Effect of Nursing Educational Program on knowledge Among Patients at Risk for Stroke

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ABSTRACT

Background: Stroke is the third most common cause of death worldwide and the leading cause of adult disability. *Aim of the study:* was to assess the impact of a nursing education program on Knowledge among patients at risk for stroke. *Subjects and Method:* A quasi-experimental design was used in the current study. This study was carried out on a convenient sample of 133 patients at risk of stroke. This study was conducted in the outpatients clinics in governmental hospitals and the health insurance hospitals in Port-Said City. Three different tools were used for data collection, namely **1)** -Structured interview questionnaire sheet , **2)** - Stroke risk assessment screening tool and **3)** - Patients' assessment knowledge about stroke. The educational program was designed based on an extensive revision of the related materials, recent medical surgical nursing textbooks, studies and literature. *Results:* The study results revealed that very high statistical significant difference in total and sub-items scores of studied patients' knowledge were found between before and immediately after program implementation and between before and 3months after program implementation, slightly decline was evident in total patient knowledge from post immediate and post 3 months after the program implementation(99.2% to 96.2%) respectively ,but it was still higher than before program implementation(6.0%).*Conclusion:* The study concluded that The knowledge was significantly improved after implementation of nursing educational program about stroke prevention. *Recommendations:* The study recommended that regular continuous education programs should be conducted in the different outpatient clinics providing medical care for patients at risk for stroke to give information about stroke prevention for enhancing knowledge.

Key words: Educational Program, Patients at Risk, Stroke ,Knowledge .

INTRODUCTION

Stroke is a term to describe neurologic changes caused by a prolonged interruption in the flow of blood through one of the arteries supplying the brain. It is a medical emergency that strikes suddenly, and can cause permanent neurological damage, complications, adult disability and death. It should be treated immediately to prevent neurological deficit and permanent disability *(Ignatavicius& Workman, 2013)* .

WHO, (2013a) reported that in the developed world stroke is the second common cause of death after heart disease and is a bigger killer than cancer worldwide*.* In Egypt, the *Egyptian Cerebro-Cardio-Vascular Association(2009)* reported that predicted number of people who will die from stroke will increase to be 6.7 million each year by 2015. Risk factors for stroke are classified into modifiable and non-modifiable risk factors. **(Prabhakaran& Chong, 2014).**

Stroke is a leading cause of serious long term adult disability. More than 6.5 million people living who have had strokes. Of stroke survivors, 50%to 70% will be functionally independent, 15% to 30% will live with permanent disability and twenty percent will require long term care after 3 months *(Goldstein et al., 2011,Centers for Disease Control and Prevention (CDC) (2010).* Moreover, *Goldstein et al.,(2011),*Not only does stroke affect the patient but it also greatly affects the patient's care givers and family. More than 77% of strokes are first time events, emphasizing the importance of primary stroke prevention .

Nursing educational program is designed to improve health literacy, improving knowledge and developing life skills, which are conducive to individual and community health *(Sharma & Romas, 2012).* Health education encourages and enhances health and wellness by educating communities about topics such as chronic diseases, injury, violence prevention tobacco use and substance abuse. It is necessary in every community to help people to identify their health problems to help them to understand steps that should be taken to prevent any sickness. Health education helps in correcting knowledge about various aspects of health and disease and disseminating ideas for the purpose of producing necessary attitude and behavior *(Callcott et al., 2015)*.

Significance Of The Study:

Better knowledge of stroke and cerebrovascular risk factors might stimulate people to adopt preventive behaviors, thus leading to decreased incidence of future cerebrovascular problems. Awareness about stroke is an essential component in determining the responsive decisions of a person who may be affected by the condition in the future; patient outcomes are affected accordingly. Therefore, measurement of the knowledge of stroke and its risk factors can provide information to healthcare providers about the various behaviors that members of the community could adopt for the prevention of stroke. Moreover, it can provide information on the behavior of community members when they develop symptoms related to the relevant condition. **Eshah (2013)**. This reflects the importance of nursing role in education about stroke because awareness among the general population of risk factors and warning symptoms of stroke is essential for preventive purpose and for immediate effective treatment.

AIM OF STUDY:

The aim of the study was to assess the impact of a nursing education program on knowledge among patients at risk for stroke.

Objectives

1. To identify patients at risk of stroke.

2. To assess the impact of the designed educational program on patients' knowledge among patient at risk.

RESEARCH HYPOTHESIS

The knowledge of patients at risk for stroke about stroke prevention will be significantly increased after implementation of the nursing educational program.

MATERIAL AND METHODS:

(I)- Technical Design: includes; research design, setting, subjects, and tools of data collection.

Research design:

A quasi-experimental research design was used for conduction of this study, with pre- post assessment of outcome, done to assess the impact of a nursing education program on knowledge among patients at risk for stroke.

