



Effectiveness Of A Designed Educational Training Program On Knowledge And Skill Of Nurses And Clinical Outcome Of Patients With Stroke In Selected Hospitals, Chennai – Pilot Study

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ABSTRACT :

Introduction: A stroke, or "brain attack," occurs when blood circulation to the brain fails. If a stroke occurs and blood flow can't reach the region that controls a particular body function, that part of the body won't work as it should. Brain cells can die from decreased blood flow and the resulting lack of oxygen.. **Aim:** The present study aimed to evaluate the effectiveness of a designed educational training program on knowledge and skill of nurses and clinical outcome (Level of Dependency, Level of satisfaction and Level of complications) of patients with stroke. **Methods:** A quasi experimental post test only with non-equivalent control group design was used in this study. A total of 24 (12 nurses, 12 stroke patients cared by those nurses) in selected hospital were selected as samples for the pilot study by non-probability purposive sampling technique. semi-structured questionnaire was used to collect the demographic data of staff nurses. Need assessment scale, structured multiple-choice questionnaire and observation checklist was used to assess the knowledge and skill of staff nurses. Standardized Barthel Index Modified Short-form Patient Satisfaction Questionnaire and observation checklist were used to assess the clinical outcome of patients. **Results:** The study findings revealed a statistically significant difference between the mean knowledge and skill score of staff nurses between the experimental and control group at 1% level of significance. There was a significant positive moderate correlation between knowledge gain score and skill gain score. Among stroke patients statistically significant difference was found in level of dependency, level of satisfaction and level of complications score between the experimental and control group. **Conclusion:** The study findings gave an insight that the Designed educational training program can be used as an instructional module to educate staff nurses providing direct care to stroke patients during hospital stay

Keywords: Stroke, Clinical Outcome, Skill, Knowledge

1. Introduction :

The brain, a highly complex organ, governs various body functions. The World Health Organization (WHO) defines stroke as a "Rapidly developing clinical sign of focal (or global) disturbance of cerebral function.. Ischemic strokes, accounting for 87%, occur when blood supply to the brain is obstructed, while hemorrhagic strokes, comprising 13%, result from ruptured vessels. (Johnson et al., 2016)¹ In India, the cumulative incidence of stroke ranged from incidence of stroke ranges from 105 to 152 per 100,000 persons annually, with a crude prevalence of 44.29 to 559 per 100,000 across different regions. Stroke, the second leading cause of death in India, affects over 1.5 million people yearly, with the country bearing a significant portion of the global stroke burden. As National Vital Statistics Report - Cerebrovascular Disease (stroke) is second leading cause of death in India.. (Kamalakannan et al., 2017)² Stroke management requires cooperation of all members of the multidisciplinary team. Critical care nurses are one of the important members of the multidisciplinary team. They are responsible for the coordination of care throughout the continuum of care and stroke phases (hyper acute and acute phase). As well, the nurses facilitate the work of the health care team through the provision of the needed information based on assessment and observation. Coordinated care of the acute stroke patient results in improved outcomes, decreased lengths of stay, and decreased cost (Belleza, 2021)³

1.1. Objective of the Study

- To assess the need for knowledge and skill training of nurses on nursing management of patients with stroke, both in experimental and control group.
- To evaluate the effectiveness of a designed educational training program on knowledge and skill of nurses and clinical outcome of patients with stroke, both in experimental and control group
- To correlate the post interventional level of knowledge with skill of nurses on nursing management of patients with stroke both in experimental and control group.

- To associate the selected background variables with knowledge and skill of nurses on nursing management of patients with stroke both in experimental and control group.
- To associate the selected background variables of staff nurses with clinical outcome of patients with stroke both in experimental and control group.
- To associate the selected background variables with clinical outcome of patients with stroke both in experimental and control group.

1.2. Review of Literature

Reviews related to,

- Prevalence and incidence of stroke in India
- Assessment of knowledge and skill of nurses on stroke nursing management
- Effectiveness of educational program on nurses' knowledge and skill
- Impact of designed educational program on clinical outcomes of stroke patients

Were carried out by the investigator.

1.3. Research Methodology

The research employs a quantitative approach with a quasi-experimental post-test only, non-equivalent control group design. The independent variable is the designed educational training program, while the dependent variables are the knowledge and skill of staff nurses in managing stroke patients. The study was conducted at VHS Multi Specialty Hospital and Research Institute, Chennai, which employs around 75 registered staff nurses.

