

A STUDY TO ASSESS THE EFFECTIVENESS OF A PATIENT-CENTERED EDUCATIONAL PROGRAM ON IMPROVING KNOWLEDGE AMONG PATIENTS WITH CHRONIC HEART FAILURE IN A MEDICAL-SURGICAL UNIT IN THE SELECTED HOSPITAL OF UDAIPUR.

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Abstract

BACKGROUND AND OBJECTIVES: Chronic Heart Failure (CHF) presents significant management challenges, necessitating effective patient education. This study aimed to assess the impact of a patient-centered educational program on CHF knowledge among patients in a medical-surgical unit at a hospital in Udaipur. The objectives were to measure initial knowledge levels, deliver a targeted educational program, evaluate changes in knowledge post-intervention, assess the program's effectiveness, and identify any associations between pre-test knowledge and demographic variables. *METHOD:* A pre-experimental design with one group pre-test post-test approach was employed. The study involved 100 CHF patients in a medical-surgical unit. Data collection included pre-test and post-test assessments of knowledge, demographic surveys, and statistical analysis to evaluate knowledge changes and associations. The educational program covered CHF pathophysiology, management, and lifestyle changes. The effectiveness was measured by comparing pre-test and post-test scores, and associations were analyzed using chi-square tests. *RESULTS:* Demographic analysis showed a diverse sample with most participants being female (59%), aged 18-30 years (38%), and with limited prior CHF knowledge (95%). Knowledge levels improved significantly post-intervention. Pre-test scores averaged 10.15 (33.83%), while post-test scores averaged 20.03 (66.77%). The enhancement of 9.88 points (32.93% improvement) was statistically significant ($t\text{-value} = 21.22, p < 0.01$). Chi-square tests revealed significant associations between pre-test knowledge and variables such as age, gender, duration of CHF diagnosis, and prior knowledge. *INTERPRETATION AND CONCLUSION:* The patient-centered educational program significantly improved CHF knowledge among participants, with a notable shift from inadequate to adequate knowledge. The program's effectiveness was consistent across various demographic groups, though associations with specific variables were observed. This study underscores the value of structured educational interventions in enhancing patient knowledge and self-management in CHF, potentially leading to improved health outcomes.

Keywords: Chronic Heart Failure, Patient Education, Knowledge Improvement, Medical-Surgical Unit, Educational Program, Health Outcomes

INTRODUCTION

Chronic heart failure (CHF) represents a complex, progressive condition characterized by the heart's diminished capacity to efficiently pump blood to meet the body's demands [McMurray & Stewart, 2019]. This condition imposes a substantial burden on global healthcare systems, resulting in significant morbidity, mortality, and a diminished quality of life for affected individuals [Roger et al., 2012]. While advancements in medical therapies have improved outcomes, CHF remains a persistent challenge requiring comprehensive management strategies [McMurray & Stewart, 2019].

Self-care is an integral component of CHF management, empowering patients to actively participate in their healthcare [Riegel & Lindeman, 2005]. Effective self-care hinges on a thorough understanding of the condition, including its symptoms, medications, and lifestyle modifications. However, studies consistently demonstrate that a considerable proportion of CHF patients exhibit inadequate knowledge about their disease, leading to suboptimal self-care behaviors and increased hospitalization rates [Vasan et al., 2001].

NEED FOR THE STUDY

Bridging the knowledge gap among CHF patients is essential for improving self-care practices and ultimately, clinical outcomes. Patient-centered educational programs offer a promising approach to enhance knowledge and empower individuals to manage their condition effectively [Stewart et al., 2003]. While the efficacy of such programs has been demonstrated in various settings, there is a paucity of research exploring their impact on CHF patients in the Indian context, particularly in resource-limited areas like Udaipur.

A recent study conducted by Stahlman et al. (2023) examined the impact of a heart failure (HF) educational intervention on patients recently hospitalized for acute decompensated heart failure. The study found a significant reduction in hospital and emergency department visits within 90 days post-intervention compared to the 90 days prior. Additionally, patients reported improved confidence and self-management of HF. The results suggest that such educational programs can enhance patient outcomes and reduce healthcare utilization.

El-Tahry (2017), the effectiveness of an educational program on patients with congestive heart failure (CHF) was assessed using a quasi-experimental study involving 108 patients across three hospitals in Port Said to assess the impact of an educational program on knowledge and outcomes for those with congestive heart failure (CHF). The study found significant improvements in patients' understanding of CHF, including its symptoms and management, at both one and three months post-intervention. These findings highlight the effectiveness of

educational programs in enhancing knowledge and improving health outcomes in CHF patients. By addressing the knowledge deficit among CHF patients in Udaipur, this study aims to contribute to the development and implementation of culturally appropriate and effective educational programs. The findings will inform the design of future interventions to improve patient outcomes and reduce the burden of CHF on individuals and the healthcare system.