Study Setting:

This study was conducted in the outpatients clinics of medical departments in governmental hospitals in Port Said city (general Port Said hospital and El zehor general hospital) and the health insurance hospitals in Port-Said city Al-Tadamon hospital.

Target Population (Subjects):

The target populations were a consecutive convenience sample of eligible patients were recruited from the study settings to fulfill the required sample size, they were recruited for this study according to the following criteria:

Inclusion criteria:

All included patients should have

- At moderate to high risk for stroke as identified by self reported stroke risk assessment screening tool (Delaware Stroke Initiative, www.desttroke. Org. 2005)

   Sample size:

The sample size was estimated to detect a decrease in the level of risk from high to moderate or from moderate to low from a rate of 50% (p_1=0.50) before the program by 50% reaching 25% ($p_2 = 0.25$) after the program with a 95% level of confidence (α error = 5%), and a study power of 80% (β error = 20%). Using the equation for the difference between two proportions *(Schlesselman, 1982).*

$$n = \frac{2pq\ (z_{\alpha/2}+z_\beta)^2}{(p_1 - p_2)^2}$$

Where:

n = sample size per group

P = ($p_1 + p_2$) / 2

q = 1 – p

$Z_{\alpha/2} = 1.96$

$Z_\beta = 0.84$

Accordingly, the estimated sample size is 65 subjects per level of risk, i.e. 130 patients with moderate and high risk for stroke. After adjustment for a dropout rate of 10%, the sample size was increased to 145 patients. The sample size is also large enough to test the first hypothesis of knowledge improvement.

Tools for Data Collection:

Data was collected by using four different tools:

Tool I: Structured interview questionnaire sheet:

It was developed by the researcher after reviewing the most recent and relevant literature, to assess patients' socio-demographic characteristics and patients' medical health history. *It compromised two parts:*

Part (1) Socio-demographic data sheet:

It included items related to socio-demographic characteristics of the studied patients included: ages, gender, educational level, employment , marital status.

Part (2) Medical health history:

It covered data related to patients' medical history included family history ,past medical and surgical history, and present history.

Tool (II): stroke risk assessment screening tool :

- It was developed by Barker (2005): Delaware Stroke Initiative and was translated from English to Arabic then retranslated from Arabic to English to ensure accuracy and clarity.

This tool was tested for reliability using (Cronbach Alpha),the reliability coefficient was found to be 0.91.

- It was used only for selection of the study subjects, and used to assess the patients' level of the risk to stroke, according to age and risk factors, which is classified into low, moderate and high. It comprises 18 questions about various risk factors, with yes/ No response. The scoring according to tool guidelines is based on summation of "Yes" responses to these questions. The scoring system of this tool was considered as followed:

If your age is:	stroke risk score is	risk for stroke is
< 55 years	0	Low
> 55 years	0	Low
> 55 years	2	Moderate
> 55 years	≥ 3	High
> 65 years	1	Moderate
> 65 years	≥ 2	High
Any age	3	Moderate
Any age	> 3	High

Tool III: **Patient's assessment knowledge about stroke questionnaire :**

It was developed by the researcher after reviewing and utilizing the most recent and relevant literature to assess patients' knowledge about stroke. It included 27 questions. This tool was used before , immediately after the program implementation and follow up after three months of the program implementation to assess the effect of an educational program on patients' knowledge .

Reliability

The tool were tested using the reliability coefficient (Cronbach Alpha) test ,it was found to be 0.86 for knowledge.

Scoring system:

For the knowledge items, a correct response was scored 1 and the incorrect zero. For each area of knowledge, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score. patient's knowledge was considered "satisfactory" if the percent score was 60% or more and "unsatisfactory" if less than 60%.

II) Operational Design:

The operational design included preparatory phase, content validity, pilot study and fieldwork.

A- preparatory phase:

It included reviewing of the current and past available related literature, different studies and theoretical knowledge of various aspects of the study using textbook, articles, medical websites, periodicals and magazines in order to develop the data collection tools that concern with knowledge among patient at risk for stroke .

B- Content of validity

It was ascertained by a jury consisting of nine expertise in nursing and medical fields to make sure that instruments used was measuring what it intent to measure and check its translation then appropriate modification was done accordingly .

C- Pilot Study:

A pilot study had been undertaken before starting the data collection phase and after the development of the data collection tools. It was carried out on 10% of the patients at risk for stroke who attended outpatient clinics in governmental and insurance hospitals (15 patients at risk for stroke) to test the reliability and applicability of the tools of the study and to test its clarity to patients and estimating the proper time required for

answering each tool .According to the result of pilot study the necessary modifications were done and the final forms of the tools were developed . Patients included in the pilot study were excluded from the study sample. This phase was carried out in a period of two months before started the study

D- Field Of Work (data collection):

The study was conducted from the beginning of July 2013 to the end of December 2014. The study was carried out through the following four phases which took a period of 18 months from beginning of the study.

