

Evaluating The Effectiveness Of A Multidisciplinary Approach In Managing Heart Failure Patients And Improving Clinical Outcomes

Mumtaz Ahmad Dar^{1*}, Dr Mehboob Hussain Bhat²

¹PhD Scholar Department of Interventional Cardiology, Glocal University Uttar Pradesh India.

²Medical officer, Govt. Medical College Anantnag, J&K, India

Corresponding author

Mumtaz Ahmad Dar

¹PhD Scholar, Department of Interventional Cardiology, Glocal University Uttar Pradesh India

Abstract

Aim: This study aimed to evaluate the effectiveness of the Hospital to Home (H2H) initiative on medication adherence, compliance, and quality of life among patients with heart failure.

Methods: A true experimental pre-test–post-test control group design was used. A total of 220 heart failure patients were randomly divided into experimental and control groups. The experimental group received the H2H intervention comprising discharge education, counseling, and follow-up for three months.

Results: The intervention significantly improved medication adherence, compliance, and functional ability ($p \leq 0.001$) in the experimental group compared to the control.

Conclusion: The H2H initiative effectively enhanced medication adherence and self-care behavior, promoting better management and outcomes among heart failure patients.

Keywords: Heart failure, Hospital to Home, Medication adherence, Compliance, Patient education.

INTRODUCTION

The leading cause of death worldwide, cardiovascular diseases (CVDs) are the hidden disaster of the twenty-first century (Perel P, et al 2015). CVD is currently the world's main killer, with 20.5 million people dying each year from CVDs, close to one third of all deaths worldwide (World Heart Report 2023). The death rate from CVDs has gone down in economically developed countries thanks to new drugs, better medical technology, and changes in government policies and programs. In contrast, about 75% of CVD fatalities among those under 70 years old occur in low- and middle-income countries, which raises serious concerns about their impact (Jeemon P, et al 2021). Heart attacks and heart failure are the most common CVDs. 64 million people worldwide including about 5 million in the US are afflicted by this rapidly spreading health issue, which makes up 1% to 2% of the world's population. Heart failure mortality rates are greater in Southeast Asia (15%), China (7%), South America (9%), and West Asia (9%), despite significant regional variations in heart failure incidence. Heart failure is the end outcome of several cardiovascular issues. The leading cause of mortality and illness burden in India is cardiovascular disease. Indians are particularly concerned about CVDs because of their early start and quick development with prematurely elevated mortality. India has one of the highest percentages of lost productive years as a result of mortality risk among people aged 35 to 64 (Reddy KS 1998). Heart failure accounts for 8.9% of the total disability adjusted life years (DALY), representing the largest contribution from cardiovascular disorders at 14.1%. In India, the states with the highest incidence of heart failure are Tamil Nadu, Punjab, and Kerala.

The risk factors for heart attacks and heart failure illnesses are similar. "A myocardial infarction, also known as a heart attack, occurs when the coronary blood supply to the heart muscle becomes blocked. Lipid buildup or extreme hypertension may cause a heart conduit to clog or sclerose (Gaziano TA. et al 2007). This leads to sudden cardiac arrest. However, typically, heart failure occurs gradually and becomes worse over time. This complicated disease could be caused by any problem with the ventricle's structure or function that makes it unable to fill with blood (diastolic) or empty of blood (systolic) to meet the metabolic needs of the body. Heart failure may result from valve malfunction, progressive cardiomyopathy, coronary artery disease, or chronic hypertension (Krupp, K et al 2020). If the heart isn't pumping well, it can lead to shortness of breath from swollen lungs and blood vessels, poor exercise tolerance (because tissues aren't getting enough blood), swelling in the feet and legs (called pedal edema), and too much blood and fluid in the body (called volume overload). Numerous factors, such as the patient's age, the severity of the condition, and the involved ventricle, influence the signs and symptoms of heart failure. The most typical signs of left-sided heart failure are shortness of breath, restricted exercise capacity, a chronic, persistent cough, and fluid retention that results in edema in the ankles, legs, or feet. Unusual weight gain, fatigue, and an erratic or rapid pulse are the symptoms of left-sided heart failure (Cavan, David, et al 2016). Typical signs of RSHT. Fluid retention, poor exercise tolerance, and dyspnea are the most prevalent symptoms of heart failure. This negatively impacts an individual's functional abilities and health-related quality of life. The New York Heart Failure Association (NYHA) uses an individual's exercise capacity to categorize the degree of heart failure. It facilitates tracking how well a therapy is working. Over the last 10 years, India's economic expansion and urbanization have caused a greater percentage of its people to adopt unhealthy lifestyles. Human life expectancy is rising as a result of medical advancements. However, the aging population and early onset of CVDs exacerbate it, and this trend is likely to continue in the coming years. Smoking, being overweight, eating a high-fat diet, and not exercising can cause heart failure, according to the American Heart Association (AHA). Risk factors that can't be changed, like age and genetics, can't be changed, but risk factors that can be changed can easily be changed to lower the chance that the illness will show up. People must, for instance, change their eating habits from harmful to healthy ones. When advanced risk factors like obesity and hypertension are coupled with a decline in physical activity, heart failure results.

METHODOLOGY

4.1 RESEARCH DESIGN

The research design outlines the fundamental strategies employed by the researcher to generate precise and interpretable information. It serves as the structural framework for implementing the study.

In this study, a True Experimental pre-test post-test control group design was utilized to validate the outcomes. To demonstrate the effectiveness of the Hospital to Home (H2H) initiative intervention, a comparison was essential. Therefore, the investigator aimed to evaluate the impact of the H2H initiative on therapeutic compliance, functional ability, and health-related quality of life among heart failure patients by comparing the experimental and control groups. To ensure fairness, the investigator used a random allocation method to assign selected heart failure patients equally to either the experimental or control group.

