Effect of Nursing Intervention Program on Minimizing Dysphagia for Post Stroke Patients

Attyiat Hassan Hussein 1 and Madiha Ali Mahmoud 2
1, 2 Adult Nursing Department, Faculty of Nursing, Assiut University, Egypt

ABSTRACT

Dysphagia is a very common and most frequently complaint among patients with stroke. **Aim of the study:** Assess effect of nursing intervention program on minimizing dysphagia for post stroke patients through: Designing nursing intervention program, implementing nursing intervention program and investigating the effect of nursing intervention program on minimizing dysphagia for post stroke patients. **Subject and Methods:** A quiz experimental research design was utilized in this study. **The Sample** was of 60 adult patients divided into (30) study and (30) control group. **Setting** The study was conducted in the neurology department, neurology out patients clinic and physiotherapy department at Assiut University Hospital. **Tools of data collection:** An interviewing questionnaire and the Gugging Swallowing Screen test. **Result:** the present study revealed that the highest percentage of studied sample was between the age 41 – 60 years and was male. Study group was showed a good improvement in swallowing ability after Implementing nursing intervention program. there were significance relation between swallowing ability and sex for both study and control group. **Conclusion:** it could be concluded that the implementing nursing intervention program improving swallowing ability for study group compared with the control group. **Recommendations:** Further research on a larger probability sample acquired from different geographical areas in Egypt for generalization.

Key words: Stroke, Dysphagia & Nursing Intervention Program.

Introduction

According to **World Health Organization [WHO], (2012)** stroke "is caused by the interruption of the blood supply to the brain, usually because a blood vessel bursts or blocked by a clot. This cuts off the supply of oxygen and nutrients, causing damage to the brain tissue". It is a common cause of death and disability worldwide One of the most common impairments after the onset of stroke is neurogenic oro-pharyngeal dysphagia.

Egypt is the most populated nation in the Middle East with an estimated 85.5 million people. In Egypt, according to recent estimates, the overall prevalence rate of stroke is high with a crude prevalence rate of 963/100 000 inhabitants **(Abd-Allah and Moustafa, 2014).**

Dysphagia is the inability to swallow or difficulty to hold food and fluid in the mouth (**Nazarko, 2010 and Hughes, 2011).** About one half of dysphagic patients either die or recover spontaneously within the first 14 days of stroke onset leaving half with swallowing deficits that can significantly

impair function, recovery and quality of life (QOL) (**Buchholz et al., 2012).**

Complications of dysphagia include aspiration leading to chest infection and pneumonia, malnutrition, dehydration, and a subsequent increased risk of death. Early diagnosis and management is important for recovery from stroke during the rehabilitation phase. Nurses are the first health personnel that interact with a patient post stroke, it is important that they are knowledgeable and skilled in the screening of these patients for dysphagia (**National Stroke Association [NSA], 2012) and (Rhoda &Pickel-Voight, 2015)**

Identifying swallowing issues early reduces hospital stays, healthcare costs and complications including pneumonia, dehydration and malnutrition. Dysphagia is most common immediately after a stroke, but usually declines over time. All stroke patients screened by a trained health care professional as soon as possible after hospital arrival, before being given any oral food, fluid or medication, and at least within 24 hours of admission **(National Stroke Foundation [NSF], 2017).**

Nursing is a dynamic process, which involves evidence based practice, scientific knowledge and dissemination of research knowledge into practice. Each patient must be evaluated on their admission into the Neurology Unit by using gugging swallowing screen, which would help the nurses as well as the other medical personnel to identify patients who are at risk of complications **(Suresh, 2011)**. At least 10% of post stroke deaths occurring within 30 days of hospital admission, a rate of incidence that conceivably is higher in the absence of treatment for acute swallowing problems. So that available treatment programs are designed (**Lee et al., 2011).**

Significance of the study:

Stroke patients experience dysphagia post stroke and occurs in approximately 50 % of stroke patients in the acute phase **(Ickenstein et al., 2012).** So the present study which help such group of patients to minimize dysphagia. The researchers emphasizes the importance of nursing intervention program for post stroke patients to improve swallowing ability.

