was associated with improvement in nutritional parameters. (Elmståhl et al., 1999)Exercise based Dysphagia therapy can improve the functional and physiological changes in swallowing performance of the adult with chronic Dysphagia. After 3 weeks of intense exercise based Dysphagia therapy swallowing was improved. Physiological changes after therapy imply an improved neuromuscular functioning within the swallow mechanism. (Carnaby et al., 2012)The progressive lingual exercise program helps to improve the swallowing function. A prospective cohort interventional study suggested that the lingual exercise program helps to improve the swallowing in patients with lingual weakness and swallowing disability. (Robbins et al., 2007)The clinical posting of the investigator leads to observe the stroke patients. Investigator observed that one third of the patients who are having stroke developed swallowing and feeding difficulties which subsequently result in aspiration pneumonia and add risk to their life. All of them require dietary modification and half of them in need of nasogastric or gastrostomy tube for feeding support. This affect the nutritional status and increase the length of hospital stay and subsequently affect the patient’s quality of life. This induced an interest in the researcher over the particular area, " Post Stroke Dysphagia". It gives a strong drive to search for the management of Dysphagia in Post Stroke patients from journals and also from the living experience in the wards.

# STATEMENT OF THE PROBLEM

Effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance among patients with Post Stroke Dysphagia at KMCH, Coimbatore-14

# OBJECTIVES

The objectives of the study are to, Assess the Swallowing and Feeding Performance of patients with Post Stroke Dysphagia. Determine the effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance in patients with Post Stroke Dysphagia. Associate the Swallowing and Feeding Performance with selected demographic and clinical variables.

# OPERATIONAL DEFINITIONS

POST STROKE DYSPHAGIAIt refers to the difficulty in swallowing irrespective of the area of brain damage, ischemic or hemorrhagic strokes among the post stroke patients. SWALLOWING PERFORMANCEIt refers to the ability of post stroke dysphagic patients to swallow, which is assessed by using Gugging Swallowing Screen (GUSS) scale and the patients are graded as mild, moderate, severe and no dysphagic based on the score obtained. FEEDING PERFORMANCEFeeding performance implies the capability of the post stroke dysphagic patients to pass the liquids, semisolids and solid foods from the mouth to the pharynx, and then into the stomach and it can be assessed by the Functional Oral Intake Scale (FOIS) to categorize the patients as either tube dependent or total oral intake. SELECTED NURSING INTERVENTIONSSelected nursing interventions refer to the nursing activities

which include swallowing exercises such as Shaker exercise and Hyoid lift maneuver and Positioning during the swallowing to improve the swallowing and feeding performance of the patients with post stroke dysphagia.

## HYPOTHESIS:

H1: There is a significant difference in the Swallowing and Feeding Performance before and after the implementation of Selected Nursing Interventions in Post Stroke Patients with dysphagia.

## ASSUMPTION:

Patients with cerebrovascular accident suffer with varying degree of Dysphagia. Swallowing exercises strengthen the swallowing muscles.

## CONCEPTUAL FRAMEWORK

Nursing is a complex field of study with a need for practical and hands-on training as well as knowledge of the theoretical and the historical basis. Conceptual framework for this study was developed on the basis of Ernestine Wiedenbach's Helping Art of Clinical Nursing Theory. She proposed her theory in 1970 as a prescriptive theory that directs action towards an explicit goal.

## Elements of Nursing

According to Wiedenbach there are four essential components to the field of nursing: 1. Philosophy of NursingPhilosophy of nursing comprises of attitudes and beliefs about life, that the nurse maintains and how these beliefs affect the reality. Philosophy leads the nurse to act in a certain way to improve the patient outcome. 2. Nursing PurposeThe purpose of nursing includes what a

nurse wishes to achieve through the profession and the activities which are directed to the overall wellness of the patient. 3. Nursing PracticeThe practice of nursing involves identifying and administering the required needs of a patients and determining whether that actions are helpful to the patient. 4. Art of NursingWiedenbach encouraged nurses to see nursing as an art which includes understanding the patients' concerns and needs and addressing them accordingly. This theory consist of 3 factors; central purpose, prescription and realities. A nurse develops a prescription based on a central purpose and implements it according to the realities of the situation. According to wiedenbach's central purpose is the overall goal towards which a nurse strives. Prescription refers to the plans of care for a patient. Realities refer to the physical, physiological, emotional and spiritual factors that come into play in a situation involving nursing actions. The five realities identified by Wiedenbach are agent, recipient, goal, means and framework. Wiedenbach's view of nursing as an art based on goal directed care. Wiedenbach's vision of nursing practice closely parallels the assessment, implementation and evaluation steps of the nursing process. According to Wiedenbach, nursing practice consists of identifying a patient's need for help, ministering the needed help and validating that the need for help was met. According to her factual and speculative knowledge, judgment and skills are necessary for effective nursing practice. The attributes adopted in this study are,

## Central purpose:

The central purpose of this study is to assess the effectiveness of selected nursing interventions to improve the swallowing and feeding performance among patients with post stroke dysphagia.

## Prescription:

The investigator plans the prescription that will fulfil the central purpose (improvement in the swallowing and feeding performance) by identifying the various needs to achieve the goal. Thus the investigator selected the method of selected nursing interventions such as swallowing exercises and positioning on post stroke dysphagia.

## Realities:

Agent-investigatorRecipient-post stroke patients with dysphagiaGoal-improvement in the swallowing and feeding performanceMeans-selected nursing interventions (swallowing exercises and positioning)Framework-neuro inpatient and outpatient departments in KMCH

## Identification:

This include identification of dysphagia, the need for selected nursing interventions and its effects on the swallowing and feeding performance among the post stroke patients.

## Ministration:

Ministration refers to the administration of selected nursing interventions in post stroke dysphagic patients to improve their swallowing and feeding performance.

## Validation:

It concerns the evaluation of the effectiveness of selected nursing interventions on swallowing and feeding performance among the patients with post stroke dysphagia. A positive outcome represents improvement in the swallowing and feeding performance.

## Identifying a need for help ministering the needed help validating the need of help

To improve the swallowing and feeding performance in post stroke dysphagic patientsAssessment of the swallowing and feeding performance of the post stroke dysphagic patients using GUSS and FOIS observational scales. Positive outcome patients got satisfied with improved swallowing and feeding performanceSelected nursing interventions such as swallowing exercises and positioning

## Nursing practice

Agent – investigatorRecipient – post stroke dysphagic patientsGoal – improvement in swallowing and feeding performanceMeans – selected nursing interventionsFramework – KMCH hospital

## Figure No-1: Conceptual framework- modified Ernesteine Wiedenbach's Helping Art of Clinical Nursing Theory (1970)

# CHAPTER II

# REVIEW OF LITERATURE

The literature review refers to the activities that involved in identifying and searching for information on a topic and evolving a comprehensive idea of it.

