

Effectiveness of Multifactorial Intervention in Care of Patients with Stroke on the Level of Knowledge and Practice among Care-givers in a Selected Tertiary Hospital, Coimbatore (TN)

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Abstract

Stroke is the third leading cause of death in developed countries and second in developing countries. Patients with stroke require assistance for daily activities and they are cared by their family members at home. The family members face difficulties related to physical, emotional, financial aspects, and also lack knowledge and skills to perform the activities of care. In this study, quasi experimental, non-randomised control group design was used; 40 participants were selected, 20 in each group, using non-probability purposive sampling technique. Structured knowledge questionnaire and observational checklist were used to collect the data from the caregivers. The findings showed that the pre-test mean and SD of knowledge and practice was 12.45 ± 2.61 and 16.3 ± 3.95 whereas in post-test the mean and SD of knowledge and practice was 17.85 ± 2.05 and 33.95 ± 3.32 , respectively. The calculated paired t value of knowledge and practice were 13.73 and 27.50. The correlation of post-test knowledge and practice score was 0.3 which was moderately significant at the level of $p < 0.001$. The pre-test level of knowledge was associated with type of family but pre-test level of practice was not associated with any demographic variables. The study concluded that there was a significant improvement in level of knowledge and practice after multifactorial intervention.

Key words: Effectiveness, Multifactorial intervention, Care of stroke patients

Stroke, a leading global cause of death and disability, disrupts brain function by obstructing blood flow, leading to conditions like cerebral thrombosis, embolism, and haemorrhage. In countries such as India and Brazil, it poses a significant health concern, particularly for older adults. Care giving for stroke survivors can be physically, emotionally, and financially demanding, with many caregivers lacking proper training. Education programmes for caregivers, often provided post-discharge, have been shown to reduce caregiver burden, improve care giving skills, and enhance the quality of life for both patients and caregivers. These programmes address key areas like feeding techniques, early mobilisation, and managing psychological issues, helping reduce the risk of recurrent strokes and improve long-term outcomes.

Review of Literature

A study by Eman Ali et al (2020) assessed the impact of planned health teaching on caregiver knowledge and competence in stroke home care. Using a quasi-experimental design with 50 caregivers (25 control,

25 experimental), the study measured outcomes through structured questionnaires and the Barthel Index. Post-intervention, both groups showed improved scores, with significantly higher gains in the experimental group. The findings highlight that structured caregiver education enhances knowledge and caregiving skills, improving functional outcomes for post-stroke patients.

Objectives

The study was set out with following objectives:

- To evaluate the knowledge and practice levels of caregivers in both the interventional and routine care groups regarding stroke patient care.
- To determine the effectiveness of a multifactorial intervention in improving caregivers' knowledge and practices related to stroke patient care in the interventional and routine care groups.
- To examine the correlation between post-test knowledge and practice levels in caregivers in the interventional and routine care groups.
- To analyse the association between caregivers' pre- and post-test knowledge and practice levels regarding stroke patient care and their selected demographic variables in both interventional and routine care groups.

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Methods and Materials

In this quasi-experimental study, a non-randomised control group research design was used. The study setting was, Neurology and semi private wards of PSG Hospitals, Coimbatore (TN). The target study population was all caregivers of patients with stroke. The accessible population was all caregivers of patients with stroke who were admitted in PSG hospitals, Coimbatore.

Sampling technique: A purposive sampling technique was employed to select study participants, focusing on caregivers of stroke patients who met the inclusion criteria.

Sample size was calculated by using Power analysis

$$n = \frac{Z^2 \times N \times SD^2p}{(N-1) e^2 + Z^2 \times SD^2p}$$

N = size of population, n = size of sample, e = acceptable error, SDp = standard deviation of a population

Z = standard variation at a given confidence level

$$\begin{aligned} &= \frac{3.8416 \times 965 \times 2.17 \times 2.17}{964 \times 0.7 \times 0.7 + 3.8416 \times 2.17 \times 2.17} \\ &= \frac{17,456.57}{472.36 + 18.089} \\ &= \frac{17,456.57}{490.44} \\ &= 35.59 \\ &= (\text{say}) 40 \end{aligned}$$

A sample of 40 caregivers was divided equally into two groups: 20 in the intervention group, receiving a multifactorial intervention, and 20 in the routine care group, receiving standard hospital care.

Inclusion criteria:

- who were adults.
- who were staying at least 3 days with the patients.
- who cared for client with hemiplegia, dysphasia, and trouble in feeding.

