

Impact Of Nurse-Directed Interventions On Multidimensional Wellbeing And Functional Dependence Among Stroke Survivors : A Quasi-Experimental Study

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Abstract

Stroke remains a leading cause of long-term disability worldwide, with significant impacts on physical function, cognitive abilities, and quality of life. This quasi-experimental study aimed to evaluate the effectiveness of a nurse-led intervention on multidimensional wellbeing and functional dependence among stroke survivors. Sixty patients from the Neuro medicine Department at Rajiv Gandhi Government General Hospital in Chennai were recruited and allocated into experimental and control groups. The intervention group underwent organised educational sessions focused on muscle strengthening exercises, symptom management, and medication compliance, whereas the control group received conventional care. Data was collected via the Stroke Impact Scale (SIS) and Functional Independence Measure Scale (FIMS) prior to and subsequent to the 21-day intervention. Baseline characteristics were comparable across groups. Post-intervention analysis revealed a significant improvement in the experimental group's multidimensional wellbeing (mean score increased from 46.53 to 78.73; $p = 0.001$) and functional dependence (from 39.05 to 64.84; $p = 0.001$), whereas changes in the control group were minimal and statistically non-significant. Additionally, post-test scores showed significant associations with age, residence, and illness duration. These findings confirm that nurse-led educational interventions can substantially enhance multidimensional wellbeing and functional dependence, especially those with shorter disease duration and urban residency. This approach emphasizes the role of nurses in chronic illness management and advocates for integrating such interventions into routine care to promote physical functions and quality of life.

Keywords: Stroke survivors, Multidimensional wellbeing, functional dependence, Nurse directed intervention, Patient education

Background

A stroke is a medical condition that occurs when the blood supply to a part of the brain is interrupted or reduced, preventing brain tissues from getting oxygen and nutrients. Approximately 11.6% of the global population is affected, with a disproportionate impact on men, especially those aged 30 to 60. Patients

frequently endure a range of incapacitating symptoms such as sudden weakness or numbness, trouble speaking, trouble walking and face drooping which significantly hinder daily activities and may require carer assistance or adaptive devices.

The psychosocial effects of stroke are significant. Depression and anxiety are common, impacting up to 51% of patients, intensified by both the apparent and latent consequences of the illness and societal stigma. This psychological distress is exacerbated by economic repercussions, as 40% of stroke survivors become unemployed after diagnosis due to physical and functional impairments. The expenses associated with treatment impose additional strain on patients, particularly in resource-limited environments.

A considerable proportion of patients express feelings of being misunderstood or unsupported by family, friends, and society as a whole. As many as 61% report diminished multidimensional wellbeing, which is associated with heightened depression, anxiety, and disease burden. Emotional, educational, and practical social support is crucial for patients to manage stroke efficiently.

Multidimensional Wellbeing refers to the holistic state of health, encompassing not only physical health but also psychological, social and emotional aspects of wellbeing. Low multidimensional wellbeing is prevalent and is associated with heightened symptom burden, inadequate treatment adherence, and diminished physical activity. In contrast, elevated functional dependence fosters physical functions, enhances coping mechanisms, and encourages self-care habits, including consistent exercise and adherence to medication. It is correlated with reduced depression rates and improved quality of life.

Despite of these interconnected psychosocial and physical obstacles, nurse-led interventions have proven to be effective ways for improving both multidimensional wellbeing and functional dependence among stroke survivors. These therapies typically encompass patient education, goal formulation, and family engagement. Nurse-led educational programs significantly enhance patients' confidence in managing their symptoms and promote a proactive approach to care. Research indicates that patients participating in these programs exhibit enhanced treatment adherence and self-management practices.

By engaging families, nurses create supportive environments that enhance patients' emotional wellbeing and reduce social isolation. Group educational sessions foster communities of shared experience, thereby alleviating emotional suffering. Empirical data associates these therapies with quantifiable enhancements in physical outcomes, including increased physical and functional activities.

MATERIALS AND METHODS

Study Design

This study adopted a quasi-experimental, non-randomized control group design to assess the efficacy of a nurse-led intervention on multidimensional wellbeing and functional dependence among stroke survivors. The design included pre-test and post-test evaluations for both the experimental and control groups without random assignment.

Participants

The study population included stroke survivors attending the Neuro medicine department at Rajiv Gandhi Government General Hospital, Chennai. Inclusion criteria were: diagnosed as stroke < 6 months, between the age of 35-60 years and able to follow instructions. Patients with any other co morbidities, critically ill during data collection and involved in any other research were excluded.

Sample Size Calculation

A total of 60 patients were selected using non-probability convenience sampling, with 30 patients in each group. The sample size was calculated using a 95% confidence interval and 36% relative precision based on a previous study reporting a 50% functional dependency rate in stroke survivors, yielding a required sample of 58, rounded to 60 for feasibility.

Data Collection Procedure

After obtaining ethical approval and written consent, participants underwent a pre-test using four tools: (1) Sociodemographic questionnaire, (2) Clinical variable form, (3) Stroke Impact Scale (SIS), and (4) Functional Independence Measure Scale (FIMS). Data collection took approximately 10-15 minutes per participant. Following this, the experimental group received a nurse-led intervention, while the control group received routine care. A post-test was conducted 21 days later using the same instruments.

Intervention

The nurse-directed intervention included structured education for patients and family members. Content covered demonstration of muscle strengthening exercises, disease progression, medication side effects, and physical activity (via pamphlets and video clippings).

