Original Article

Fatigue its Related Factors and Quality of Life among Patients with Heart Failure in Tertiary Care Hospital Kochi

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How to cite this article: Akhil C S, Kanmani J, Rajesh Thachathodiyil et. al. Fatigue its Related Factors and Quality of Life among Patients with Heart Failure in Tertiary Care Hospital Kochi. International Journal of Nursing Education/Volume 16 No. 2, April-June 2024.

Abstract

Background: Heart failure (HF) is a common disease caused by inability of the heart to pump for supporting the circulation and the functional abnormalities of the heart. The present study was designed to assess the Fatigue, its related factors and Quality of life (QoL) among Patients with HF in Tertiary Care Hospital, Kochi with the objectives to (1) Find out the correlation between fatigue and (QoL) among patients with HF. (2) Identify the related factors among patients with HF. (3) Find the correlation between fatigue and its related factors among patients with HF.

Methods: A cross sectional design with non-probability convenience sampling technique was used to collect data from 150 HF patients from cardiology OPD at AIMS, Kochi. A standardized MFI, PSQI, HADS, MLHFQ tool were used for the assessment of fatigue, sleep, anxiety, depression, and QoL. The emotional aspects of QoL is significantly correlated with general fatigue ($p=0.026$), physical fatigue ($p=0.004$) and reduced motivation (< 0.001). The correlation with depression and dimensions of fatigue was found to be significant as the p-value was less than 0.05..

Conclusion: The study concludes that the general fatigue level increases the QoL decrease. General and mental fatigue increases the depression also increases.

Key words: Anxiety; Depression; Fatigue; Heart failure; Quality of life; Sleep quality

Introduction

Heart Failure (HF) is an abnormal clinical condition involving impaired cardiac pumping. It is associated with numerous types of cardiovascular disease[1], particularly long standing hypertension,

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Submission date: March 5, 2024 **Revision date:** March , 30 2024 **Published date: April 15 2024**

coronary artery disease (CAD) and myocardial infarction. Heart failure is characterized by ventricular dysfunction, reduced exercise tolerance, diminished quality of life and shortened life expectancy. It is characterized by several complex symptoms that are difficult to control and result in a high rate of re hospitalization, morbidity, and mortality across the world.[2,3] Worsening symptoms such as fatigue, exercise intolerance, and dyspnea are associated with an increased prevalence of sleep disturbances, estimated at 30% to 70%.[4]

Fatigue – as defined by North American Nursing Diagnosis Association (NANDA-I Definition) an overwhelming sustained sense of exhaustion and decreased capacity for physical and mental work at the usual level. Fatigue is also one of the most commonly reported symptoms by patients with chronic heart diseases. The causes of fatigue in heart failure[5] include low cardiac output, poor tissue perfusion, muscle metabolic abnormalities, autonomic nervous system abnormalities, deconditioning effects, and endothelial dysfunction. Fatigue is a subjective experience with physiologic, treatment-related, and psychological components of patients with various chronic illnesses. Acute tiredness is an expected response to physical exertion, change in daily activities, additional stress, or inadequate sleep. It can affect the work performance as well as social and family responsibilities. Fatigue can be physical, mental, and motivational. The causes of fatigue are multifactorial. The related factors of fatigue according to NANDA it is defined as the etiologic or other contributing factors that have influenced the health status change. Such factors can be grouped into four categories pathophysiologic (biologic- sleep deprivation , pregnancy, poor physical condition disease states, increased physical exertion, malnutrition, anemia or psychological-boring lifestyle, stress, anxiety, depression), treatment-related, situational- negative life events, occupation (environmental- humidity, lights, noise, temperature, personal), and maturational. So fatigue affects physical, social, emotional, social, role and cognitive functioning. Simply stated, fatigue reduces the quality of life (QoL). It interferes with the performance of activities of daily living, may lead to mood disturbances and dependency on others. The quality of life is a multidimensional term, which consist of different domains such as physical and social functioning and psychological wellbeing. The incidence of heart failure in patients with a systolic blood pressure (SBP) of 144-154 mmHg is 0.1% to 0.6% United Kingdom Prospective Diabetes study (UKPDS) trials, the number of new HF cases due to hypertension may increase from 1,18000 - 7,08000 per year in 2000 to 2,14000 - 1.3million respectively per year in 2025. The prevalence of HF due to obesity alone could be estimated to range from 4, 50000 to7, 50000 and diabetic estimated at 184000.[6]

