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# Assessing the Impact of Educational Interventions on Quality of Life: Measuring by Minnesota Living with Heart Failure Questionnaire

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## ABSTRACT

**Introduction:** Heart failure is one of the most common cardiovascular diseases which decrease the quality of life. Most of the factors influencing the quality of life can be modified with educational interventions. Therefore, this study examined the impact of educational program on quality of life of congestive heart failure patients.

**Aims:** The aim of the study was to access the impact of educational intervention on quality of life among congestive heart failure patients.

**Methodology:** The study was conducted at Faisalabad Institute of Cardiology, Faisalabad Pakistan.

Quasi-experimental design was used concerned study. The study participants were recruited through the process of convenient sampling. The sample consisted of men and women admitted to cardiac units, the researcher took data from patient's file for primary and secondary diagnosis of heart failure and was obtain consent from those participants, who are fulfill the eligibility criteria.

**Results:** The intervention showed significant ( $p < 0.001$ ) decreased on physical and total dimension of quality of life over 30 days and 90 days indicating improvement due to ongoing educational programme.

**Conclusion:** Our study outcomes demonstrated the importance of persistent educational interventions in improving quality of life in heart failure patients. In these patients, ongoing education enhanced their physical and emotional elements of QOL, as well as their overall QOL. In order to consistently promote self-care practices, regulate symptoms, and prevent consequences, continual training programmes are required when it comes to the influence of chronic diseases on social health. As a result, with the rising prevalence of heart failure, persistent regimens are required.

**Key Words:** Educational interventions, Heart Failure, Quality of Life, Minnesota living with heart failure, Impact, Questionnaire

## INTRODUCTION

Heart failure is a prevalent cardiovascular condition that has a negative impact on one's quality of life. The heart is unable to properly pump enough blood throughout the body, resulting in a deficiency of blood flow supply throughout the body away from the heart.<sup>1</sup> As a result, the oxygen delivery to human organs and tissues is insufficient.<sup>2</sup> When heart failure strikes, the right ventricle frequently collapses as a result of the left ventricle's failing. The right ventricle, on the other hand, might sometimes fail on its own. Acute heart failure and chronic heart failure are the two types of heart failure. Acute heart failure manifests itself as fast onset of symptoms and rapid worsening of heart failure symptoms.<sup>3</sup>

Heart failure has been one of the major clinical and economic burden in the United States. On average, each patient's total annual medical costs amount to \$6,199, with 95% of hospitalization costs.<sup>4</sup> The high hospitalization and medical care costs have often prevented many patients from accessing high-quality medical care. As a result, most of them have succumbed to illnesses. While several patients have had insurance covers, many have had to spend their financial resources to cater to their medication.<sup>5</sup>

Educational program has played a pivotal role in improving the patient's knowledge about the disease process, self-care, and cost-effectiveness which in turn reduced the hospitalization stay of the patients.<sup>6</sup> Moreover, this program has helped

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improve adherence to treatment. For instance, the improvement of self-care has promoted a healthy lifestyle among patients suffering from heart failure disease. Knowing the signs and symptoms of the disease, the process of treatments, and the appropriate actions required in the management of the disease has helped prevent the disease from worsening and hence reduce hospitalization stay for the patients. It is therefore essential for all the health care directors to initiate such programs in their health care facilities to enhance the disease awareness, self-care, and cost effectiveness for the sake of patients suffering from heart failure.<sup>7</sup>

Quality of life explains the extent to which a person is comfortable, healthy, and in a position to enjoy or take part in life events. The concept of quality of life is seen as multifaceted in care delivery, incorporating social, material, physical and emotional wellbeing.<sup>8</sup> The concept of the quality of life can be explored in the case of congestive cardiac failure patients. There are various consequences of poor quality of life for congestive heart failure patients. Congestive heart failure (CHF) involves a chronic and progressive disorder that mainly affects the heart muscle pumping power in an individual. Whereas the condition is frequently known as heart failure, congestive heart failure includes the phase in which there is an accumulation of fluid inside the heart, resulting in inefficient pumping power.<sup>9</sup>

Hospital discharge education for patients with congestive heart failure (CHF) is important since it will help patients how to prevent future re-admission, improves self-care, and assists patients in determining problems early; hence it will increase the chances for improved patients results and adoption of best health interventions.<sup>10</sup> The Center for Medicare and Medicaid Service (CMS) reviewed how to reduce reimbursement by adding penalties for a patient with CHF (Congestive Heart Failure) for those who are re-admitted after hospital discharge within 30 days of their earlier heart failure admission. Re-admission of patients with CHF occurs due to inadequate planning discharge teaching from the patient non-adherence to guidelines are illustrated as factors that lead to re-hospitalization, hence discharge teaching for patients with CHF is important since it improves the quality of life for patients and also improves patient's outcomes.<sup>11</sup>

