Assiut Scientific Nursing Journal
http://asnj.journals.ekb.eg
http://www.arabimpactfactor.com

Effect of Pre Discharge Nursing Education on Recurrence of Stroke Among Studied Patients

Amira Mostafa Mahdy [1], Sahra Zaki Azer [2], Mohamed Mostafa Ahmed [3] & Marwa Ali Almasry[4] .

1. Demonstrator of Medical Surgical Department, Facuity of Nursing, Assuit University, Assuit, Egypt.
2. Assistant Professor of medical surgical department, Facuity of Nursing, Assuit university, Assuit, Egypt.
3. Lecturer of Neurology Department, Facuity of Medicine, Assuit university, Assuit, Egypt.
4. Lecturer of Medical Surgical Department, Facuity of Nursing, Assuit university, Assuit, Egypt.

Abstract

Background; Education has a vital role in decreasing stroke recurrence and facilitating successful self-management of this chronic disease. **Aims were to;** Evaluate the effect of implementing pre discharge nursing education on recurrence of stroke among studied patients**. Research design;** (Pre/posttest) quazi experimental research design was utilized in this study. **Setting;** Neurology department at Assuit University Hospital. **Sample;** (150) adult patients with stroke (males & females). **Tools;** Patient's assessment sheet and National Institutes of Health Stroke Scale (NIHSS) were used (pre & post) the implementation of pre discharge nursing education. **Results;** Mean age of patients in control group was (54.46±9.52) years old and study group was (51.6±12.8) years old and there was a statistical significance difference between the control and the study groups as regarding recurrence of the stroke ($p< 0.005$). **Conclusion;** Stroke recurrence was significantly decreased among the studied patients who received pre discharge nursing education than patients who received routine hospital care (control group). **Recommendation;** Instruction hand book about modifiable risk factors that lead to stroke recurrence and methods to deal with it should be available for all patients with stroke.

Keyword: Effect, Pre discharge Nursing Education, Recurrence & Stroke patients.

Introduction

The World Health Organization defined stroke as 'rapidly developed clinical
signs of focal (or global) disturbance of cerebral function, lasting over than 24 hours or resulting in death **(Coupland et al., 2017)**.

Recovery time after stroke differs from patient to another, it could take weeks, months or may be years. Some people recover fully, but others may develop short or lifelong disabilities. If a patient develops a stroke, the patient will be at high risk for an additional stroke. As one from each four cases with strokes annually are recurrent **(Mozzafarian et al., 2016).**

Recurrent stroke is related to increase disability and mortality compared to the index stroke **(Khanevski et al., 2018).** The chance of stroke recurrence within 90 days (3 months) of a previous attack is great **(Xie et al., 2017).**

Risk of stroke recurrence can be within a short- or long- term period starting from 30 days for the short term period to 10 years for the long term period after the first attack of stroke **(Mohan et al., 2016)**.

Providing patients with good education and knowledge concerning stroke is a vital aspect of caring for such a group of patients with stoke. As education provides support to people by providing those people with the understanding of their illness and assistance with decision-making regarding their care and life style; Furthermore, education has a vital role in decreasing stroke recurrence and facilitating successful self-management of this chronic disease, lack of patient's education could increase the chance of stroke recurrence **(Hafsteinsdóttir et al., 2017).**

All nurses play an important role in reducing stroke recurrence by identifying adjustable risk factors and proving the effective of risk reduction efforts and this may cause stronger decrease in recurrence cases and thus reduce the burden of stroke in the future (**Gan et al., 2018**).

Significance of the study

From the researcher's experience during 2 years of training period in neurology department at Assuit university hospital, it has been observed that most of the patients who suffered from an attack of stroke are most likely to suffer another attack after recovery and admitted to hospital again with diagnosis of stroke recurrence which accounts about 1830 cases that is more than 50% of all stroke admitted cases according to the patients records at Assiut University Hospital through 2019 (**Assiut University hospital records., 2019).** So, all patients with stroke must be given a pre discharge nursing education which plays an important role in reducing number of recurrent attack of stroke.

Aims of the study

The aims of this study were to evaluate the effect of implementing pre discharge nursing education on recurrence of stroke through:

- Develop a pre discharge nursing education for patients with stroke based on need assessment.
- Implement the pre discharge nursing education for patients with stroke.
- Evaluate the effect of implement the pre discharge nursing education on the number of stroke recurrence.

Research Hypothesis

Pre discharge nursing education will show a positive effect on reducing the number of stroke recurrence among study group more than control group.

Patients and Method

Research design

(Pre/post test) quazi experimental research design was utilized on to conduct this study.

Setting:

The study was conducted in neurology department at Assuit University Hospital.

Sample

(150) stroke adult patients (males and females) admitted to neurology department at Assiut University Hospital. Age ranged from 18 to 65 years. An influence calculation estimated that in order to detect an impact size of two groups (control/study) (pre / posttest) with a p-value< 0.05 and 80% power, confidence level 0.95, so a sample size of (150) patients were needed and total patients were divided into two equal groups (control and study).

Inclusion criteria:

Age ranges from 18 to 65years, Patient with first attack of stroke, sufficient

cognitive and communicative ability, a willingness to participate in the study.

Two tools were utilized for data collection in this study. These tools were as follow:

Tool I: Patient's assessment sheet: This tool consisted of three parts.

Part I: patient's Demographic data: It was developed to assess Patient's demographic characteristics. It included age, sex, marital status, level of education, living situation and occupation.

Part II: Patient medical data: It was developed to assess past medical history as; heart disease, hypertension and diabetes. As well to assess the present medical history as; causes of stroke, types of stroke, number of stroke attacks, date of admission, date of discharge and affected side.