1 .Assessment phase:

After finalization of the study tools, the researcher interviewed each patient individually at outpatient clinic reception to identify patients who met the inclusion criteria of the study sample using **Tool I** and **Tool II .**

Then starting the initial patient assessment (pre assessment before program implementation) as following: Assess patients' knowledge about stroke using **Tool IV.**

In this phase 3 - 5 patients were taken a day, for two days at a rate of 6-10 patients a week. This phase lasted for nearly six months (one to one and half hour for each patient),also, the researcher assessed available place, time, instructional materials for conduction of the education program.

2. Educational program development phase :

The health education program was planned and designed by the researcher based on the results of the assessment phase and reviewing relevant related literature .

A-Formulation of objective:

The aim of the program was to increase patients' knowledge about stroke and its risk factors .

B- Contents :

Covered all areas about stroke prevention which include**:** definition , types , risk factors, warning signs, complication of stroke, preventive measures of stroke, instructions regarding to medication, diet and weight reduction, personal exercise, stress and nervousness, smoking reduction and medical checkup or follow up.

- An educational booklet was prepared by the researcher to present information for patients in a simple way using simple language and illustrative pictures.

- The developed program was tested for applicability , content validity by nine experts in the field and modifications were done .

C- Planning of action:

In this step the researcher designed a plan for a nursing education program implementation. This plan included 4 sessions were implemented in four weeks, each week included 2 groups of patients, the studied patients were divided into 15 groups, each group contained (8-10) patients from the same outpatient clinics . The time was spent in explanations with each group was 30 to 45minutes depending on certain circumstances such as patients' level of education or depth of discussion and 15 minutes break between each group .

The researcher applied the program in four sessions a month every session repeated twice weekly for a period of 8 months. Also, the program teaching strategy was determined by:

a- Choosing the appropriate teaching methods which was in the form of lecture, discussion (interactive lecture).

b- Choosing the appropriate teaching media which was in the form of (handout)

E- Clinical Area Preparation:

- Permission for conducting the study was taken from the head of nurse responsible for outpatient clinics after explaining the purpose, the time and the place of implementing the study.

- Many copies of tools **III, IV** and the developed booklets were prepared by the researcher to facilitate learning and evaluation of program outcomes

3 – Program implementation phase :

-At the beginning, the studied patients were divided into 15 groups each group consisted of 8-10 patients, then arrangement of the session times was done for each group

- Program implementation was done according to the arranged time for each group as followed, each group was gathered at out- patient clinics reception room, actual education program was implemented for four weeks at a rate of one session a week and each session took 30 to 45minutes per day from 10:00 to 12:00 am .

• At the beginning of the first session , introduction to the education program and its importance, presentation of the education program plan and presentation of learning objectives of the education program were explained to each group separately.

• A copy of booklet was given to each patients to facilitate remembering the knowledge during explanation of information given.

- At the beginning of each session, it was suitable to start with a brief revision of what was given before. Then informed them about objectives of the present session and discuss the content of these sessions using different teaching methods including discussions and lectures(interactive lecture) in clear and concise form .

- Finally, the researcher gave the patients her feedback starting with positive points then negative ones and any missing points or mistakes were corrected immediately to prevent other patients from falling into the same mistakes, also patients were asked to give their feedback about the sessions content

4- Evaluation phase:

After program implementation ,the program outcome was evaluated two times, first evaluation immediately after program implementation and the second evaluation after three months of program implementation .

1- Immediately after program implementation , patients' knowledge about stroke was evaluated by using **Tool IV**

2- The second evaluation was carried out after three months of program implementation by using **Tool IV** .

Final evaluation was done by comparing the initial assessment (pre assessment) with immediate assessment and after 3 months assessment result findings to evaluate the impact of program implemented on knowledge about stroke .The researcher informed patients that they came to evaluate the effectiveness of the program not to evaluate them

III) Administrative Design:

An official written permission was obtained to carry out the study, from the directors of outpatients clinics in the governmental hospitals and health insurance hospital in Port Said city after explanation of the study purpose through an official formal letters from the Dean of the Faculty of Nursing Port Said University. In addition to verbal explanation of the nature and the aim of the study was performed to medical and nursing staff in outpatient   clinic .

(III)- Ethical Consideration:

For each recruited subject the following issues was considered:-

-An informed oral consent was obtained after explanation of the aim of the study.

-The anonymity, confidentiality, the privacy and the right to refuse to participate in the study was assured .Additionally, the participants had the right to withdraw from the study at any time without rational.

(IV)- Statistical Design:

Up completion of data collection, variables included in the structured interview sheet , were coded prior to computerized data entry.

