



TECH-INTEGRATED TELENURSING: IMPACT OF THE HOSPITAL-TO-HOME (H2H) INITIATIVE ON THERAPEUTIC COMPLIANCE AND HEALTH-RELATED QUALITY OF LIFE AMONG PATIENTS WITH HEART FAILURE

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ABSTRACT

Heart failure is a long term cardiovascular disorder that requires continuous therapeutic adherence and effective self-management to improve patient health and quality of life. This experimental study focused on the effectiveness of a Tech-Integrated Telenursing Hospital-to-Home (H2H) Initiative in enhancing therapeutic compliance and health-related quality of life among patients with heart failure. Sample size was total of 220 patients, from a tertiary care hospital in Coimbatore, Tamil Nadu, India, with 110 patients randomly assigned to receive the H2H intervention alongside conventional care. The intervention comprised of counselling, educational materials, and telephonic voicemail reminders for around four weeks. Standardised instruments were used to assess medication adherence, therapeutic compliance, self-care behaviour, and health-related quality of life. Assessments were conducted at baseline, one month, and three months after discharge. The findings demonstrated significant improvements in medication adherence, therapeutic compliance, self-care behaviours, and health-related quality of life among patients who undergo the H2H intervention compared with those receiving conventional care ($p < 0.001$). The study concludes that technology-integrated telenursing is an effective strategy for promoting long-term adherence, improving patient outcomes, and supporting the transition from hospital to home among individuals with heart failure problem.

Keywords: Heart failure, Telenursing, Hospital-to-Home (H2H), Telehealth, Nursing intervention.

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Dr. K. Ramalakshmi, is the Principal of Srinivasan College of Nursing, Perambalur, Tamil Nadu, India. She has over 23 years of experience in nursing education and specializes in Cardiovascular Nursing and Medical-Surgical Nursing. Throughout her academic career, she has been actively involved in nursing education, research, curriculum development, and the professional growth of nursing students. Her areas of expertise include cardiovascular nursing, medical-surgical nursing, evidence-based practice, and nursing research. Dr. Ramalakshmi is committed to advancing nursing knowledge and fostering excellence in healthcare education through teaching, research, and scholarly contributions.



INTRODUCTION

Heart failure (HF) is a major health challenge as a result of its incapacitating, unstable, progressive gloomy prognosis that causes global burden. It has been described as the end stage of cardiac disorders and is often accompanied by non-compliance to the therapeutic regimen, lack of adherence to fluid and diet restrictions, failure to seek medical assistance for escalating symptoms. It is recognized that patients with heart failure have to learn to live with the consequences of disease and treatment.

Patient discharge education and counselling are the fundamental and essential components for a sustained long-term management goal which includes compliance with the pharmacological intervention, dietary modification, lifestyle modification, and prevention of further disease progression. Nurses play a vital role in patient and family caregivers' education to provide adequate health information at the time of discharge.

Digital technology and its applications are an ideal medium for delivering interventions allowing patient management at a distance. Mobile phone helps to monitor patients' performance at home and reinforce the vital aspects of the therapeutic regimen to prevent further deterioration. The expansion of its safe usage and cost-effectiveness will probably reshape the present health care delivery system. The investigator perceived the need for an effective intervention that can improve the compliance status and health - related quality of life among patients with heart failure.

Literature Review

Heart failure is main public health concern associated with high rates of morbidity, mortality, and hospital readmissions, requiring comprehensive long-term management strategies to improve patient outcomes (Savarese & Lund, 2017; McDonagh et al., 2021). Evidence indicates that structured discharge planning and patient education significantly improve medication adherence, self-care practices, and symptom management among patients with heart failure (Albert, 2016). Technology-assisted interventions, particularly telenursing and structured telephone support, have gained prominence as effective approaches for ensuring continuity of care following hospital discharge. Such interventions help a lot in regular follow-up, reinforce therapeutic compliance, promote early recognition of worsening symptoms, and reduce the risk of rehospitalization (Ingilis et al., 2015). Furthermore, nurse-led self-care interventions have been shown to enhance patients' confidence in disease management and improve health-related quality of life by encouraging adherence to prescribed medications, dietary recommendations, and lifestyle modifications (Jaarsma et al., 2017; Riegel et al., 2017). The World Health Organization (2021) also focuses on the integration of digital health technologies and self-care interventions into routine healthcare services to help strengthen patient-centered care. Overall, these findings support the implementation of technology-integrated Hospital-to-Home (H2H) telenursing interventions as an effective strategy for improving therapeutic compliance and health-related quality of life among patients with heart failure.

Objectives of the Study

1. To describe the therapeutic compliance and health- related quality of life in patients with heart failure amongst patients attending cardiac OPD.
2. To evaluate the feasibility and efficacy of Hospital to Home initiative intervention package in the study population

The hypothesis formulated for the study was:

H₁: There is a significant improvement in health - related quality of life, and therapeutic compliance among the study population who receives Hospital to Home initiative compared to the conventional care group.

METHODOLOGY

The research process for this study was guided by the conceptual framework based on Dr. Imogene King's Goal attainment theory Model.