TABLE 4.1: SCHEMATIC REPRESENTATION OF THE STUDY DESIGN

Random Allocation Design

Groups and Testing Phases

Group	Pre-Test (O _i)	Intervention	Post-Test 1 (O ₂) (1st Month)	Post-Test 2 (O ₃) (3rd Month)

Experimental Group	O ₁	H ₂ H – Hospital to Home Initiative Intervention Package (X)	O ₂	O ₃
Control Group	O ₁	Conventional Care	O ₂	O ₃

O₁ (Pre-Test Data Collection): Includes baseline assessments on the following:

- Demographic and Clinical Variables
- Medication Adherence: Assessed using the Morisky Medication Adherence Scale (MMAS)
- Heart Failure Compliance: Measured using the Heart Failure Compliance Scale (HFCS)
- Self-Care Behavior: Evaluated with the European Heart Failure Self-Care Behavior Scale (EuHFSBs)
- Physical Activity Status: Determined through the DUKE Activity Status Index (DASI) Scale

O₂: Post-test - 1 {Done at the end of 1st month (30 days) after discharge}

- Morisky Medication Adherence Scale (MMAS): Assesses patients' adherence to prescribed medications.
- Heart Failure Compliance Scale (HFCS): Evaluates patients' compliance with heart failure management guidelines.
- European Heart Failure Self-Care Behavior Scale (EuHFSBs): Measures self-care behaviors in individuals with heart failure.
- DUKE Activity Status Index (DASI) Scale: Determines a patient's physical activity and functional capacity.
- Minnesota Living with Heart Failure (MLHF) Scale: Assesses health-related quality of life in heart failure patients.

O₃: Post-test - 2 {Done at the end of 3rd month (90 days) after discharge}

- Morisky Medication Adherence Scale (MMAS): Measures adherence to prescribed medications.
- Heart Failure Compliance Scale (HFCS): Assesses compliance with heart failure management.
- European Heart Failure Self-Care Behavior Scale (EuHFSBs): Evaluates self-care practices in heart failure patients.
- DUKE Activity Status Index (DASI) Scale: Gauges physical activity and functional ability.

Hospital to Home Initiative (H2H)

Intervention: Cardiovascular care providers committed to improve transitions from hospital settings to home through planned discharge education. Educating patients

before discharge promotes compliant to treatment and it helps them to spot their problems early. H2H focused on following domains, Competence in therapeutic compliance in terms of medications adherence salt restriction, life style modifications, early recognition of heart failure signs and symptoms and prompt follow up after discharge.

RESULT

The frequency and percentage distribution of demographic variables among experimental and control groups are described in Section 5.1: Description of Demographic and Clinical Variables

Table 5.1 (N=220)

Demographic Variables	Group				χ ² and p value
	Experimental (n=110)		Control (n=110)		
	n	%	n	%	
Age (years)					χ ² =3.90 P=0.25 DF=3 (NS)
a. 31 - 40	10	9.09	6	5.45	
b. 41 - 50	40	36.36	30	27.27	
c. 51 - 60	37	33.64	46	41.82	
d. 61 - 70	23	20.91	28	25.45	
Sex					χ ² =0.52 P=0.47 DF=1 (NS)
a. Male	102	92.73	99	90.00	
b. Female	8	7.27	11	10.00	
Marital Status					χ ² =1.16 P=0.76 DF=3 (NS)
a. Married	88	80.00	85	77.27	
b. Unmarried	2	1.82	4	3.64	
c. Separated	2	1.82	1	0.91	
d. Widow/widower	18	16.36	20	18.18	
Education					χ ² =2.11 P=0.55 DF=3 (NS)
a. No formal education	13	11.83	12	10.91	
b. Higher secondary	39	35.45	48	43.64	
c. Degree	41	37.27	32	29.09	
d. PG/higher education	17	15.45	18	16.36	

Demographic Variables	Group		□2 and p value
	Experimental (n=110)	Control (n=110)	

	n	%	n	%	
Occupation					
a. Employed	46	41.82	43	39.09	
b. Self employed	22	20.00	24	21.82	$\chi^2=3.31$
c. Unemployed	36	32.73	30	27.27	P=0.35
d. Retired from job	6	5.45	13	11.82	DF=3 (NS)
Alcohol intake					
a. Non drinker	48	43.64	49	44.55	
b. < 3 times / week	51	46.36	48	43.63	$\chi^2=0.77$
c. > 3 times /week	9	8.18	9	8.18	P=0.86
d. Daily	2	1.82	4	3.64	DF=3 (NS)
Smoking					
a. Yes	40	36.36	29	26.36	$\chi^2=2.56$ P=0.11
b. No	70	63.64	81	73.64	DF=1 (NS)

NS= not significant; DF= Degrees of Freedom; P>0.05 not significant

The table 5.1 illustrates, 36% in experimental group were in the age group of 41 – 50 years whereas 41.8 % in control group were in the age group of 51 – 60 years. With regard to gender 92.7% in experimental group and 90 % in control group were male. Regarding marital status, 80 % in experimental group and 77.7 % in control group were married. Majority of them were living with spouse. In education status 37.27 % in experimental group had higher education whereas 43.6 % in control group have had higher secondary school education. In relation to occupation, majority of the experimental group, 41.8% and 39.09% of control group were employed. As far as concern about alcohol intake, majority of the experimental 46 % subjects were having the

Table 5.1 shows that 41.8% of the control group's members were between the ages of 51 and 60, whereas 36% of the experimental group's members were between the ages of 41 and 50. In terms of gender, 90 percent of the control group and 92.7% of the experimental group were males. In terms of marital status, 77.7% of the control group and 80% of the experimental group were married. Most of them shared a home with a spouse. In terms of education, 43.6% of the control group had completed upper secondary school, whereas 37.27% of the experimental group had done so. Regarding employment, the majority of the experimental group (41.8%) and the control group (30.9%) drank fewer than three times per week, while 44% of the control group did not drink. Regarding smoking, 63% of the experimental group and 73% of the control group either quit smoking after beginning therapy or did not smoke. group were working. Regarding alcohol use, the vast majority of trial participants (46%) were experiencing the