Part III: Stroke risk factors assessment sheet

Stroke risk factors assessment sheet was developed by the researcher after reviewing the current national and international literature and was revised by experts which included all modifiable risk factors as ; smoking, high cholesterol, drinking alcohol, illegal drug use, sedentary life-style, physical inactivity, obesity, imbalanced diet, dehydration, hormones and atrial fibrillation. Also assess the non modifiable as; family history. So the tool used to assess all risk factors that the patients may suffer from which could increase their chance of having another attack of stroke (recurrence).

Tool (II): National Institutes of Health Stroke Scale (NIHSS)(pre, post): It was developed at 1995 by National Institutes of Health organization to measure neurological function in patients to determine occurrence (recurrence) and severity of stroke, It is consisted of 11elements.The total score is ranging from 0 to 42, each element scores a specific ability between a 0 and 4 some elements only have a scale from 0 to 2. a score of 0 typically indicates normal function in that specific ability, while a higher score indicating the level of impairment, if patient have a total score of 0 indicate no stroke symptoms (no recurrence), 1–4 score indicate minor stroke, 5–15 indicate moderate stroke, 16–20 indicate moderate to severe stroke, 21–42 severe stroke and this classification can help to determine recurrence and severity of stroke in patients with or without residual effect, the studied patients were assessed (pre) which mean pre discharge from the hospital after finishing medical treatment and (post) 3 months from discharge then (post) 6 months, if the score that was given to the patients pre assessment phase decreased or became zero in the flowing post assessment phases (3 and 6 months), this indicating that the patient's condition improved (no recurrence). Some patient could also be given a score pre assessment phase due to residual effect from stroke that remain after medical treatment and vice versa. An increase in the score given to the patients at the pre assessment phase in the following post assessment phases means increasing the possibility of developing a recurrence of a stroke attack **(National Institutes of Health., 1995).**

Procedure

This study was carried out in three phases:

I: Preparatory phase

Tools development:

Data collection tools was developed based on reviewing the current, past, local and international related literature in the various aspects using books, articles, periodicals, magazines and references were done.

Content validity and reliability

Content validity was revised and checked by (5) experts from Medical-Surgical Nursing staff and Medical staff at Assuit University. The experts revised the developed tools for clarity, relevancey and comprehensiveness. Minor modifications were done

and correction was carried out accordingly, so tools were designed in their final format and tested for reliability.

Reliability of the two tools were measured by Cronbach's alpha coefficient test (r=0.72).

Pilot study

A pilot study on (10%) of the studied subjects (15 patients) was conducted during January 2020 to test the clarity and applicability of the tools. In line with this pilot study, specific modifications were made. Those patients who were involved in the pilot study were excluded from the study.

Development of the pre discharge nursing education for patients with stroke about stroke recurrence and measures to prevent it:

It was developed in a simple Arabic language and designed to decrease recurrence of stroke among the studied patients based on their needs assessed from the pre test. To provide patients with the educational needs in a way to manage the modifiable risk factors which increase their chance to have another stroke and also enhance their knowledge about disease itself and how to prevent its recurrence

II. Implementation phase

- Once the permission was granted to proceed with the proposed study, the researcher initiated data collection, name of potential patients who have admitted to neurology department and who met the criteria were obtained from the medical sheet of the patient.
- **The pre test;**
  - The researcher introduced herself and purpose of study was explained to patients who agreed to participate in the study prior to any data collection which took about 5-10 min.
  - Data was collected from the control group first all at once (75 patients) then from the study group.
  - After taking the patient's oral agreement for voluntary participation in the study, each patient involved in the study was interviewed individually to obtain base line data that were established using **(tool I),** then assess the risk of stroke recurrence and severity by determine wither patient has a residual effect from the stroke after medical treatment or recovered fully that can be used as a base line for post assessment using **(tool II).**
  - The pretest was conducted to the study group. Data collected from the pretest was analyzed in order to identify patient's need regarding their knowledge about disease itself and how to prevent its recurrence.
- Pre discharge nursing education content covered over two sessions; each session took about 30mins. The study was conducted in the morning and afternoon shifts. The education was given on an individual basis. During the session one family member was presented in the session for patient's support and increasing their sense of responsibility during application of the nursing education at home.
- **The first session** covered the information included in the first portion of the nursing education; definition of a stroke and stroke recurrence (causes, risk factors, warning signs, signs and symptoms of stroke recurrence and complications of stroke recurrence).
- **The second session** covered the preventive measures of stroke recurrence which contained items as (smoking cessation, weight reduction, maintenance of normal blood pressure , blood glucose level and blood cholesterol level, control of atrial fibrillation, relaxation and avoidance of stress and pressure, hydration maintenance, diet, compliance of treatment, physical activity and exercises as deep breathing exercise).
- At the end of each session feedback received from the patients to assess their understanding, and then the researchers explained any difficult points.
- Each patient from study group obtained a hard copy of the booklet also the researcher used pictures to enhance patient's understanding and helped them to retain the learned material.
- The pre-discharge nursing education was carried out for the study group only while the control group received the routine hospital care during the time of discharge which included the patients were given a follow-up card by a member of the nursing team for follow up in outpatient clinics every two weeks and a list of prescribed medications to be taken during the recovery period.
- The researcher discussed with the patients and their families about the time scheduled of contact for follow up and monitor patient's condition, in order to asses if patients might develop a possibility for stroke recurrence at two times within 6 months follow up after discharge from hospitals (after 3 months and after 6 months).
- The researchers arranged also with the patients in the both groups (study and control) the time and place for follow up which were two times at (3 and 6 months) after discharge in the Outpatient Clinics, at Neurological Hospital, in Assiut University Hospital.
- The collection of data lasted through the period from January 2020 to July 2020.