Statistical Analysis:

Data entry and statistical analysis were done using SPSS 20 statistical software packages. Quality control was done at the stages of coding and data entry. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Quantitative continuous data were compared using paired t-test in case of comparisons between phases of the study. Qualitative categorical variables were compared using chi-square test. Statistical significance was considered at p-value ≤ 0.05. Cronbach alpha coefficient was used to assess the reliability of the tool through its internal consistency.

RESULTS:

Table (1): shows the frequency distribution of socio- demographic characteristics of the studied patients. Regarding to patients' age, it is clear that equal percentages of the studied patients (37.6%) were among the age group of fifty years old to less than sixty years old and the age of sixty years old to more than sixty years old .In relation to gender 57.1% of the studied patients were female . As regards to their marital status, it was found that the nearly two-thirds of the studied patients (66.2%) were married. As for educational level, (26.4%) of the studied patients were illiterate, while 11.3% had institute educational degree. Concerning employment, it was also observed that more than half of studied patients (57.2%) were working.

Table (2): shows frequency distribution of the studied patients in relation to medical health history. As regards to family history ,slightly more than half of the studied patients reported that their family had diabetes (53.4%), and hypertension (50.4%) while only 5.3% of them reported that their family had history of renal disease . Regarding to past medical &surgical history, this table shows that more than one third of the studied patients (62.4%) reported previous hospitalization in last year. In relation to reason of

hospitalization, it was observed that most of studied patients reported reason of hospitalization was hypertension (81.9%), heart disease and diabetes mellitus 69.9% , 54.2% respectively. Concerning present health history, it can observed that highest percentage of the studied patients had hypertension (78.9%). Otherwise, nearly two third (65.4%)of the studied patients recognized their disease incidentally or through medical examination. As regard to actual symptoms (warning signs of stroke), it is clear that 63.2% of the studied patients were suffering from very severe headache. Concerning treatment regimen described, (63.2%)of the studied patients were treated with drug only.

Table (3): shows frequency distribution of studied patients according to level of risk for developing stroke. It was observed that 50.4%of the studied patients had moderate risk for stroke. While 49.6% of them had high risk for stroke .

Table (4): shows the difference in studied patients' knowledge related to stroke throughout the program implementation. Very high statistical significant difference in total and sub-items scores of studied patients' knowledge were found between before and immediately after program implementation and between before and 3months after program implementation at P-value (0.000). This table also shows slightly decline was evident in total patient knowledge from post immediate and post 3 months after the program implementation (99.2% to 96.2%)respectively ,but it was still higher than before program implementation (6.0%).

Table (5): shows the relationship between the total knowledge satisfaction related to stroke and socio -demographic characteristics among the studied patients throughout the program implementation, it is clear that, there was only a statistically significant relation between patients knowledge and their socio-demographic characteristics in area related to employment before the program implementation p-value(0.000*). But there was no a statistically significant relation between patients knowledge and their socio-demographic characteristics in area related to age, gender, marital status, educational level.

Table (1): Frequency distribution of socio-demographic characteristics of the studied patients (n=133)

Socio-demographic characteristics variables	Frequency (N)	Percent (%)
Age (years)		
<30	4	3.0%
30 -	3	2.3%
40 -	26	19.5%
50 –	50	37.6%
≥60	50	37.6%
Mean ±SD	55.50±10.60	
Gender		
Male	57	42.9%
Female	76	57.1%
Marital status		
Single	4	3.0%
Married	88	66.2%
Widowed	37	27.8%
Divorced	4	3.0%
Educational level		
Illiterate	35	26.4%
Read and write	19	14.3%
Primary	19	14.3%
Secondary	26	19.5%
Institute	15	11.3%
University	19	14.3%
Employment		
Work	76	57.2%
Not work	57	42.9%

Table (2): Frequency distribution of the studied patients in relation to medical health history (n=133).

Medical health history	Frequency (N)	Percent (%)
Family history #n=133		
Ischemic heart disease	38	28.6%
Diabetes	71	53.4%

Hypertension	67	50.4%
Obesity	27	20.3%
Renal disease	7	5.3%
Stroke	11	8.3%
Past medical history		
Previous hospitalization		
Yes	83	62.4%
No	50	37.6%
Reason of hospitalization #n=83		
Heart disease	58	69.9%
Hypertension	68	81.9%
Diabetes	45	54.2%
Past surgical history n=133		
Yes	87	65.4%
No	46	34.6%
Types of surgery		
Major	58	66.7%
Minor	23	26.4%
Both	6	6.9%

#Not mutually exclusive

Table (2): Frequency distribution of the studied patients in relation to medical health history (n=133).*(cont.)*