OBJECTIVES

1. To measure the initial level of knowledge about chronic heart failure among patients in the medical-surgical unit before the implementation of the patient-centered educational program.
2. To deliver a patient-centered educational program designed to enhance knowledge regarding chronic heart failure to the participants in the medical-surgical unit.
3. To evaluate the change in knowledge levels about chronic heart failure among patients in the medical-surgical unit after the implementation of the educational program.
4. To assess the effectiveness of the patient-centered educational program in improving patient knowledge by comparing pre-test and post-test scores.
5. To find out the association between pre-test knowledge with selected demographic variables.

ASSUMPTIONS

1. Patients will provide honest and accurate responses during both pre-test and post-test assessments to reflect their true knowledge levels.
2. The patient-centered educational program will be delivered consistently and uniformly to all participants to ensure the validity of the intervention.
3. The knowledge of chronic heart failure among participants is assumed to be relatively stable over the study period except for the effects of the educational program.

HYPOTHESES

H₀: The patient-centered educational program will not lead to a statistically significant improvement in knowledge about chronic heart failure among patients in the medical-surgical unit when comparing pre-test and post-test scores.

H₁: The patient-centered educational program will lead to a statistically significant improvement in knowledge about chronic heart failure among patients in the medical-surgical unit when comparing pre-test and post-test scores.

H₂: There will be significant association between pre-test knowledge about chronic heart failure and selected demographic variables among patients in the medical-surgical unit.

