



Effectiveness Of A Nurse-Led Structured Self-Management Intervention On Health-Related Quality Of Life Among Patients With Chronic Heart Failure

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Background

Chronic Heart Failure (CHF) is a progressive cardiovascular disorder associated with high morbidity, repeated hospitalizations, reduced functional capacity, and poor Health-Related Quality of Life (HRQoL). Effective self-management practices such as medication adherence, dietary control, symptom monitoring, fluid restriction, and lifestyle modification are essential for improving patient outcomes. However, many CHF patients lack adequate knowledge and self-management skills. Nurse-led structured self-management interventions may significantly improve HRQoL and enhance patient self-care behavior.

Objectives

1. To assess baseline HRQoL among patients with chronic heart failure.
2. To evaluate the effectiveness of a nurse-led structured self-management intervention on HRQoL.
3. To compare posttest HRQoL scores between experimental and control groups.
4. To determine the association between posttest HRQoL scores and selected demographic variables.

Methods

An experimental pretest-posttest control group design was adopted for the study. A total of 100 patients diagnosed with chronic heart failure were selected using consecutive sampling and randomly assigned into experimental (n=50) and control (n=50) groups. Baseline HRQoL was assessed using the Minnesota Living with Heart Failure Questionnaire (MLHFQ). The experimental group received a structured nurse-led self-management intervention consisting of heart failure education, medication adherence counselling, dietary

and fluid restriction guidance, symptom monitoring training, physical activity recommendations, stress management, and follow-up reinforcement sessions. The control group received routine hospital care. Posttest assessment was conducted after 30 days. Data were analyzed using descriptive and inferential statistics.

Results

The mean pretest HRQoL score in the experimental group significantly improved from 68.42 ± 9.14 to 38.26 ± 7.82 following the intervention. The control group showed only minimal change (pretest: 67.88 ± 8.97 ; posttest: 63.74 ± 8.55). The calculated paired *t*-value for the experimental group was 18.64 ($p < 0.001$), indicating a highly significant improvement in HRQoL following the intervention. An independent samples *t*-test revealed a significant difference between the posttest scores of the experimental and control groups ($p < 0.001$).

Conclusion

The nurse-led structured self-management intervention was highly effective in improving health-related quality of life among patients with chronic heart failure. Integrating structured nurse-led educational and follow-up interventions into routine cardiac care may enhance patient outcomes and reduce disease burden.

Keywords:

Chronic Heart Failure, Self-Management, Nurse-Led Intervention, Health-Related Quality of Life, Cardiac Nursing.

INTRODUCTION

Chronic Heart Failure (CHF) is one of the leading causes of morbidity and mortality worldwide and represents a major public health challenge. It is a complex clinical syndrome characterized by impaired ventricular function resulting in inadequate cardiac output to meet the body's metabolic demands. Patients with CHF commonly experience dyspnea, fatigue, edema, exercise intolerance, sleep disturbances, and psychological distress, all of which negatively affect daily functioning and quality of life.

Globally, more than 64 million people are affected by heart failure, and the prevalence continues to rise due to aging populations, sedentary lifestyles, hypertension, diabetes mellitus, obesity, and coronary artery disease. In India, cardiovascular diseases account for a significant proportion of hospital admissions and healthcare expenditure. Chronic heart failure often leads to repeated hospitalizations, prolonged treatment, reduced productivity, and increased dependency.

Health-Related Quality of Life (HRQoL) has emerged as an important outcome indicator in chronic disease management. Poor HRQoL among CHF patients is associated with increased mortality, frequent readmissions, and psychological burden. Therefore, interventions that improve self-care behavior and disease management can substantially improve patient outcomes.

Self-management includes adherence to medications, sodium and fluid restriction, daily weight monitoring, physical activity, early symptom recognition, stress management, and timely healthcare seeking behavior. However, many patients lack adequate understanding regarding these practices due to limited education and insufficient counselling.

Nurses play a pivotal role in chronic disease management through patient education, counselling, emotional support, and follow-up care. Structured nurse-led self-management interventions have demonstrated positive effects on patient adherence, symptom control, and quality of life. Therefore, this study was undertaken to assess the effectiveness of a nurse-led structured self-management intervention on HRQoL among patients with chronic heart failure.

OBJECTIVES

1. To assess baseline health-related quality of life among patients with chronic heart failure.
2. To evaluate the effectiveness of a nurse-led structured self-management intervention on HRQoL among patients with chronic heart failure.
3. To compare posttest HRQoL scores between experimental and control groups.
4. To determine the association between posttest HRQoL scores and selected demographic variables.

