

Impact of a family intervention package on self-efficacy among stroke caregivers: evidence from a Pilot Study

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Title of study: Effectiveness of family intervention package on self-efficacy among caregivers of stroke patients at selected hospitals. **Background:** Stroke caregiving often imposes a substantial burden on families, frequently leading to psychological stress and reduced self-efficacy. Enhancing caregivers' confidence through structured interventions can significantly improve caregiving outcomes. **Objective:** To assess effectiveness of family intervention package on quality of life among caregivers of stroke patients at selected hospitals. **Null Hypothesis:** There is no significant effect of family intervention package on self-efficacy among caregivers of stroke patients. (at $P = 0.05$). **Methods:** A quasi-experimental, non-randomized pilot study was conducted at a tertiary hospital in Maharashtra, India. Twenty caregivers were purposively sampled and divided into experimental ($n=10$) and control ($n=10$) groups. Self efficacy was assessed using structured self-efficacy scale. The experimental group received a structured intervention comprising stroke education, training on care of patients and self care, a caregiver manual, and telephonic follow-ups across 8 weeks. Self-efficacy was assessed at baseline, Day 15, Week 4, and Week 8 using a validated 30-item scale. Data were analysed using paired and independent t-tests in Python. **Results:** The experimental group showed a significant improvement in self-efficacy from a baseline mean of 73.8 ± 18.12 to 95.2 ± 12.52 at Week 8 ($t = -7.11$, $p < 0.001$). In contrast, the control group showed only a modest increase from 74.7 ± 11.95 to 79.9 ± 8.31 . A statistically significant difference in self-efficacy scores was observed between the experimental and control groups at Week 8, favouring the experimental group ($t = 3.21$, $p < 0.001$).

Conclusion: The structured family intervention package was effective in enhancing caregiver self-efficacy. Incorporating such interventions into clinical practice can strengthen caregivers' capacity to manage stroke-related care, ultimately benefiting both caregivers and patients.

Keywords: Stroke caregivers; Self-efficacy; Family intervention; Quasi-experimental study; Nursing support; Stroke care

1. INTRODUCTION

Stroke remains a major public health concern globally and is one of the leading causes of adult disability. In India, an estimated 1.8 million people suffer a stroke annually, with many survivors requiring long-term care and support at home [1]. This care responsibility often falls on family members, who may lack the training, resources, or emotional preparedness to manage the complex needs of stroke survivors [2]. Family caregivers are essential to stroke rehabilitation and recovery; however, they frequently experience high levels of stress, anxiety, and reduced well-being. Among the various psychosocial challenges, **low self-efficacy**—the caregiver's belief in their ability to manage care tasks—emerges as a significant predictor of caregiver burnout, poor coping, and ineffective caregiving [3]. According to Bandura, “people's beliefs in their efficacy influence how they think, feel, motivate themselves, and act” [4]. Enhancing self-efficacy among caregivers can thus be a critical target for intervention.

Studies have shown that structured interventions, including skill-building sessions, psychoeducation, and ongoing support, can positively impact caregiver outcomes, especially self-efficacy [5,6]. In the nursing context, empowering caregivers through family-centered approaches not only improves caregiver competence but also positively affects patient recovery and reduces healthcare burden [7].

This pilot study was conducted to check effectiveness of family intervention package on self-efficacy among caregivers of stroke patients at selected hospitals. By equipping caregivers with knowledge,

emotional support, and follow-up guidance, the intervention aimed to foster a greater sense of confidence and capability in their caregiving role.

2. MATERIALS AND METHODS

2.1 Study Design and Setting

This pilot study employed a quasi-experimental, non-randomized control group design to evaluate the effectiveness of a structured family intervention package on self-efficacy among caregivers of stroke patients. It was conducted from August 2023 to December 2023 at a selected tertiary care hospital in Maharashtra, India.

2.2 Sample Size and Sampling Method

A total of 20 caregivers were recruited through non-probability purposive sampling, with 10 participants in the experimental group and 10 in the control group. The sample size, representing 10% of the planned full-scale study, was deemed adequate for assessing feasibility and refining study procedures.