Exclusion criteria:

- who had physical disability.
- who had severe sensory and motor deprivation.

Data Collection Tool

Section A: Assessment of demographic & clinical variables: Demographic characteristics consist of age, gender, education, type of family, occupation, income, locality and relationship with patient. Clinical variables consisted of common difficulties faced, duration of present caring experience,

previous experience in caring, information received regarding care of patient with stroke and source of information.

Section B: Structured knowledge questionnaire: It consisted of structured questionnaire, comprising 25 questions. Ten questions were on general information on stroke, 15 questions on various aspects of stroke (Improving mobility & enhancing self-care, Diet & communication and Positioning & prevention of complications).

Section C: Observational checklist: Checklist was used to assess the level of practice of certain aspects of care; it contained 50 items (Table 1).

Table 1: Checklist for assessment

Items	No. of items
Back care	7
Positioning	10
Mouth care	6
Range of motion exercises	17
Lifting & transferring	10
Total	50

Scoring interpretation: The items were rated as 1 for correctly performed and 0 for not performed. Maximum score was 50, and minimum score was 0 (Table 2).

Table 2: Scoring of items

Score	Percentage	Level of practice
0-25	≤50%	Needs improvement
26-37	51-75%	Fair practice
38-50	>75%	Good practice

Validity and reliability of the tool: The validity of the tool was obtained from experts of Medical-Surgical Nursing Department. Test-retest method was used to assess the reliability of structured knowledge questionnaire and the score was 0.9. Inter rater reliability method was used to assess the reliability of observational checklist, the score was 0.5.

Ethical approval: Ethical clearance and written permissions were obtained, participants were fully informed about the study, provided written consent, and assured that the data shall be kept confidential being for research purposes only.

Intervention: Interventions include education on general information of stroke for 30 minutes and demonstration of selected nursing procedures such as back care, positioning, mouth care, range of motion exercises, lifting & transferring for a duration of one hour in a day and taking return demonstration from them and issue of the pamphlets containing the steps of procedure. On

day 7, post-test was conducted to both groups by using structured knowledge questionnaire and observational checklist.

Data Analysis and Interpretation

Frequency and percentage distribution of caregivers of patients with stroke according to demographic and clinical variables: The study revealed that most participants in both groups were aged 31-40 years, predominantly female (90%), and primarily from nuclear families (80%). While 25 percent of the intervention group were graduates, 35 percent in the routine care group had higher education. Caregivers in the intervention group faced more psychological (35%) and physical (20%) difficulties, whereas 55 percent of the routine care group reported no issues. Nearly all participants were new caregivers (<1 month) with minimal stroke care experience (95%), and only 10 percent of the intervention group had received stroke care information, primarily from relatives.

Figure 1 shows that the multifactorial intervention significantly improved caregivers’ knowledge in the interventional group, with 65 percent achieving moderately adequate and 35 percent adequate knowledge post-intervention, compared to none having adequate knowledge beforehand. In contrast, the routine care group showed no change, with 65 percent maintaining inadequate and 35 percent moderately adequate knowledge.

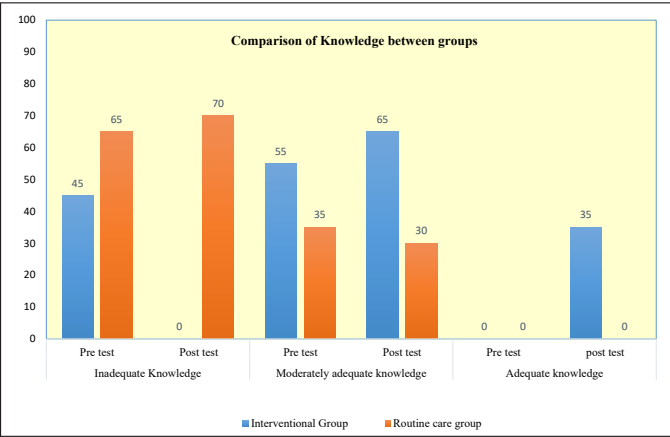


Fig 1: Frequency and percentage distribution of overall pre- and post-test level of knowledge about care of patients with stroke among interventional group and routine care group.

Figure 2 shows that in the intervention group, all participants (100%) were categorised as needing improvement in practice during the pre-test. After the intervention, 17 participants (85%) showed fair practice, and 3 (15%) showed good practice. In contrast, the routine care group had all participants (100%) needing improvement in the pre-test, and

although they remained largely the same post-test, 2 participants (10%) demonstrated fair practice.