It is an essential component of research process. It aids the researcher to understand what is already known in relation to the problem of interest and what remains to be known. Review of literature helps to plan and conduct the study in a systematic and scientific manner. Reviews are discussed in the following headings;

## Incidence of stroke

## Prevalence of swallowing difficulties in post stroke patients.

## Effect of shaker exercise and hyoid lift maneuver on dysphagia.

## Effect of other exercise and conventional therapies on dysphagia.

## Studies related to incidence of stroke

Barker-Collo et al., (2009) conducted a systematic review of population based studies of the incidence and early case fatality of stroke based on the studies published from 1970 to 2008. Stroke incidence and case fatality from 21days to 1 month post stroke were analysed. The review showed a statistically significant trend in stroke incidence with 42% decrease in stroke incidence in high income countries and greater than 10% increase in stroke incidence in low to middle income countries. The overall stroke incidence rate in low to middle income countries were exceeded 20% than the high income countries. Bhat et al., (2008) established a prospective study collect the standardized data on annual incidence and case fatality rate at 28 days during 2005-2006. The result showed an annual incidence in subjects of 25 years and above of 145/100, 000 persons (CI 95%: 120–170); for males it is 149/100, 000 persons (CI 95%: 120–170) and for females it is 141/100, 000

persons (CI 95%: 120–160). Stroke diagnosis was supported by computed tomography in 407 (89. 2%) of 456 FES cases: 366 (80. 2%) had ischemic stroke, 81 (17. 7%) had hemorrhagic stroke and 9 (1. 9%) were in the unspecified category. The mean age was 66 ± (SD) 13. 60 years, women were older as compared to men (mean age 68. 9 ± 13. 12 years vs. 63. 4 ± 13. 53 years). Case fatality at 28 days, 320 (70%) of 456 FES cases were still alive and 136 (29. 8%) had died. Of the 320 surviving patients 38. 5% had moderate to severe disability by the modified Rankin scale. US Centers for Disease Control and Prevention, (2002), stroke is the third leading cause of death in the United States. More than 140, 000 people die each year from stroke in the United States. Each year, approximately 795, 000 people suffer a stroke. About 600, 000 of these are first attacks, and 185, 000 are recurrent attacks. Nearly three-quarters of all strokes occur in people over the age of 65. The risk of having a stroke more than doubles each decade after the age of 55. Strokes can and do occur at ANY age. Nearly one fourth of strokes occur in people under the age of 65. Stroke death rates are higher for African-Americans than for whites, even at younger ages. On average, someone in the United States has a stroke every 40 seconds. Stroke accounted for about one of every 17 deaths in the United States in 2006. Stroke mortality in 2005 was 137, 000. Anand et al., (2001) were estimated the mortality and morbidity due to stroke in India. They collected information through electronic search, hand search and contacts with experts. Analysis was done separately for males and females at 10 year intervals. They located 7 studies and 2 were discarded. The prevalence estimated as 203 per 100, 000 populations above 20 years. The male female ratio was 1. 7. 12% of all strokes occurred in population below 40 years. The estimated 102,

000 deaths, which represented 1. 2% of total deaths in the country. The world heart federation states that every year 15 million people suffer with stroke globally. In that nearly 6 million die and another 5 million are left disabled. Stroke is considered as the second cause of disability after dementia. Globally, stroke is the second leading cause of death above 60 years and fifth leading cause of death in people aged 15 to 59 years old. The incidence is still increasing in developing countries such as China, where 1. 3 million people have stroke each year and 75% live with varying degrees of disability due to stroke. Banerjee and Das (N. D.) reviewed various population based surveys on stroke which were conducted in different parts of India. During the last decade, the age-adjusted prevalence rate of stroke was between 250-350/100, 000. Recent studies showed that the age-adjusted annual incidence rate was 105/100, 000 in the urban community of Kolkata and 262/100, 000 in a rural community of Bengal. The ratio of cerebral infarct to hemorrhage was 2. 21. Hypertension was the most important risk factor. Stroke represented 1. 2% of total deaths in India.

## Studies related to the prevalence of swallowing difficulties in post stroke patients

Falsetti et al., (2009) analysed patients with stroke in neuro rehabilitation unit to define the incidence of dysphagia, compare clinical bedside assessment and videofluoroscopy and define any correlation between dysphagia and clinical characteristic of patients. The study done in 151 consecutive inpatients with recent ischemic or hemorrhagic stroke. In that 62 were clinically diagnosed with dysphagia and correlation between clinical and VFS diagnosis of dysphagia was significant. They concluded that

dysphagia occur in more than a third of the patients with stroke admitted to rehabilitation and the grade of the dysphagia correlates with dysarthria, aphasia, low FIM and level of cognitive functioning. They found that the large cortical strokes of non dominant side were associated with dysphagia. Dziewas et al., (2008) stated that aspiration was a common complication associated with stroke patients and also give poor outcome. They assessed the 2 step swallowing provocation test (SPT) to detect the aspiration risk in acute stroke patients. It was concluded that SPT failed to detect the aspiration risk in patients with predominant impairment of oral phase swallowing and relatively intact pharyngeal phase. In later group they concluded that the FEES or additional clinical features indicating oral phase pathology should considered to accurately judging the patient’s aspiration risk. Smeeton et al., (2006) elicited a population based long term follow up study to determine whether dysphagia in the first week of acute stroke associated with long term outome. They assessed 567 patients with dysphagia within one week of stroke and they were followed up at 3 months and yearly for 5 years by face to face interview. The study confirmed the presence of dysphagia during the acute phase of stroke was associated with poor outcome during the subsequent year, especially at 3 months, and was also associated with increased institutionalisation rate in the long term. Martino et al., (2005) stated that there was a high incidence of dysphagia and associated pulmonary compromise in stroke patients. Out of 104 original peer reviewed articles, 24 articles met inclusion criteria and were evaluated. They found that dysphagia tends to be lower after hemispheric stroke and remains prominent in the rehabilitation brain stem stroke. They also stated that there was increased risk for pneumonia in patients with dysphagia (RR,

3. 17; 95% CI, 2. 07, 4. 87) and even greater risk in patients with aspiration (RR, 11. 56; 95% CI, 3. 36, 39. 77). They concluded that the high incidence for dysphagia and pneumonia is a consistent finding with stroke patients. Bowen et al., (2004) conducted a study to assess the patient awareness of the clinical indicators of the dysphagia and its influence on swallowing performance and outcome in dysphagic stroke patients. 70 patients were assessed 72 hours after the hemispheric stroke. 27 patients identified with dysphagia, out of which 16 had poor awareness of their dysphagic symptoms. Dysphagic patients with poor awareness drank water more quickly (5ml/s vs. <1ml/s, p= 0. 03) and took larger volumes of food per swallow (10ml vs. 6ml, p= 0. 04) than patients with good awareness. Dysphagia patients with good awareness modified their way of drink and swallow more slowly than those with poor awareness. These findings concluded that the patients with poor awareness experienced more complications at 3 months than those with good awareness. Guey et al., (2000) conducted a study to delineate the incidence and outcome of dysphagia among hospitalized patients. They retrospectively reviewed the medical records of 36 patients who were admitted of brain stem stroke. Follow up interviews were conducted via telephone to learn the general medical condition and feeding status of the patients 7 to 43 months after hospital discharge. A total of 81% of the patients had dysphagia at the time of initial clinical swallowing evaluation, which was performed 10 to 75 days after A total of 81% of the patients had dysphagia at the time of initial clinical swallowing evaluation, which was performed 10-75 days after the onset of stroke. A total of 79% of the dysphagic individuals depended on tube feeding at the initial evaluation. Follow up interviews showed that 88%