Inclusion Criteria:

- Aged ≥ 18 years
- Primary caregivers of stroke survivors receiving home care
- Provided caregiving ≥ 6 hours/day
- Able to understand English or Marathi

Exclusion Criteria:

- Caregivers of critically ill patients
- Those involved in other intervention studies

2.3 Tools for Data Collection

A structured tool was used, comprising:

- Section A: Demographic profile (14 items) including age, gender, education, occupation, relationship to patient, care hours/day, residence, income, etc.
- Section B: Self-Efficacy Scale (30 items), developed by the investigator to assess caregiver confidence across domains like physical care, emotional support, and coping.

The self-efficacy scale was tested for validity and reliability:

- Face and Content Validity: Established through expert review in nursing, psychology, and neurology
- Reliability:
 - Test-retest reliability (Pearson's correlation): 0.98
 - Internal consistency (Cronbach's alpha): 0.89

These values indicate excellent stability and high internal reliability of the tool.

2.4 Intervention: Family Intervention Package

The family intervention package consists of following interventions held over period of 8 weeks.

- (First Interaction: Usually day between 3rd to 5th day of admission to Neurology unit)
- Session I: Education about stroke – Definition, Types of stroke, Causes and Risk factors, Sign and symptoms of stroke, Management, Prevention of recurrence, Complications and its prevention.

Teach Techniques for home care of stroke patients along with demonstration

- Managing communication problems
- Assisting in moving, transfer and positioning.
- Assisting in feeding, eating and swallowing.
- Assisting in Personal care
- Assisting and providing exercises
- Managing cognitive and behavioural problems.

- (Session 2: usually on next day of after session 1)

Session II: Self-care and related techniques.

- How to find support and get help.
- How to recognize the signs of stress and techniques for management.

- Time management.
 - Managing roles and responsibilities
 - Maintaining physical health
 - Maintaining psychological health.
- **End of session:** Provide Booklet for patient care guidance.
 - **(Day 15):** face to face interaction with care givers and guidance for home care.
 - Telephonic/ face to face follow up and guidance 3rd week and 6th week.
- The control group continued with routine care as per hospital protocols and did not receive any structured intervention.

2.5 Data Collection Procedure

After ethics approval and informed consent, baseline data were collected at enrolment (Day 3–5 post-admission). The self-efficacy scale was administered at:

- Pre-test (baseline)
- Post-test 1 (Day 15)
- Post-test 2 (Week 4)
- Post-test 3 (Week 8)

2.6 Ethical Considerations

The study received ethical clearance from the Institutional Ethics Committee of Dr. D.Y. Patil Vidyapeeth, Pune (Approval No: DYPV/CON/954/2021). Participants were assured of confidentiality, the right to withdraw at any time, and voluntary participation in compliance with ICMR 2019 and the Declaration of Helsinki.