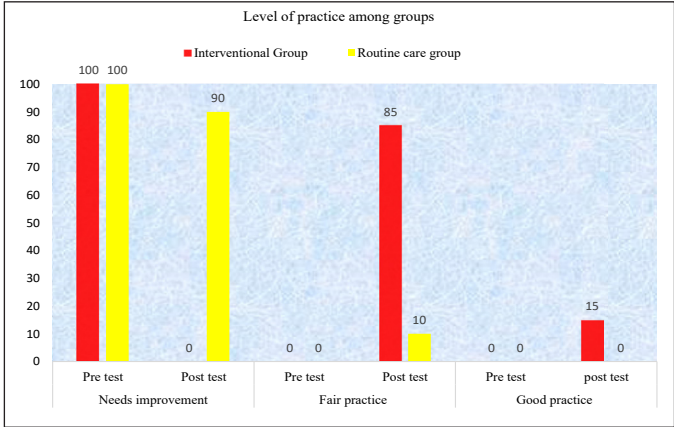


Fig 2: Frequency and percentage distribution of overall pre- and post-test level of practice about care of patients with stroke among routine care group.

Table 3: Comparison of post-test level of knowledge and practice between interventional and routine care group by using unpaired t test (n=40)

Post test	Interventional group	Routine care group	Calculated 't' value
	Mean ± SD	Mean ± SD	
Level of knowledge	17.8± 2.05	12.05±1.74	9.634* p<0.05 S
Level of practice	33.9± 3.32	22.2± 3.99	10.12* p<0.05 S

The results demonstrate a significant improvement in both knowledge and practice in the interventional group compared to the routine care group (Table-3, Fig 3). The post-test mean scores for knowledge (17.8±2.05 vs 12.05±1.74) and practice (33.9±3.32 vs 22.2±3.99) were markedly higher in the interventional group, with calculated ‘t’ values of 9.634 and 10.12, respectively, both exceeding the critical value of 2.02 at a significance level of p<0.05. These findings provide strong evidence for

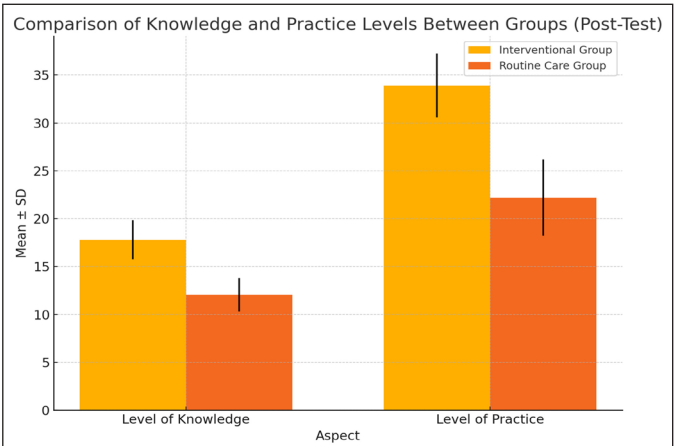


Fig 3: Post-test knowledge and practice levels between groups.

the effectiveness of the multifactorial intervention in enhancing caregivers' knowledge and practice.

Table 4 illustrates the correlation between post-test knowledge and practice scores in the interventional and routine care groups for stroke patient care. In both groups, a positive correlation was observed: the interventional group had a correlation of $r = 0.3$, while the routine care group had a correlation of $r = 0.35$. This suggests that higher knowledge levels were associated with improved caregiving practices. These findings support the research hypothesis, confirming a positive link between knowledge and practice in both groups.

Table 4: Correlation of post-test level of knowledge and practice regarding care of patients with stroke among caregivers of two (N=40)

Group	Knowledge	Practice	'r' value
	Mean $\pm$ SD	Mean $\pm$ SD	
Interventional group	17.9 $\pm$ 2.05	33.95 $\pm$ 3.32	$r=0.3$
Routine care group	12.05 $\pm$ 1.74	22.2 $\pm$ 3.99	$r= 0.35$

Table 5: Association of the pretest level of knowledge of caregivers in interventional group with selected demographic variables (N=20)