The study sample comprised staff nurses and stroke patients who met the inclusion criteria, selected from specific settings. A total of 12 staff nurses (6 in the experimental group and 6 in the control group) and 12 stroke patients (6 in the experimental group and 6 in the control group) were included. Both groups were chosen using purposive sampling techniques.

The inclusion criteria for staff nurses were: availability during data collection, being qualified and registered, and having a minimum of three months of experience in the stroke ward. For stroke patients, the criteria included being aged 35 to 70 years with a normal level of consciousness based on the GCS score, being hospitalized within 24 hours of stroke onset, having a first-time medical diagnosis of stroke, and being able to communicate verbally or non-verbally. Exclusion criteria for staff nurses included those in the induction and training period. For stroke patients, exclusion criteria were being critically ill, having severe cognitive difficulties, or undergoing surgical intervention for stroke.

Institutional ethical committee approval was obtained. After obtaining informed consent from the patients, Data were collected by the researcher. It took approximately 30 minutes to collect the data from each sample. Anonymity was maintained.

Data collection procedure

- Formal administrative permission obtained from The Director of VHS Hospital and the HOD's of Neuro medicine and Neurosurgery Department.
- 6 Staff nurses working in Medical ICU and medical ward were taken as experimental group (3 in each area)
- 6 Staff nurses working in Neuro Surgical ICU and Rehabilitation ward were taken as Control group. (3 in each area)
- After obtaining Informed consent, Need assessment was done among staff nurses on day 1 for both experimental and control group
- For the Experimental group ,on day 1 following need assessment designed educational training program was given to staff nurses.. Workbook was given to staff nurses with 10 exercises for reinforcement
- Knowledge and skill was assessed on day 7 using structure questionnaire and checklist for both experimental and control group staff nurses
- A booklet on nursing management of patients with stroke was given to the staff nurses in experimental group towards the end.
- Clinical outcome of stroke patients was assessed 15 days after the post test in both experimental and control group

The study utilized a semi-structured questionnaire to gather demographic and clinical data, including a checklist with 20 questions covering general concepts, pathophysiology, signs/symptoms, and neurological assessment. This aimed to identify the knowledge and skill training needs for nurses. Knowledge was assessed using 30 structured multiple-choice items on types, incidence, risk factors, clinical manifestations, emergency evaluation, diagnostic studies, and medical and nursing management of stroke rehabilitation. Each item had one correct answer and three distractors, with correct answers scoring 1 point and wrong answers scoring 0. The total score was 30, and percentages were calculated to interpret scores as adequate (>70%), moderately adequate (50-70%), or inadequate (<50%).

Skills were assessed using three manned and two unmanned OSCE stations with checklists, with a total score of 50. Scores were interpreted as good (>74%), moderate (50-74%), or needing improvement (≤50%). The Standardized Barthel Index, Modified Short-form Patient Satisfaction Questionnaire, and checklists were used to assess patients' dependency levels, satisfaction levels, and post-stroke complications, respectively. The tool was validated by two neurologists, two medical-surgical nursing experts, and one physiotherapist.

The reliability of the need assessment and knowledge tools was confirmed using the test-retest method, with scores of 0.81 and 0.83, respectively. Inter-rater reliability and Cronbach’s alpha were used to assess the reliability of the OSCE checklist, Modified Short-form Patient Satisfaction Questionnaire, and post-stroke complications checklist, with scores of 0.90, 0.88, and 0.89, respectively.

1.4. Data Analysis

In data analysis, frequency and percentage distribution, mean, and standard deviation were utilized to assess the level of knowledge and skill of staff nurses, as well as the clinical outcomes of stroke patients concerning self-care of AVF. A paired t-test was employed to evaluate the changes in knowledge and skills. The Pearson’s coefficient of correlation was used to correlate the knowledge with the skills of staff nurses. Additionally, the Chi-square test was used to associate the post-interventional knowledge and skills of staff nurses with selected demographic variables.