FIG. 5.1 AGE DISTRIBUTION

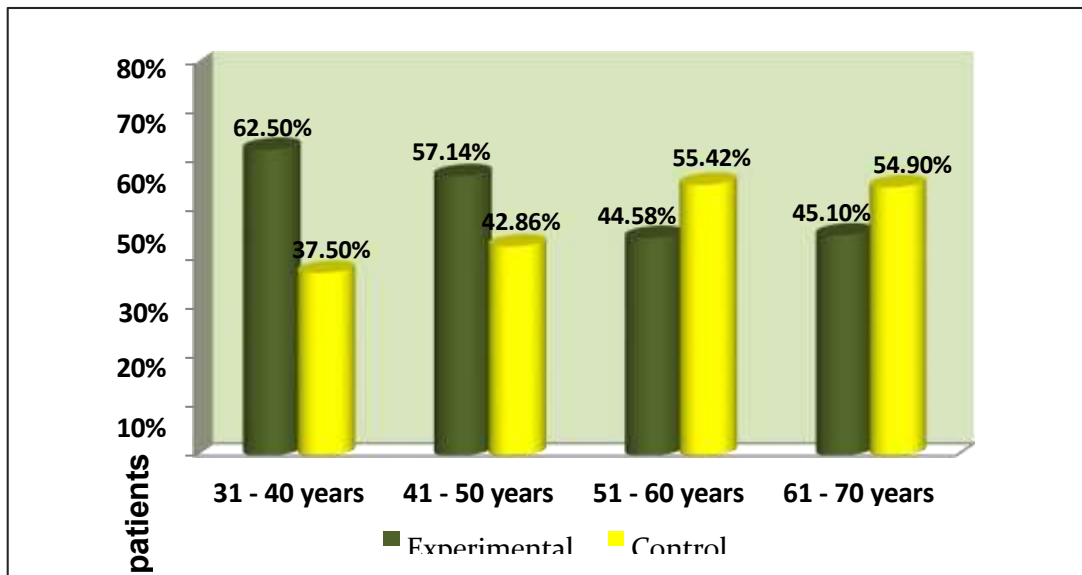


TABLE 5.2 FREQUENCY AND PERCENTAGE DISTRIBUTION OF CLINICAL VARIABLES AMONG EXPERIMENTAL AND CONTROL GROUP(N=220)

S.No	Clinical Variables	Group				□2 and p value
		Experimental (n=110)		Control (n=110)		
		n	%	n	%	
1.	Etiology of Illness					□2=12.61 P=0.08 DF=7 (NS)
	a. Coronary artery disease	41	37.27	55	50.00	
	b. Valvular heart disease	11	9.09	16	14.55	
	c. Cardiomyopathy	7	6.36	2	1.82	
	d. Hypertension	7	6.36	12	10.91	
	CVD+VAD	17	15.45	7	6.36	
	CVD+HT	23	20.91	16	14.55	
	VAD+HT	4	3.64	2	1.82	

S.No	Clinical Variables	Group				□2 and p value
		Experimental (n=110)		Control (n=110)		
		n	%	n	%	
2.	NYHA Functional Class					□2=2.02 P=0.16 DF=1 (NS)
	a. II	108	89.08	107	97.27	
	b. III	02	1.82	03	2.72	
3.	LVEF					□2=0.59 P=0.74 DF=2 (NS)
	a. 30 – 35%	51	46.36	46	41.82	
	b. 25 - 30%	2	1.82	3	2.73	
4.	Co morbidities					□2=4.96 P=0.18 DF=3 (NS)
	a. Hypertension	40	36.36	32	29.09	
	b. Diabetes	7	6.36	2	1.82	
	c. COPD	0	0.00	0	0.00	
	d. Others	4	3.64	4	3.64	
	HT+DM	59	53.64	72	65.45	
5.	Medications					□2=8.78 P=0.07 DF=3 (NS)
	a. ACE inhibitor	0	0.00	0	0.00	
	b. Beta blockers	5	4.55	4	3.64	
	ACE+Beta	22	20.00	24	21.82	
	ACE+Beta+spir	14	12.73	14	12.73	
	ACE+Beta+Dig	16	14.55	32	29.09	
	ACE+Beta+spir+Dig	53	48.18	36	32.73	

The table 5.2 shows the distribution of clinical variables of experimental and control groups. Considering etiological factors majority in experimental 37 % and 50% in control group were diagnosed with coronary artery disease. Related to NYHA functional class, in experimental group, the majority 89.08% were I class, similarly in the control group majority of study participants 90.90% were class I.

SECTION 5.2

TABLE 5.3 DISTRIBUTION OF PRE-TEST, POST-TEST-I AND POST-TEST-II LEVEL OF MEDICATION ADHERENCE SCORE ASSOCIATED WITH HEART FAILURE AMONG HEART FAILURE PATIENTS BY GROUPWISE

(N = 106+108)

Level of Adherence	Experimental Group (n= 106)						Control Group (n = 108)						χ ² value	P value
	Pre test		Post-test I		Post Test II		Pre test		Post-test I		Post-test II			
	No	%	No	%	No	%	No	%	No	%	No	%		
Low adherence	94	88.68	20	18.86	10	9.43	94	87.04	90	83.33	86	76.63	0.13	0.71 (NS) DF=1
Medium adherence	12	11.32	57	52.78	21	19.81	14	12.96	18	16.67	22	20.37	93.81	0.001 (S) DF=2
High adherence	0	0.00	29	27.36	75	70.76	0	0.00	0	0.00	0	0.00	135.18	0.001 (S) DF=2

DF= Degrees of freedom S= significant NS= not significant P>0.05 not significant P≤0.05 significant