Aim of the study:

The study aimed to assess effect of nursing intervention program on minimizing dysphagia for post stroke patients through:

1. Designing nursing intervention program for post stroke patients.
2. Implementing nursing intervention program for post stroke patients.
3. Investigating the effect of nursing intervention program on minimizing dysphagia for post stroke patients.

Research hypothesis:

Swallowing ability of the study group after application of nursing intervention program was improved than control group.

1-Technical design:

Research design:

A quiz experimental research design was utilized in this study.

Research Setting:

The study was conducted in the Neurology Department, Neurology Out Patients Clinic and Physiotherapy Department at Assiut University Hospital.

Research Subject:

Sixty adult patients were enrolled in the study and randomly assigned to study group (30) & control group (30) aged from (18 - 65) year. Under exclusion criteria:

1. Unconscious patients
2. Patients had cognitive disorder

Tools of data collection:

Tool (I): An interviewing questionnaire: it was developed by the researchers based on literature review to assess characteristic of the study and control group such as (age, sex, marital status and level of education).

Tool (II): The Gugging Swallowing Screen (GUSS) adopted from Micheala et al., (2007) used to assess swallowing ability, is a simple test, easy, rapid, and suitable noninvasive tool to grade the severity of dysphagia. Is divided into 2 parts: the preliminary assessment (part 1, indirect swallowing test) and the direct swallowing test (part 2). The evaluation criteria used in the indirect swallowing test are vigilance, cough and/or throat clearing, and saliva swallow. The evaluation criteria used in the direct swallowing test are deglutition, involuntary cough, drooling, and voice change. GUSS scores was 0-9: Severe dysphagia with a high risk of aspiration, 10-14: Moderate dysphagia with a risk of aspiration, 15-19: Slight dysphagia with a low risk of aspiration and 20: Slight/ No dysphagia with minimal risk of aspiration. The Gugging Swallowing Screen was done under supervision of neurology physician.

Nursing Intervention Program:

The program includes exercise for improving swallowing ability designed by **Becker, (2013)** are focused on strengthening muscles and building coordination of the nerves and muscles involved in swallowing. Exercises for the jaw such as open jaw stretch, sideway jaw stretch, jaw circle; exercises for lip which included five lip motor exercises; exercises for tongue which included seven tongue motor exercise and exercises for swallowing such as Mendelsohn maneuvers and hyoid lift Maneuver. The researchers used simple words and practice during demonstration suitable to the stroke patients. All exercises were lasting for 10-20 minutes, three time a day. All exercises were done with cooperation of neurology physician.

Content validity:

It was established by panel of five expertise of medicine and Nursing field who reviewed the instruments for clarity, relevance, comprehensiveness, understanding and applicability.

II- Operational design

The study was carried out on three phases:

Preparatory phase:

A review of current and past, local and international related literature as textbooks, articles, journals and periodicals was done, study tools were formulated. The booklet written in Arabic language and supported with picture for easy understand and demonstrate.

Ethical considerations:

- Research proposal will be approved from Ethical Committee (EC) in the Faculty of Nursing.
- There is no risk for study subject during application of the research..
- The study will follow common ethical principles in clinical research.

- Written consent will be obtained from patients or guidance that are willing to participate in the study, after explaining the nature and purpose of the study.
- Confidentiality and anonymity will be assured.
- Study subject have the right to refuse to participate and or withdraw from the study without any rational any time.
- Study subject privacy will be considered during collection of data.

1. Pilot study:

A pilot study was conducted on 10% (6) patients to test the clarity, applicability and practicability of the questionnaire and detect the obstacles and problems that may be encountered during data collection. no modifications were done. These patients were included in the study.