Data Analysis

Data were encoded and entered into Microsoft Excel, then analysed utilising IBM SPSS version 26. Categorical variables were represented as frequencies and percentages, whereas continuous variables were summarised as mean $\pm$ standard deviation. Group comparisons were performed with Chi-square and Pearson correlation analyses. A p-value of < 0.05 was considered statistically significant.

RESULTS

Baseline characteristics

The mean age of the participants was 45.6 ± 5.3 years. Females comprised 56.67% of both groups. Most participants were married, had secondary education, and were unemployed. Rural residency and nuclear family structures were predominant. There were no significant differences in baseline demographic or clinical variables between groups ($p > 0.05$), confirming group comparability.

Pre-Intervention Measures

At baseline, both groups showed similar levels of multidimensional wellbeing and functional dependence. Moderate multidimensional wellbeing was observed in 93.33% of the experimental and 93.33% of the control group, with the remainder reporting low levels. No high functional dependence scores were reported. Functional dependence was moderate in 100.00% (experimental) and 100.00% (control). Statistical analysis revealed no significant differences ($p = 0.64$ and $p = 1.00$, respectively).

Effectiveness of Nurse-Directed Intervention

The nurse-directed intervention showed a clear improvement in both multidimensional wellbeing and functional dependence among stroke survivors. In the experimental group, multidimensional wellbeing scores increased from 46.53% to 78.73%, showing a 32% improvement. In comparison, the control group had only a 1.76% increase. For functional dependence, scores in the experimental group rose from 39.05 to 64.84%, a 25.79% improvement. The control group had only a small 5.31% gain. These results show that nurse-led education and support made a big difference in helping patients feel more confident in managing their illness and more supported by those around them (Table 1 & 2).

Table 1: Effectiveness of nurse-directed intervention on multidimensional wellbeing

Group	Assessments	Multidimensional wellbeing score			
		Maximum score	Mean wellbeing score	Percentage of wellbeing score	Percentage of wellbeing score
Experiment	Pretest	100	46.53	46.53%	32.20%
	Posttest	100	78.73	78.73%	
Control	Pretest	100	47.97	47.97%	1.76%
	Posttest	100	49.73	49.73%	

Table 2: Effectiveness of nurse-directed intervention on functional dependence

Group	Assessments	Functional dependence gain score			
		Maximum score	Mean Activity of daily living score	Percentage of Activity of daily living score	Percentage of Activity of daily living gain score
Experiment	Pretest	126	49.20	39.05%	25.79%
	Posttest	126	81.70	64.84%	

Control	Pretest	126	39.47	46.23%	5.31%
	Posttest	126	51.57	47.02%	

Statistical Comparisons

Mean multidimensional wellbeing scores in the experimental group rose significantly from 46.53 ± 5.62 to 78.73 ± 4.08 ($p = 0.001$), whereas the control group showed a minimal change (47.97 ± 4.67 to 49.73 ± 5.11 ; $p = 0.29$). Similarly, mean functional dependence scores increased from 49.20 ± 5.14 to 81.70 ± 6.16 in the experimental group ($p = 0.001$), compared to a non-significant shift in the control group (49.73 ± 2.94 to 51.57 ± 4.04 ; $p = 0.62$).

Associations with Demographic and Clinical Variables

Significant associations were found between post-test multidimensional wellbeing levels and age ($p = 0.05$), residence ($p = 0.05$), and duration of illness ($p = 0.05$) in the experimental group. Participants aged 31- 40 years and those with disease duration less than six months were more likely to achieve high multidimensional wellbeing. Similarly, urban and semi-urban residents had better outcomes. Post-test functional dependence was also significantly associated with these variables ($p = 0.05$), reinforcing the influence of these variables on intervention efficacy.

DISCUSSION

This study highlights the effectiveness of nurse-directed interventions in enhancing multidimensional wellbeing and functional dependence among stroke survivors. Participants initially demonstrated moderate to minimal levels of multidimensional wellbeing and functional dependence, reflecting the psychosocial burdens commonly associated with stroke survivors, including physical and functional impairments.

Following the intervention, the experimental group demonstrated a substantial improvement in self-efficacy (from 46.53 to 78.73) and perceived social support (from 39.05 to 64.84), with statistically significant differences compared to the control group. These results are consistent with the findings of Hyunjin et al., who reported that structured educational programs delivered by nurses significantly increased multidimensional wellbeing among stroke survivors. Similarly, Salokhiddinov's recent experimental study found that nurse-led self-management education improved psychological wellbeing. Functional dependence, showed marked improvement following the intervention. Prior evidence suggests that such support mitigates stress, enhances coping mechanisms, and correlates with better disease outcomes. Lima et al. emphasized the patients coping skills, awareness of their condition and ability to perform activities of daily living.

The study found significant associations between post-test scores and demographic factors such as age, family structure, level of education, residence and dietary pattern. Participants aged 31–40 years and those living in urban or semi-urban areas showed greater improvements, in line with observations by Lima et al., who found that disease duration and socio-demographic factors influence multidimensional wellbeing. Zhu et al. also reported similar links between multidimensional wellbeing and demographic factors such as, disease duration, and taking regular medications.

CONCLUSION

This study establishes the usefulness of nurse-led treatments in markedly improving multidimensional wellbeing and functional dependence among stroke survivors. Comprehensive education for patients and their families resulted in quantifiable enhancements in psychosocial outcomes, particularly for individuals with a brief disease duration and those residing in urban areas. These findings underscore the essential role of nurses in chronic disease management by empowering patients via customised, supportive care. Incorporating these strategies into standard clinical practice may enhance adherence, resilience, and quality of life among stroke survivors. Ongoing study is advised to investigate long-term effects and scalability in various healthcare environments.

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