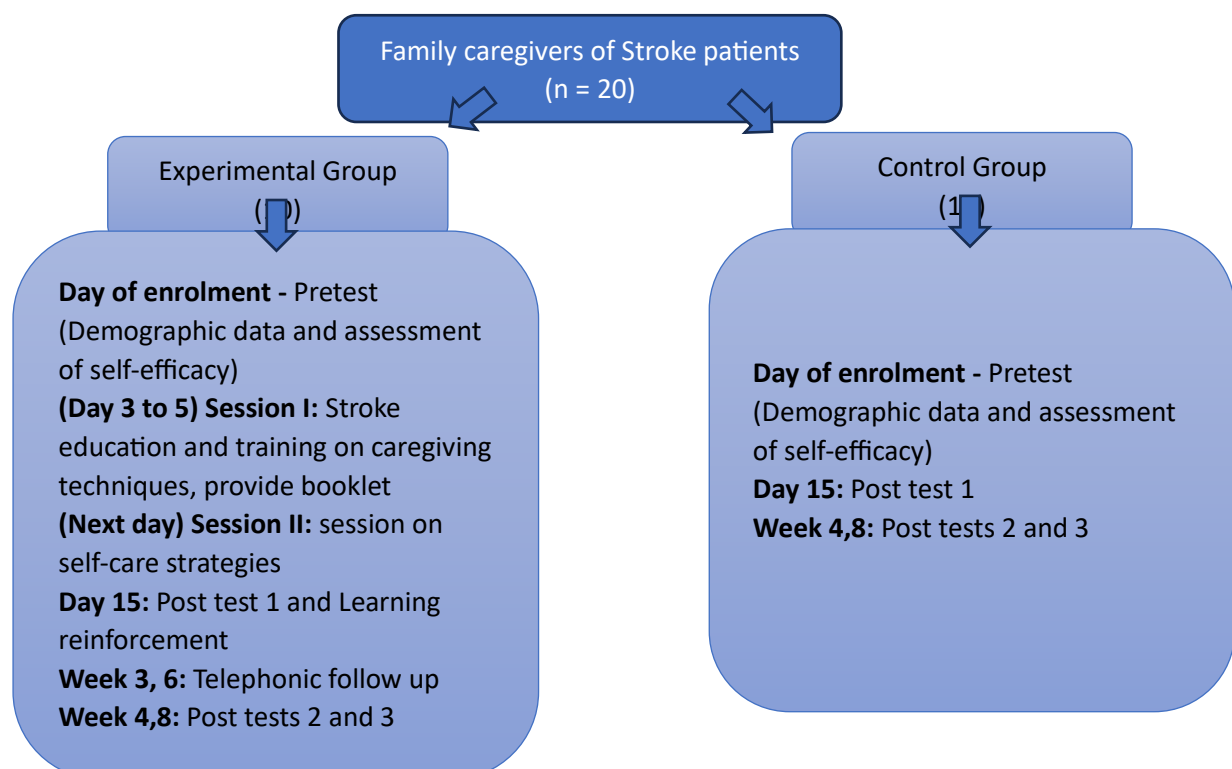
2.7 Data Analysis

Data was entered in Microsoft Excel 2019 and analysed using Python. Normality was checked using the Shapiro–Wilk test. As data were normally distributed, parametric tests were used:

- Descriptive statistics: Frequency, percentage, mean, and standard deviation
- Inferential statistics:
 - Paired *t*-test to evaluate within-group changes
 - Independent *t*-test for between-group comparisons

A *p*-value < 0.05 was considered statistically significant.

Fig: Flow chart of study methodology



RESULTS

Table 3.1 Demographic Characteristics of study participants

	Experimental Group (10)		Control Group (10)	
Demographic Variable	Frequency	Percentage	Frequency	Percentage
Age (in years)				
18-30	1	10.0%	2	20.0%
31-40	3	30.0%	2	20.0%
41-50	3	30.0%	5	50.0%
51-60	2	20.0%	0	0.0%
61 and above	1	10.0%	1	10.0%
Gender				
Male	5	50.0%	4	40.0%
Female	5	50.0%	6	60.0%
Education				
Primary	1	10.0%	1	10.0%
Secondary	1	10.0%	4	40.0%
higher Secondary	2	20.0%	3	30.0%
Diploma	1	10.0%	1	10.0%
Graduation and above	5	50.0%	1	10.0%
Occupation				
Government Employee	0	0.0%	2	20.0%
Private Employee	6	60.0%	3	30.0%
Self-employed/Business	2	20.0%	2	20.0%
Retired	1	10.0%	0	0.0%
Housewife/Homemaker	1	10.0%	3	30.0%
Marital Status				
Married	7	70.0%	10	100.0%
unmarried	2	20.0%	0	0.0%
Separated	0	0.0%	0	0.0%
Widow/Widower	1	10.0%	0	0.0%
Type of family				
Nuclear	7	70.0%	10	100.0%
Joint	3	30.0%	0	0.0%
Monthly Family Income				
Below 10,000/-	2	20.0%	4	40.0%
10001 - 20000/-	1	10.0%	1	10.0%
20001 - 30000/-	1	10.0%	2	20.0%
30001 and above	6	60.0%	3	30.0%
Area of Residence				
Urban	8	80.0%	6	60.0%
Rural	2	20.0%	3	30.0%
Semiurban	0	0.0%	1	10.0%
Relationship with patient				
Spouse	3	30.0%	3	30.0%
Daughter	1	10.0%	2	20.0%
Daughter-in-law	2	20.0%	2	20.0%
Son	3	30.0%	3	30.0%
Any other - Specify	1	10.0%		
Care hours/day				