1.5. Results and Discussion

- Objective 1: To assess the need for knowledge and skill training of nurses on nursing management of patients with stroke both in experimental and control groups

Table 1 : Frequency and percentage distribution of Need Assessment Score

Level of Need	Experimental Group (n=6)		Control Group (n=6)	
	f	%	f	%
Low (Less than 10)	0	0.00	0	0.00
Moderate (10 – 15)	1	16.67	4	66.67
High (16 and above)	5	83.33	2	33.33
Total	6	100.0%	6	100.0%

- Objective 2: To evaluate the effectiveness of a designed educational training program on knowledge and skill of nurses and clinical outcome of patients with stroke both in experimental and control groups

Table 2.1: Comparison of Post test Mean Knowledge Score

VARIABLE	Experimental Group (n=6) Mean±SD	Control Group (n=6) Mean±SD	Mean Difference Mean	Student’s independent t-test
Knowledge	23.00 ± 2.00	15.00 ± 2.19	8.00	t=6.61 P=0.001*** (S)

Table 2.2: Comparison of Post test Mean Skill Score

VARIABLE	Experimental Group (n=6) Mean±SD	Control Group (n=6) Mean±SD	Mean Difference Mean	Student’s independent t-test
Skill	31.17 ± 3.13	20.17 ± 5.63	11.00	t=4.18 P=0.01** (S)

Table 2.3: Comparison of Mean Dependency Score of stroke patients

VARIABLE	Experimental Group (n=6) Mean±SD	Control Group (n=6) Mean±SD	Mean Difference Mean	Student’s independent t-test

Level of Dependency	65.50 ± 6.81	45.92 ± 7.95	19.58	t=14.49 P=0.001*** (S)
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Table 2.4: Comparison of Mean Satisfaction Score of stroke patients

VARIABLE	Experimental group (n=6) Mean±SD	Control group (n=6) Mean±SD	Mean Difference Mean	Student’s independent t-test
Level of Satisfaction	57.50 ± 2.34	44.83 ± 6.40	12.67	t=4.55 P=0.01** (S)

Table 2.5: Comparison of level of complication score of stroke patients

Level of complications	Experimental(n=6)		Control (n=6)	
	f	%	f	%
Absence of complications	3	50.00	0	0.00
Grade -1	3	50.00	1	16.67
Grade -2	0	0.00	3	50.00
Grade -3	0	0.00	2	33.33
Total	6	100.0	6	100.0

- OBJECTIVE 3: To correlate the post interventional level of knowledge with skill of nurses on nursing management of patients with stroke both in experimental and control group

Table 3.1: Correlation between mean gain score of Knowledge and Skill of staff nurses (Experimental group)

Group	Variables	Mean gain score Mean±SD	Karl Pearson Correlation coefficients
Experimental group	Knowledge gain score Vs Skill gain score	23.00±2.00 31.17±3.13	r= 0.42 P=0.05* (S)
Control group	Knowledge gain score Vs Skill gain score	15.00±2.19 20.17±5.64	r= 0.17 P=0.63 (NS)

- OBJECTIVE 4: To associate the selected background variables with knowledge and skill of nurses on nursing management of patients with stroke both in experimental and control groups.
 - There was no statistically significant association between the selected background variables and clinical outcome of patients with stroke both in experimental and control groups
- OBJECTIVE 5: To associate the selected background variables of staff nurses with clinical outcome of patients with stroke both in experimental and control groups

- There was no statistically significant association between the selected background variables and knowledge and skill of nurses both in experimental and control groups.
- OBJECTIVE 6: To associate the selected background variables with clinical outcome of patients with stroke both in experimental and control groups
 - There was no statistically significant association between the selected background variables and clinical outcome of patients with stroke both in experimental and control groups

1.6. Conclusion

The main aim of the pilot study was to identify the reliability of the tool and feasibility of the study. The pilot study revealed the tool was reliable and the study is practicable and feasible to carry on staff nurses and patients with stroke.

The result of the pilot study revealed that there is a significant difference in the post intervention knowledge and skill score of staff nurses in experimental and control group. Designed educational training program can be used as a instructional module to educate staff nurses providing direct care to stroke patients during hospital stay. The suggestions of the pilot study were incorporated in the main study..

Appendix A. An example appendix

Authors including an appendix section should do so before References section. Multiple appendices should all have headings in the style used above. They will automatically be ordered A, B, C etc.

A.1. Example of a sub-heading within an appendix

There is also the option to include a subheading within the Appendix if you wish.

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