A True Experimental Research Design was undertaken for the study. The study was conducted in cardiac wards and cardiac OPDs of the tertiary hospital at Coimbatore. 220 Heart failure patients were recruited for the study. Among them, 110 heart failure patients who were in the age group of 31 – 80 years, with NYHA II and III functional class, Left Ventricular Ejection Fraction of 20 - 40% and clinically stable with medications were randomly selected to receive H2H intervention.



The data collection instrument include; the Morisky medication adherence scale to assess the medication adherence, Modified Heart Failure Compliance Scale for compliance status, European Heart Failure Self-care Behavior scale, and Minnesota Living with Heart Failure scale to assess health-related quality of life in physical, emotional and social domains.

Hospital to Home initiative intervention package is the combination of intensive discharge education on one – to – one basis and counseling followed by telephonic voice mail reminders for 4 weeks. All patients were provided written material as per AHA guidelines. Post-test was done at 30 days and further 90 days after discharge, at the time of patient's follow up at cardiac OPDs. Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (chi-square, Independent t-test, McNemar test, repeated measures of ANOVA and Bonferroni test, Spearman rank correlation coefficient) were used to summarize the data and to test the research hypothesis.

RESULTS & DISCUSSION

- The results of the study showed that the mean age of the experimental group was 50.42 ± 09.47 years and the control group was 50.33 ± 10.22 years.
- The Majority of the samples in the intervention group (92.07%) were married (80%) males. Maximum participants in the intervention group (37.27 %) had higher education than the conventional care (43.06%) group. As far as the concern about smoking and alcohol intake, the majorities (63 %) of the study group were having the habit of smoking, alcoholism or they left after starting treatment.
- In clinical variables, the majority of participants (89.08%) were in NYHA functional class from II to III, and 55% of the participants had 35 – 40% of left ventricular ejection fraction. 87 % of heart failure patients were allocated for an intervention. Among the group, 48% were receiving complex medication regimens. Whereas in the conventional care group 56.7% were having comorbidities and both groups were equally hospitalized with exacerbations due to poor compliance.
- The results of the effect of an intervention on outcome variables revealed that there was a positive statistically significant change in medication adherence, therapeutic compliance and health-related quality of life in the H2H group.
- The patients belong to both groups were observed in the 1st and 3rd months after the intervention. The findings on medication adherence with H2H group: The overall mean score of 3.27 in 1st month had improved to 6.91 in 3rd month post-test. This statistical significance was confirmed using an independent t-test (12.32), an extended McNemar's test ($\chi^2=85.83$, $p<0.001$), ANOVA F- Test ($F = 145.22$). Overall adherence status was demonstrated through post hoc multiple comparisons by the Bonferroni t-test (3.27 ± 1.16 vs 6.91 ± 0.90).
- Study revealed that; overall components of therapeutic compliance pertaining to dietary habit (90%), fluid intake (81%), exercise (78%), smoking (92%), appointments (88.7%), and lifestyle changes (79%) were adhered by the H2H group. The table value was highly significant at $p \leq 0.001$ in therapeutic compliance ($t=32.36$). Domain-wise differences were verified by repeated measures of the ANOVA F – test. ($F=565.06$) and post hoc multiple comparisons of Bonferroni t-test from pre-test to post-test II (70.47 ± 7.42 vs 105.22 ± 8.43).
- With regard to health-related quality of life, both the group (72.64%) had impaired quality of life. During the first follow-up after implementation of H2H intervention the level of impairment was reduced by 71.70%, followed by 28.30% in 3rd month follow-up. This indicates the improvement in health-related quality of life among patients with heart failure. This Statistical significance was substantiated by independent t-test (40.94), extended McNemar's test ($\chi^2=76.63$), repeated measures of ANOVA F- test ($F = 489.64$), and post hoc multiple comparisons of Bonferroni t-test (63.46 ± 5.92 vs 27.76 ± 6.17 with the mean difference 35.70), at the level of $p \leq .001$.
- The study found an independent association between post-test level of compliance score with the level of education (above HSC) ($\chi^2=7.90$ $P=0.05$), and 35-40% LVEF ($\chi^2=7.32$ $p=0.02$) were having high compliance score among the H2H group than others.
- Younger patients of 31-50 years ($\chi^2=4.94$ $P=0.02$) and employed patients ($\chi^2=5.72$ $P=0.03$) among the H2H group were having low impairment (QOL) score than others. Whereas unemployed patients and highly literate patients ($\chi^2=6.11$ $P=0.01$) ($\chi^2=5.44$ $P=0.02$) had good self-care behavior scores than the conventional care group.



Hence it was concluded that Hospital to Home initiative intervention was effective in improving therapeutic compliance, and health-related quality of life among patients with heart failure.

CONCLUSION

The study concluded that the Hospital to Home initiative was an effective, novel intervention strategy, incorporated with digital technology substantiated to improve patients' adherence to the therapeutic regimen. These promised results suggested that the comprehensive education model can be implemented by Cardiac Nurses among heart failure patients at discharge from acute care settings to home care management.

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