6 - 8	4	40.0%	5	50.0%
8 - 10	3	30.0%	2	20.0%
10 - 12	1	10.0%	0	0.0%
12 and above	2	20.0%	3	30.0%
Previous experience as caregiver				
Yes	3	30.0%	2	20.0%
No	7	70.0%	8	80.0%
Personal Habits				
Smoking	0	0.0%	1	10.0%
Tobacco chewing	2	20.0%	0	0.0%
Alcohol	0	0.0%	1	10.0%
Excess caffeine intake	3	30.0%	3	30.0%
No	5	50.0%	5	50.0%
Type of exercises performed				
Yoga	0	0.0%	2	20.0%
Meditation	0	0.0%	0	0.0%
Walking	9	90.0%	0	0.0%
Weight bearing	0	0.0%	4	40.0%
Any other specify/No	1	10.0%	1	10.0%
History of any chronic illness				
Yes	4	40.0%	1	10.0%
No	6	60.0%	9	90.0%

The demographic comparison revealed that the experimental group had a larger proportion of caregivers aged 31–50 years (60%), with equal representation of males and females, while the control group had more participants aged 41–50 years (50%) and a higher proportion of females (60%). Educational qualifications were higher in the experimental group, with 50% being graduates or above, whereas 40% of the control group had education up to the secondary level. Private-sector employment was more common in the experimental group (60%), while the control group had an equal share of private employees and homemakers (30% each). All control group participants were married and from nuclear families, whereas 70% in the experimental group were married and 30% lived in joint families. Income levels above ₹30,000 were more frequently reported in the experimental group (60%) compared to the control group (30%). Urban residency was also more common among experimental participants (80%). Spouses and sons were the most frequent caregivers in both groups. Most participants reported caregiving durations of 6–8 hours daily, although extended caregiving (≥ 12 hours) was more prevalent in the control group. Prior caregiving experience was limited in both groups. None of the experimental group participants reported smoking or alcohol use, in contrast to a few in the control group. Walking was the most common physical activity in the experimental group (90%), while 40% of the control group engaged in weight-bearing exercises. Chronic illness was more commonly reported in the experimental group (40% vs. 10%).

Table 3.2: Comparison of Self efficacy between Experimental and Control Groups across assessment timepoints

Scale	Timepoint	Experimental group		Control Group	
		Mean	SD	Mean	SD
Self-efficacy	Pretest	73.8	18.12	74.7	11.95
	Posttest_1	87.7	12.77	76.4	9.37
	Posttest_2	92.7	12.43	77.4	10.36
	Posttest_3	95.2	12.52	79.9	8.31

Pretest: Both groups have moderate self-efficacy (Experimental: 73.8, Control: 74.7).

Posttest 1: Experimental group shows improved self-efficacy (87.7) reaching higher moderate, while Control group remains moderate (76.4).

Posttest 2: Experimental group moves to high self-efficacy (92.7), Control group stays moderate (77.4).

Posttest 3: Experimental group maintains high self-efficacy (95.2), Control group shows slight improvement but remains moderate (79.9).

The Experimental group shows a significant and sustained increase in self-efficacy, reaching and maintaining a high level. In contrast, the Control group's self-efficacy improves only modestly, remaining in the moderate range.