RESEARCH METHODOLOGY

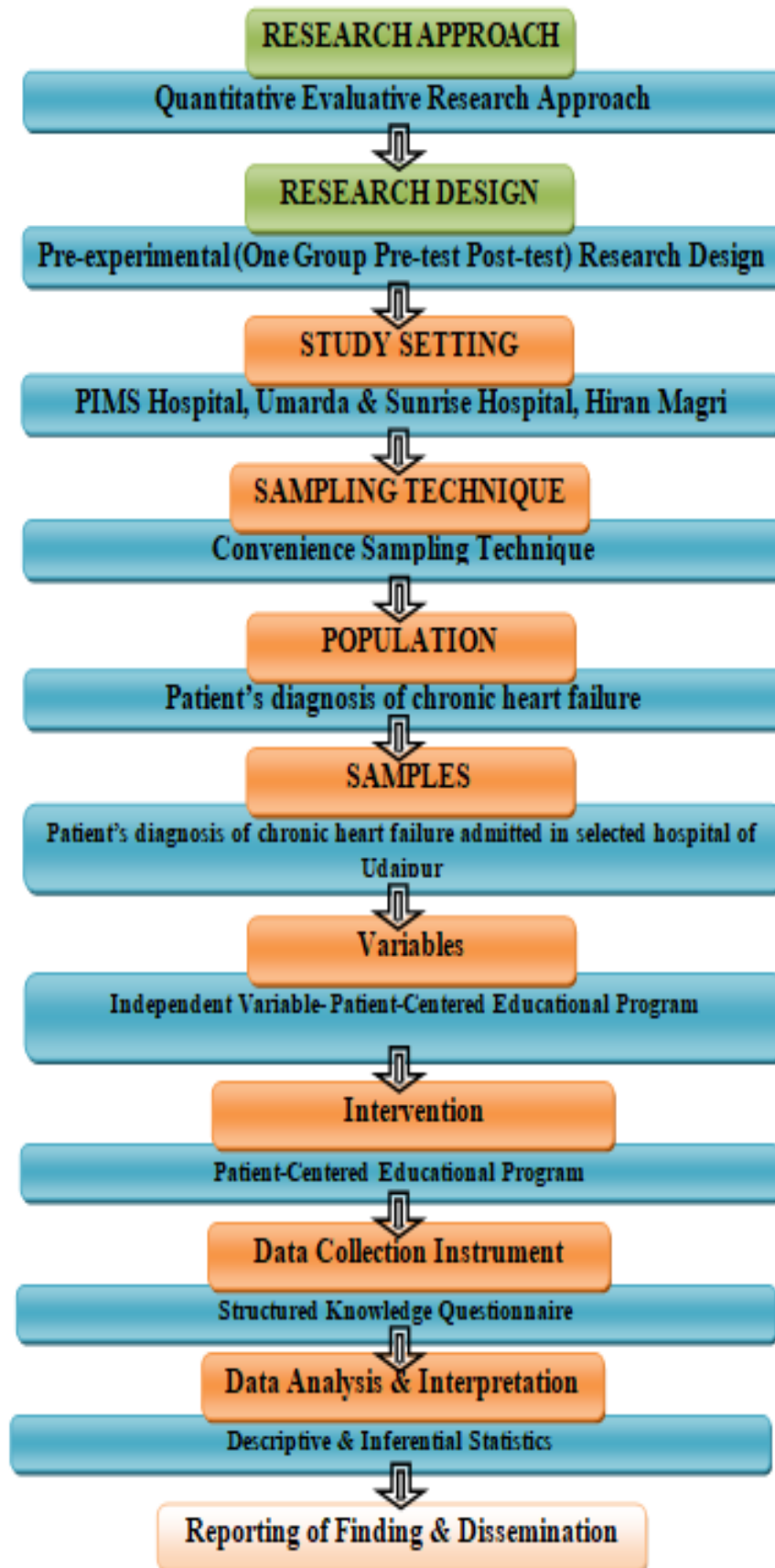


Figure-1: Schematic Presentation of Research Methodology

RESULT

Distribution of frequency and percentage analysis of selected variables

N=100

S. N.	Demographic Variable		Frequency (n)	Percentage (%)
1	Age in years	18-30 years	38	38.00
		31-45 years	20	20.00
		46-60 years	33	33.00
		61 years and above	9	9.00
2	Gender	Male	41	41.00
		Female	59	59.00
		Transgender	0	0.00
3	Educational Level	No formal education	26	26.00
		Primary or secondary education	20	20.00
		College/University degree	30	30.00
		Postgraduate degree and others	24	24.00
4	Marital Status	Single	17	17.00
		Married	53	53.00
		Divorced	21	21.00
		Widowed	9	9.00
5	Duration of Chronic Heart Failure Diagnosis	Less than 1 year	19	19.00
		1-3 years	24	24.00
		4-6 years	40	40.00
		More than 6 years	17	17.00
6	Prior Knowledge or Experience with Chronic Heart Failure	Yes	5	5.00
		No	95	95.00

Table – Data shows the following findings.

The demographic characteristics of the sample group, consisting of 100 patients with chronic heart failure, present a varied distribution across several key variables.

- Age distribution shows that 38 participants (38%) are between 18-30 years old, making this the largest age group. This is followed by 33 participants (33%) in the 46-60 years age group. The 31-45 years age group accounts for 20 participants (20%), while the smallest group, those aged 61 years and above, represents 9 participants (9%) of the sample.
- In terms of gender, the majority of participants are female, constituting 59 participants (59%) of the sample, while males account for 41 participants (41%). Notably, no participants identified as transgender (0%).
- Regarding educational level, 30 participants (30%) hold a college or university degree, while 24 participants (24%) have completed postgraduate education. On the other hand, 26 participants (26%) have no formal education, and 20 participants (20%) have only primary or secondary education.
- Marital status is predominantly married, with 53 participants (53%) reporting they are married. This is followed by 21 participants (21%) who are divorced, 17 participants (17%) who are single, and 9 participants (9%) who are widowed.
- The duration of chronic heart failure diagnosis varies among participants, with 40 participants (40%) having lived with the condition for 4-6 years, making this the largest group. Another 24 participants (24%) have been diagnosed for 1-3 years, 19 participants (19%) for less than a year, and 17 participants (17%) for more than 6 years.
- Finally, in terms of prior knowledge or experience with chronic heart failure, a significant majority of 95 participants (95%) reported having no prior knowledge or experience. Only 5 participants (5%) had some prior knowledge or experience with the condition, highlighting the importance and potential impact of educational programs in this population.

Distribution of people by the level of knowledge

N=100

Level of Knowledge	Score	Pre-test		Post-test	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Inadequate knowledge (0-50%)	0-15	53	53.00	0	0
Moderate knowledge (51-75%)	16-22	47	47.00	56	56.00
Adequate knowledge (76%-100%)	23-30	0	0	44	44.00
Total	30	100	100	100	100

The table provides a comparison of participants' knowledge levels about chronic heart failure before and after the implementation of a patient-centered educational program. Before the intervention, a significant portion of participants (53 out of 100, or 53%) demonstrated inadequate knowledge, scoring between 0-15, while 47 participants (47%) exhibited moderate knowledge with scores ranging from 16-22. Notably, none of the participants (0%) had adequate knowledge, as no one scored in the highest range (23-30).

