

**CRITICAL CARE NURSES' KNOWLEDGE AND PRACTICES REGARDING
DYSPHAGIA CARE OF ACUTE ISCHEMIC STROKE PATIENTS**Nahla Shaaban Khalil^{1*}, Radwa Muhammad Eissa² and Manal Sayed Ismaeel³^{1,3}Critical Care Nursing Department, Faculty of Nursing, Cairo University.²Critical Care Nursing Department, Faculty of Nursing, Fayoum University.***Corresponding Author: Nahla Shaaban Khalil**

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ABSTRACT

Background: Dysphagia is a very serious condition that may affect up to 80% of all stroke patients. It can affect hydration and nutritional status of stroke patients delaying their recovery. Also, it can lead to very serious complications such as aspiration pneumonia, choking, and even premature death. Early dysphagia screening and recognition by trained nurses is considered as one of best practices for acute stroke patient to prevent subsequent complications and promote stroke rehabilitation. **Objectives:** To assess critical care nurse's knowledge and practices regarding dysphagia care of acute ischemic stroke patients. **Method:** A descriptive exploratory design was utilized and conducted in critical care stroke unit at a teaching university hospital in Eastern Egypt including 30 nurses working in this unit. Nurses' baseline, knowledge questionnaire and observational checklists regarding dysphagia care were utilized. **Results:** Almost all the studied nurses have got unsatisfactory, knowledge and practices level regarding care of dysphagic patient. Moreover, nurses' knowledge was significantly correlated with years of experience in the field of nursing and years of experience in stroke units. **Conclusion:** It can be concluded that knowledge and practices of critical care stroke unit nurses were inconvenient and need to be improved. As well, enrichment of nurses' knowledge and practices regarding dysphagia care of acute ischemic stroke patients is highly recommended with replication of this study on larger samples from the different geographical locations in Egypt.

KEYWORDS: Critical care stroke unit, dysphagia, acute ischemic stroke patient.**1. INTRODUCTION**

Post stroke dysphagias a life-threatening condition which refers to swallowing difficulties that may follow acute ischemic or hemorrhagic stroke, it varies from some swallowing difficulties to certain foods to complete inability to swallow at all.^[1] Dysphagia prevalence among stroke patients varies greatly in literature, in the very recent researches it varied from 20.7% to 46.3% and even to 50%.^[2,3-4]

Dysphagia puts huge burden on stroke patients, which included many complications as pneumonia infection (23% vs. 1.1%, $P < 0.001$), prolonged hospital stays (4.4 ± 2.8).^[2] It also increases the risk for mortality, malnutrition and dehydration.^[5] Mortality rate is three times higher in patients who have aspire than patients who do not aspire, and there is a vicious circle among dysphagia, malnutrition, aspiration, and aspiration pneumonia.^[6]

Early dysphagia screening and recognition by trained nurses is considered as one of best practices for acute stroke patient to prevent subsequent complications and promote stroke rehabilitation.^[7-8]

Critical care nurses are the first and most interactive personnel to acute stroke patients,^[9] they are in a typical position to early identify individuals with swallowing problems and initiate interventions that prevent further complications until a formal assessment takes place.^[10]

In order to ensure optimal patients' nutrition, dehydration as well as to decrease the risk for chest infection nursing interventions should include; early dysphagia assessment by using a familiar, valid, reliable, dysphagia test.^[11] upon which nurses can determine the patient's level of dysphagia, the right food consistencies or to determine the need for a naso- gastric intubation. The nurse also should provide adequate feeding position to prevent aspiration, and to maintain upright position 60 minutes after eating to prevent aspiration. Ensure safe swallowing by maintaining adequate location of the food in the mouth, providing the right size and temperature of the food ensuring food preferences to the patient. And finally providing adequate oral hygiene.^[12]

Obtaining a full understanding of nurses' knowledge and practices is necessary to determine the gaps in dysphagia quality of care. Previous studies have often detected poor

nurses' post stroke dysphagia knowledge and practices in the light of the international guidelines and recommendations, while others recommended early dysphagia screening and recognition by trained nurses to prevent subsequent complications and to promote stroke recovery.^[7]

This study was aimed to evaluate critical care nurses' knowledge and practice regarding dysphagia care in acute ischemic stroke patients.