of the 27 patients who were contacted had resumed full oral intake 4 months after the onset of stroke. They concluded that the incidence of dysphagia was relatively high in their study population and the long term outcome was favourable. Cameron et al., (2000) prospectively examined 128 patients with acute first-ever stroke to determine the prevalence of swallowing disorders, the diagnostic accuracy of the clinical assessment of swallowing function compared with video fluoroscopy, and interobserver agreement for the clinical and video fluoroscopic diagnosis of swallowing disorders and aspiration. They found that clinical and video fluoroscopic evidence of a swallowing disorder in 51% and 64% of patients respectively. Hallberg et al., (1999) conducted a study to investigate the frequency of dysphagia among patients with acute stroke. Using the medical records and continuous observation they detected 77% of the patients with dysphagia during the screening process. It was concluded that most of the dysphagic patients can be identified through the systematic interviews, observations and test swallows and the severity of stroke was an indicator of dysphagia. The study suggested that this test should repeat and include in the nursing care assessment to find out the dysphagic patients and to reduce functional disability. Smithard et al., (1997) assessed the frequency and natural history of swallowing problems following an acute stroke. 121 consecutive patients admitted within 24 hours of the onset of their stroke were studied prospectively. They assessed the ability to swallow repeatedly by a physician, a speech and language therapist, and by video fluoroscopy. Clinically 51% (61/121) of patients were assessed as being at risk of aspiration on admission. Many swallowing problems resolved over the first 7 days, through 28/110 (27%) were still considered at risk by the physician.

Over a 6-month period, most problems had resolved, but some patients had persistent difficulties (6, 8%), and a few (2, 3% at 6 months) had developed swallowing problems. Ninety-five patients underwent video fluoroscopic examination within a median time of 2 days; 21 (22%) were aspirating. At 1 month a repeat examination showed that 12 (15%) were aspirating. Only 4 of these were persistent; the remaining 8 had not been previously identified. This study has confirmed that swallowing problems following acute stroke are common, and it has been documented that the dysphagia may persist, recur in some patients, or develop in others later in the history of their stroke. Hamdy (1997) compared the electromyographic responses of the affected and unaffected hemispheres in dysphagic and non-dysphagic patients with unilateral hemiplegic stroke. They took 20 patients with unilateral hemispheric stroke in which 8 of them had associated swallowing difficulties. They found that the stimulation of the unaffected hemisphere evoked smaller pharyngeal responses in dysphagic patients than in non-dysphagic patients. They concluded that the dysphagia after unilateral hemispheric stroke was related to the magnitude of pharyngeal motor representation in the unaffected hemisphere. Veis and logemann (1985) conducted a study to determine the nature of the swallowing disorders, the relationship between the site of the cerebrovascular accident and the nature of the swallowing disorder(s) exhibited and the frequency and etiology of any aspiration present. The 38 CVA patients exhibited a variety of physiologic disturbances in swallowing, usually occurring in combination rather than as isolated disorders. Few differences in nature of swallowing disorders were seen according to lesion location. Approximately one third of the patients aspirated, most frequently because of delayed triggering of the swallowing

reflex. All aspiration occurred because of disorders in the pharyngeal stage of the swallow, emphasizing the importance of VFG evaluation of dysphagia in CVA patients.

## Studies related to the effect of shaker exercise and Hyoid lift maneuvre on dysphagia

Antunes & Lunet (2012) had done a structured interventional programme to find out the effect of head tilt exercise (shaker) on the swallow function. They concluded that there is an increase in the anterior excursion of the larynx and in the anteroposterior diameter of the upper esophageal sphincter opening and thereby eliminating the dysphagic symptoms. Shaker et al., (2009) conducted a randomized study on 19 patients who exhibited oropharyngeal dysphagia on videofluorography involving upper esophageal sphincter (UES) and had 3 months history of aspiration. Out of which 14 patients were subjected to either traditional swallowing therapy or shaker exercise for 6 weeks, and undergone modified barium swallow on pre and post therapy. The study concluded that the residue in various oral and pharyngeal locations did not differ between the groups and both had significant effect on the post therapy. But the shaker exercise group elicited significantly less aspiration in post therapy. Antonik et al., (2009) prospectively examined the 11 dysphagic patients with upper esophageal sphincter dysfunction to determine the effect of shaker exercise on thyrohyoid muscle shortening. 6 patients were randomized to traditional swallowing therapy and 5 to the shaker exercise group. It showed that the percent change in the thyrohyoid distance in the shaker exercise group was significantly high when compared to the traditional therapy (p= 0. 034). The

completion of the therapy stated that the shaker exercise augments the thyrohyoid muscle shortening in addition to the strengthening of the suprahyoid muscles. Daniels et al., (2002) evaluated 27 patients about the effect of shaker exercise on post stroke dysphagia manifested by post swallow residue and aspiration necessitating percutaneous tube feeding. They assessed by videofluoroscopy and functional assessment of swallowing score before and after 6 weeks of shaker exercise program. The results were exhibited significant improvement in the UES opening, anterior laryngeal excursion (p=<0. 01) and also in the resolution of the post deglutitive aspiration. They concluded that the suprahyoid muscle strengthening exercise program is effective in restoring oral feeding in dysphagic patients. Easterling et al., (2002) described the effect of shaker exercise on swallowing function of the older people. 26 older adults performed the shaker exercise. It showed that maximum anterior hyoid and laryngeal excursions as well as maximum anteroposterior UES opening increased (p <0. 05) following exercise. Duration to attain the exercise was varied among the participants.