III- Evaluation phase

In this phase the researcher assessed stroke recurrence using (**Tool II)** post (3) and (6) months from patient discharge for all the patients in both groups.

Ethical Consideration

Research proposal was approved from Ethical Committee within the Faculty of Nursing. There was no risk for study subjects during application of the research. The study was following common ethical principles in clinical research. Oral consent was obtained from patient or guidance that was willing to participate within the study, after explaining the nature and purpose of the study. Confidentiality of the subject data was assured. They informed that participation was voluntary and that patients could withdraw at any time of the study. Anonymity was considered during collection of data.

Statistical analysis

Data entry was done using a compatible personal laptop computer by the researcher. All data was entered into statistical packages for the social sciences (SPSS) version 22.0 software for analysis and excel for figures. The content of every tool was analysed, categorized and then coded by the researcher.Categorical variables were described by number and percent, where continuous variables described by mean and standard deviation (Mean, SD). Chi-square test and fisher exact test accustomed to compare between categorical variables where compare between continuous variables by t-test and a nova test. A two-tailed test in which $p < 0.05$ was considered statistically significant.

Results

Table (I): Frequency and percentage distribution of demographic characteristics of the studied patients (n= 150).

Variables	Control group		Study group		P value
	(n=75)	%	(n=75)	%	
Age					
Mean±SD	54.46±9.52		51.65±12.84		**0.130 ns**
Sex					
Male	44	58.7	45	60.0	**.500 ns**
Female	31	41.3	30	40.0	
Marital status					
Single	1	1.3	4	5.3	
Married	59	78.7	55	73.3	**.373ns**
Widow	15	20.0	16	21.3	
Educational level					
Illiterate	34	45.3	26	34.7	
Read and write	14	18.7	19	25.3	
Preparatory school	5	6.7	4	5.3	**.291ns**
Secondary school	9	12.0	5	6.7	
High education	13	17.3	21	28.0	
Occupation					
Office work	8	10.7	16	21.3	
Farmer	11	14.7	11	14.7	
Student	1	1.3	3	4.0	
Machinery work	4	5.3	1	1.3	**.275 ns**
Non-working	48	64.0	40	35.3	
Other jobs	3	4.0	4	5.3	
Living situations					
Live alone	1	1.3	2	2.7	
Live with family members	74	98.7	73	97.3	**.500 ns**
Chi-Square Tests	**Ns= Not significant difference P>0.05**				

Table (2): Frequency and percentage distribution of medical data of the studied patients (n=150).

Variables	Control group		study group		P value
	(n=75)	%	(n=75)	%	
1.Past medical history:					
Heart disease	8	10.7	14	18.7	**0.124 ns**
Diabetes mellitus	24	32.0	17	22.7	**0.136 ns**
Hypertension	51	68.0	50	66.7	**0.500 ns**
2.Present medical history:					
Type of stroke					
Ischemic	48	64.0	56	74.7	**0.134 ns**
Hemorrhagic	21	28.0	11	14.7	
Transit ischemic attack	6	8.0	8	10.7	
Causes of stroke					
Lacunar infract	34	45.3	33	44.0	**0.261 ns**
Large artery occlusion	20	26.7	27	36.0	
Intracerebral hemorrhage	11	14.7	4	5.3	
Subarchanoid hemorrhage	10	13.3	7	9.3	
Affected side					
Right	33	44.0	34	45.3	**.196 ns**
Left	42	56.0	41	54.7	

Ns= Not significant difference P>0.05 Chi-Square Tests

Table (3): Frequency and percentage distribution of stroke recurrence Risk factors among the control and study groups (n= 150).

Risk factors	Control group		Study group		P value
	(n=75)	%	(n=75)	%	
(I)Non modifiable risk factors					
Family history	26	34.7	23	30.7	**0.36 ns**
(II)modifiable risk factors					
1- Smoking	34	45.3	32	42.7	**.435ns**
2-High cholesterol	22	29.3	18	24.0	**.290 ns**
3- Drinking alcohol	0	0.00	0	0.00	**------**
4- Illegal drug use	5	6.7	7	9.3	**.382 ns**
5- Sedentary life style	7	9.3	12	16.0	**.163 ns**
6- Physical inactivity	19	25.3	17	22.7	**.424 ns**
7- Obesity	32	42.7	27	36.0	**.252 ns**
8- Imbalanced diet	23	30.7	21	28.0	**.429ns**
9- Dehydration	8	10.7	5	6.7	**0.282 ns**
10-Hormones: oral contraceptive pills	7	9.3	7	9.3	**0.610 ns**
11-Irregular heart rate(AF)	10	13.3	12	16.0	**.409 ns**

Ns= Not significant difference P>0.05 Chi-Square Tests

Table (4): Comparison between study and control groups according to National Institutes of Health Stroke Scale (NIHSS) pre/ post (3,6months) after implementing of predischarge nursing education (no. 150)