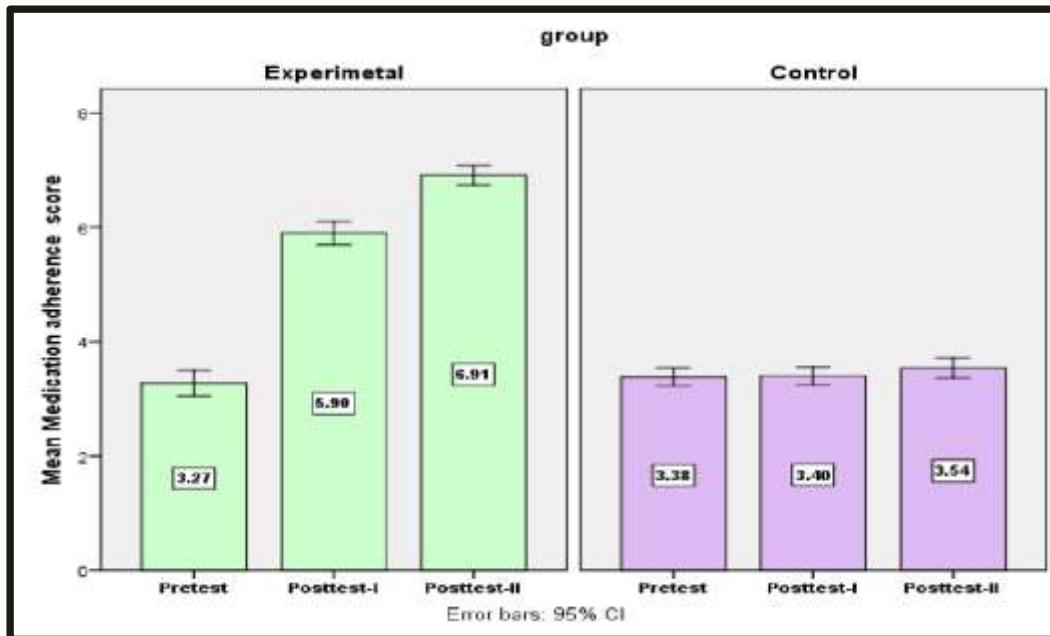
Table 5.3 revealed that there is no significant difference of level of medication adherence between experimental and control group of patients in pre-test. The non-significant P- values 0.71 indicate, similarity of level of medication adherence among experiment and control group. In post-test-I, there is a significant difference in level of medication adherence score between experimental and control group of patients. The significant P- values 0.001 indicates, the experiment group having medium level of medication adherence score more than control group. In post-test-II, there is a significant difference in level of medication adherence score with experimental group of patients. The significant P- values 0.001 indicates, the experiment group having high level of medication adherence score than control group.

TABLE 5.4 COMPARISON OF EXPERIMENTAL AND CONTROL GROUP MEAN MEDICATION ADHERENCE SCORE DURING PRE-TEST, POST-TEST-I AND POST-TEST-II

Medication Adherence Score	Group				Mean Difference	Student Independent T - Test
	Experimental (n=106)		Control (n=108)			
	Mean	SD	Mean	SD		
Pre-test	3.27	1.16	3.38	.83	-0.11	T =0.77 P = 0.44 DF = 212 (NS)
Post-test-I	5.90	1.06	3.40	.84	2.50	T =7.80 P = 0.001 DF= 212 (S)
Post-test-II	6.91	.90	3.54	.92	3.37	T =12.32 P = 0.001 DF = 212 (S)

NS = Not significant P>0.05 is not significant S= significant P≤0.001 very high significant.

FIG. 5.13 SIMPLE BAR WITH STANDARD ERROR COMPARES THE PATIENTS MEDICATION ADHERENCE SCORE BETWEEN EXPERIMENTAL AND CONTROL GROUP DURING PRE-TEST, POST-TEST –I AND POST-TEST – II



Considering the post-test –II score, experimental group of patients were having 6.91 score and control group of patients were having 3.54 score. So the mean difference of score is 3.37 this difference is large and it is statistically significant. It was confirmed by using independent t test with the value of $t = 12.32$ at $p < 0.001$ level which indicated highly significant.

This difference shows the effectiveness of hospital to home initiative on medication adherence improvement in experimental group. Differences and generalization of medication adherence improvement score between pre-test and post-test score was calculated using and mean difference with 95% CI and proportion with 95% CI.

TABLE 5.8 EFFECTIVENESS OF HOSPITAL TO HOME INITIATIVE OF MEDICATION ADHERENCE IMPROVEMENT SCORE

Group		Mean score	% of Mean score	Mean Difference of Medication adherence improvement score (95% CI)	Percentage of Medication adherence improvement score (95% CI)
Experimental	Pre-test	3.27	40.88	3.63 (3.34 – 3.92)	45.37 % (41.75 % – 49.00 %)
	Post-test-I	5.90	73.75		
	Post-test-II	6.91	86.38		
Control	Pre-test	3.38	42.25	0.16 (-0.03 – 0.25)	2.00 % (-0.04 % – 3.12 %)
	Post-test-I	3.40	42.50		
	Post-test-II	3.54	44.25		

Table 5.8 reveals the effectiveness of hospital to home initiative on medication adherence among Patients with Heart Failure. In experimental group, On an average, in post-test, after having intervention patients were improved 45.37% of medication adherence score than pre-test score. This difference shows the effectiveness of hospital to home initiative on medication adherence improvement in experimental group. Differences and generalization of medication adherence improvement score between pre-test and post-test score was calculated with 95% CI.

TABLE 5.9 FREQUENCY AND PERCENTAGE DISTRIBUTION OF COMPLIANCE SCORE ASSOCIATED WITH HEART FAILURE AMONG HEART FAILURE PATIENTS BY GROUPWISE

Assessment	Level of adherence	Group				χ^2 value	P value
		Experimental Group (n=106)		Control Group (n=108)			
		No.	%	No.	%		
Pre-test	Low Compliance	26	24.53	29	26.85	0.15	0.70 (NS) DF=1
	Medium Compliance	80	75.47	79	73.15		
	High Compliance	0	0.00	0	0.00		
Post-test-I	Low Compliance	10	9.43	23	21.30	108.84	0.001*** (S)
	Medium Compliance	25	23.58	85	78.70		

	High Compliance	71	66.98	0	0.00		DF=2
Post-test-II	Low Compliance	6	5.66	21	19.44	147.09	0.001*** (S) DF=2
	Medium Compliance	14	13.21	87	80.56		
	High Compliance	86	81.13	0	0.00		

DF= Degrees of freedom $P > 0.05$ not significant *** very high significant at $P \leq 0.001$ Table 5.9 illustrates the level of compliance scores between experimental and control group among heart failure patients. In pre-test, there was no significant difference of level of compliance between experimental and control group of patients. The non-significant P-values 0.71 indicates, similarity of level of compliance among experimental and control group. In post-test I, there is difference in level of compliance score between experimental and control group of patients. The significant P-values 0.001 indicate, the experiment group having medium level of compliance score more than control group. In post-test II, there is a significant difference in level of compliance score between experimental and control group of patients. The significant P-values 0.001 indicate, the experiment group having high level of compliance score more than control group.