## Studies related to the effect of other exercise and conventional therapies on dysphagia.

Crary et al., (2012) implemented a prospective study to determine the effect of Mendelsohn maneuver in the swallowing physiology of the post stroke patients. 18 outpatients between 6 weeks and 22 months post stroke were enrolled. Cross over design used to compare 2 weeks of treatment with 2 weeks of no treatment. There was improvement observed in the duration of opening of the upper esophageal sphincter (UES). The result concluded that

the Mendelsohn maneuver altering the duration of hyoid movement and UES opening. Jung et al., (2012) explained the effect of bedside exercise program on the recovery of swallowing after stroke. They conducted an experimental study on 50 stroke patients with dysphagia (<6 months post stroke), 25 subjects each in control and experimental group respectively. The experimental group received treatment with bedside exercise training including oral, pharyngeal, laryngeal and respiratory exercises 1 hour per day for 2 months. The result showed improvement of swallowing function at the oral phase in video fluoroscopy in experimental group than that of control group (p <0. 05). Baijens et al., (2009) conducted a systematic review of the literature on the effect of therapy in oropharyngeal dysphagia carried out by the speech therapists. The literature search was performed using the electronic databases, pubmed and Embase. 59 studies were included. Statistically significant positive therapy effects were found. Even though many questions remain about the effects of therapy in oropharyngeal dysphagia some positive significant outcome studies have been published. Steele et al., (2008) conducted a case study with 3 subjects on the tongue pressure training therapy for the post stroke dysphagic patients. The outcome was measured as increased isometric tongue strength, improved tongue pressure generation accuracy, improved bolus control on video fluoroscopy and improved functional dietary intake by mouth. The study suggested that tongue pressure training was beneficial for improving instrumental and functional aspects of swallowing. Khedr et al., (2008) explained the effectiveness of repetitive Transcranial magnetic stimulation (rTMS) on post stroke dysphagia. 26 patients with monohemispheric stroke received real (n= 14) or sham (n= 12) rTMS, a total of 300 rTMS pulses on

the affected motor cortex for five consecutive days. Real rTMS led to a significantly greater improvement compared with sham in dysphagia. The study concluded that rTMS was useful adjunct to conventional therapy for dysphagia after stroke. Runions et al., (2002) implemented a study to find the effectiveness of decision making algorithms to enhance the assessment and dietary treatment of swallowing difficulties in acute stroke patients in the neuroscience unit. More than 70% of the patients showed clinical improvement in the swallowing function during their hospitalization. The result showed that the early and ongoing assessment of the swallowing functions and dietary modifications of the patients have a good effect on the swallowing ability of the patients. Philip et al., (2000) done a study to assess the effect of different management strategies for dysphagic stroke patients particularly regard to the feeding. They assessed the nutritional status of the patients after the nutritional supplement with percutaneous endoscopic gastrostomy versus nasogastric tube feeding. Two trials in 49 patients suggested that PEG reduces end-of-trial case fatality (Peto odds ratio 0. 28, 95% CI 0. 09 to 0. 89) and treatment failures (OR 0. 10, 95% CI 0. 02 to 0. 52) and improved nutritional status, assessed as weight, mid arm circumference or serum albumin. The researchers concluded that PEG feeding may improve the outcome and nutrition as compared with NGT feeding.

# CHAPTER III

# METHODOLOGY

This chapter deals with the methods adopted by the researcher to conduct the research and it deals with the research design, variables, setting of the

study, population, sample size, sampling techniques, criteria for sample selection, description of the tools, description about the intervention, pilot study, method of data collection and data analysis.

## RESEARCH DESIGN

In this study, the researcher adopted pre experimental design with single group pre test-post test design. Schematic representation of the design is as follows: E O1 X O2E: Experimental GroupO1: Pre test assessment of Swallowing and Feeding Performance among patients with StrokeO2: Post test assessment of Swallowing and Feeding Performance among patients with Stroke 6 weeks after the initial assessment. X: Nursing Interventions to improve Swallowing and Feeding Performance including Swallowing Exercises and Positioning.

## VARIABLES:

In this study, Selected Nursing Interventions for Dysphagia was the independent variable; Swallowing and Feeding Performance were the dependent variables.

## SETTING OF THE STUDY

This study was conducted in both Neuro inpatient and outpatient department of Kovai Medical Center and Hospital, Coimbatore. KMCH is an 800 bedded multispecialty hospital. The neurological unit in the hospital includes, 12 bedded Neuro Intensive Care Unit, neurosurgical unit and neurological ward with 40 bed availability.

## POPULATION OF THE STUDY

All the patients with Stroke who were admitted or attending the outpatient department and with the complaints of difficulty in Swallowing and Feeding were the population of the study.

## SAMPLE SIZE

Sample size for this study was 30.

## SAMPLING TECHNIQUE

Non probability purposive sampling technique was adopted for this study.

## CRITERIA FOR SAMPLE SELECTION

INCLUSION CRITERIASubjects with Stroke who are having difficulty in Swallowing and Feeding. Subjects who had mild to severe Dysphagia with GUSS evaluation score between 5 and 19. Subjects who are Ryles tube fed. Both male and female subjects above 30 years. Subjects with both hemorrhagic and ischemic Stroke. Subjects those who are able to perform the exercises. EXCLUSION CRITERIASubjects who are mentally ill. Subjects who are unconscious. Subjects who are in tracheostomy.

## DESCRIPTION ABOUT THE INTERVENTION

In this study the manipulation was given to the subjects to overcome the difficulties in the Swallowing and Feeding Performance. The treatment included the Swallowing Exercises and Positioning during the Swallowing.

# SWALLOWING EXERCISES

The Swallowing Exercises included the Shaker Exercise and Hyoid Lift Maneuver. These exercises help the subjects to strengthen the Swallowing muscles and thus in turn improve the Swallowing and Feeding Performance.

## Shaker exercise

Step 1: The subjects were made to lie flat on the back. Step 2: Instructed the subject to raise the head and to fixate the gaze on their toes. Step 3: Subjects should remain this position for 60 seconds. Step 4: The subjects were asked to return back the supine position and remain for 60 seconds. Step 5: Subjects performed this exercise for 6 to 10 times at once. Step 6: Instructed the subjects to repeat the procedure 3 to 6 times a day for a period of 6 weeks.

## Hyoid lift maneuver

Step 1: The subjects were made to sit in high Fowler’s position. Step 2: Placed a food table in front of the subject and was spreaded with a bedsheet or towel. Step 3: Few small pieces of papers (about 1 inch diameter) were put over the sheet or towel. Step 4: Instructor kept a straw near the subject’s mouth and asked them to suck one piece of paper to its tip. Step 5: Instructed to keep sucking on the straw to keep the paper attached. Step 6: Made them to bring it over the small cup and informed to stop sucking forreleasing the paper into the container. Step 7: The subjects should place about 5 to 10 pieces of papers into the container. Step 8: Instructed the subjects to repeat the exercise 3 to 6 times a day for 6 weeks.

# POSITIONING

The subjects were made in high Fowler’s position and instructed to elevate or down the chin and tilt the head towards the stronger side while Swallowing. This promotes the flow of food and liquid to the esophagus.