National Institutes of Health Stroke Scale (NIHSS)	Control group						Study group						p.1	p.2	p.3
	Pre		Post				Pre		Post						
			3 Month		6 Month				3 Month		6 Month				
	N	%	N	%	N	%	N	%	N	%	N	%			
1A: Level of consciousness: Asking a simple questions related to (time, place and person) 0 = Alert	75	100.0	75	100.0	75	100.0	75	100.0	75	100.0	75	100.0	NS	NS	NS
1B:LOC questions: Ask month and age															
0 = Both questions right	72	96.0	70	93.3	70	93.3	70	93.3	73	97.3	75	100.	0.467	0.24	.023
1=One questions right	3	0.4	5	6.7	5	6.7	5	6.7	2	2.7	0	0	Ns	Ns	S
1C: LOC: Command 'Blink eyes' & 'squeeze hands'															
0 = Performs both tasks correctly.	73	97.3	72	96.0	72	96.0	72	96.0	73	97.3	75	100.0	0.649	0.64	.08
1= Performs one tasks correctly.	2	2.7	3	0.4	3	0.4	3	0.4	2	2.7	0	0	Ns	Ns	Ns
2 Eye Gaze: Asking the patient to follow an object horizontally.															
0 = Normal.	75	100.0	75	100.0	75	100.0	75	100.0	75	100.0	75	100.0	NS	NS	NS
3- Visual Fields: Covering one eye and then the other. Each upper and lower quadrant is tested by asking the patient to indicate how many fingers the investigator is presenting in each quadrant															
0 = No visual loss.	70	93.3	70	93.3	73	97.3	73	97.3	74	98.7	75	100.0	0.246	0.09	.155
1= no vision in 1 quaderent(partial hemiianopia)	5	6.7	5	6.7	2	2.7	2	2.7	1	1.3	0	0.0	Ns	Ns	NS
4 - Dysarthria: Ask patient to read or repeat words															
0 = Normal.	68	90.7	66	88.0	69	92.0	67	89.3	72	96.0	75	100.0	.942	.024	.012
1 = Mild-to-moderate dysarthria.	3	4.0	2	2.7	6	8.0	3	4.0	3	4.0	0	0	Ns	S	S
2 = Severe dysarthria.	4	5.3	7	9.3	0	0.0	5	6.7	0	0.0	0	0.0			
5 -Facial palsy - Ask patient to smile															
0= Normal	61	81.3	62	82.7	59	78.7	56	74.7	71	94.7	75	100.0	.588	.003	.001
1=Minor	11	14.7	0	0.0	7	9.3	12	16.0	4	5.3	0	0.0	Ns	HS	HS
2= Partial	2	2.7	6	8.0	4	5.3	4	5.3	0	0.0	0	0.0			
3=Abnormal	1	1.3	7	9.3	5	6.7	3	4.0	0	0	0	0.0			

National Institutes of Health Stroke Scale (NIHSS)	Control group						Study group						p.1	p.2	p.3
	Pre		Post				Pre		Post						
			3 Month		6 Month				3 Month		6 Month				
6 -Arm motor right **Ask patient to closes eyes and holds right arms straight out for 10 seconds**															
0 = No drift	68	90.7	59	78.7	53	70.7	64	85.3	71	94.7	75	100.0			
1 = Drift	7	9.3	4	5.3	5	6.7	6	8.0	3	4.0	0	0.0	.075	.008	.001
2 = Some effort against gravity	0	0.0	10	13.3	8	10.7	5	6.7	1	1.3	0	0.0	Ns	Hs	HS
3 = No effort against gravity; limb falls.	0	0.0	2	2.7	6	8.0	0	0.0	0	0.0	0	0.0			
4=No movement	0	0.0	0	0.0	3	4.0	0	0.0	0	0.0	0	0.00			
6-Arm motor left **Ask patient to closes eyes and holds left arms straight out for 10 seconds**															
0=No drift	65	86.7	57	76.0	55	73.3	66	88.0	68	90.7	75	100.0			
1=Drift	5	6.7	4	5.3	8	10.7	2	2.7	5	6.7	0	0			
2=Some effort against gravity	4	5.3	10	13.3	7	9.3	3	4.0	2	2.7	0	0	.152	.025	.001
3=No effort against gravity; limb falls.	1	1.3	4	5.3	3	4.0	4	5.3	0	0	0	0	Ns	S	HS
4=No movement	0	0.0	0	0.0	2	2.7	0	0.0	0	0.0	0	0			
7 -Leg motor right **Ask patient to hold the right leg at 30 degrees**															
0 = No drift	70	93.3	56	74.7	52	69.3	64	85.3	70	93.3	75	100.0			
1 = Drift	5	6.7	3	4.0	6	8.0	8	10.7	4	5.3	0	0	.529	.005	.001
2 = Some effort against gravity	0	0.0	11	14.7	10	13.3	2	2.7	1	1.3	0	0	Ns	HS	HS
3 = No effort against gravity; limb falls.	0	0.0	5	6.7	4	5.3	1	1.3	0	0	0	0			
4 = No movement.	0	0.0	0	0.0	3	4.0	0	0.0	0	0	0	0			
7-Leg motor left **Ask patient to hold the left leg at 30 degrees**															
0 = No drift	65	86.7	57	76.0	55	73.3	66	88.0	66	88.0	75	100.0			
1 = Drift	3	4.0	5	6.7	8	10.7	3	4.0	7	9.3	0	0	.832	.032	.001
2 = Some effort against gravity	4	5.3	7	9.3	8	10.7	2	2.7	2	2.7	0	0	Ns	S	HS
3 = No effort against gravity; limb falls.	3	4.0	6	8.0	3	4.0	4	5.3	0	0	0	0			
4 = No movement	0	0.0	0	0	1	1.3	0	0.0	0	0	0	0			
8-Speech: Ask patient to say "any words or sentencess"															
0 = No aphasia normal.	70	93.3	66	88.0	69	92.0	67	89.3	73	97.3	75	100.0			
1 = Mild-to-moderate aphasia.	5	6.7	9	12.0	6	8.0	8	10.0	2	2.7	0	0			
2 = Severe aphasia.	0	0	0	0	0	0	0	0	0	0	0	0	.384	.028	.012
3 = Mute, global aphasia;.	0	0	0	0	0	0	0	0	0	0	0	0	Ns	S	S