TABLE 5.10 MEAN AND STANDARD DEVIATION OF THE COMPLIANCE SCORE DURING PRE-TEST, POST-TEST-1 AND POST-TEST-2 BY BETWEEN GROUP ANALYSES

Groups	Pre-test		Post-test-I		Post-test-II	
	Mean	SD	Mean	SD	Mean	SD
Experiment (n=106)	70.47	7.42	97.45	9.70	105.22	8.43
Control (n=108)	69.83	7.63	71.19	6.92	71.54	6.72

The mean compliance for the experiment group subjects was found to be 70.47 before the intervention. After the intervention, the compliance score was improved to 97.45 during post-test-I, and further improved to 105.22 in post-test-II. Among control group, the mean compliance was found to be 69.83, 71.19 and 71.54 at the pre-test, post-test-I, and post-test-II.

FIG. 5.17 LINE GRAPH SHOWS THE PRE-TEST, POST-TEST-I AND POST-TEST-II OF EXPERIMENTAL AND CONTROL GROUP COMPLIANCE IMPROVEMENT SCORE

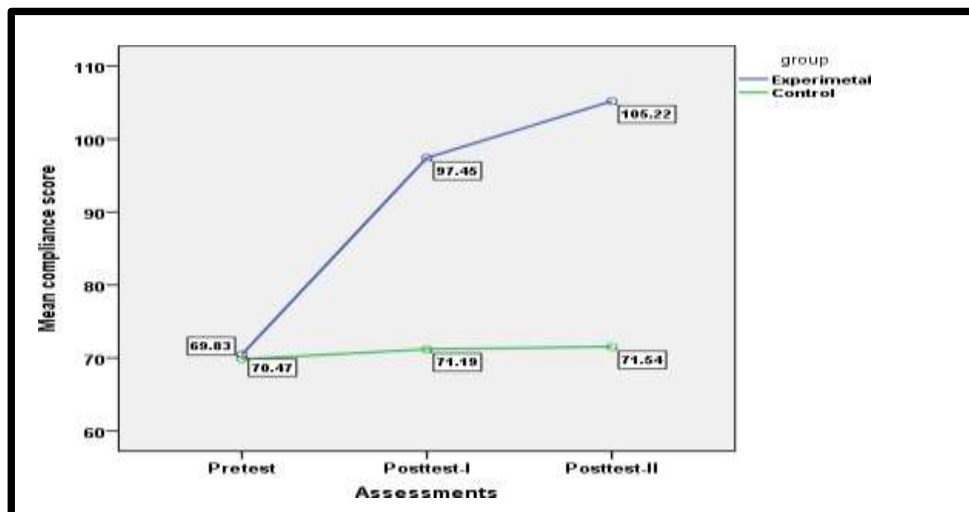


TABLE 5.11 COMPARISON OF PRE-TEST, 1st MONTH AND 3rd MONTH LEVEL

		Level of Compliance						Extended McNemar 's test
		Pre-test		Post-test-I		Post-test-II		
		n	%	n	%	n	%	
Experiment	Low Compliance	26	24.53	10	9.43	6	5.66	□2=86.05 p=0.001*** (S)
	Medium Compliance	80	75.47	25	23.58	14	13.21	
	High Compliance	0	0.00	71	66.98	86	81.13	
Control	Low Compliance	29	26.85	23	21.30	21	19.44	□2=2.46 p=0.11 (NS)
	Medium Compliance	79	73.15	85	78.70	87	80.56	
	High Compliance	0	0.00	0	0.00	0	0.00	

Not significant $P > 0.05$ *** very high significant at $P \leq 0.001$

In experimental group, there is a significant difference between pre-test and post- test-II score but in control group there is no significant difference between pre-test and post-test-II score. It was confirmed using extended McNemar's test.

These findings suggested that all components of the intervention were beneficial.