HYPOTHESES

H0 - There will be no significant difference in posttest HRQoL scores between the experimental and control groups.

H1 - Patients receiving the nurse-led structured self-management intervention will demonstrate significantly improved posttest HRQoL scores compared to patients receiving routine care at $p < 0.05$ level of significance.

METHODOLOGY

Research Approach and Design

An experimental research approach with pretest-posttest control group design was adopted to evaluate the effectiveness of the nurse-led structured self-management intervention.

Two groups were formed:

Experimental Group who Received the structured nurse-led self-management intervention.

Control Group who Received routine hospital care and standard discharge instructions.

Both groups were assessed before and after the intervention using the same HRQoL assessment tool.

Setting and Population

The study was conducted in the cardiology wards and outpatient department of a selected tertiary care hospital. The hospital provides specialized cardiac care services to patients from both rural and urban areas.

The target population consisted of all patients diagnosed with chronic heart failure.

The accessible population included patients admitted or attending follow-up clinics during the data collection period.

Sample and Sampling Technique

A total of 100 patients with chronic heart failure were selected using consecutive sampling based on eligibility criteria and willingness to participate. Participants were randomly allocated into:

- Experimental Group (n = 50)
- Control Group (n = 50)

using lottery randomization method.

Inclusion Criteria

Patients diagnosed with Chronic Heart Failure classified under New York Heart Association (NYHA) Class II and III, aged above 30 years, able to understand and communicate in Hindi, Gujarati, or English, willing to participate in the study, and available for follow-up assessment during the data collection period were included in the study.

Exclusion Criteria

Patients who were critically ill, admitted to the intensive care unit during the data collection period, diagnosed with severe psychiatric disorders or cognitive impairment, and patients with terminal illnesses were excluded from the study.

Description and Validation of the Tool

Part I: Demographic and Clinical Variables

The demographic and clinical data sheet consisted of variables including age, gender, educational status, occupation, marital status, monthly family income, duration of illness, smoking history, and associated comorbidities.

Part II: Minnesota Living with Heart Failure Questionnaire (MLHFQ)

Health-Related Quality of Life (HRQoL) was assessed using the standardized Minnesota Living with Heart Failure Questionnaire (MLHFQ). The questionnaire consisted of 21 items measuring the impact of heart failure on various dimensions of daily living, including physical functioning, emotional well-being, social limitations, and symptom burden. Each item was rated on a 6-point Likert scale ranging from 0 ("No impact") to 5 ("Very much affected"). The total score ranged from 0 to 105. Interpretation

Score Range	Interpretation
0–35	Good HRQoL
36–70	Moderate HRQoL
71–105	Poor HRQoL

Lower scores indicated better quality of life.

Validity and Reliability

Content validity of the tool was established by a panel of seven experts from the fields of cardiology nursing, medical-surgical nursing, and cardiology medicine to ensure the relevance, clarity, and adequacy of the items included in the questionnaire. The Content Validity Index (CVI) of the tool was found to be 0.91, indicating excellent content validity.

Reliability of the tool was established using Cronbach's Alpha method. The reliability coefficient was found to be $r = 0.89$, which indicated high internal consistency and reliability of the instrument.

Description of the Intervention

The structured nurse-led self-management intervention was developed to improve self-care practices and health-related quality of life among patients with chronic heart failure. The intervention included comprehensive disease education regarding chronic heart failure, medication adherence counselling, guidance regarding salt and fluid restriction, daily weight monitoring education, physical activity and exercise recommendations, recognition of warning symptoms, stress management techniques, smoking and alcohol cessation counselling, distribution of a printed information booklet, and weekly follow-up telephone counselling sessions for reinforcement and clarification of doubts.

Duration of the Intervention

The intervention programme consisted of an initial teaching session of approximately 45 minutes duration, followed by weekly reinforcement sessions of 20 minutes each. The total duration of the intervention and follow-up period was 30 days.

Data Collection Procedure

Prior to data collection, administrative permission and ethical clearance were obtained from the concerned authorities and Institutional Ethics Committee. Eligible patients who fulfilled the inclusion criteria were identified from the cardiology wards and outpatient department. Written informed consent was obtained from all participants after explaining the purpose of the study.

Baseline assessment of health-related quality of life was conducted for both experimental and control groups using the Minnesota Living with Heart Failure Questionnaire (MLHFQ). Following the pretest assessment, the experimental group received the structured nurse-led self-management intervention, whereas the control group received routine hospital care and standard discharge instructions.