2. Field work: (Implementation phase):

Data were collected within duration of 8 months (from first of January, 2015 till end of August, 2015). At initial interview the researchers introduced themselves to initiate line of communication in order to facilitate the implementation of the tools and explained the nature and purpose of the study to obtain cooperation from patients and health care personnel in Neurology Department. Gugging Swallowing Screen (GUSS) and exercise program were done under the supervision of neurology physician.

The researchers divided randomly the patients into both control group and study group and interviewed with each patient individually. The researchers conducted the pretest after one day of patient admission using an interview questionnaire and Gugging Swallowing Screen. The study participants was interviewed daily during hospitalization for demonstration of dysphagia exercise. An orientation to the program and its purpose were done at the beginning of the first session. The researchers was taking into consideration the use of simple words suitable to the stroke patients. All exercises were done in each session lasting for 10-20 minutes, three time a day. The program was given in 5 days, 15 sessions for all study sample. The researchers demonstrated exercises including exercises for jaw, lip, tongue and swallowing Then re demonstration was done.

Whereas, control group participants received only routine care provided by nurses in the Neurology Department.

Evaluation phase:

The study participants were assessed for swallowing ability using Gugging swallowing screen during hospitalization for post test and after one month post discharge for follow up was done for both groups to evaluate the effect of the program on improving swallowing ability.

III- Administrative design:

This study approved by research ethical committee of Faculty of Nursing at Assiut University. Permission to carry out the study was obtained from the responsible hospital authorities of the Neurology Department at Assiut University Hospital, after explain the aim of the study to obtain their cooperation.

IV- Statistical design:

Collected data were coded and analyzed using frequency, percentage, Independent sample T-test, Chi-square and One-way-ANOVA test. Variables were significant at P value < 0.05. All the statistical analysis was performed using the statistical package for Social Sciences [SPSS] version.

Results:

Figure (1) show that, the highest percentage of studied sample was between the age 41 –60 years.

Figure (2) show that, the highest percentage of studied sample was male.

Figure (3) illustrate that, improvement in the swallowing ability in study group than the control group. the highest percentage of swallowing ability in studied sample both (control and study group) was severe dysphagia in pre test whereas in posttest the highest percentage in study group was moderate dysphagia and slight dysphagia in follow up.

Table (1) show that, the highest percentage of swallowing ability were 18 (60 %) of the patients had severe dysphagia in the study group whereas 21(70%) had severe dysphagia in the control group in pretest. During the posttest 11 (36.7%) had moderate and slight dysphagia. In follow up phase 21(70%) had slight dysphagia.

Table (2) show that, there were significance relation between swallowing ability and sex for control.

Table (3) show that, there were significance relation between swallowing ability and sex for study group.