Present health history	Frequency (N)	Percent (%)
Type of disease#		
Ischemic heart disease	64	48.1%
Diabetes	81	60.9%
Hypertension	105	78.9%
Obesity	19	14.3%
Gastroenterology	18	13.5%
Urology	5	3.8%
Deficiencies of kidney function	4	3.0%
Rheumatoid	9	6.7%
Asthma	10	7.5%
Liver disease	7	5.3%

Previous stroke	2	1.5%
Recognition of disease through		
Incidentally or when a medical examination	87	65.4%
The emergence of symptoms of the disease	46	34.6%
Actual symptoms (**warning signs of stroke)#**		
1-Sudden numbness or weakness of face, arm, or leg, especially on one side of the body.	12	9.0%
2-Sudden confusion or trouble speaking or understanding.	4	3.0%
3-Sudden trouble seeing in one or both eyes .	27	20.3%
4-Sudden trouble walking, dizziness, loss of balance, or coordination.	67	50.4%
5-Sudden severe headache with no known cause.	84	63.2%
6-Other symptoms such aschest pain ,shortness of breath, palpitations.	40	30.1%
Treatment regimen described:		
Drugs only	84	63.2%
Drugs + diet	40	30.1%
Drugs + diet + exercise	9	6.8%

#Not mutually exclusive

Table (3) : Frequency distribution of studied patients according to level of risk for developing stroke using Delware Scale (n=133)

Levels of stroke	Frequency(N)	Percent (%)
High risk for stroke	66	49.6 %
Moderate risk for stroke	67	50.4 %
Total	133	100 %

Table (4): Difference in studied patients' knowledge related to stroke throughout the program implementation(n=133).

Knowledge items	Before program (Pre phase)		Immediate after program (Post phase)		After program 3 months (Follow up phase)		Sig. (before / immediate)	Sig. (before /3M)
	(N)	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**		
Definition								
Unsatisfactory	103	77.4%	0	0.00%	2	1.5%	.000***	.000***
Satisfactory	30	22.6%	133	100%	131	98.5%		
Risk factors								
Unsatisfactory	123	92.5%	3	2.3%	21	15.8%	.000***	.000***

Satisfactory	10	7.5%	130	97.7%	112	84.2%		
Warning signs								
Unsatisfactory	131	98.5%	38	28.6%	75	56.4%	.000***	.000***
Satisfactory	2	1.5%	95	71.4%	58	43.6%		
Stroke preventive measures								
Unsatisfactory	111	83.5%	0	0.0%	6	4.5%	.000***	.000***
Satisfactory	22	16.5%	133	100.0%	127	95.5%		
Medication								
Unsatisfactory	0	0.00%	0	0.00%	0	0.00%	--	--
Satisfactory	133	100.0%	133	100.0%	133	100.0%		
Diet								
Unsatisfactory	90	67.7%	7	5.3%	9	6.8%	.000***	.000***
Satisfactory	43	32.3%	126	94.7%	124	93.2%		
Exercise								
Unsatisfactory	35	26.3%	6	4.5%	9	6.8%	.000***	.000***
Satisfactory	98	73.7%	127	95.5%	124	93.2%		
Stress relieving measures								
Unsatisfactory	111	83.5%	29	21.8%	47	35.3%	.000***	.000***
Satisfactory	22	16.5%	104	78.2%	86	64.7%		
Smoking								
Unsatisfactory	67	50.4%	4	3.0%	9	6.8%	.000***	.000***
Satisfactory	66	49.6%	129	97.0%	124	93.2%		
Follow up								
Unsatisfactory	71	53.4%	3	2.3%	5	3.8%	.000***	.000***
Satisfactory	62	46.6%	130	97.7%	128	96.2%		
Total knowledge score								
Unsatisfactory	125	94.0%	1	0.8%	5	3.8%	.000***	.000***
Satisfactory	8	6.0%	132	99.2%	128	96.2%		
Mean±SD	24.23±7.187		50.73 ±3.919		48.81 ±5.177			

Paired samples test   (*) statistically significant at p ≤0.05(**) high statistically significant at p ≤0.001

(***)very high statistically significant at p ≤0.0001

N.B:- Satisfactory level of patient's knowledge = score of 60% and more.

Table (5): Relationship between the total knowledge satisfaction related to stroke and socio - demographic characteristics among studied patients throughout the program implementation (n=133).