# DEVELOPMENT AND DESCRIPTION OF THE TOOL

The tool for data collection is described in the following sections; Section A: Demographic variablesSection B: Clinical variablesSection C: Gugging Swallowing Screen (GUSS)Section D: Functional Oral Intake Scale (FOIS)SECTION A: DEMOGRAPHIC VARIABLESThe demographic variables composed of Age Group, Sex, Education and Personal Habits. SECTION B: CLINICAL VARIABLESIt includes on the type of Stroke and Co-morbid Illness. SECTION C: GUSS (GUGGING SWALLOWING SCREEN)It is a screening method used to assess the Swallowing ability of the patients. Components of the tool include indirect and direct Swallowing test. The indirect Swallowing test or the preliminary investigation includes vigilance, cough and/or throat clearing and saliva swallow. The direct swallow test assesses the deglutition, cough, drooling and voice change during the intake of semisolid, liquid and solid diet. Based on the score patients are graded from no Dysphagia to severe Dysphagia. The minimum score is 0 and the maximum score is 20 which correspond to the severe dysphagia and no dysphagia respectively. SECTION D: FUNCTIONAL ORAL INTAKE SCALE (FOIS)This scale was developed by Crary, Carnaby-Mann and Groher (2005) for the assessment of Functional Oral Intake in Stroke patients. It includes 2 major categories with 7 levels from 1 to 7 starting with no oral intake to total oral intake with no restriction respectively. Levels 1-3: Tube dependentLevels 4-7: Total oral intake

## SCORING AND INTERPRETATION

GUGGING SWALLOWING SCREEN (GUSS)Severity code based on scoring20: No Dysphagia15-19: Mild Dysphagia10-14: Moderate Dysphagia0-9: Severe Dysphagia

## VALIDITY AND RELIABILITY OF THE TOOL

Michaela et al., conducted a study to yield the validity and reliability of the Gugging Swallowing Screen (GUSS) scale in assessing the Swallowing ability with fluid and non fluid nutrition. They assessed 50 acute Stroke patients prospectively. Interrater reliability showed excellent agreement between both raters (k= 0. 835, p <0. 001). GUSS predicted the aspiration risk well (area under curve= 0. 77; 95%CI, 0. 53 to 1. 02 in 20 patient sample; area under curve= 0. 933; 95%CI, 0. 833 to 1. 033 in 30 patient sample). Content validity showed a significantly higher aspiration risk with liquids compared with semisolid textures (p= 0. 001) therefore confirming the subsequence of GUSS.

## PILOT STUDY

The pilot study was conducted in 5 Post Stroke Dysphagic patients by using non probability purposive random sampling technique. The patients were selected from the neurological wards. The study was reliable and feasible.

## DATA COLLECTION PROCEDURE

The formal permission was obtained from the Chairman, Kovai Medical Centre and Hospital and from the Consultant of Neurology. The data were collected for period of 6 weeks. Patients were selected from the inpatient and out-patient department and the investigator makes a good rapport with

patients. The investigator explained the purpose of the study to the patients and relatives to ensure their co-operation. The patients were selected on the basis of inclusion criteria. The patients who were selected for the study were assessed for the Swallowing and Feeding Performance using the Gugging Swallowing screen (GUSS) scale and Functional Oral Intake Scale (FOIS). The investigator and the staff nurse oriented to the use of GUSS and FOIS were observed the subjects during the Swallowing and Feeding Performance. Then the subjects were graded for their Swallowing and Feeding Performance. The inter rater reliability was checked and it was found to be reliable. Then they were subjected for Swallowing Exercises and Positioning while Swallowing. Swallowing Exercises were performed 3 to 6 times a day for a period of 6 weeks. After 6 weeks again the Swallowing and Feeding Performance of the subjects were assessed by the same nurse rater and investigator using observational technique.

## STATISTICAL ANALYSIS:

The collected data were analyzed by using both descriptive and inferential statistics. In the descriptive statistics mean, median and percentage analysis were used. Inferential statistics like paired ‘ t’ test and sign tests were used to find out the effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance respectively. Fisher exact test was used to associate the selected demographic and clinical variables with the post test Swallowing and Feeding Performance.

# CHAPTER IV

# DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected to determine the effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance among patients with Post Stroke Dysphagia at KMCH, Coimbatore-14. In this study the data was analysed, tabulated and presented based on the objectives of the study using descriptive and inferential statistics.

## ORGANIZATION OF FINDINGS

The data was tabulated and presented as follows; Section A: Description about the demographic and clinical characteristics ofthe subjects with Post Stroke DysphagiaSection B: Description about the Swallowing and Feeding Performance among patients with Post Stroke DysphagiaSection C: Effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance among patients with Post Stroke Dysphagia. Section D: Association of Swallowing and Feeding Performance with selectedDemographic and Clinical variables among patients with Post Stroke Dysphagia.

## Section A: Description about the Demographic and Clinical Characteristics of Subjects with Post Stroke Dysphagia

## Table1. Distribution of Subjects According to their Demographic profile

## N= 30

## S. No

## Demographic Variables

## (f)

## %

1Age group(in years)30-50723. 3351-701550> 70826. 672SexMale1653. 33Female1446. 673Educational statusIlliterate00Up to Higher secondary2066. 67Graduate1033. 335HabitsTobacco use310Alcohol26. 67Both tobacco & alcohol930None of the two1653. 33Table 1 shows the distribution of the subjects according to the demographic variables. Based on the Age, half of the subjects (50%) were in the age group of 50-70 years. With regards to the sex, the subjects share almost equal proportion such as 53 and 47 percent of male and female respectively. In case of education, most of the subjects 66. 67 percent attained either preliminary or higher secondary education. Regarding the habits, 53. 33 percent of the subjects had no bad habits like smoking and alcoholism but developed stroke with swallowing and feeding difficulty. Fig. 2. Distribution of the Subjects According to their AgeFig. 3. Distribution of the Subjects According to their SexFig. 4. Distribution of the Subjects According to their Educational StatusFig. 5. Distribution of the Subjects based on their Personal Habits

**Table 2. Distribution of the Subjects According to their Clinical VariablesN= 30**

**S. No**

**Clinical Variables**

**(f)**

**%**

1Type of strokeAnterior circulation stroke310Middle circulation stroke1240Posterior circulation stroke15502Co-morbid illnessNo co-morbid illness413Diabetes mellitus310Hypertension1240Both Diabetes & Hypertension1137Table 2 reveals the distribution of the subjects according to the Clinical variables. The higher proportion of the subjects with posterior circulation stroke elicited Swallowing and Feeding difficulty. According to Co-morbid Illness, majority of the subjects with Hypertension (40%) developed stroke and associated Swallowing and Feeding problems. Fig. 6. Distribution of the Subjects based on the Type of StrokeFig. 7. Distribution of the Subjects based on their Co-morbid Illness

## Section B: Description of the Subjects with Post Stroke Dysphagia According to their Grade in Swallowing and Feeding Performance

## Table 3. Distribution of the Subjects with Post Stroke Dysphagia based on Gugging Swallowing Screen (GUSS) Score

**N= 30**

**S. No**

**GUSS Scoring**

**Pre-test**

**Post-test**

**(f)**

**%**

**(f)**

**%**

1No dysphagia00516. 672Mild dysphagia723. 33826. 673Moderate dysphagia1240723. 334Severe dysphagia1136. 671033. 33Table 3 shows the distribution of the subjects based on the GUSS score. In the pre-test assessment of Swallowing Performance, 23. 33% of the subjects had Mild Dysphagia, 40% of the subjects had Moderate Dysphagia and 36. 67% of the subjects had Severe Dysphagia. It shows that all the patients with Stroke had an associated Swallowing problem. In the above mentioned table, the post-test assessment of Swallowing Performance shows that 16. 67% of the subjects were improved to the No Dysphagia stage with good Swallowing performance. About 26. 67% of the subjects had Mild Dysphagia, 23. 33%

had Moderate Dysphagia and 33. 33% of the subjects had Severe Dysphagia with some improvement in the Swallowing Performance. Fig. 8. Distribution of the Subjects According to the GUSS scores