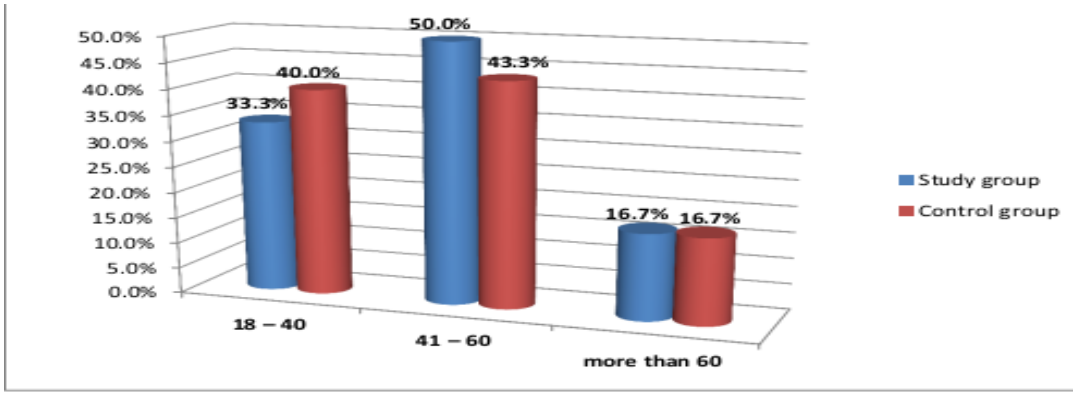

Figure (1): Percentages distribution of studied sample according to age

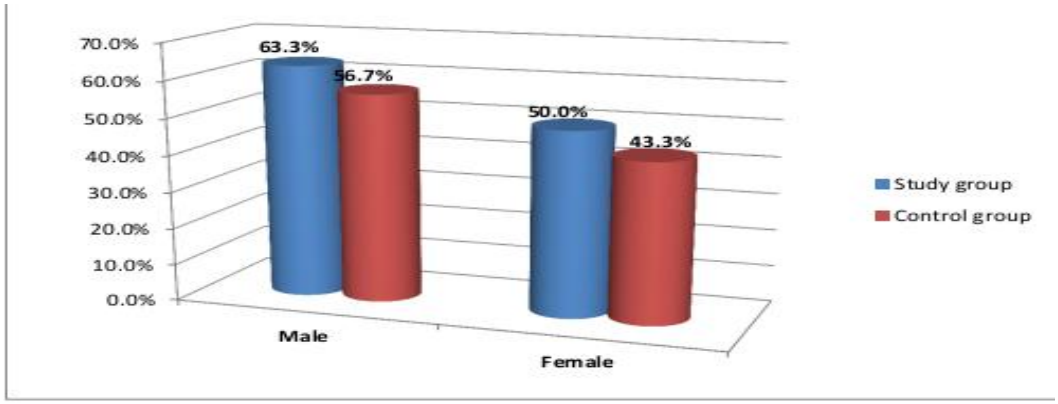

Figure (2):Percentages distribution of studied sample according to sex

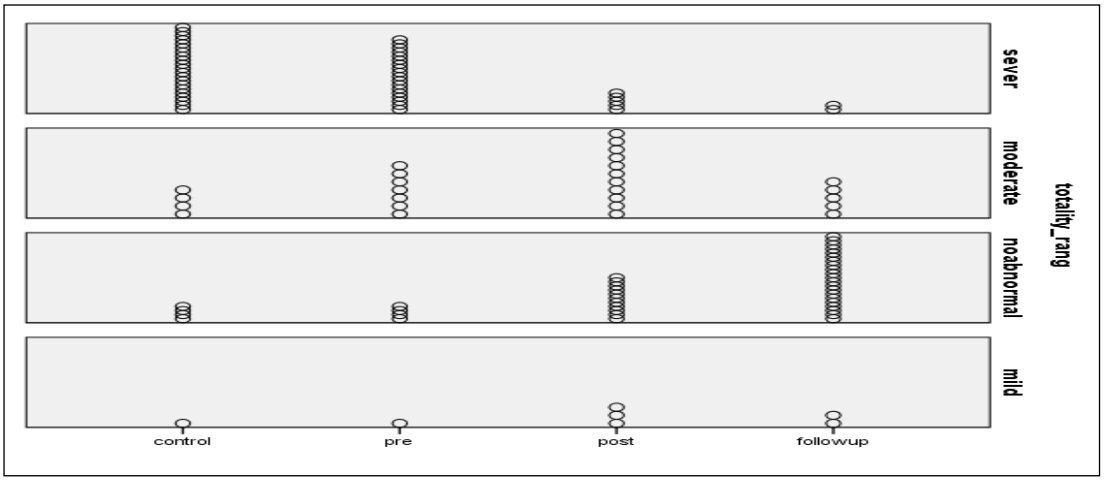

Figure (3): Swallowing ability in the study group and control group.