2. METHODS

2.1. Design

Exploratory cross-sectional design was utilized in critical care stroke unit, at a teaching university hospital in eastern delta of Egypt.

2.2. Sample

A non-probability convenient sample of all nurses working in the unit (N=30). The criteria for inclusion in the sample were nurses with experience in the critical care stroke unit of at least one year, excluded from the study were nursing professionals with less than one year working in critical care stroke unit after graduation or who refused to participate in the study.

2.3. Data Collection

To demographic characteristics and knowledge sheets were filled by the nurses themselves after their morning shift, then nurses were observed by the researcher to assess nurses' practices regarding assessment and management of dysphagic patients utilizing checklists for three times in different shifts for each nurse to practices. These data were collected from June 2015 to September of the same year.

2.4. Research Instrument

- 1) To demographic characteristics sheet, to cover basic social characteristics of the studied sample.
- 2) Knowledge questionnaire, a designed questionnaire was developed by the researchers based on literature review, its content was reviewed by a neurologist doctor and panel of four expert professors in the field of critical care and emergency nursing to check for ease of use and understanding.

The knowledge questionnaire included 4 multiple choice items. It simply covered knowledge about dysphagia and including definition, signs, the goal of its assessment, and the it's appropriate assessment position. Each correct answer took "one" score and the false answer got "zero" score. The scoring system categorized as follows; scores fewer than 80% was considered the unsatisfactory level and the scores equal or more than 80% considered satisfactory level. This percentage was decided by a panel of experts, who critically viewed that 80% is the least accepted level to work in such a critical environment.

3) Observational checklist of nurse's care of dysphagia is based on the latest evidence-based protocols in assessment and managing dysphagic patients; checklist was derived from the Gugging Swallowing Screen (GUSS) test which is a reliable and sensitive tool it was chosen for its feasibility, applicability, validity and other psychometric characters; it can grade the severity of dysphagia and recommend a special diet accordingly. The scoring system was distributed as follows; "right and complete done" action step took two grades, "incomplete done" took one grade and incorrect/not done took zero grade. The total score of the questionnaire was (28) grades. The scores were categorized as follows; performance level below 80% was considered unsatisfactory and equal or more than 80% were considered satisfactory.

2.5. Data Analysis

Later, descriptive as well as inferential statistics were carried out utilizing statistical package for social sciences (SPSS). The utilized tests were frequency, means, Standard deviation, independent t-test and one-way ANOVA test.

2.6. Ethical Standards

A primary approval to conduct the proposed study was obtained from the ethical committee and research at faculty of nursing Cairo University. Also, an official permission was obtained from Zagazig University hospital administrators to conduct the study. Participation in the study was entirely voluntary; each subject had the right to withdraw from the study when he or she wanted. Informed consent was obtained from the subjects.

Anonymity and confidentiality were assured through coding the data, every participant had the right to withdraw from the study at any time. Subjects were assured that this data won't be reused in another research without their permission.

Also, the last ethical approval was obtained from the ethical committee and research at faculty of nursing Cairo University on 25 of March 2018.

3. RESULTS

Table 1 shows nurses' baseline characteristics, that nearly half (46.7%) of the studied subjects; their age is ranged between (26-35) years. Most of the nurses are married (90%). More than three fourths (80%) were diploma graduates. As well, (73.3%) of the studied subjects has been working for more than 10 years in the field of nursing, and nearly half (46.7%) has experience for more than 10 years of working in stroke units.

Table 2 exhibits frequency distribution of correct and incorrect answers of M.C.Q items; more than half (56.7%) of the studied sample correctly answered the question pertinent to dysphagia definition. Also, more than half (66.7%) of the nurses correctly answered the

question pertinent to the purpose of dysphagia assessment. Contrarily, only 10% considered coughing as a sign of dysphagia. Moreover only (43.3%) could identify high fowlers' position as assessment position for dysphagia.

Table 3 illustrates percentage distribution of not done, incorrect/ incomplete, and correct practices related to dysphagia assessment, the majority (90%) of the studied sample didn't assess the patient's ability to cough. The majority (90%) didn't assess the patient's ability to swallow saliva successfully. Moreover, most nurses (96.7%) showed incomplete practices regarding assessment of the patient's vigilance, more than half (56.7%) put the patient in an incorrect position for dysphagia examination.