Multiple factors influence self-care behavior. To begin with, experience and skills become the first factor. The experience becomes an influential contributor to skill development in self-care. Therefore, patients must have sufficient knowledge and skills, enabling them to take the physician's advice to the latter.<sup>13</sup> The study is necessary to ensure that more people acquire the appropriate knowledge needed to improve their general health. The importance of developing education programs is to ensure that there is adequate adherence to the medical recommendations during the treatment that eliminates any medical errors that may lead to ultimate

readmissions.<sup>12</sup> This way, the treatment of congestive heart failure is made more effective. When there is the presence of therapeutic interventions and educational sessions, it can lead to the improvement of a patient's self-care, increase their awareness, and lead to positive health outcomes. When a patient lacks basic knowledge on their issues, it leads to low rates of compliance, and it is a great contributor to poor quality of life and readmissions in the hospital.<sup>14</sup>

The rationale of this study is to determine the effectiveness of educational programs in improving their quality of life through conducting a literature review on various articles related to educational programs and the quality of life of congestive heart failure patients. The general aim of the study is to throw the light on the educational program on quality of life, whether the patient is faced with heart problems. According to the literature review many researchers conducted about impact of educational program on quality of life of congestive heart failure patients. On each variable define separately, in many different countries and continents on different populations but no anyone try to find out collectively the above mentioned variables among the married male and female patients with educational program on quality of life. There is a very scarce research literature found with relevance to Pakistan. In the previous studies on educational program on quality of life in congestive heart failure patients there was lack of control group and sample size that does not permit the meaningful evaluation of the large numbers of variables that can influence the quality of life. In the previous studies of relationship of educational program on quality of life of congestive heart failure patients with mortality different tools were used in each study caused a lack of correlation between mortality and all domains of educational program.

### Objective:

- To access the impact of educational intervention on quality of life among congestive heart failure patients.

### Research Hypothesis

So, the hypothesis generated are as follows:

$H_0$  : The intervention has no significant effect on the quality of life in heart failure patients

$H_a$  : The intervention has significant effect on the quality of life in heart failure patients.

### Significance of the Study

This study aims to provide a better understanding of the quality of life lived by HF patients and how educational programs can be used to improve the quality of life of such patients. The findings of this study will not only benefit the HF patients themselves by helping to improve their quality of life but will also benefit nurses and healthcare practitioners

in general to improve the outcome of their patients. Further, this study will significantly help the educational program develops better programs that would enhance HF patients' life quality even better.

## Operational Definitions

### Independent Variable

**Educational Program/ Discharge Teaching:** A health education program is a planning and treatment process that will help the patient to enhance quality of life to reduce the re-hospitalization of heart failure patients.

### Dependent Variable

**A Quality of Life** is ability to perform physical and social activities, maintaining happiness, and relationships. Quality of life will be measure through MLHFQ.

MLHFQ Scale scores represent the average of 21 items in the scale that the respondent answered MLHFQ total scoring 0-105:

- A score of less than 24 (good quality of life),
- A score of 24 to 45 (average quality of life),
- A score greater than 45 were determined as the cutting points for the (poor quality of life) questionnaire.

## Study Designs

This study was used quasi-experimental design concerned quantitative statistics investigation and was explanatory in character. A quasi-experiment is a type of research design that attempts to establish a cause-and-effect relationship. The main difference with a true experiment is that the groups are not randomly assigned.

## Setting

The study was conducted at Faisalabad Institute of Cardiology, Faisalabad Pakistan.

## Duration of Study

Duration of study was 9 months after the approval of IRB.

## Sampling Technique

Convenient sample was used in this study to collect data from Faisalabad Institute of Cardiology (FIC).

## Sample Size

Total calculated sample size is 36.