National Institutes of Health Stroke Scale (NIHSS)	Control group						Study group						p.1	p.2	p.3
	Pre		Post				Pre		Post						
			3 Month		6 Month				3 Month		6 Month				
9-Ataxia															
Finger to nose test															
0 = Absent.	**70**	**93.3**	**58**	**77.3**	**64**	**85.3**	**70**	**93. 3**	**72**	**96.0**	**75**	**100.0**			
1 = Present in one limb.	**5**	**6.7**	**16**	**21.3**	**8**	**10.7**	**5**	**6.7**	**3**	**4.0**	**0**	**0**	**1.00**	**.003**	**.003**
2 = Present in two limbs.	**0**	**0**	**1**	**1.3**	**3**	**4.0**	**0**	**0**	**0**	**0**	**0**	**0**	**Ns**	**HS**	**HS**
UN = Amputation or joint fusion	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
10.Sensory:															
Pin pirck to limbs,face															
0 = Normal; no sensory loss.	**71**	**94.7**	**74**	**98.7**	**73**	**97.3**	**70**	**93.3**	**73**	**97.3**	**75**	**100.0**	**.731**	**1.00**	**.155**
1 = Mild-to-moderate sensory loss.	**4**	**5.3**	**1**	**1.3**	**2**	**2.7**	**5**	**6.7**	**2**	**2.7**	**0**	**0**	**Ns**	**Ns**	**Ns**
2 = Severe to total loss.	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
11Extinction and Inattention: Sufficient information to identify neglect may be obtained during the prior testing.															
0 = Normal.	**75**	**100.0**	**75**	**100.0**	**75**	**100.0**	**75**	**100.0**	**75**	**100.0**	**75**	**100.0**			
1 =mild.	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**NS**	**NS**	**NS**
2 =sever.	**0**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
NIH score Mean±SD	**0.61±0.57**		**0.79±0.66**		**1.12±0.77**		**0.29±0.46**		**0.95±0.77**		**0.0±0.0**		**.122 Ns**	**.001 HS**	**.001 HS**
Total Score															
Interpretation:															
0 = No stroke symptoms	**32**	**42.7**	**18**	**24.0**	**24**	**32.0**	**26**	**34.7**	**53**	**70.7**	**75**	**100.0**			
1-4= Minor stroke	**40**	**53.3**	**30**	**40.0**	**31**	**41.3**	**39**	**52.0**	**22**	**29.3**	**0**	**0**	**.111**	**.001**	**.001**
5-15= Moderate stroke	**3**	**4.0**	**27**	**36.0**	**20**	**26.7**	**10**	**13.3**	**0**	**0**	**0**	**0**	**Ns**	**HS**	**HS**
16-20= Moderate to Severe stroke	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
Sever stroke=21-42	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

Chi-Square Tests *Ns= Non significant difference P>0.05* *S=significant difference P≤0.05*

HS=significant difference P<0.01

p.1= comparison between study and control regarding pre

p.2= comparison between study and control regarding after 3 months

p.3=comparison between study and control regarding after 6 months

Table (1): Showed that as regard demographic data the mean age of patients in control group was (54.46±9.52) years old and study group was (51.6±12.8) years old, more than half of them were males in both control and study groups (58.7% & 60.0%) respectively. Also the majority of the studied patients were married in both control and study groups (78.7% & 73.3%) respectively and live with family members (98.7% & 97.3%) respectively. As regard to the educational level, it was found that the highest percentage was illiterate (45.3% & 34.7%) in both control and study groups respectively, also the non- working patients among the both groups were (64.0% & 35.3%) respectively in both control and study groups. Totally, this table showed that there was no statistical significant difference between study and control groups as regard the demographic data (P>0.05).

Table (2): Clarified that as regard medical data the highest percentage of the studied patients had hypertension in both control and study groups (68.0% & 66.7%) respectively and ischemic stroke (64.0% & 74.7%) respectively. while the highest percentage cause of stroke among both the control and the study groups was Lacunar infract (45.3% & 44.0%) respectively. More than half of studied patients in both control and study groups (56.0% & 54.7%) respectively had impairment in the left side of the body. There was no statistical significant difference between study and control groups as regard the medical data (P>0.05).

Table (3)|: Showed that the highest reported percentage of stroke risk factors among the both control and study groups were modifiable factors as smoking (45.3% & 42.7%) followed by obesity (with BMI from 25 to 40 kg/m2, according to World Health Organization classification) was (42.7% & 36.0%) respectively, while the zero percentage reported from both groups was alcohol drinking (0.0%).There was no statistical significant difference between study and control groups regarding the reported stroke risk factors (P>0.05).

Table (4): Illustrated that there was a statistical significance difference as regard to recurrence of stroke among the studied patients in both study and control groups in pre / post (3 and 6 months) after implementation of the pre-discharge nursing education.

Discussion

Patients with stroke reported many and diverse educational needs, which often were not met. These educational needs are about knowledge related to clinical aspects of stroke, prevention of recurrence, treatment regimen and functional recovery. Lacking of all this information require improve education of patients about disease on various aspect especially stroke prevention and recurrence according to situations that matches every patient's need **(recurrence) (Jones et al., 2018).**

Regarding demographic characteristics of the patients; the current study revealed that; the majority of studied patient their age was more than fifty-six in control group in which these findings supported by **Gul et al., (2019)** and **Javid et al., (2016)** who reported that the mean age of patients was more than fifty-six,,but in study group the mean age of the majority was more than fifty-one. These findings supported by **Omar et al., (2016) and Gopal et al., (2020)** who reported that the mean age of patients was more than fifty- one. From the researcher's opinion this result of the study may be due to decrease of their daily living activity in old age which is a risk factor for stroke recurrence. Also, this study disagreed with **Gunal et al., (2019)** who reported that the mean age of patients with stroke was more than sixty eight as researcher studied different age group range from 32 to 86 years old.