Table 4 examines percentage distribution of not done, incorrect/ incomplete, and correct practices related to dysphagia management, all (100%) of the studied sample reported for nasogastric tube insertion for sever dysphagia, all (100%) nurses provide pureed and soft food, liquids very slowly sip by sip for the patient who can swallow liquid and semisolid foods while solid are not.

Table 5 shows the mean knowledge score of nurses' dysphagia knowledge of acute ischemic stroke patient was (1.8 ± 0.79).

Table 6 shows that only (3.3%) of the studied sample have satisfactory level regarding dysphagia knowledge of acute ischemic stroke patient. Satisfaction level is $\geq 80\%$ (≥ 3.2).

Table 7 illustrates the total, mean, and standard deviation regarding practice score of nurses' dysphagia care of acute ischemic stroke patient was $10.2 (\pm 1.8)$.

Table 8 shows satisfaction percentage of the studied sample regarding dysphagia care of acute ischemic stroke patient. Satisfaction level is $\geq 80\%$ (≥ 22.4).

Section (III)

This section presents additional correlational findings.

Table 9 exhibits that there is a negative weak statistical correlation between nurses' dysphagia care practices and dysphagia knowledge questions, ($r = -0.37$).

Table 10 illustrates that there is a significant statistical difference among the nurses' total knowledge means regarding dysphagia by their years of experience in the field of nursing, ($F = 3.7, p = .023$).

Table 11 shows that there is a significant statistical difference among nurses' total knowledge means regarding dysphagia knowledge by their years of experience in stroke unit, ($F = 9.11; P = 0.000$).

Table 1: Percentage distribution of the studied subjects' background data, (n=30).

Variable	Study sample	
	No.	%
Age		
16 – 25	11	36.7
26 – 35	14	46.7
36 – 45	4	13.3
46 or more	1	3.3
Marital status	No.	%
Single	1	3.3
Married	27	90.0
Divorced	2	6.7
Education level	No.	%
Bachelor	2	6.7
Tech. Inst.	4	13.3
Diploma	24	80.0
Years of experience in nursing field	No.	%
1 – 5	1	3.3
6 – 10	7	23.3
> 10	22	73.3
Years of experience in the stroke care unit:	No.	%
1 – 5	5	16.7
6 – 10	11	36.7
> 10	14	46.7

Table 2: Frequency distribution of correct and incorrect answers of M.C.Q items of nurses' knowledge regarding dysphagia, (n=30).

M.C.Q. Items	No.	%
1) Dysphagia is defined as;		
a) Difficult swallowing or passage of solid and liquid foods from the pharynx to the stomach. *	17	56.7
b) Painful swallowing of solid and liquid foods from the pharynx and down to the stomach.	1	3.3
c) False Sensation of food in the pharynx and esophagus.	0	0.0
d) All the above.	12	40.0
e) I don't know	0	0.0
2) One of dysphagia signs:		
a) Coughing. *	3	10.0
b) Mouth angle drop.	3	10.0
c) Teeth clench.	10	33.3
d) All the above.	14	46.7
e) I don't know.	0	0.0
3) The nurse assesses dysphagia to		
a) Determine adequate methods for feeding. *	20	66.7
b) To increase food intake.	0	0.0
c) To increase liquids intake.	5	16.7
d) All the above.	5	16.7
e) I don't know.	0	0.0
4) Dysphagia assessment position is		
a) Flat position.	0	0.0
b) Semi fowler's position	16	53.3
c) Fowler's position. *	13	43.3
d) All the above.	1	3.3
e) I don't know.	0	0.0

(*) is the correct answer to the question.

Table 3: Percentage distribution of not done, incorrect/ incomplete, and correct practices related to dysphagia assessment, (n=30).