FIG. 5.18 COMPARISON OF PRE-TEST, POST-TEST-I AND POST-TEST-II LEVEL OF COMPLIANCE SCORE AMONG EXPERIMENTAL GROUP

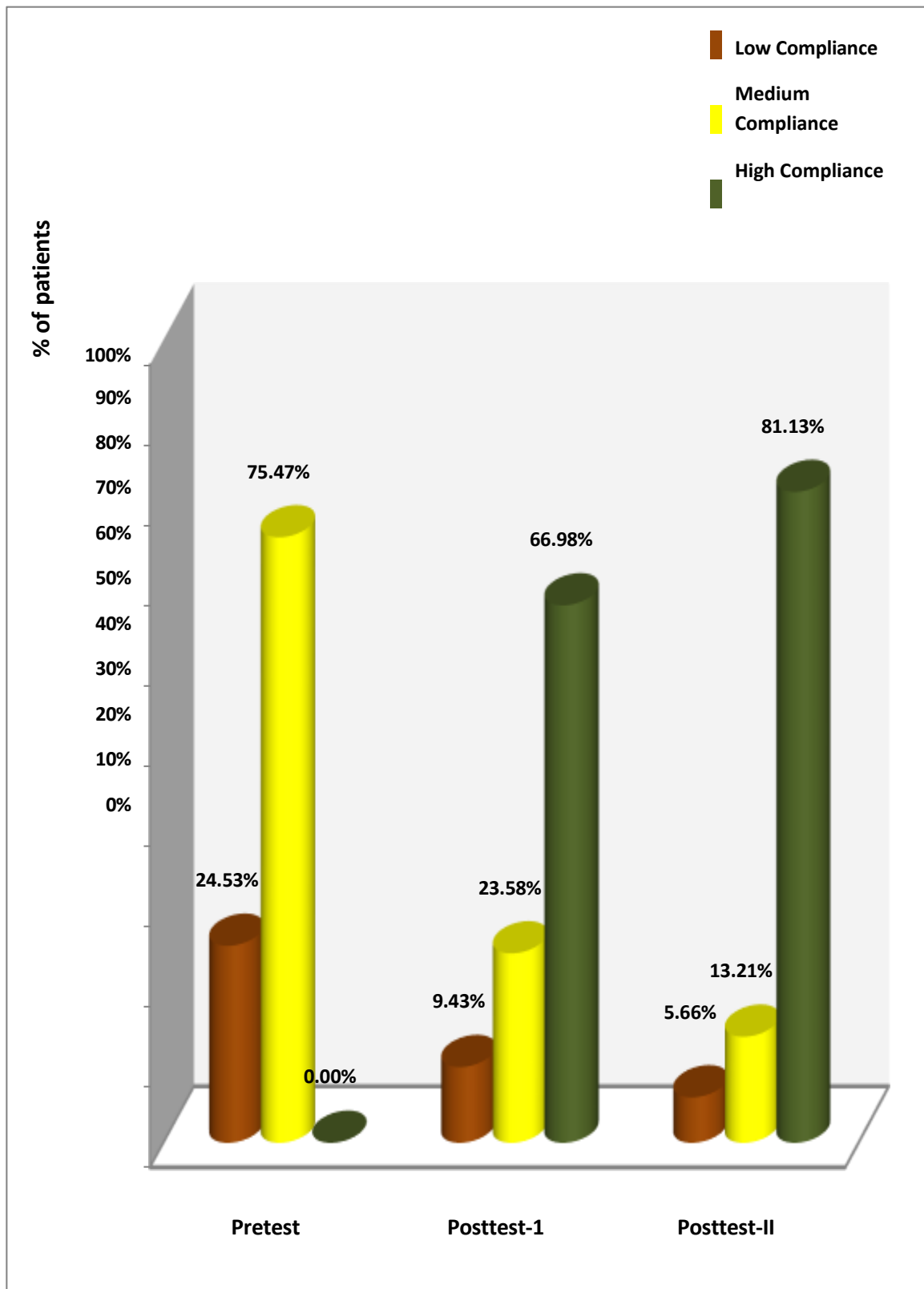


FIG. 5.19 COMPARISON OF PRE-TEST, POST-TEST-I AND POST-TEST-II LEVEL OF COMPLIANCE SCORE AMONG CONTROL GROUP

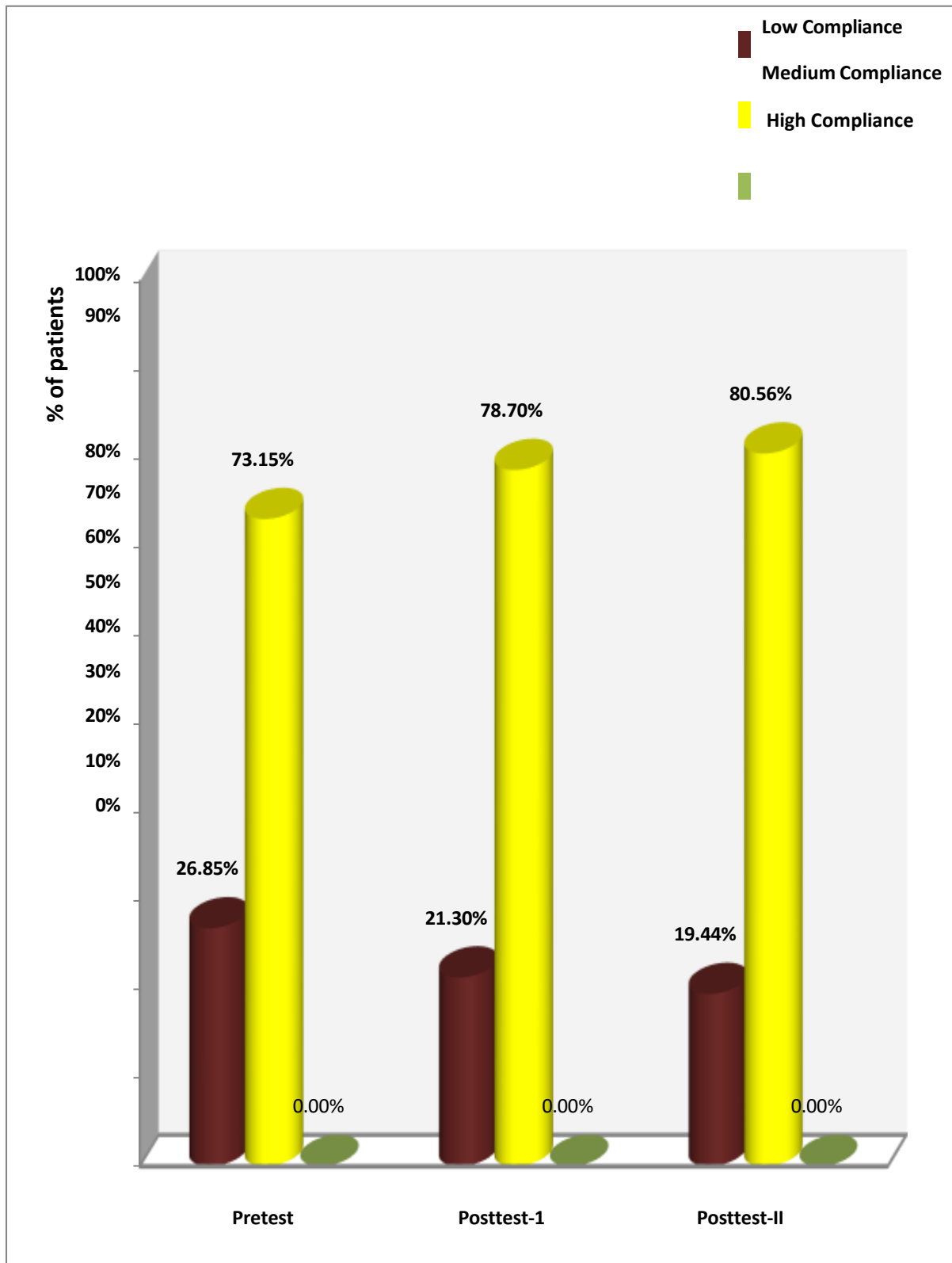


TABLE 5.12 EFFECTIVENESS AND COMPARISON OF HOSPITAL TO HOME INITIATIVE ON COMPLIANCE SCORE AMONG HEART FAILURE PATIENTS

Domains	Experimental Group (n =106)						Control Group (n = 108)					
	Pre-test		Post-test I		Post-test -II		Pre-test		Post-test I		Post-test -II	
	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%
Appointment keeping	10.45	52.25	16.92	84.60	18.12	90.60	10.31	51.55	11.15	55.75	11.15	55.75
	12.96	64.80	16.24	81.20	18.59	92.95	13.06	65.30	13.33	66.65	13.38	66.90
Dietary habit	10.15	50.75	15.44	77.20	17.74	88.70	10.09	50.45	9.69	48.45	9.71	48.55
Fluid Intake	8.51	53.19	12.42	77.63	13.00	81.25	8.54	53.38	8.53	53.31	8.56	53.50
Exercise	8.92	55.75	12.30	76.88	12.58	78.63	8.69	54.31	8.95	55.94	8.97	56.06
Smoking/ alcoholism cessation	9.94	62.13	12.06	75.38	12.54	78.38	9.63	60.19 %	9.92	62.00	10.09	63.06
	9.53	59.56	12.08	75.50	12.64	79.00	9.52	59.50	9.62	60.13	9.68	60.50
Total	70.47	56.83	97.45	78.59	105.22	84.85	69.83	56.31	71.19	57.41	71.54	57.69

Table 5.12 projects that, in experimental group, 56.83 % compliance score has improved to 78.59%, 84.85 % in post-test I & post-test II respectively. Whereas in control group, in pre-test they were having 56.31% of compliance score has improved in post-test-I they are having 57.41% compliance score and in post-test-II they were having 57.69% compliance score.

TABLE 5.13 COMPARISON OF DOMAIN WISE COMPLIANCE SCORE BETWEEN EXPERIMENTAL AND CONTROL GROUP

Domains	Group				Mean Difference	Student Independent t-test
	Experimental (n=106)		Control (n=108)			
	Mean	SD	Mean	SD		
Appointment keeping	10.45	2.39	10.31	2.39	0.14	t=0.45 p=0.65 (NS)
	12.96	2.02	13.06	2.02	-0.10	t=0.33 p=0.74(NS)
Dietary habit	10.15	2.40	10.09	2.38	0.06	t=0.18 p=0.86 (NS)
Fluid Intake	8.51	2.03	8.54	2.09	-0.03	t=0.10 p=0.92 (NS)
Exercise	8.92	2.26	8.69	2.31	0.23	t=0.74 p=0.46 (NS)
Smoking alcoholism cessation	9.94	3.36	9.63	3.69	0.31	t=0.65 p=0.51 (NS)
	9.53	1.74	9.52	1.80	0.01	t=0.04 p=0.96 (NS)