The current study revealed that, more than half of studied sample were males, this result was congruent with **Groeneveld et al., (2019), Okoye et al., (2017) and Zhang et al., (2019)** who mentioned that about (58.2%) of patients in their study were males.

Also the finding of the study disagreed with a study conducted by **Yang et al.**, **(2018)** who revealed that more than half of studied patient were females in the both study and control groups. This may be due to population compositions and life style difference in china

In relation to marital status, education and occupation, the present study revealed that the highest percentage of studied patients were married, illiterate and not- working.This study finding was in the same line with a study conducted by **Mahmoud & Abdel Elaziz., (2016)** who found that more than half of studied patients were illiterate, married and retired, also disagreed with **Aziz et al.**, **(2019)** who stated that majority of studied patients were with moderate qualification and working

From the researcher's opinion; these result may be due to our traditional society in which people married at young age so most of the studied patients were married as well as stressful events between partners predisposing to increase risk of stroke recurrence, as well increase in populations in Egypt with low income puts a lot of pressure on males. Additionally lack of educations and unemployment could lead to people to become unaware about their diseases or risk factors which increase their chances of developing such condition and its recurrence

Moreover, The study result revealed that the majority of studied patients were living with family members, this study result was congruent with **Chafjiri et al.**, **(2017)** and contradicted with the findings of **Cecily., (2016)** who found that most of the studied patients lived alone away from their families, in his study entitled knowledge on prevention of cerebrovascular accident among

patients with diabetes and hypertension in India. From researcher's opinion of view this result may be due to Egyptian socialization nature and society that value meaning of family relation un like other foreign countries

Regarding medical data، the result of the present study revealed that highest percentage of the studied patients have past history of hypertension, the stroke type were ischemic and most common cause of stroke were Lacunar infract in both control and study groups. These finding supported by **Pinto et al., (2006)** who stated that hypertension were more frequent among patients with lacunar stroke .Also, This result was in an agreement with the finding of **Park et al., (2019)** who mentioned that the highest percentage of patients with stroke admitted between January 2018 to December 2018 had ischemic stroke and hypertension in which common cause of stroke among those patients was lacunar infract.

The current study; revealed that affected side in more than half of patients with stroke had impairment in the left side of the body in the both groups. This study result was in line with **Hillis, (2013)** who stated that stroke most frequently caused by damage in the right side hemisphere which leading to deficit in the left side of the body

On the other hand this study finding contradicted by **Portegies et al., (2015)** finding, in which they demonstrated that the most common cause of stroke was left-sided hemisphere than right-sided which mean right side body deficit. While **Lefkovits et al., (2013)** who reported that the highest percentage of cases in their study had intracerebral hemorrhage stroke with cardiac disease and diabetes, as this study conducted on young populations. Also, this study finding reveled that hyperglycemia increase risk of bleeding.

Regarding stroke risk factors, study result represented that, the highest percentage of the studied sample had modifiable stroke risk factors as smoking followed by obesity, while the zero percentage of stroke risk factors was alcohol drinking**. Aziz et al., (2019)** reported that a significant association has been found between smoking status and increasing the chances of recurrent stroke and has an impact on the lipid profile of the smoker, hence that increasing the chance of stroke recurrence

Likewise **Ge et al., (2020)** were in the same line of the study finding as they pointed that smoking and obesity overcome hypertension as the most common risk factors for ischemic stroke in young male patients, which has also been reported elsewhere.

This study finding disagreed with study conducted in china where the researchers reported that recurrent stroke risk factors were more often alcohol drinking, diabetes and coronary heart disease while less likely to be smoking and obesity **(Zheng & Yao, 2019),** this study finding may be due to alcohol drinking is commonly spread in some countries**.**

Regarding effect of pre-discharge nursing education; the result of the present study reported that there was a statistical significant difference between control and study groups pre/post implementation of pre-discharge nursing education regarding recurrence of stroke attack among such group of patients.

In this study the result revealed that in the pre assessment phase of study group only **(34.7%)** of patient recovered fully after medical treatment with no residual effect while other patients had a minor and moderate residual effect after medical treatment in pre assessment phase (52.0% & 13.3%). From the researcher opinion after investigation by asking patients and family members it has been found that patients with no residual effect had seeked medical treatment immediately after appearance of numbness signs on the patients and a few of patient's family member were educated to recognize stroke signs and seek help without any delay, that's why extremities didn't forbid from blood for a long time that could lead to residual effect un like patient's who had minor or moderate residual effect as a result of delay medical treatment.

Also the researcher notices that at post assessment follow up in study group at 3 months (70.7%) had no stroke recurrence while (29.3%) of patients had minor residual effect, for these result to became (100%) at 6 months post assessment.

From the researcher opinion it has been mentioned that residual effect can take from 3 to 6 months for fully recover that's why some patients had a minor residual effect at 3 months which may be due to delay in the treatment that made residual effect take time to recover. Moreover, when the researcher found that all patients in study group had no recurrence or residual effect at 6 months post assessment that had been a result that patients and family member were very scared from disease as its their first experience also when researcher explained nature of disease during sessions and the fact that it could be recurrent they were very alert even to ask for researcher phone number for further enquiry when needed and they have been followed the instruction strictly in the hand book that had been given to them with the follow up of the researcher trying to avoid another attack, Also the researcher had strengthen on risk factors that is related to each patient during pre-discharge nursing education and how to modify it as much as possible to avoid recurrence not to mention that it was the first ever attack to patients.