Socio-demographic data	Pre knowledge					Post knowledge					Follow up knowledge				
	Satisfactory		Unsatisfactory		P. value	Satisfactory		Unsatisfactory		P. value	Satisfactory		Unsatisfactory		P. value
	N	%	N	%		N	%	N	%		N	%	N	%	
Gender															
Male	5	8.8%	52	91.2%	.247	56	98.2%	1	1.8%	.246	55	95.5%	2	3.5%	.895
Female	3	3.9%	73	96.1%		76	100%	0	0.0%		73	96.1%	3	3.9%	
Age															
<30 years	0	0.0%	4	100%		4	100%	0	0.0%		4	100%	0	0.0%	
30 –	0	0.0%	3	100%		3	100%	0	0.0%		3	100%	0	0.0%	
40 –	3	11.5%	23	88.5%	.459	26	100%	0	0.0%	.796	25	96.2%	1	3.8%	.990
50 -	1	2.0%	49	98.0%		49	98.0%	1	1.8%		48	96.0%	2	4.0%	
≥60 years	4	8.0%	46	92.0%		50	100%	0	0.0%		48	96.0%	2	4.0%	
Marital status															
Single	0	0.0%	4	100.0%		4	100%	0	0.0 %		4	100%	0	0.0%	
Married	7	8.0%	81	92.0%	.612	87	98.9%	1	1.1%	.916	84	95.5%	4	4.5%	.902
Widowed	1	2.7%	36	97.3%		37	100%	0	0.0%		36	97.3%	1	2.7%	
Divorced	0	0.0%	4	100%		4	100%	0	0.0%		4	100%	0	0.0%	
Educational level															
Illiterate	0	0.0%	35	100.0%		34	97.1%	1	2.9%		34	97.1%	1	2.9%	
Read and write	1	5.3%	18	94.7%		19	100%	0	0.00%		19	100%	0	0.0%	
Primary	2	10.5%	17	89.5%		19	100%	0	0.00%		18	94.7%	1	5.3%	
Secondary	3	11.5%	23	88.5%	.541	26	100%	0	0.00%	.880	25	96.2%	1	3.8%	.984
Institute	0	0.0%	15	100.0%		15	100%	0	0.00%		14	93.3%	1	6.7%	
University	2	10.5%	17	89.5%		19	100%	0	0.00%		18	94.7%	1	5.3%	
Employment															
Work	6	6.7%	70	93.3%	.000***	75	98.7%	1	1.3%	.677	72	94.7%	4	5.3%	.553
Not work	2	3.5%	55	96.5%		57	100%	0	0.0%		56	98.2%	1	1.8%	
Work hours															
from 5 to 8 hours	3	4.8%	59	95.2%		61	98.4%	1	1.6%		58	93.5%	4	6.5%	

									.892						
from 9 to 11 hours	2	18.2%	9	81.8%	.079	11	100%	0	0.00%		11	100%	0	0.0%	.621
from 14 to15 hours	1	33.6%	2	66.7%		3	100%	0	0.00%		3	100%	0	0.0%	
Sufficiency of income Yes	4	10.0%	36	90.0%	.181	40	100%	0	0.0%	.244	38	95.0%	2	5.0%	0.395
Somewhat	1	12.5%	57	98.3%		58	100%	0	0.0%		55	94.8%	3	5.2%	
No	3	8.6%	32	91.4%		34	97.1%	1	2.9%		35	100%	0	0.0%	
Hospitals Health insurance	6	7.1%	78	92.9%	.387	84	100%	0	0.0%	.113	82	97.6%	2	2.4%	0.400
Port said general	0	0.0%	24	100.0%		24	100%	0	0.0%		22	91.7%	2	8.3%	
Al zehor general	2	8.0%	23	92.0%		24	96.0%	1	4.0%		24	96.0%	1	4.0%	

(*) statistically significant at P≤0.05 (**) high statistically significant at p ≤0.001   (***)   very   high statistically significant at p ≤0.0001

DISCUSSION:

Stroke is one of the top four leading causes of death in both high and middle-income countries, and it is the most significant reason for rehabilitation worldwide **(WHO, 2013).** The present study is aimed to assess the effect of a nursing education program on knowledge among patients at risk for stroke.

Regarding to **age**, the results of the present study revealed that**,** nearly three quarter of the studied patients were within the age of 50 years old to≥60 years old. This may be due to the fact that older adults physiological and health life changes and they considered the most vulnerable group for chronic diseases which may be a risk for stroke in older adults. These finding were agreed with **Thomas, and Williams, (2014)** who conducted a study to assess the risk status of stroke among adults and the effectiveness of an awareness program on primary prevention of stroke at selected areas in Mysore district ,found that more than half had more than 55years old.

As regard to **gender** , the results of the present study revealed that more than half of the studied patients were female. This was probably due to the fact that the females expose to stressors in her personal life, or due to hormonal fluctuation, changes that happened in different stages of her life as (pregnancy, childbirth and

menopause), use of contraceptives. This result supported by ***Williams and Hopper, (2015)*** who stated that women have additional risks due to hormone changes in pregnancy and menopause .Also **Qureshi et al.,(2007)** who studied the frequencies of intra-cerebral bleed, cerebral infarction and subarachnoid hemorrhage and found that from 100 cases there were 44 cases of studied subjects were male and 56 cases were female. This result was contradicted by**, *Farghaly et al., (2013)*** who reported that both prevalence and incidence of stroke rates were higher in males than in females .