The calculated sample size is 1. This sample size is small to perform the statistical test with good efficiency. So, 30 participants will be taken after adding 20% drop out rate final. Sample size  $n=36$

The sample size is calculated by using the following formula: -

$$n = \frac{\sigma_d^2 \left( Z_\beta + Z_{\alpha/2} \right)^2}{\text{difference}^2}$$

$$\sigma_\alpha = 0.47_{(Awoke, et.al., (2019))}$$

$$Z_\beta = 1.26$$

$$Z_{\alpha/2} = 1.96$$

$$\mu_d = 1.34_{(Awoke, et.al., (2019))}$$

$$= \frac{(0.47)^2 (1.28 + 1.96)^2}{(1.345)^2}$$

$$= \frac{0.2209 \times (10.4976)}{1.809}$$

$$= \frac{2.31}{1.809}$$

$$= 1.221$$

## Sample Selection

The study participants were recruited through the process of convenient sampling. The sample consisted of men and women admitted to cardiac units, the researcher took data from patient's file for primary and secondary diagnosis of heart failure and was obtain the consent from those participants, who are fulfill the eligibility criteria. The majority of patients in this sample was in NYHA classes II and III (New York Heart Association Classification) scores of having an ejection fraction of less than 40 %.

## Inclusion Criteria

The following inclusion criteria was followed for this study.

- (1) All heart failure patients admitted to the cardiac units with ECHO report indicating Congestive heart failure (CHF)
- (2) Both genders will be included equally.
- (3) Patients age 18 to 70 years old.
- (4)  $EF < 40\%$  and  $> 20\%$
- (5) Dyspnea
- (6) Patients discharge to home and having cell phone/land line no.
- (7) Patients are able to give written or verbal consent for themselves.

## Exclusion Criteria

The following exclusion criteria will be followed for this study.

- (1) Already taken any educational session or counselling regarding disease
- (2) Severe neuropsychiatric condition
- (3) Planned major surgery/intervention as a treatment of congestive heart failure.

- (4) Cerebrovascular accident, end stage kidney disease, malignancy end stage
- (5) Patient with congenital heart disease
- (6) Bed ridden

### Data Collection Procedure

The data was collected after approval of the synopsis. The researcher checked the record for diagnosis of heart failure and eligibility. After receiving the verbal or written consent for enrollment, the researcher will contact the eligible patients. Before signing written informed consent, participants were briefed with complete introduction to the research, its objective and process. And researcher was also brief the risks and benefits and confidentiality of the data. The demographic data of the participants were collected through one-to-one interviews and medical records. MLHFQ was given to the respondents to fill out on the second day at hospital admission with the guidance of the researcher/facilitator. After taking the appointment from the participants, the researcher approached the patient at their bedside and educate the participants through booklet which is the evidence-based comprehensive heart failure patient education booklet for four consecutive day for 15 mints. Booklet and Visual color-coded (Green, Yellow, and Red) guide for patient to monitor the symptoms at home according to the color zoon participants contacted the related nurse or Doctor.

- Post test 1 was conducted 30 days after completion of the intervention with filling of questionnaires collected by the researcher/ facilitator on one-month clinical follow-up visit.
- Post test 2 was conducted at 90 days after intervention at each participant on three-month follow-up visit.

Before the patient education, a one-hour training session for three consecutive days will be provided to facilitator/nurses in the cardiac units. The nurses' training sessions will be held over six days. Nurses will be asked to recapitulate the material in their own words and use the Robert Woods Johnson Foundation (RWJF) Live with Heart Failure guidance to facilitate comprehension and continuity.

An Instructional Guide for patients. Content for the standardized RWJF patient information materials for heart failure is based on the ACCF/AHA recommendations on nutrition, exercise, weight monitoring, avoidance of smoking, limiting of fluids, adherence to drugs, and follow-up appointments. The researcher will take the advance permission from hospital administration for any adjustment regarding early patient visit or any investigation.

The researcher/ facilitator took the baseline data during hospital admission before discharge. The researcher will adjust the time of participants to visit the hospital at 30th day and 90th day before discharge accordingly with the help of hospital cardiologist.

### Study Variables

**Independent Variable:** -The independent variable will be:

The Educational intervention/tech back technique is the independent variable.

**Dependent Variable:** -The dependent variable will be:

Quality of life will be measured by, MLHFQ

## RESULTS

**Table 1: Demographic description of Sample**

Background variables	N=36	Percentage
<b>Age</b>	40-45 Years	14.0%
	46-50 Years	16.8%
	51-55 Years	22.3%
	56-60 Years	19.5%
	61-65 Years	27.8%
<b>Gender</b>	Male	72.2%
	Female	27.8%
<b>Occupation</b>	Employee	44.4%
	Unemployed	47.2%
	Retired	8.3%
<b>Marital status</b>	Married	91.7%
	Unmarried	8.3%
<b>BMI</b>	18.00-25.00	30.6%
	26.00-30.00	44.5%
	31.00-40.00	25.1%
<b>Total cholesterol</b>	200	2.8%
	220	5.6%
	230	36.1%
	250	19.4%
	260	2.8%
	270	8.3%
	275	2.8%
300	22.2%	
<b>Ejection friction</b>	30	19.4%
	35	47.2%
	40	13.9%
<b>Classification NYHA</b>	Class2	27.8%
	Class3	72.2%
<b>Qualification</b>	Illiterate	44.4%
	Primary	41.7%
	Middle or above	13.9%
<b>Residency</b>	Rural	50.0%
	Urban	50.0%
<b>Smoking</b>	Yes	22%
	No	14%