## Table 4. Distribution of Subjects with Post Stroke Dysphagia According to the scores in the Functional Oral Intake Scale (FOIS)

**N= 30**

**S. No**

**FOIS**

**Pre-test**

**Post-test**

**(f)**

**%**

**(f)**

**%**

1Tube dependent1136. 671136. 672Total oral intake1963. 331963. 33Table 4 shows the distribution of the subjects according to the Functional Oral Intake Scale (FOIS). In both the pre-test and post-test assessment equal number of subjects fallen in Tube Dependent (36. 67%) and Total Oral Intake (63. 33%) categories of FOIS. Despite the result shows the equal distribution of subjects in the pre and post test assessment, the subjects had improvement in the Feeding Performance during the post test assessment from no oral intake level to tube supplement with consistent oral intake level in the Tube Dependent category. Likewise, subjects showed improvement

from the intake of single consistency to the total intake with no restriction level in the Total Oral Intake category. Fig. 9. Distribution of the Subjects According to the Functional Oral Intake Scale (FOIS)

## Section C: Effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance in patients with Post Stroke Dysphagia

## Table 5. Description of ‘ t’ test for the Mean difference in Pre and Post test Swallowing score of Subjects with Post Stroke Dysphagia

## N= 30

## Group

## N

## Mean

## Standard deviation

## df

## ‘ t’ value

Pre test3012. 503. 875296. 150***Post test3013. 874. 547***significant at . 001 levelObtained paired ‘ t’ test to compute the mean difference. The ‘ t’ value for the mean difference between pre and post test Swallowing Score was 6. 150. The obtained ‘ t’ value was significant at . 001 level and at 29 degree of freedom. Hence there is a significant difference existing between the mean pre and post test Swallowing Scores. Fig. 10. Pre and Post test GUSS Swallowing Score of the Subjects with Post Stroke Dysphagia

**Table 6. Description of Sign test for the Median difference in Pre and Post test Feeding score of Subjects with StrokeN= 30**

**Group**

**N**

**Median Feeding Score**

**Feeding Score Range**

**‘ p’ value**

**Minimum**

**Maximum**

Pre test305160. 000***Post test306. 517***significant at . 001 levelTable 6 depicts the median of pre-test Feeding Score among subjects was 5 and the median of post-test Feeding Score was 6. 5. Sign test was computed to find out the difference between the pre and post test median Score of Feeding. The sign test score showed p value 0. 000 which was significant at . 001 level. It showed a significant difference between the pre and post test Feeding Scores. Fig. 11. Pre and Post test Feeding Performance Scores in Post Stroke Dysphagic patients

## Section D: Association of the Swallowing and Feeding Performance with selected Demographic and Clinical Variables among patients with Post Stroke Dysphagia

## Table 7. Association of Swallowing function with selected Demographic and Clinical Variables using Gugging Swallowing Screen (GUSS)

**N= 30**

**S. No**

**Variables**

**GUSS Score**

**p value**

**No Dysphagia**

**Mild Dysphagia**

**Moderate Dysphagia**

**Severe**

**Dysphagia**

1Sexa) Maleb) Female145325820. 082(NS)2Habitsa) no habitsb) smoking/ alcohol413552460. 705(NS)3Stroke typea) ACSb) MCSc) PCS0231430162530. 380(NS)4Co-morbid illnessa)no co-morbid illnessb) diabetes onlyc) hypertension onlyd) both diabetes & hypertension11300053212211260. 236(NS)NS- non significant at . 05 levelTable 7 indicates the association of Selected Demographic and Clinical variables with the Swallowing Performance. The p value calculated using fisher exact test to verify the association between Swallowing Performance of Post Stroke Patients with the selected Demographic and Clinical variables

such as Sex, Habits, Type of Stroke and Co-morbid illness. The p values of each variable were not significant at . 05 levels. Hence no association exist between the Swallowing Function and Selected Demographic and Clinical variables.

## Table 8. Association of Feeding performance with selected Demographic and Clinical Variables using Functional Oral Intake Scale (FOIS)

## N= 30

## S. No

## Variables

## FOIS

## p value

## Tube Dependent

## Total Oral Intake

1Sexa) Maleb) Female838110. 142(NS)2Habitsa) no habitsb) smoking/ alcohol471270. 257(NS)3Stroke typea) ACSb) MCSc) PCS25417110. 372(NS)4Co-morbid lllnessa) no co-morbid illnessb) diabetes onlyc) hypertension onlyd) both diabetes & hypertension1127321040. 111(NS)NS-non significant at . 05 levelTable 8 discloses the association of Selected Demographical and Clinical variables with the Feeding Performance. The p values calculated using fisher exact test to uncover the association between the Feeding Performance of Post Stroke Dysphagic patients with Selected Demographic and Clinical variables such as Sex, Habits, Type of Stroke and

history of Co-morbid Illness. The findings revealed no association exist between the variables and the Feeding Performance.

# CHAPTER – V

# DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter deals with discussion, summary and conclusions drawn. It clarifies the limitations of the study, the implications and recommendations given for different areas in Nursing practice, Education, administration and research.

## DISCUSSION

The present study was designed to assess the effectiveness of Selected Nursing Interventions among patients with Post Stroke Dysphagia at KMCH, Coimbatore-14. The researcher carried out the study among 30 patients and adopted pre-experimental research design with single group pre test post test design. The researcher used non probability purposive sampling technique to select the 30 subjects. The researcher conducted this study to assess the effectiveness of Shaker Exercise and Hyoid Lift Maneuver on Swallowing and Feeding Performance among patients with Post Stroke Dysphagia.

## DEMOGRAPHIC DESCRIPTION OF SUBJECTS

The demographic variables included in the study were Age, Sex, Education and Habits. The mean Age of the subjects was 60. Half of the subjects were in the Age group 50-70 years. Almost equal numbers of subjects were in the

30-50 and above 70 years Age groups and it was about 23 and 27 percent respectively. Regarding the Sex, nearly equal numbers of subjects were in the male and female Sex group and it showed 53 and 47 percent respectively. On the basis of their Educational Status, 67 percent of the subjects were studied up to secondary Education. About 33. 33 percent of the subjects completed any one of the graduate degree course. In accordance with their Personal Habits, 53. 33 percent had no bad Habits like Smoking and Alcoholism. Ten percent of subjects had the habit of Tobacco use. Seven percent of subjects were consuming Alcohol. Thirty percent of the subjects had the habit of both Tobacco and Alcohol consumption.