Concerning the marital status , level of education and occupation, the results of the present study showed that nearly two third of the studied patient were married, slightly more than quarter of them were illiterate and more than half of them were working. This finding is in accordance with **Abdu ,(2013)** who found that more than three quarter of studied sample were married, more than one third of them were illiterates however, only a small percent of them were highly educated, and less than half of them were housewives.

The results of the present study shows that slightly more than half of the studied patients reported that their family had diabetes and hypertension. This is probably due to the fact that these diseases are heredity and considered the most common chronic disease so those patients are at risk for stroke, This result was in agreement with ***Mvundura et al (2010)*** who stated that family history of stroke was associated with the risk for stroke and high blood pressure as well as related conditions. Family history of stroke alone or combined with other risk factors can be a useful tool in assessing stroke risk.

Also, the results of the present study revealed that, less than two third of the studied patients reported previous hospitalization in last year. This may be due to non-compliance with stroke preventive self- practices. Additionally, It was observed that most reasons of studied patients hospitalization were uncontrolled hypertension , heart disease and diabetes mellitus. However, the results of the present study revealed that, more than one third of the studied patients reported no previous admission in last year, This is may be due to that they have chronic diseases and comply to treatment regimen as medication. This result go in line with the results of ***Abd Elhameed et al ,(2010)***who studied the caregiver training and health status out comes in cerebral

stroke elder patients and found that the majority of the studied subjects were not previously hospitalized.

Regarding to the present health history, in the present study the highest percentage of the studied patients had hypertension followed by diabetes and ischemic heart disease. This may be related to the fact that hypertension was a major risk factors for stroke. The result of this study was in agreement with **El Shafiey ,(2013 Abd Elhameed et al ,(2010))**who found that hypertension was encountered by the majority of the studied subjects, followed by diabetes and coronary artery disease.

As regard to actual symptoms (warning signs of stroke), It is clear that nearly two third of the studied patients were suffering from very severe headache . This is may be due to more than three quarters of the studied patients had hypertension and these symptoms are considered the most common warning signs of stroke associated with hypertension. This result supported by **(American Stroke Association, 2013& Ennen, 2013)** who stated that sudden numbness or weakness of face, arm, or leg, especially on one side of the body, Sudden confusion or trouble speaking or understanding. Sudden trouble seeing in one or both eyes, sudden trouble walking, dizziness, loss of balance, or coordination and sudden severe headache with no known cause**.** Women have other unique symptoms such as a sudden onset nausea, facial and limb pain , general weakness, chest pain ,shortness of breath, hiccups, palpitations.

As regards to patients' knowledge about stroke before the program implementation, in the current study, the majority of the studied patients had very high statistical significant unsatisfactory total basic knowledge score and related to all items of stroke including definition, risk factors, warning signs , stroke preventive measures, diet, exercise, stress, smoking and follow up. The results might be due to that there was no source of acquiring knowledge from doctors ,nurses because they were over loaded and insufficient of staff in addition to all of them not attending an education program about stroke risk factors ,warning signs and stroke prevention among participated patients.

Also this results was explained by **Eshah (2013)** who stated that the widespread prevalence of cerebrovascular risk factors in the Jordanian community is intensified by the deficit in basic knowledge about stroke and major cerebrovascular risk factors

among Jordanians. Therefore, community awareness about stroke and cerebrovascular risk factors needs to be increased through national health education campaigns. In addition, health promotion programs should be adopted in Jordan.

Also, this result was in agreement with ***Jones et al (2010)*** who conducted a study of stroke knowledge and awareness: an integrative review of the evidence. The study results showed that generally, levels of participants'(general public, stroke patients and people at risk of stroke) knowledge about recognizing and preventing stroke were poor. Moreover , the current study was inconsistent with ***Sharrief et al.,(2015)*** who stated that knowledge of stroke warning signs, risk factors and appropriate action to take for stroke symptoms was not poor when compared to literature.

Moreover, the results of the present study revealed that there was a statistical significant improvement immediately after program implementation in patients' total knowledge score as related to all items of stroke. This might be due to effectiveness of health education program about stroke by using different methods of teaching including lecture and discussion (interactive lecture) and using appropriate teaching media which was in the form of handout (booklet) which prepared by the researcher to present information for patients in a simple way using simple language and illustrative pictures.

This results was in agreement with ***Sane (2015)*** who found a statistically significant increase in the post test score reflecting on the positive impact of the Self – Instructional Model on the knowledge, attitude and practice to stroke prevention among hypertensive patients. This finding also went in the line with **Tang et al.,(2015)** who reported the experimental group scored significantly higher than control group in level of knowledge and cognition of stroke and concluded further studied with longer follow up(6 months or 1 year) are needed to evaluate the long term effects of health education on stroke knowledge and cognition among patients.