Pre-test total	70.47	7.42	69.83	7.63	0.64	t=0.62 p=0.54 (NS)
Appointment keeping	16.92	2.12	11.15	1.93	5.77	T =20.79 p=0.001 (S)
	16.24	2.07	13.33	1.96	2.91	T =10.53 p=0.001 (S)
Dietary habit	15.44	2.65	9.69	2.43	5.75	T =16.56 p=0.001 (S)
Fluid Intake	12.42	3.75	8.53	2.21	3.89	T =9.28 p=0.001 (S)
Exercise	12.30	3.76	8.95	2.15	3.35	T =8.01p=0.001 (S)
Smoking alcoholism cessation	12.06	4.00	9.92	3.53	2.14	T =4.15 p=0.001 (S)
	12.08	3.53	9.62	1.82	2.46	T =6.41 p=0.001 (S)
Post-test-I total	97.45	9.70	71.19	6.92	26.26	T =22.82 p=0.001 (S)
Appointment keeping	18.12	1.93	11.15	1.93	6.97	T =26.41 p=0.001 (S)
	18.59	1.73	13.38	1.91	5.21	T =20.95 p=0.001 (S)
Dietary habit	17.74	2.53	9.71	2.44	8.03	t=23.62 p=0.001 (S)
Fluid Intake	13.00	3.19	8.56	2.21	4.44	t=11.88 p=0.001 (S)
Exercise	12.58	3.52	8.97	2.15	3.61	t=9.08 p=0.001 (S)
Smoking alcoholism cessation	12.54	3.67	10.09	3.25	2.45	t=5.16 p=0.001 (S)
	12.64	3.12	9.68	1.76	2.96	t=8.60 p=0.001 (S)
Post-test-II total	105.22	8.43	71.54	6.72	33.68	t=32.36 p=0.001 (S)

CONCLUSION

The present study demonstrated that the Hospital to Home (H2H) initiative is an effective strategy for improving therapeutic compliance, medication adherence, and overall self-care behavior among patients with heart failure. By integrating structured discharge education, counseling, and consistent follow-up, the program successfully bridged the gap between hospital care and home management. Patients who received the H2H intervention showed significant improvement in medication adherence scores, lifestyle modifications, and early recognition of symptoms compared to those receiving conventional care. These improvements translated into better functional ability and quality of life, emphasizing the value of a multidisciplinary approach in managing chronic cardiac conditions. The findings highlight the importance of patient education, caregiver involvement, and continued support in reducing hospital readmissions and improving long-term outcomes. Therefore, implementing such transitional care models across healthcare settings can substantially enhance the continuity and effectiveness of heart failure management.

Acknowledgement

I would like to share my gratitude to my guide.

Conflict of interest

No conflict of interest were found.