Weekly follow-up sessions were conducted for participants in the experimental group to reinforce self-management practices and monitor adherence. Posttest assessment was carried out for both groups on the 30th day using the same standardized questionnaire.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Ethics Committee prior to commencement of the research study. Written informed consent was obtained from all participants, and confidentiality of the collected information was strictly maintained throughout the study. Participants were informed about their right to withdraw from the study at any stage without any penalty or effect on their treatment. To ensure ethical fairness, the control group participants were also provided with the educational booklet after completion of the posttest assessment.

Data Analysis

The collected data were analyzed using descriptive and inferential statistical methods. Descriptive statistics including frequency, percentage, mean, and standard deviation were used to summarize demographic variables and HRQoL scores. Inferential statistics such as paired *t*-test, independent *t*-test, and Chi-square test were used to determine the effectiveness of the intervention and association between variables. The level of statistical significance was fixed at $p < 0.05$.

RESULTS

Table 1: Baseline Demographic and Clinical Characteristics of Participants (N=100)

Variable	Experimental Group (n=50)	Control Group (n=50)
Mean Age (years) $\pm$ SD	58.4 $\pm$ 8.2	57.9 $\pm$ 7.8
Male	32 (64.0%)	34 (68.0%)
Female	18 (36.0%)	16 (32.0%)
Hypertension	36 (72.0%)	35 (70.0%)
Diabetes Mellitus	27 (54.0%)	29 (58.0%)
Smoking History	23 (46.0%)	21 (42.0%)
NYHA Class II	20 (40.0%)	21 (42.0%)
NYHA Class III	30 (60.0%)	29 (58.0%)

Table 2: Within-Group and Between-Group Comparison of Pretest and Posttest HRQoL Scores (N=100)

Group	Pretest Mean ± SD	Posttest Mean ± SD	Mean Difference	Paired t- value	p- value
Experimental (n=50)	68.42 ± 9.14	38.26 ± 7.82	30.16	18.64	<0.001
Control (n=50)	67.88 ± 8.97	63.74 ± 8.55	4.14	1.88	>0.05

Between-Group Comparison of Posttest Scores

Comparison	Mean Difference	Independent t-value	p-value
Experimental vs Control	25.48	14.93	<0.001

The findings revealed a statistically significant improvement in posttest HRQoL scores among participants in the experimental group compared to the control group, successfully supporting hypothesis H1. This indicates that the nurse-led structured self-management intervention was highly effective in improving the quality of life of patients with chronic heart failure.

Association Between Posttest HRQoL Scores and Demographic Variables

To determine the association between posttest HRQoL scores and selected demographic variables, a Chi-square (χ^2) test was conducted. The analysis revealed that there was no significant association between posttest HRQoL categories and primary demographic parameters, including age ($\chi^2 = 2.14, p > 0.05$), gender ($\chi^2 = 0.85, p > 0.05$), and baseline NYHA clinical classification ($\chi^2 = 3.41, p > 0.05$). This confirms that the intervention yielded consistent health improvements across diverse demographic backgrounds.

DISCUSSION

The findings of the study demonstrated a highly significant improvement in HRQoL among patients who received the nurse-led structured self-management intervention. The large reduction in HRQoL scores in the experimental group indicates improved physical functioning, emotional well-being, symptom management, and social adjustment.

The improvement may be attributed to regular counselling, individualized education, symptom awareness training, and continuous reinforcement through follow-up sessions. Patients who actively participated in self-management activities reported better confidence in handling symptoms and treatment adherence.

The control group showed only minimal improvement, possibly due to routine treatment and natural recovery patterns. Similar findings have been reported in previous studies evaluating nurse-led heart failure management programmes. The findings of the present study are consistent with previous studies conducted by Boyde et al. (2018) and Jaarsma et al. (2017), which reported significant improvement in self-care behavior and quality of life following structured nurse-led educational interventions among heart failure patients.

LIMITATIONS

The study was limited to a single tertiary care hospital with a relatively small sample size, which may affect the generalizability of the findings. The short follow-up duration may also limit assessment of long-term intervention effectiveness.

CONCLUSION

The nurse-led structured self-management intervention was highly effective in improving health-related quality of life among patients with chronic heart failure. Incorporating structured educational interventions into routine cardiac nursing care can enhance patient self-care behavior and improve overall disease outcomes.

RECOMMENDATIONS

1. Similar studies may be conducted with larger sample sizes.
2. Multi-centre studies can improve generalizability.
3. Long-term follow-up studies should be conducted.
4. Digital and telehealth interventions may be integrated into heart failure management.
5. Structured nurse-led programmes should be incorporated into cardiac rehabilitation services.

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