Dysphagia assessment items	Not done		Done incorrect		Done incomplete		Done	
	No.	%	No.	%	No.	%	No.	%
1- Put the patient in sitting position	0	0.0	17	56.7	0	0.0	13	43.3
2- Assess the patient's vigilance	1	3.3	0	0.0	29	96.7	0	0.0
3- Assess the patient's ability to cough and clear his throat twice	27	90	0	0.0	0	0.0	3	10.0
4- Assess the patient's ability to swallow saliva successfully	27	90	0	0.0	0	0.0	3	10.0
5- Assess deglutition, the nurse use 1/2 tea spoon pudding like food and assessment is taken after the 3 rd trial.	4	13.3	26	86.6	0	0.0	0	0.0
6-Assess if the swallowing is not possible, delayed (>2 sec. for liquid and semiliquid and >10 sec. for solid) or successful	0	0.0	0	0.0	30	100	0	0.0
7-Assess if the patient coughs involuntary before, during, or after and within 3 minutes after swallowing.	27	90.0	0	0.0	0	0.0	3	10.0
8- Assess if the patient drools after deglutition or his voice has been changed	30	100	0	0.0	0	0.0	0	0.0
9- Repeat steps from 4-7 with liquid and solid foods.	30	100	0	0.0	0	0.0	0	0.0
10- Liquid intake is assessed first by 5ml then 10ml then 15ml then the nurse continues with 50ml.	0	0.0	0	0.0	30	100	0	0.0
11- If there are no symptoms then by using solid food	30	100	0	0.0	0	0.0	0	0.0

Table 4: Percentage distribution of not done, incorrect/ incomplete, and correct practices related to dysphagia management, (n=30).

Dysphagia Management items	Not done		Done incorrect		Done incomplete		Done	
	No.	%	No.	%	No.	%	No.	%
1- Report for nasogastric tube insertion for sever dysphagia with unsuccessful semisolid swallowing, or unconscious patient.	0	0.0	0	0.0	0	0.0	30	100
2- Provide pureed and soft food, liquids very slowly sip by sip for the patient who can swallow liquid and semisolid foods while solid are not.	0	0.0	0	0.0	0	0.0	30	100
3- At risk for aspiration - No liquid medication.	0	0.0	0	0.0	0	0.0	30	100

Table 5: Nurses' total and mean knowledge degrees of dysphagia of acute ischemic stroke patients, (n = 30).

Total knowledge	Minimum	Maximum	Mean	Std. deviation
4	.00	4.0	1.8	0.79

Table 6: Frequency distribution of nurses' satisfactory knowledge level regarding dysphagia of acute ischemic stroke patient's, (n=30).

Total knowledge	Satisfactory		Unsatisfactory	
	N.	%	N.	%
4	1	3.3	29	96.7

Table 7: Nurse's total, mean, and standard deviation of total dysphagia care of acute ischemic stroke patient, (n=30).

	Minimum	Maximum	Mean	Std. deviation
Dysphagia Care	8	17	10.2	1.8

Table 8: Frequency distribution of nurses' satisfactory practice level regarding dysphagia care of acute ischemic stroke patients, (n=30).

Total practice	Satisfactory		Unsatisfactory	
	N.	%	N.	%
28	0	0.0	30	100

Table 9: Relationship between nurses' knowledge and care practices regarding dysphagia of acute ischemic stroke patient, (n = 30).

		Dysphagia knowledge
Dysphagia care practice	r value	-0.37

Table 10: One way ANOVA test for comparison of nurses' total knowledge scores regarding care of acute ischemic stroke patients by their years of experience in the field of nursing, (n = 30).

	Years of experience in the field of Nursing	N	F	P value
Total knowledge	1 – 5	1	3.7	.023
	6 – 10	7		
	> 10	22		

Table 11: One-way ANOVA test for comparison of nurses' means of total knowledge regarding dysphagia of acute ischemic stroke patients by their years of experience in stroke unit, (n = 30).

	Years of Experience In stroke unit	N	F	P value
Total knowledge	1 – 5	5	9.11	0.0001
	6 – 10	11		
	> 10	14		

4. DISCUSSION

The analysis of data in the present study showed that almost all nurses had unsatisfactory knowledge and practices level regarding dysphagia of acute ischemic stroke patients that included; dysphagia definition, the purpose of dysphagia assessment, coughing as a sign of dysphagia. High fowlers' position as assessment position for dysphagia and dysphagia care practices.