REFERENCES

1. [https://www.who.int/news-room/fact-sheets/detail/cardiovascular-disease-\(CVDs\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-disease-(CVDs)) - Fact sheet 11 June 2021.
2. Gregory A Roth, George A Mensah et.al, "Global Burden of Cardiovascular Diseases Update from 1990 - 2019, J Am Coll Cardiology, 2020 Dec 22;76 (25) 2982 - 3021.
3. Roth GA, Johnson C, Abajobir A et.al., "Global, Regional and National Burden of Cardiovascular diseases for 10 cause"s. J Am Coll Cardiol.2017;70(1):1-25.
4. Hisham Dokainish MD, Koon Teo et.al., "The Lancet Global Health" Global Mortality cohort (INTER-CHF); Volume 5, Issue 7, July 2017, pp: 665-672.
5. Gianluigi Savarese, Lars H Lund," Global Public Health Burden of Heart Failure", Cardiac Fail Rev:2017 Apr; 3(1): 7-11.
6. A Sreenivas Kumar, Nakul Sinha, "Cardiovascular disease in India: a 360-degree overview", Med J Armed Forces India, 2020 Jan; 76 (1): 1-3.
7. Ronald S Chamberlain, Sond et.al, "Determining 30-day readmission risk for HF patients" International Journal of Gen.Medicine;2018, Apr 9;11:127-141.
8. P.M Moye. P.S Chu et.al, "Impact of a Pharmacy - Led Intervention program on the readmission rate of elderly patients with heart failure. Am J Health Syst Pharm., 75 (2018), pp:183-190.
9. Lipy Lucy Costal, Md. Shariful et.al, "Quality of Life of Chronic Heart Failure Patients" Open Journal Of Nursing, Open Journal of Nursing; Scientific Research Publishing: Vol:10 Sep 2020. pp:831-857.
10. SR Toukhsati, T Jaarsma et.al., "Self-care Interventions in Patients with Heart Failure", Clinical Medicine Insights: Cardiology; 2019; Volume 13:1-8.
11. Peggy H. Yen, FNP-BC. DNP, A Renee Leasure, Ph.D., "Use and Effectiveness of the Teach-Back Method in Patient Education and Health Outcomes". Fed Practitioner 2019 Jun;36(6): 284-289.
12. Xiaoqi Qiu, MBBS, Chunhan Lan, et.al, " The effect of Nurse-Led Interventions on re-admission and Mortality for Congestive Heart failure" A Meta-Analysis; J Medicine (Baltimore):2021 Feb 19; 100 (7): e24599.
13. Youn-Jung son, Yaelim Lee, et.al, "Effectiveness of Mobile Phone-Based Interventions for Improving Health Outcomes in Patients with Chronic Heart Failure": International Journal of Environmental Research and Public Health Review; 7 March 2020.
14. Shantanu Nundy, Rabia R Razi," A Text messaging intervention to improve heart failure self-management after hospital discharge" J Med Internet Res, 2017 Mar 11;15 (3): e53. <http://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>.9 Dec 2020.
15. Maedeh Amini, Farid Zayeri et.al, "Trend analysis of CVD Mortality-to-incidence ratio: Global burden

- of disease study; BMC Public Health, Volume 21, Article Number: 401 25 Feb 2021.
16. <https://www.heart.org/en/health-topics/heart-failure/causes-and-risks-for-heartfailure/understand-your-risk-for-heart-failure>
 17. Roth G A et.al., “Cardiovascular Disease Burden Across Time, Location, Cause, and Risk Factor”, Journal of the American college of cardiology; 2020; 76 (25) 2982 – 3021.
 18. Meyer S, Brouwers FP, et.al., “Differences in old and New onset of Heart Failure” Clin Res Cardiol 2015; 104: 342 – 350.
 19. Amy Groenewegen, Frans H, et.al., “Epidemiology of Heart Failure”, European Journal of Heart Failure: Cit-147; Volume22, Issue:8; Aug 2020 pp:1342 – 1356.
 20. Ferreira JP, Kraus S, et al. “World Heart Federation-Roadmap for Heart Failure; Global Heart:2019, 14:197-214.
 21. <https://www.who.int/news/item/27-05-2021-world-health-assembly-approvesdevelopment-of-implementation-roadmap-for-achieving-sdg-target-onnoncommunicable-diseases>; World Health Assembly. <https://www.who.int/india/health-topics/cardiovascular-diseases>
 22. 24. A Sreenivas Kumar, Nakul Sinha,” Cardiovascular Disease in India-A 360 Degree Overview” Med J Armed Forces India; Jan 2020: 76 (1): 1-3.
 23. 25. Zahid U Rehman, Arsalan et.al,”Retraction: Medication Non –Adherence among patients with heart failure. Cureus; 2019 Nov 5; 11(11) r 7.
 24. 26. Todd M Ruppam Pamela Cooper et al., “Medication adherence Interventions Improve Heart Failure Mortality and Readmission rates” J Am Heart Association; 2016 Jun 17;5 (6): e 002606.
 25. 27. Julia T Bidwell, Melinda K Higgins et al., “ Caregiver Well-being and Patient outcomes in Heart failure”; A meta-Analysis; A journal of Cardiovascular Nursing 2018: 32 (4);1.
 26. 28. Carolyn Miller Reilly et al., “Isolating the benefits of fluid restriction in patients with heart failure” Eur J Cardiovasc Nurs 2016 Dec; 14 (6): 495-505.
 27. 29. Barbara-Jean Sullivan, Linda Marcuccilli, et al., “Competence, Compassion, and Care of the Self: Family care giving Needs and concerns” Journal of Cardiovascular Nursing; Jun: 2016; 31(3):209-14.
 28. 30. Alvin Chandra, Muthiah Vaduganathan et al., “Health related quality of life with heart failure”, JACC Heart Failure; 2020. Mar;8(3):245 – 246.
 29. 31. Anne Ankerstjerna et.al., “Patient – reported outcomes and Medication adherence in patients with heart failure” European Heart Journal- Cardiovascular Pharmacotherapy, Volume:7, issue 4, July 2021, pp:287-295.
 30. 32. Pedro Pallangyo, Jalak Millinga et al., “Medication adherence and survival among hospitalized heart failure patients in a tertiary hospital in Tanzania” BMC Res., 2020 Feb 21; 13(1):89.