Following the educational program, there was a marked improvement in knowledge levels. The number of participants with inadequate knowledge dropped to zero, indicating that the intervention successfully eliminated this category. Meanwhile, 56 participants (56%) moved into the moderate knowledge category, scoring between 16-22. Additionally, 44 participants (44%) achieved adequate knowledge, scoring between 23-30.

This shift in knowledge levels from pre-test to post-test highlights the effectiveness of the educational program. The intervention not only improved the overall knowledge among participants but also significantly increased the number of individuals who reached an adequate level of understanding regarding chronic heart failure.

Effectiveness of patient-centered educational program by comparing pre-test and post-test knowledge score of respondents

N=100

Test	Mean	Mean Percentage (%)	SD	Enhancement	Enhancement Percentage (%)	Calculated t-Value	Tabular Value
Pre-test	10.15	33.83	3.83	9.88	32.93	21.22**	1.664
Post-test	20.03	66.77	2.76				

**Significant, df-99; p>0.05 level

The table illustrates the effectiveness of the patient-centered educational program by comparing respondents' pre-test and post-test knowledge scores. For the pre-test, the average score was 10.15, corresponding to a mean percentage of 33.83%, with a standard deviation of 3.83. After the educational program, the post-test scores significantly improved, with an average score rising to 20.03 and a mean percentage of 66.77%, accompanied by a reduced standard deviation of 2.76. This increase in scores represents an enhancement of 9.88 points and a percentage improvement of 32.93%. The statistical analysis, reflected in a calculated t-value of 21.22 compared to a tabular value of 1.664, indicates a highly significant difference between the pre-test and post-test results. This significant t-value suggests that the patient-centered educational program effectively improved respondents' knowledge. Hence **H1** is accepted and null hypothesis (**H0**) rejected.

Association between pre-test knowledge score with demographic variables such as Age in Year and Gender

N=100

SR. No.	Demographic Variables	Chi-Square Value	Degree of Freedom	Tabulated Value	Level of Significance
1	Age	9.254	3	7.815	Significance
2	Gender	8.457	2	5.991	Significance
3	Educational level	2.423	3	7.815	Not Significance
4	Marital Status	3.864	3	7.815	Not Significance
5	Duration of Chronic Heart Failure Diagnosis	13.192	3	7.815	Significance
6	Prior Knowledge or Experience with Chronic Heart Failure	5.381	1	3.841	Significance

Findings revealed that the chi-square value was not significant at 0.05% level of significance. Hence the research hypothesis **H2** is accepted. It indicted that there is significant association between the pre-test knowledge score and selected demographic variables such as age, gender, duration of chronic heart failure diagnosis, and prior knowledge or experience with chronic heart failure of patients.

DISCUSSION

The data presented offers a comprehensive analysis of the effectiveness of a patient-centered educational program for individuals with chronic heart failure (CHF). The demographic analysis of the 100 participants reveals a diverse sample across several variables. The majority of participants were female (59%), with a significant portion aged between 18-30 years (38%) and having moderate educational attainment, such as college or university degrees (30%). Most participants were married (53%) and had been diagnosed with CHF for 4-6 years (40%). Notably, 95% of participants had no prior knowledge of CHF, emphasizing the need for educational interventions.

The comparison of knowledge levels before and after the educational program demonstrates substantial improvement. Initially, 53% of participants had inadequate knowledge, with none scoring in the adequate range. Post-intervention, this group entirely eliminated inadequate knowledge, with 56% exhibiting moderate knowledge and 44% achieving an adequate level of understanding. This significant shift underscores the program's effectiveness in enhancing participants' knowledge about CHF.

Statistical analysis further supports the program's efficacy. The mean score increased from 10.15 (33.83%) pre-test to 20.03 (66.77%) post-test, with a notable t-value of 21.22 compared to the tabular value of 1.664, indicating a highly significant improvement. This result confirms that the educational program effectively increased participants' knowledge.

Additionally, the association between pre-test knowledge scores and various demographic variables was analyzed using chi-square tests. Significant associations were found with age, gender, duration of CHF diagnosis, and prior knowledge or experience with CHF, suggesting that these factors influence baseline knowledge levels. In contrast, educational level and marital status did not show significant associations, indicating that the educational program's impact was consistent across these variables.

In summary, the findings highlight that the patient-centered educational program significantly improved knowledge about CHF among participants, reduced inadequate knowledge to zero, and enhanced overall understanding. The significant associations with demographic variables

suggest targeted educational approaches could be beneficial for different groups. This study supports the value of structured educational interventions in managing chronic conditions like CHF, potentially leading to better patient outcomes and informed self-management.

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