In the present study , after three months of program implementation, there was a slightly decline in patients' total knowledge score and related to all items of stroke and total knowledge score but it was still higher than before program implementation. This result reflected two aspect , the first was effectiveness of a nursing education program as their knowledge was still higher than before program implementation, the second

was deficiency in patients' retention to knowledge which indicates necessity for planning refreshed education program every three months. This result supported by **Chan et al.,(2010)** who studied effectiveness of stroke education in the emergency department waiting room and stated that the knowledge retention in the intervention group gradually declined during the follow up.

The results of the current study shows that there was only a statistically significant relation was found between patients knowledge and their socio-demographic characteristics in area related to employment pre the program implementation. This result contradicted by *Monaliza et al., (2012)* who showed that younger age and higher level of education were associated with better knowledge about risk factors and warning symptoms of stroke. (knowledge about stroke varies positively with education and age) ,they added that the higher was the economic status better was the knowledge related to risk factors and warning symptoms of stroke. This finding could be due to the higher socioeconomic status subject often have the better education hence were well informed about risk factors and warning symptoms of stroke. Also, **Wan et al., (2014)** who stated that male patients and those with a lower education level need targeted stroke education**.**

Moreover, *Slark and Sharma (2013)* who emphasized that increased knowledge of stroke risk factors is significantly associated with younger age, a higher educational level and not living alone. Finally, the program had succeeded in inducing statistically significant improvements in patients' knowledge about stroke which meaning that the research hypothesis was fulfilled. Therefore, it can be concluded from the results of the present study that the implemented education program had a positive impact on patients' knowledge .

CONCLUSION:

Based on the results of the present study, it can be concluded that;

The implemented educational program had succeeded in inducing statistically significant improvement in patients' knowledge about stroke which mean that the research hypothesis was fulfilled .

RECOMMENDATIONS:

Based on the most important findings of this study , the following recommendations are suggested :

- The standard stroke risk screening tool should be used for identifying patients' at risk for stroke in outpatient clinics.

- Regular continuous education programs should be conducted in the different outpatient clinics providing medical care for patients at risk for stroke about stroke and stroke prevention for enhancing patients' knowledge .

  Further researches:

- Replication of the current study on a large probability sample from different geographical areas to achieve more generalized results.

- Replication of the current study to assess the impact of an education program on the incidence of stroke .

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تقييم تأثير البرنامج التعليمي التمريضي على المعلومات لدي المرضى ذوي الخطورة للسكتة الدماغية

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الخلاصة

تعتبر السكتة الدماغية السبب الثالث للوفاة وكذلك السبب الرئيسي للعجز عند البالغين في العالم. وتهدف هذه الدراسة إلى تقييم تأثير البرنامج التعليمي التمريضي على المعلومات لدي المرضى ذوي الخطورة للسكتة الدماغية .تألفت عينة الدراسة من (133)من المرضي المعرضين للإصابة بالسكتة الدماغية من العيادات الخارجية بالمستشفيات العامة ومستشفى التأمين الصحي ببورسعيد. منهم 66 مريض معرض للإصابة بدرجة متوسطة و67 معرض للإصابة بدرجة عالية .تم جمع البيانات الخاصة بالدراسة باستخدام الادوات التالية، الأولي استبيان مكون من جزئين :الجزء الاول لمعرفة البيانات الشخصية والجزء الثاني لمعرفة البيانات الصحية و التاريخ المرضي والثانية كانت استبيان استمارة مقياس ديلا وير لتقييم عوامل الخطورة المؤدية للسكتة الدماغية لتحديد عينة الدراسة ، الثالثة كانت استبيان لتقييم معلومات المرضي عن السكتة الدماغية لتقييم معلومات المرضي عن السكتة الدماغية .تم إعداد البرنامج التعليمي بعد مراجعة مكثفة للمراجع العلمية المختلفة المرتبطة بموضوع الدراسة . أظهرت النتائج أن معظم المرضي ليس لديهم المستوى المرضى من المعلومات عن السكتة الدماغية قبل تنفيذ البرنامج لكن كان لديهم المستوى المرضى من الممارسات الوقائية و أظهرت ايضا نتائج الدراسة تحسنا واضحا في المعلومات بعد تنفيذ البرنامج مباشرة. كما أظهرت النتائج انخفاضا في المعلومات بعد ثلاثة أشهر من تنفيذ البرنامج وفي ضوء نتائج هذه الدراسة نستخلص ان البرنامج نجح في تحقيق هدفه. توصى الدراسة بعمل برامج تعليمية منتظمة ومستمرة وذلك لتحسين معلومات المرضي الوقائية للسكتة الدماغية.

الكلمات المرشدة: البرنامج التعليمي - معلومات ـ السكتة الدماغية – المرضى ذوي الخطورة للسكتة الدماغية