Demographic variables	Inadequate knowledge		Moderate adequate knowledge		χ^2 Value
	f	%	f	%	
Age (years)					$\chi^2=0.783$ $p<0.05$ NS
a) 21-30	1	5	2	10	
b) 31-40	3	15	5	25	
c) 41-50	4	20	3	15	
d) 51-60	1	5	1	5	
Educational status					$\chi^2=10.90$ NS
b) Graduate	0	-	5	25	
e) High school	0	-	2	10	
f) Middle school	3	15	3	15	
g) Primary school	3	15	1	5	
h) Illiterate	3	15	0	-	
Type of family					$\chi^2=4.082$ $p<0.05$ S*
a) Nuclear family	9	45	7	35	
b) Joint family	0	-	4	20	
Occupational status					$\chi^2=2.79$ $p<0.05$ NS
a) Private	1	5	5	25	
b) Self employed	3	15	2	10	
c) Unemployed	5	25	4	20	
Monthly income (Rs)					$\chi^2=7.179$ $p<0.05$ NS
a) <5000	4	20	2	10	
b) 5001-10,000	4	20	2	10	
c) 10001-15000	1	5	1	5	
d) >15000	0	-	6	30	

Table 3 shows that the calculated chi-square was greater than the table value for selected demographic variable such as type of family and other variables were not associated. This table depicts that there was significant association between pretest level of knowledge and type of family of participants in interventional group.

Discussion

The study demonstrated significant improvements in both knowledge and practice in the interventional group. In the pre-test, 45 percent had inadequate knowledge and 55 percent had moderately adequate knowledge, while post-intervention, 65 percent had moderately adequate knowledge and 35 percent had adequate knowledge. In contrast, the routine care group showed no improvement, with 65 percent having inadequate knowledge in both the pre and post-test. Regarding practice, all (100%) participants in the interventional group initially needed improvement, but post-test, 85 percent had fair practice and 15 percent had good practice. In contrast, the routine care group showed minimal improvement, with only 10 percent achieving fair practice. These results align with a similar study by Gujar (2019), where 73.33 percent had poor practice in the pre-test, and post-test, 56.67 percent had average practice, with 33.33 percent showing good practice.

The present study found a positive correlation between knowledge and practice in both the interventional and routine care groups, with 'r' values of 0.3 and 0.35, respectively. In the interventional group, adequate knowledge correlated with good practice, while in the routine care group, inadequate knowledge correlated with poor practice. These findings align with a similar study by Bhavya (2017), which also reported that as caregivers' knowledge increased, their attitude and practice toward stroke patient care became more favourable.

Nursing Implications

Nursing Education

1. Sound knowledge facilitates delivery of sound practice. The practice of multifactorial intervention helps the caregivers to prevent complications and reduces the caregiver burden.

2. Periodic seminars, workshops, conferences and group discussions can be arranged on newer strategies regarding care of the patient with stroke.

Nursing Practice

1. Continuing nursing education programme for novice nurses can be arranged to update their knowledge regarding care of patients with stroke and further improve their skills related to management of stroke.
2. The senior nurses and students can disseminate the knowledge gained to the juniors who are unaware about stroke care and its prevention.
3. An ongoing training programme in the hospitals can be organised for health providers, infection control nurses and other professionals regarding care of patients with stroke.
4. Nurses can participate in the management of activities of daily living and provide psychological care to the patient and caregivers of patients with stroke.
5. The nurses need to encourage the caregivers to apply the knowledge and practice gained through multifactorial intervention in caring for the client.

Nursing Administration

1. Periodical reinforcement in the form of in-service education, continuing education and training programmes can be arranged for nurses regarding care of stroke patients.
2. Protocol can be created on the care of patients with stroke to be followed in all the wards by staff nurses.

Nursing Research

1. The current study supplements scientific evidence to the existing body of knowledge.
2. The research findings of the study can be disseminated through conferences, seminars and by publishing in journals and websites.
3. Studies can be conducted regarding various aspects of practice on stroke care.

Recommendations

- The research could explore the integration of digital tools or mobile applications in the educational intervention, making it more accessible and interactive for caregivers, particularly in remote or underserved areas.
- The study could be replicated with different types of interventions (e.g., one-on-one counselling, video-based education, or community workshops) to compare their effectiveness in improving caregivers' knowledge and practice in stroke care.

- Research could assess the impact of psychosocial support, alongside educational interventions, to evaluate how emotional well-being and stress management influence the quality of caregiving in stroke patients.
- Future studies could focus on tailoring educational materials to accommodate cultural differences, ensuring that stroke care education is relevant and effective for diverse populations.
- The research could include the involvement of family members beyond primary caregivers to assess their knowledge and ability to support stroke patient care, fostering a more comprehensive care approach.