In accordance with the current study results **Denby & Harvey, (2013)** support this finding in their study as they stated that orienting patients with stroke and their families about the preventive measures of a recurrent stroke attack is a

rehabilitation challenge. These results were also in line with **Sa et al., (2013)** who reported the importance of patient education in a systematic process with applying a various educational techniques to boost lifestyle behavioral changes which may be effective to reduce stroke recurrence.
Also, this finding agreed with **Irewall et al., (2019)** as they reported the positive effect of nurse-led and telephone-based on preventing secondary stroke and improving in blood pressure across education groups than routine follow-up patients with low educational process.
Likewise, **Elbqry et al., (2019)** supported the result of the current study as they mentioned that the implementation of the educational program for patients with stroke is necessary to increase the level of knowledge and self-efficacy about a recurrent stroke.

Conclusion

The study findings supported the research hypotheses as it had been proven that there was statistically significant reduction on stroke recurrence on the six months from discharge; Whereas stroke recurrence was minimized among the patients in the study group who received pre-discharge nursing education than patients in the control group.

Recommendations

Instruction hand book about modifiable risk factors that lead to stroke recurrence and methods to deal with it should be available for all stroke patients, a special consideration for elderly patients with stroke, replication of the current study on a long term from 1 to 5 years is recommended to achieve generalize ability and wider utilization of the designed pre discharge nursing education.

References

1. **Assiut Univrsity hospital records., (2019): Aziz A., Ahmed E., El SayedMahdy N., & Mahmoud S., (2019):** Factors Affecting Compliance with Lifestyle Modifications among Patients Suffering from Recurrence of Cerebrovascular Stroke, Egyptian Journal of Health Care, vol. (10), No. (3): Pp. 1-21.
2. **Aziz S., Ghadzi S., Maisharah S., Abidin N., Tangiisuran B., Zainal H., & Keng Yee L., (2019):** Gender Differences and Risk Factors of Recurrent Stroke in Type 2 Diabetic Malaysian Population with History of Stroke: The Observation from Malaysian National Neurology Registry, Journal of Diabetes Research, Vol.(19), No. (5): P.10.
3. **Cecily S., (2016):** Knowledge on Prevention of Cerebrovascular Accident among Patients with Diabetes and Hypertension in India, International Journal of Science and Research (IJSR), Vol. (5), No. (3):P.10.
4. **Chafjiri R., Navabi N., Shamsalinia A., & Ghaffari F., (2017):** The relationship between the spiritual attitude of the family caregivers of older patients with stroke and their burden, Clinical interventions in aging Journal, Vol. (12):P.453.
5. **Coupland A., Thapar A., Qureshi M., Jenkins H., and Davies A., (2017):** The definition of stroke , journal of royal society of medicine, vol. (110), No. (1):Pp. 9-12.
6. **Denby F., & Harvey R., (2013):** An educational intervention for stroke rehabilitation patients and their families: healthy living after stroke. Topics in stroke rehabilitation journal, Vol. (9), No. (4): Pp. 34-45.
7. **Elbqry M., Sherif W., Mahdy N., Gaballah S., & Altantawy A., (2019):** Implementation of an education program on patient's knowledge and self-efficacy regarding recurrent cereberovascular stroke. The Malaysian Journal of Nursing, Vol.(11), No. (2): Pp. 40-48.
8. **Gan Y., Wu J., Zhang S., LiL Yin X., Gong Y., Herath C., Mkandawire N., Zhou Y., Song X., Zeng X., Li W., Liu Q., Shu C., Wang Z., & Lu Z., (2018)**: Prevalence and risk factors associated with stroke in middle-aged and older Chinese, A community-based cross-sectional study ,scientific reports, U.S. National Library of Medicine journal, Vol. (8) : P. 4563.
9. **Ge J., Xing Y., Chen H., Wang L., & Cui L., (2020):** Analysis of young ischemic stroke patients in northeast China, Annals of Translational Medicine Journal, Vol.(8), No. (1): P.3.
10. **Gopal M., Lakhani S., & Lee V., (2020):** Intravenous Thrombolysis in Acute Ischemic Stroke Patients With Infective Endocarditis, journal of Stroke, vol. (51), No. (1): Pp. 262-266.
11. **Groeneveld I., Goossens P., van Braak I., van der Pas S., Meesters J., Mishre R & SCORE S., (2019):** Patients' outcome expectations and their fulfilment in multidisciplinary stroke rehabilitation, Annals of physical and rehabilitation medicine journal, vol. (62), No. (1):Pp. 21-27.
12. **Gul I., Malik M., Halim A., & Rauf S., (2019):** Post stroke depression: experience at a tertiary care hospital of Pakistan, Pakistan Armed Forces Medical Journal, vol. (69), No. (4): Pp. 779-83.
13. **Gunal A., Baskurt F., & Baskurt Z., (2019):** The effect of emotional distress on functional outcomes in acute stroke patients, Nigerian journal of clinical practice, vol. (22), No. (11): P.1583.