The researchers interpreted the reasons for nurses' inadequate knowledge and practices mainly to an absence of incorporation dysphagia care in a nursing curriculum of the taught nursing program. Other relevant causes included lack of training programs provided by their hospital. Also, lack of disseminated posters, and guidelines in nurses' work areas. Another factor for lack of nurses' knowledge in the current study was nurses' workload which made the delay of nurses' abilities and motives to acquire and update their knowledge. absence of pre-employment orientation programs. Perceived lack of importance, the presence of other health care professionals such as neurologists to care for patient's dysphagia delegating specific actions to the nurses. However, nurses' understanding of these data will improve the patient's health status, preventing many health problems, shorten patient's hospital stays, and even improve their prognosis.

Our study findings are congruent with a study made by,^[13] who stated that only less than half (42%) of her study's respondents could identify cough as a sign of dysphagia. Also, the same study revealed that less than one third (29.9%) of all the study representants considered 90° sitting position as a safe position for feeding. As well, the study mentioned that only one third (35%) of all respondents chose thin liquids as the most food consistency that causing aspiration to the patient. In the same line, our study findings are consistent with,^[6,9-13] studies who stated that nurses have difficulties in identifying signs and symptoms of dysphagia.

Regarding nurses' practices the researcher found that all the studied nurses use water to test the presence of dysphagia this finding is congruent with,^[14] who found low nurses' knowledge level regarding adequate food consistency for dysphagic patients. Also, our study finding regarding nurses' practices is invariable with the study of,^[15] which is made on 312 health care professionals with (67.9%) of nurses to discover their knowledge, attitude and practices regarding dysphagia, the study illustrated that only slightly over one tenth of the participants was aware of and could perform a standard screening and assessment of dysphagia.

On the other hand, our study opposed by,^[15] who mentioned in a study of 312 of health care professionals with (67.9% of nurses) that they have a satisfactory knowledge level of dysphagia. As well, the study findings are disagreed with the study of,^[13] in that most of the nurses (92%) correctly identified dysphagia

definition. And the study done by,^[14] on hospice care nurses that found all the studied sample correctly identified cough as a sign of dysphagia. Also, our study results disagreed with a study made by,^[18] whose nursing sample was hospice care nurses and he found that (90%) of his study sample respondents indicated sitting position is save for feeding dysphagic patients. Also, in a study made by,^[6] stated that ICU nurses have adequate knowledge regarding the adequate position for dysphagic patient eating.

The researchers examined the association between total knowledge and total practices scores regarding dysphagia of AIS patients, and there was a weak negative correlation indicating that nurses' practices are not congruent with their knowledge level. The researchers examined other factors that may have relevance to unsatisfactory nurses' level of knowledge and practice regarding dysphagia of acute ischemic stroke patients, such as age, educational level, and years of experience. Our findings revealed a significant positive correlation between nurses' knowledge and both years of experience in nursing field and years of experience in stroke unit. This finding is supported by,^[16] who founded in their systemic review study "Investigating factors that have an impact on nurses' performance of patients' conscious level assessment" that experience is the most important demographic factor affecting nurses' assessment of patients' 'conscious level.

Also,^[17] founded that nurses' experience as a demographic factor is significant in determining nurses' knowledge of glasgow coma scale. The researcher may explain this finding to years of practice and working allows nurses to have the opportunity to gain more knowledge and excellence their nursing practices.

5. CONCLUSION

The present study concluded that critical care nurses have insufficient knowledge and practices concerning management of dysphagia of acute ischemic stroke patient. Moreover, a positive significant correlation was found between knowledge and nurses' years of experience in the field of nursing and years of experience in stroke unit.

6. RECOMMENDATIONS

By the end lacking the accepted level of knowledge and practices regarding dysphagia makes the dysphagic stroke patients more susceptible to complications such as aspiration pneumonia, dehydration, malnutrition, unnecessary nasogastric tube insertion, inability to evaluate the effectiveness of neurological treatment on swallowing and other speech disorders that follows stroke accident and others.

We suggest recommendations for improvement of patient care for dysphagia:

- Conduction of in-service program regarding identification and management of dysphagia based on the most recent evidence-based practices.
- Periodic evaluation of nurses' knowledge and practice.
- Replication of the study on a large probability sample selected from different geographical areas in Egypt.

Ethics Approval and Consent to Participate

Final ethical approval was obtained on 25 March 2018.

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