Limitations

The practices of caregivers were influenced by physiotherapist. Also, sometimes the caregivers were emotionally unstable, which prevented them from focusing on care.

Conclusion

The present study evaluated the effectiveness of a multifactorial intervention in improving the knowledge and practice of caregivers in the care of stroke patients. The results demonstrated a significant improvement in both knowledge and practice levels among participants in the interventional group after the intervention. Initially, the caregivers exhibited inadequate knowledge and poor practice, but post-intervention, there was a noticeable shift toward more adequate knowledge and better practice, particularly in areas such as general stroke information, mobility, and self-care.

The multifactorial approach, which combined various educational strategies, proved to be an effective method in equipping caregivers with the necessary skills and knowledge to provide improved care for stroke patients. This finding highlights the importance of structured, multifaceted educational interventions in enhancing caregiver competence, thereby contributing to better patient outcomes. Overall, the study concluded that such interventions are not only beneficial for improving the caregivers' knowledge but also for fostering more effective and confident caregiving practices, ultimately supporting the well-being of both caregivers and stroke patients.

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तन-मन को कुछ भी परोसते रहेंगे तो जीवन की दिशा-दशा दुरस्त नहीं रहेगी

मशीनों के सम्मोहन में हम जीवन के आनंद भूलने लगे हैं। जहां एक ओर अंतरंग संबंध जाते रहे, एकाकीपन से ग्रस्त हो गए वहीं जीवन को ठहराव और संबल प्रदान करती आस्थाएं भी लुप्त होने के कगार पर हैं।

अंधाधुंध मशीनीकरण और हमारे रहन-सहन व सोच के डिजिटल तौरतरी के उन पारंपरिक मूल्यों और आस्थाओं को झकझोरने पर तुले हैं जो सदियों से जनजीवन को स्थायित्व और सुरक्षा प्रदान करते आए हैं। सनातनी जीवन मूल्यों और धारणाओं पर प्रश्नचिन्ह लग रहे हैं। इनसे उबरना निहायत जरूरी है किंतु दुविधाओं और आशंकाओं से सराबोर फिजाओं में सही राह का चयन, इस पर स्वयं चलना और दूसरों को वैसा बताना असाधारण सदाशयता, जुगत और सूझबूझ मांगता है। अविचार के भवसागर में स्वयं न बहने वाले उन शख्सों की आज सख्त जरूरत है जो दूसरों को भी थाम सकें।

गलाकाटू प्रतिस्पर्धा: दूसरी ओर वाहवाही बटोरने की गला-काटू होड़ है, निरंतर सुलगती अनंत लौकिक आकांक्षाएं हैं। कुछ की दशा उन नाविकों सरीखी है जो समुद्र में सुदूर मत्स्य कन्याओं के आकर्षक संगीत से सम्मोहित हो कर उन तक पहुंचने को बेताब हैं, वापस नहीं लौटने के लिए।

प्रकृति की अद्भुत व्यवस्था: प्रकृति के सभी कार्यकलापों में एक शानदार व्यवस्था है। यह प्रकृति का अनुशासन है। मन, चित्त या शरीर तभी तक सुचारु रूप से कार्य करेंगे जब तक ये अनुशासन और मर्यादा में बंधे रहेंगे। जैसे उचित खाद्यान्न के नियमित सेवन से पाचन प्रणाली नियत समय पर क्रियाशील हो कर खाद्यान्न को भलीभांति अवशोषित करती, और शरीर को भरपूर ऊर्जा देती है। स्वस्थ तभी रहेंगे जब मनुष्य के दोनों घटकों यानी मन और शरीर को दिए जा रहे पोषण की गुणवत्ता और मात्रा प्राकृतिक विधान के अनुकूल होगी।

समृद्धि का एक विश्वस्त पैमाना: मनुष्य की आध्यात्मिक समृद्धि का एक विश्वस्त पैमाना उसका संतुलित और संयत रहना और उसके चरित्र की दृढ़ता है। बेशक नशे में अपार आनंद है, किंतु संगीत या कला में भी उससे कम आनंद नहीं। सर्वाधिक निरीह, दीनहीन और दयनीय वह है जिसका स्वयं पर नियंत्रण नहीं है। अपने भीतरी शक्तिपुंज को जान कर प्रफुल्लित, खुशनुमा रहने की जुगत करें, इसी निमित्त आप दुनिया में आए हैं।