## CLINICAL DESCRIPTION OF SUBJECTS

The clinical variables include Type of Stroke and Co-morbid Illness. In consistent with the Type of Stroke, 10 percent of the subjects had Stroke due to the problem in anterior circulation, 40 percent of the subjects had Stroke due to problem in middle circulation and 50 percent of the subjects had Stroke due to problem in the posterior circulation. With reference to the Co-morbid Illness, 13. 33 percent of the subjects had No Co-morbid Illness. About 10 and 40 percent of the subjects had the complaints of Diabetes Mellitus and Hypertension respectively. Remaining 36. 67 percent of the subjects had both Hypertension and Diabetes Mellitus. The major findings of the study were discussed according to the objectives:

## The first objective was to assess the Swallowing and Feeding Performance of patients with Post Stroke Dysphagia.

In the pre test assessment of the Swallowing Performance using GUSS Score indicates 23. 33% of the subjects had Mild Dysphagia, 40% of the subjects

had Moderate Dysphagia and 36. 67% of the subjects had Severe Dysphagia. The post-test assessment of Swallowing Performance explains that 16. 67% of the subjects were improved to the No Dysphagia stage with good Swallowing and Feeding Performance. About 26. 67% of the subjects had Mild Dysphagia and 23. 33% of the subjects had Moderate Dysphagia. Remaining 33. 33% of the subjects had severe Dysphagia with various improvements in the Swallowing Performance. The pre test and post test Feeding Performance Score using FOIS describes equal number of subjects in the Tube Dependent (36. 67%) and Total Oral Intake category (63. 33%). Despite the result revealed an equal number of subjects in the pre and post test assessment, the subjects had an improvement in the Feeding Performance during the post test assessment from no oral intake level to tube supplement with consistent oral intake level in the Tube Dependent category. Likewise, subjects showed an improvement from the intake of single consistency to the total intake with no restriction in the Total Oral Intake category. The present study was supported by Trapl et al., who conducted study in 2002 and described that out of 30 patients, 30 to 50% had Severe Dysphagia and showed significantly higher risk of aspiration with liquids compared with semisolid textures (p= 0. 001). Therefore they confirmed the subsequent sequence of GUSS.

## The second objective was to determine the effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance in patients with Post Stroke Dysphagia.

With reference to the Swallowing Performance based on the GUSS Score, the mean pre-test Swallowing among subjects was 12. 50 and the mean post-

test Swallowing Score was 13. 87 based on the GUSS tool. Paired ‘ t’ test was used to compute the mean difference. The ‘ t’ value for this mean difference between pre and post test Swallowing Score was 6. 150. The ‘ t’ value obtained at . 001 level of significance and at 29 degrees of freedom. Hence there is a significant difference exist between the mean pre and post test Swallowing Scores. It further implies that the Swallowing Score in the post test was higher than the pre test Swallowing Score. This improvement was due to the Selected Nursing Interventions such as Swallowing Exercises and Positioning while Swallowing. So the Swallowing Exercises such as Shaker Exercise and Hyoid Lift Maneuver found to be effective in improving the Swallowing Performance in Stroke patients. The final result concluded that 22 subjects (73. 3%) expressed improvement after the treatment. Remaining 8 subjects (26. 7%) had no changes in their Swallowing Performance after the therapy. The median of pre-test Feeding Score among subjects was 5 and the median of post-test Feeding Score was 6. 5. Sign test was computed to find out the difference between the pre and post test median Scores of Feeding. The sign test Score showed the p value 0. 000 which was significant at . 001 level. It showed that, a significant difference present between the pre and post test Feeding Scores. It further implies that the Feeding Score in post test was higher than the pre test Feeding Score. This improvement in the Feeding Performance was due to the Selected Nursing Interventions. So the Swallowing Exercises were effective in improving the Feeding Performance in Stroke patients having Dysphagia. Median test was used to compare the effect between the pre test and post test group instead of mean as because the FOIS was a 7 point likert scale. As the variables did not follow the normality and the highest Score was 7, parametric test was not

applicable. Hence non parametric sign test was adopted which is equivalent to paired ‘ t’ test to find out the effectiveness. The result of the present study was substantiated with a study conducted by Mepani et al., in 2005 on augmentation of deglutitive thyrohyoid muscle shortening by the Shaker Exercise. The study involved the effect of 6 weeks shaker exercise in 11 dysphagic patients; six patients were randomized to control group and 5 patients to the Shaker Exercise group. After the therapy the change in thyrohyoid distance among Shaker Exercise group was significantly greater compared to the control group (p= 0. 034), this subsequently improve the Swallowing function of the patients.

## Association of the Swallowing and Feeding Performance with selected Demographic and Clinical variables among patients with Post Stroke Dysphagia

The Fisher exact test was used to associate the selected Demographic and Clinical variables with the Swallowing and Feeding Performance of the patients with Post Stroke Dysphagia. The calculated p values for the association between the Swallowing Performance of Post Stroke patients with the selected Demographic and Clinical variables such as Sex, Habits, Type of Stroke and Co-morbid Illness were not significant and hence there exist no association between them. The calculated p values for the association between the Feeding Performance of Post Stroke patients with selected Demographic and Clinical variables such as Sex, Habits, Type of Stroke and history of Co-morbid Illness were not significant and hence there is no association between them.

# SUMMARY

The aim of the present study was to assess the effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance among patients with Post Stroke Dysphagia, for which the following objectives were formulated; To assess the Swallowing and Feeding Performance of patients with Post Stroke Dysphagia. To determine the effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance in patients with Post Stroke Dysphagia. To associate the Swallowing and Feeding Performance with selected Demographic and Clinical variables. The study was based on Ernesteine Wiedenbach's helping art of clinical nursing theory (1970). The research design applied for the study was pre experimental single group pre test-post test design. Study was conducted in KMCH. 30 samples were selected by non probability purposive sampling technique. The tool used for data collection consists of Demographic and Clinical variables, Gugging Swallowing Screen (GUSS) and Functional Oral Intake Scale (FOIS) to assess the Swallowing and Feeding Performance in Post Stroke Dysphagic patients. The data were collected for a period of 6 weeks. Descriptive and inferential statistics were used in statistical analysis, to assess the effectiveness of Selected Nursing Interventions among patients with Post Stroke Dysphagia. Fisher exact test was used to find out the association between the selected Demographic and Clinical variables with the Swallowing and Feeding Performance in patients with Post Stroke Dysphagia.