Table 1 shows that background detail of the heart failure patients with regard to age, gender, qualification, work experience, and work setting. The sample consisted of 36 heart failure patients from Faisalabad Institute of Cardiology. Findings

of this study show that majority 27.8% participants are 61-65 years old. Also, a good majority 72.2% male participants and 55.6% participants were literate. A huge majority 91.7% participants are married. The participant's occupations were 44.4% employee, 47.2% unemployed and 8.3% retired. The BMI of the participants 22.3% were 31-39 category and 2nd highest fall four values 25, 27, 28 and 30 were 4 (11.1%). The total cholesterol of the participants 22.2% 300 cholesterol and 19.4% were 250 cholesterol. The Ejection friction status of the participants 13.3% 35 friction ejection and were 17 (19.4%), 30 were 7 (19.4%) and 40 were 5 (13.9%). The Classification NYHA status 72.2% were class and 19.4% NYHA class 2. The smoking status of the participant 61.1% were smoker and 38.9% were non-smoker. The residency status 50.0% were rural areas and 50.0% belong urban areas.

### Distribution of respondents on the basis of cholesterol level:

The incidence of heart failure (HF) is constantly increasing in the Western world. Treatment with statins is well established for the primary and secondary prevention of cardiac events by lowering low-density lipoprotein (LDL) cholesterol levels. There are conflicting reports on the role of LDL cholesterol as an adverse prognostic predictor in patients with advanced HF. So the cholesterol level of respondents was measured.

**Table 2: Total cholesterol wise classification**

Total cholesterol	N	%
200	1	2.8
220	2	5.6
230	13	36.1
250	7	19.4
260	1	2.8
270	3	8.3
275	1	2.8
300	8	22.2
Total	36	100.0

The total cholesterol of the participants 230 were 13(36.1%), 250 were (19.4%) and 300 were 8 (22.2%).

### Ejection friction wise distribution of the respondents:

**Table 3: Ejection friction wise classification**

Ejection friction	N	%
30	7	19.4
35	17	47.2
40	5	13.9
Total	36	100.0

The Ejection friction wise classification of the participants depicted that 17 participants have 30 points Ejection friction, 7 participants having ejection friction of 30 points and least i-e 5 respondents have ejection friction up to 40 points.

**Table 4: Smoking wise classification:**

Smoker	N	%
Yes	22	61.1
No	14	38.9
Total	36	100.0

The smoking status of the participant were smoker 22 (61.1%) and non-smoker were 14 (38.9%).

**Table 5: BMI wise classification**

BMI	N	%
18.00	1	2.8
23.00	1	2.8
24.00	5	13.9
25.00	4	11.1
26.00	2	5.6
26.29	1	2.8
27.00	4	11.1
28.00	4	11.1
29.00	1	2.8
30.00	4	11.1
31.00	2	5.6
32.00	3	8.3
33.00	2	5.6
39.00	1	2.8
40.00	1	2.8
Total	36	100.0

The BMI of the participants under 20 value were only 1 (2.8%), 24 value were maximum 5(13.9%), 2<sup>nd</sup> highest fall four values 25, 27, 28 and 30 were 4 (11.1%) and 31-39 category fall were 8 (22.3%).

**Table 6: Repeated measures ANOVA for comparison between pre-intervention and post-interventions**

Variables	Intervention (N=36)	Mean	SD	(95% CI) Lower	(95% CI) Upper	F (df1, df2)	P
Physical	Pre	37.69	1.62	37.15	38.24	4165.60 (2, 70)	<0.001
	Post-1	29.83	1.46	29.34	30.33		
	Post-2	29.58	1.59	29.04	30.12		
Emotional	Pre	23.50	1.25	23.07	23.92	151.89 (2, 70)	<0.001
	Post-1	18.69	1.85	18.07	19.32		
	Post-2	18.50	1.25	18.07	18.92		
Total	Pre	97.22	3.91	95.90	98.54	32331.78 (2, 70)	<0.001
	Post-1	78.72	3.56	77.52	79.93		
	Post-2	76.61	3.82	75.32	77.90		