Graph A: Graph comparing mean difference in Self efficacy score among both groups at different timepoints

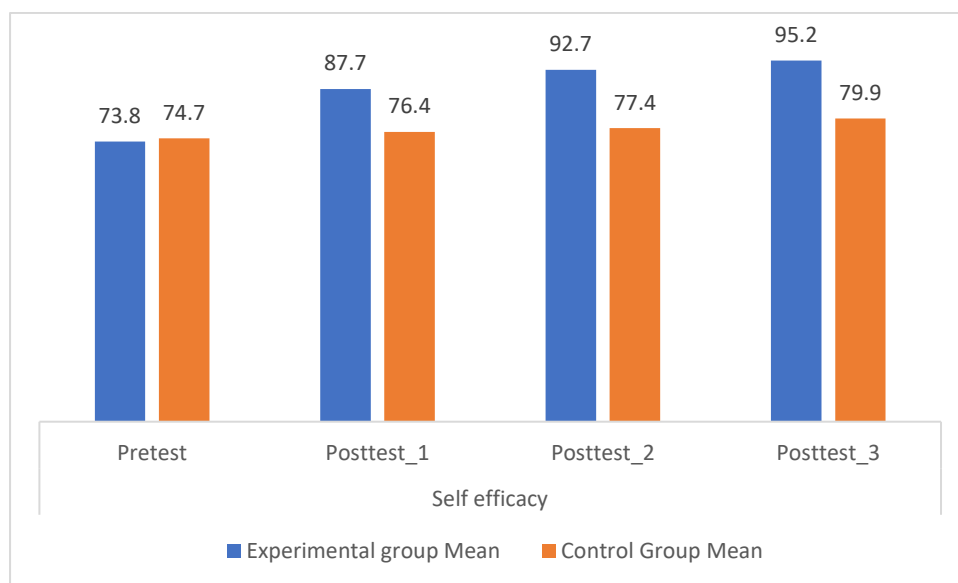


Table 3.3: Comparing Pre and Post test performance of Experimental Group

Measurement scale	Timepoint	Experimental group		t-value	p-value
		Mean	SD		
Self-efficacy	Pretest	73.8	18.12	-7.11	0.00
	Posttest_3	95.2	12.52		

The t-value of -7.11 with a p-value of 0.00 indicates a significant increase in Self Efficacy scores from Pretest to Posttest 3. This demonstrates that the intervention was highly effective in improving Self Efficacy.

Table 3.4: Comparing Post test performance of Experimental and Control Group

Scale	Group	Experimental group		t-value	p-value
		Mean	SD		
Self-efficacy	Experimental	95.2	12.52	3.21	0.00
	control	79.9	8.31		

The Experimental group has a significantly higher mean score 95.2 with standard deviation of 12.52 compared to the Control group mean 79.9 and SD 8.31, with a t-value of 3.21 and a p-value of 0.00. This

significant difference shows that the intervention in the Experimental group significantly improved self-efficacy compared to the Control group.

DISCUSSION

The findings of this pilot study clearly indicate that the family intervention package can significantly enhance self-efficacy among caregivers of stroke survivors. This aligns with Bandura's theory, which emphasizes that individuals with higher perceived self-efficacy are better equipped to handle challenges, including those encountered in caregiving roles.

Consistent with the current results, a study by **Lee et al. (2018)** demonstrated that a community-based caregiver training program significantly improved stroke caregivers' self-efficacy and caregiving preparedness. Their randomized controlled trial showed sustained improvements across various domains of caregiving, highlighting the importance of structured, ongoing support. [8]

Similarly, **Akosile et al. (2018)** reported that a caregiver support program involving education, physical training, and emotional counselling significantly increased self-efficacy levels among Nigerian stroke caregivers. The authors emphasized that empowering caregivers through comprehensive intervention models was essential for improving caregiver confidence and stroke rehabilitation outcomes.[9]

These findings validate the components used in this study's intervention package—namely, education about stroke and patient care, self-care for caregivers, booklet and telephonic follow-ups—as key facilitators in improving caregiver efficacy. Moreover, the present study adds to the body of evidence supporting the integration of such structured interventions into routine stroke rehabilitation care, particularly in resource-constrained settings where family caregivers play a central role.

Despite the positive findings, the study is limited by its small sample size and short follow-up duration. Future studies should explore the long-term impact of such interventions, ideally through multicentre randomized controlled trials.

CONCLUSION

The study found that a structured family intervention package significantly improved self-efficacy among stroke caregivers. The combination of education, caregiver support, and follow-up proved effective in enhancing caregiving confidence. These findings highlight the need to incorporate such interventions into routine stroke care. Further research with larger samples and longer follow-up is recommended.

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