## Major findings of the study

On the basis of Gugging Swallowing Screening (GUSS), the investigator observed the degrees of improvement in Swallowing difficulty after the

therapy among patients with Post Stroke Dysphagia. About 16. 67% of the subjects had No Dysphagia, 26. 67% had Mild Dysphagia, 23. 33% had Moderate Dysphagia, and 33. 33% had Severe Dysphagia. In accordance with the Functional Oral Intake Scale (FOIS), 36. 67% of the subjects were in Tube Dependent category and 63. 33% were in Total Oral Intake category with sustained improvement in the Feeding Performance. The mean pre test score of the Swallowing Performance using Gugging Swallowing Screening (GUSS) tool was 12. 50. The mean post test Score of the Swallowing Performance using GUSS evaluation tool was 13. 87. There was a significant difference between the mean pre-test and post-test Swallowing Performance Score. The ‘ t’ value obtained was 6. 150 which is significant at 0. 001 level and at 29 degrees of freedom. The final result explained that, 22 subjects (73. 3%) expressed Swallowing improvement after the treatment. Remaining eight subjects (26. 7%) had no changes in their Swallowing Performance after the therapy. Median test was used to compare the Feeding Performance Score of the pre and post test groups. The median pre test Feeding Performance of the patients with Post Stroke Dysphagia was 5 with a range of 1 to 6 and that of post median test was 6. 5 with a range of 1 to 7. The non parametric sign test was used to find out the effectiveness of the therapy on Feeding Performance. The obtained p value was 0. 000 at 0. 01 level of significance. This revealed a significant improvement in the Feeding Performance of Post Stroke Dysphagic patients. The final result revealed that 24 respondents (80%) showed an improvement in their Feeding Performance after the therapy and was assessed by FOIS scoring. But remaining six respondents (20%) showed no changes in the Feeding Performance when assessed by FOIS. There was no significant association exist between the

Swallowing and Feeding Performance of the Post Stroke Dysphagic patients with the selected Demographic and Clinical variables.

# CONCLUSION

The study was tested and accepted the hypothesis that there is a significant difference in Swallowing and Feeding Performance before and after the implementation of Selected Nursing Interventions in Post Stroke patients with Dysphagia. The result concluded that the study group had better outcome than the others. There was a significant improvement in the Swallowing and Feeding Performance of the Post Stroke Dysphagic patients after the Exercise and Positioning therapy. The participants had reduced the risk of aspiration and aspiration related complications after the therapy. Hence, Selected Nursing Interventions such as Swallowing Exercises like Shaker exercise and Hyoid Lift Maneuver and positioning during Swallowing can be recommended for the patients with Post Stroke Dysphagia.

# IMPLICATIONS

The present study has its own implications in nursing practice, nursing education, nursing administration and nursing research.

## Nursing practice:

Dysphagia is one of the major complications among Post Stroke patients. This study implies the effectiveness of Selected Nursing Interventions in the improvement of Swallowing and Feeding Performance among the Post Stroke Dysphagic patients. This study creates awareness among the nursing personnel about the importance of the various complications after the Stroke and its various evidence based management. The present study shows that

the exercise intervention for the Post Stroke Dysphagic patients can prevent the risk of aspiration and aspiration pneumonia. The result shows that, Selected Nursing Intervention for the Post Stroke patients can reduce the risk of malnourishment. Nurses can gain skill for providing Swallowing Exercises in the Post Stroke Dysphagic patients to improve their quality of life.

## Nursing Education:

The nurse educator can create awareness among the health care professionals about the complicated effects of Stroke and its various evidence based management. The nurse educator can arrange in-service Education programs to update their knowledge regarding the new techniques and modalities to manage the Post Stroke Dysphagia. The nurse educator can teach the students about the present study findings and its implication in patients with Post Stroke Dysphagia. This will help to improve the knowledge of the students on Swallowing Exercises. The nurse educator can motivate the nursing personnel and students to use this Swallowing Exercises and positioning in the improvement of Swallowing and Feeding Performance and in the reduction of aspiration risk in Post Stroke Dysphagic patients.

## Nursing administration:

Nurse administrator should aware of the problem experienced by the clients after the Stroke. Nurse administrator can provide continuing education or short term courses in the clinical area for preparing the nurses with competence in managing the after effects of Stroke especially Dysphagia. Nurse administrator can plan and organize seminars, workshops and conferences about " Selected Nursing Interventions for the improvements of

Swallowing and Feeding Performance among patients with Post Stroke Dysphagia. Nurse administrator can formulate protocol to incorporate the study findings in nursing intervention.

## Nursing research:

This study provides a basis for further studies. The findings of the study can be a foundation for conducting the study on large sample to strongly support the efficacy. The implications of the study can be used as a motivation for nurses to conduct research in India, where the health care system is advancing. This study helps to update the knowledge and proper utilization of resources in the field of nursing practice.

## LIMITATIONS OF THE STUDY

The study was limited to small sample size of 30 subjects. The study was limited to a single setting. The study was conducted using a single group.

## RECOMMENDATIONS

A similar study can be conducted with large number of subjects to generalize the research findings. A study can be conducted at different settings. Similar study can be undertaken using different Swallowing and lingual exercises. This study can be conducted with experimental and quasi experimental design. A comparative study can be conducted between different types of Swallowing Exercises in Post Stroke Dysphagic patients. A similar study can be done to assess the effectiveness of Swallowing Exercises among patients with Dysphagia who are receiving radiation for head and neck cancer.

# ABSTRACT

The present study entitled " Effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance among patients with Post Stroke Dysphagia at KMCH, Coimbatore-14. This study was undertaken during the year 2012-2013, in partial fulfillment of requirement for the degree of Master of Science in Nursing at KMCH College of Nursing, Coimbatore, which is affiliated to the Tamilnadu Dr. M. G. R. Medical University, Chennai. Objectives: 1. To assess the Swallowing and Feeding Performance of patients with Post Stroke Dysphagia. 2. To determine the effectiveness of Selected Nursing Interventions on Swallowing and Feeding Performance in patients with Post Stroke Dysphagia. 3. To associate the Swallowing and Feeding Performance with selected Demographic and Clinical variables. Research Design: Pre experimental design with single group pre test-post test design. Setting: Neuro inpatient and outpatient department of Kovai Medical Center and Hospital, Coimbatore. Samples: All Post Stroke Dysphagic patients. Sample Size: The sample size was 30. Sampling Technique: Non probability purposive sampling. Conceptual framework: Ernestine Widenbach’s Helping Art of Clinical Nursing Theory (1970) was adopted. Intervention: Selected Nursing Interventions such as Swallowing Exercises and Positioning during the swallowing were incorporated. The clients were instructed to do the Shaker Exercise and Hyoid Lift Maneuver 3 to 6 times a day for a period of 6 weeks. The subjects were instructed to elevate or down the chin and tilt the head towards stronger side while Swallowing. Outcome Measures: Swallowing and Feeding Performance was assessed by Gugging Swallowing Screen (GUSS) and Functional Oral Intake Scale (FOIS) respectively. Results: The mean difference between pre and post test Swallowing Score was 6. 150

and which was significant at 0. 001 level. The p value obtained for Feeding Score was 0. 000 at 0. 001 level of significance. The result showed a significant improvement in the Swallowing and Feeding Performance. Conclusion: This study proved that the implementation of Selected Nursing Interventions will improve the Swallowing and Feeding Performance among Post Stroke patients with Dysphagia. Hence the Swallowing Exercises and Positioning can be recommended in clinical practice to improve the Swallowing and Feeding Performance in Post Stroke Dysphagic patients.