14. **Hafsteinsdóttir T., Vergunst M., Lindeman E., & Schuurmans M., (2017):** Educational needs of patients with a stroke and their caregivers: a systematic review of the literature. Patient education and counseling, Patient education and counseling journal, Vol. (85), No. (1): Pp. 14-25.
15. **Hillis A., (2013):** New insights from a not-so-neglected field: Hemispatial neglect, Behavioural neurology journal, Vol. (26), No. (1-2): Pp. 109-110.
16. **Irewall A., Ögren J., Bergström L., Laurell K., Söderström L., & Mooe T., (2019):** Nurse-led, telephone-based secondary preventive follow-up benefits stroke/TIA patients with low education: a randomized controlled trial sub-study. Trials journal, Vol.(20), No. (1): Pp. 1-10.
17. **Javid R., Bhatti A., & Azhar M., (2016):** Frequency of Hypoalbuminemia in patients with Ischemic Stroke, Pak Journal Med Health Sci, vol. (10), No. (2): Pp. 571-73.
18. **Jones S., Miller, C., Gibson, J., Cook J., Price C., & Watkins C., (2018):** The impact of education and training interventions for nurses and other health care staff involved in the delivery of stroke care: An integrative review, Nurse Education Today journal, vol. (61), No. (18):Pp. 249-257.
19. **Khanevski A., Bjerkreim A., Novotny V., Næss H., Thomassen L., Logallo N., & Kvistad C., (2018):** Thirty day recurrence after ischemic stroke or TIA, journal of Brain and behavior, Vol.(8), No. (10): P.1108.
20. **Lefkovits J., Davis S., Rossiter S., Kilpatrick C., Hopper J., Green R., & Tress B., (2013):** Acute stroke outcome: effects of stroke type and risk factors, Australian and New Zealand journal of medicine, Vol. (22),No. (1): Pp. 30-35.
21. **Mahmoud S., & AbdElaziz N., (2016):** Impact of stroke on life satisfaction and psychological adjustment among stroke patients during rehabilitation, Life Sci Journal, vol. (13), No. (3): Pp. 7-17.
22. **Mohan K., Wolfe C., Rudd A., Heuschmann P., Kolominsky-Rabas P & Grieve A., (2016):** Risk and Cumulative Risk of Stroke Recurrence A Systematic Review and Meta-Analysis , Stroke; a journal of cerebral circulation, vol. (42), No (5): Pp. 1489-94.
23. **Mozzafarian D., Benjamin E., Go A., Arnett D., Blaha M., Cushman M., Das S., de Ferranti S., Després J., Fullerton H., Howard V., Huffman M., Isasi C., Jiménez M., Judd S., Kissela B., Lichtman J., Lisabeth L., Liu S., Mackey R., Magid D., McGuire D., Mohler E., Moy C., Muntner P., Mussolino M., Nasir K., Neumar RW, Nichol G., Palaniappan L, Pandey D., Reeves M., Rodriguez C., Rosamond W., Sorlie P., Stein J., Towfighi A., Turan T., Virani S., Woo D., Yeh R., & Turner M., (2016) :** On behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee, Heart disease and stroke statistics Circulation, vol.(133), No.(4): Pp. 38-48.
24. **National Institute of Health, National Institute of Neurological Disorders and Stroke, (1995): Stroke Scale.**
25. **Okoye E., Awhen P., Akosile C., Maruf F., Iheukwumere N., &Egwuonwu A., (2017):** Caregiver–proxy reliability of the Igbo-culture adapted Maleka Stroke Community Reintegration Measure: a validation study, Topics in stroke rehabilitation journal, vol. (24), No. (6): Pp. 422-427.
26. **Omar H., Mirsaeidi M., Shumac J., Enten G., Mangar D., & Camporesi E., (2016):** Incidence and predictors of ischemic cerebrovascular stroke among patients on extracorporeal membrane oxygenation support, Journal of critical care, vol. (32): Pp. 48-51.
27. **Park J., Kim J., Baik J., Park J., Nam H., & Han S., (2019):** Prior antithrombotic use is significantly associated with decreased blood viscosity within 24 hours of symptom onset in patients with acute ischemic stroke, Journal of Neurocritical Care,vol. (12), No. (2): Pp. 85-91
28. **Pinto A., Tuttolomondo A., Raimondo D., Fernandez P., & Licata G., (2006):** Risk factors profile and clinical outcome of ischemic stroke patients admitted in a Department of Internal Medicine and classified by TOAST classification, International angiology journal, vol. (25), No. (3): P. 261.
29. **Portegies M., Selwaness M., Hofman A., Koudstaal P., Vernooij M., & Ikram M., (2015**): Left-sided strokes are more often recognized than right-sided strokes: the Rotterdam study, journal of Stroke, Vol. (46), No. (1): Pp. 252-254.
30. **Sa S., Hb S., & Ma C., (2013):** Secondary stroke prevention through patient education intervention on lifestyle risk factors: a review. Journal of Health, Vol. (4), No. (2): Pp. 127-151.
31. **Xie X., Xu J., Gu H., Tao Y., Chen P., Wang Y., & Wang Y., (2017):** The J-curve association between systolic blood pressure and clinical outcomes in ischemic

stroke or TIA: the BOSS study. Scientific reports, Vol.(7), No. (1), Pp. 1-6.

32. **Yang S., Zhao Y., Tian Y., Chen Y., Zhao X., Li Y., & Yao Y., (2018):** Common variants of ROCKs and the risk of hypertension, and stroke: Two case-control studies and a follow-up study in Chinese Han population, Biochimica et BiophysicaActa (BBA)-Molecular Basis of Disease journal, vol. (18), No. (3):Pp. 778-783.
33. **Zhang H., Yin Y., Zhang C., & Zhang D., (2019):** Costs of hospitalization for stroke from two urban health insurance claims data in Guangzhou City, southern China, BMC health services research journal, vol.(19), No. (1):P. 671.
34. **Zheng S., & Yao B., (2019):** Impact of risk factors for recurrence after the first ischemic stroke in adults: A systematic review and meta-analysis, Journal of Clinical Neuroscience, Vol.(60): Pp. 24-30.