**Table 6: Post-Hoc test with Bonferroni adjustment for multiple comparisons**

Variables	Intervention (N=36)	Mean Difference	Std. Error	P
Physical	Pre – Post 1	7.86	0.11	<0.001
	Pre – Post 2	8.11	0.05	<0.001
	Post 1 – Post 2	0.25	0.12	0.14
Emotional	Pre – Post 1	4.81	0.39	<0.001
	Pre – Post 2	5.00	0.00	--
	Post 1 – Post 2	0.19	0.39	1.00
Total	Pre – Post 1	18.50	0.47	<0.001
	Pre – Post 2	20.61	0.12	<0.001
	Post 1 – Post 2	2.11	0.47	<0.001

**Physical:** Based on the results of ANOVA (repeated measure analysis of variance), there was a significant difference found in Baseline Data, (M=37.69, SD=1.62). After 30 days' educational intervention were found significant differences (M=29.58, SD=1.46) based on Teck Back techniques on quality of life in heart failure patients and After 90 days' educational intervention were found significant differences (M=29.83, SD=1.59) based on Teck Back techniques on quality of life in heart failure patients.

**Emotional:** Further results show that there was a significant difference found between baseline Data and 30 days'

educational intervention (*Mean Difference* =4.81, *Std. Error* =0.39, *P* = <0.001). Results show that there was a significant difference found between baseline Data and after 90 days' educational intervention (*Mean Difference* =5.00, *Std. Error* =0.00, *P* = <0.001).

**Total:** Results show that there was a non-significant difference found between 30 days' educational intervention and after 90 days' educational intervention (*Mean Difference* =0.19, *Std. Error* =0.39, *P* = 1.00).

**Table 7: Smoking classification impact of educational program on quality of life of congestive heart failure patients**

Variables	Smoking wise classification	N	Mean	Std. Deviation	Df	T	Sig
Pre Assessment	Yes	22	2.38	.200	35	2.714	.00*
	No	14	2.49	.354			
Post-1 at 30 days Assessment	Yes	22	2.32	.309	73	-1.31	.19
	No	14	2.37	.271			
Post-2 at 90 days Assessment	Yes	22	2.33	.274	73	-.044	.96
	No	14	2.34	.335			

Clears that independent sample t-test was applied to find out the mean comparisons in between the smoking responses on impact of educational program on quality of life of congestive heart failure patients and the result shows that the smoker and nonsmoker patient mean score. Therefore, it has been analyzed from the above pre-assessment results that mean for response “yes” was  $M=2.38$ , ( $SD=.200$ ) and responses in “No” was having mean  $M=2.49$  and  $SD=.354$ . Result further shows that the pre-assessment p-value shows that, impact of educational program on quality of life of congestive heart failure relatively high in smoker patients than nonsmoker.

Post-1 at 30 days assessment Class2 were ( $M=2.32$ ), ( $SD=.309$ ) and Class3 ( $M=2.37$ ), ( $SD=.271$ ). Result further shows that the Post-1 30 days assessment p-value shows that, impact of educational program on quality of life of congestive heart failure relatively high in smoker patients than nonsmoker.

Post-2 at 90 days assessment depicted that “yes” response was drop having mean  $M=2.33$  and  $SD=.274$  and response for “No” ( $M=2.34$ ), ( $SD=.335$ ). Result further shows that the post-2 90 days assessment p-value shows that, impact of educational program on quality of life of congestive heart failure relatively high in smoker patients than nonsmoker.

## CONCLUSION

Our study outcomes demonstrated the importance of persistent educational interventions in improving quality of life in heart failure patients. In these patients, ongoing education enhanced their physical and emotional elements of QOL, as well as their overall QOL. In order to consistently promote self-care practices, regulate symptoms, and prevent consequences, continual training programmes are required when it comes to the influence of chronic diseases on social health. As a result, with the rising prevalence of heart failure, persistent regimens are required.

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## Contribution of Each Author:

Author name	Contribution
Shaheen Nazakat	Author, researcher
Dr. Kabir Origi Abdullahi	Supervise and edit paper draft
Asif Haneef	Statistical analysis
Adnan Yaqoob	Proof Reading
Syed Amir Gillani	Facilitate in data collection
Muhammad Afzal	Proof reading and facilitate in data collection
Umm-E-Habiba	Proof reading
Muhammad Sajid	Facilitate in collection

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