Table (1): Distribution of swallowing ability for study and control group

Swallowing ability	Control group N=(30)		Study group N=(30)					
			Pre		Post		Follow-up	
	No	%	No	%	No	%	No	%
- Slight/No dysphagia	4	13.3	4	13.3	11	36.7	21	70.0
- Slight dysphagia	1	3.3	1	3.3	3	10.0	2	6.7
- Moderate dysphagia	4	13.4	7	23.4	11	36.7	5	16.7
- Sever dysphagia	21	70.0	18	60.0	5	16.6	2	6.7

Table (2): Relation between swallowing ability and characteristic data in Control group:

Characteristic	Control group								P-value
	Slight/No dysphagia (n= 4)		Mild (n= 1)		Moderate (n= 4)		Sever (n=21)		0.885
	No	%	No.	%	No.	%	No.	%	
Age: 18 – 40	2	20.0	0	0.0	1	10.0	7	70.0	
41 – 60	2	13.3	1	6.7	1	6.7	11	73.3	
> 60	0	0.0	0	0.0	2	40.0	3	60.0	
Sex: Male	4	23.5	1	5.9	4	23.5	8	47.1	0.005**
Female	0	0.0	0	0.0	0	0.0	13	100.0	

Table (3): Relation between swallowing ability and characteristic in study group:

Characteristic	Study group								P-value
	Slight/No dysphagia (n= 4)		Mild (n= 1)		Moderate (n=7)		Sever (n=18)		0.228
	No	%	No.	%	No.	%	No.	%	
Age: 18 – 40	3	25.0	1	8.3	2	16.7	6	50.0	
41 – 60	1	7.7	0	0.0	4	30.8	8	61.5	
> 60	0	0.0	0	0.0	1	30.0	4	80.0	
Sex: Male	1	5.3	0	0.0	5	26.3	13	68.4	0.005**
Female	3	27.3	1	9.1	2	18.2	5	45.5	

Discussion:

Stroke is the leading cause of dysphagia. More than 70 percent of stroke survivors experience dysphagia **National Stroke Association [NSA], (2013).**

The present study showed that; the highest percentage of the studied patients was between the age 41- 60 years Also there was a predominance of male. This study finding was in the line with **Elmasry et al., (2015)** who reported that the majority of patients aged between 47 – 67 years, more than half of study sample (56.7%) were male.

Mozzafarian et al., (2016) stated that, age is the single most important risk factor for stroke. Stroke risk increases with age, but stroke can occur at any age. The risk of having a stroke doubles every decade after the age of 55. **National Stroke Association [NSA], (2013)** reported that Approximately 25% of strokes occur in people aged under 65 years.

The present study revealed that good improvement in swallowing ability after implementing exercises training program in study group than that of control group. The study findings were consistent with **Jung-Ho Kang, (2013)** who revealed that patients who attended the exercises program showed a significant improvement in the swallowing ability than the control group.

The study findings were agree with **Jansi Rani et al., (2013)** who mentioned that the practice of dysphagia exercise was an effective method to improve the swallowing ability of patients suffering from swallowing difficulty. These exercises which reduce complications.

In addition **Mann et al., (2012)** stated that, exercises are designed to increase the strength and range of motion of oral and pharyngeal musculature. These exercises are includes: Lip Exercises, Tongue Exercises, Jaw Exercises and Pharyngeal Swallow Exercises.

McCullough and Kim, (2013) and Antunes& Lunet, (2012) mentioned that, effects of the head lift exercise were the eliminate of dysphagic symptoms. The present results showed that, there were significance relation between swallowing ability and sex of studied sample.

Hagg& Anniko, (2010) stated that a significant relation was found between swallowing ability in stroke patients with age.

Conclusion:

In the light of this study findings and research hypothesis, it can be concluded that after nursing intervention program an improvement in the swallowing ability occur in the study group compared to the control group.

Recommendations:

1. Further research on a larger probability sample acquired from different geographical areas in Egypt for generalization.

2. Establishment of Continuous nursing education and inservice training programs at Neurology Department about dysphagia in stroke patients equipped with information booklet about dysphagia. The booklet should contain information about dysphagia, the signs and symptoms, possible complications and how to manage these patients.

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