The prevalence of heart failure in India due to coronary artery disease ,hypertension ,obesity, diabetes and rheumatic heart disease to range from 1.3 to 4.6 million ,with annual incidence of 491 600-1.8 million.[7]In Kerala the age related Coronary Artery Disease (CAD) mortality rates per 100,000 are 382 for men and 128 women. Heart failure affects people of all ages, from children to young adults to the middle aged and elderly. Almost 1.4 million persons with heart failure are under 60 years of age. Chronic heart failure is present in two percent of persons age 40 to59. More than of persons age 60 to 69 have heart failure.[8]

According to Trivandrum Heart Failure Registry in 2013, Heart Failure occurs younger by 10 years have male predominance, more have CAD, in-hospital stay was longer and mortality was higher. One year mortality was 31.7% - similar to data from the US and Europe. The prevalence of heart disease in rural Kerala is 7%, which is nearly double that of north India and parallel the high level of cholesterol in Kerala.[9]

Keeping in view of all the above facts and including highlights the burden of HF among public. This possibly puts them at high risk of mortality and morbidity. Fatigue is also most commonly reported Symptoms by patient with chronic HF related factors including sleep, anxiety and depression are important predictive of quality of life of HF patients. The intervention targeting physical symptoms and depression are excepted to improve quality of life in HF patients.

During the clinical posting period, the researcher has come across with patient who had attended the heart failure clinics and identified the patients with

heart failure had some physical and psychological disturbances that had impact on their quality of life. Considering all these factors the researcher felt the need for assessing the fatigue, its related factors and quality of life among patients with heart failure. The conceptual framework used for this study was Levine's Energy Conservation Model.

Materials and Methods

A Cross sectional study was conducted among 150 heart failure patients during the month of December 2019 February 2020 to from department of cardiology 0PD in a multispecialty hospital, Kochi, Kerala, India. The subjects were selected by non-probability convenience sampling technique. The data were collected using standardized questionnaire.

The following tools were used for the study. Tool I was a structured questionnaire to assess the sociodemographic and clinical variables, which had two sections. Section A sociodemographic data and section B clinical data. Tool II: Multidimensional Fatigue Inventory-(MFI) which had 20 items, with scores ranging from 0 to 5. Tool IIIa: Pittsburg Sleep Quality Index-(PSQI) include 19items, with scores ranging from 0 to 3. Tool IIIb: Hospital Anxiety and Depression Scale (HADS) which had 14 items scores ranging from 0 to 21. Tool 3c: Minnesota Living with Heart Failure Questionnaire (MLHFQ) consist 21 items are there with scores ranging from 0 to 105. All tools were freely available. Prior to the commencement of the study, Ethical clearance obtained from Institution Review Board. After establishing rapport with the subjects, an informed consent was taken prior to data collection explaining the importance of study and the data collection procedure. 150 subjects who met the inclusion criteria were taken. Inclusion criteria for the present study was, all heart failure patients who undergone heart failure clinics and those who are willing to participate in the study. Exclusion criteria was patients who are critically ill. Data entry and descriptive analysis was done using software SPSS 20.0.

Results and Discussion

Table 1: Distribution of subjects based on demographic variables. (n = 150)

Sl No.	Demographic variables	Frequency (f)	Percentage (%)
1.	**Sex**		
	Male	103	68.7
	Female	47	31.3
2.	**Monthly income**		
	Below 5000	37	24.7
	5000-10000	29	19.3
	10000-25000	68	45.3
	25000 above	16	10.7
3.	**Diet Pattern**		
	Vegetarian	47	31.0
	Non-Vegetarian	103	69.0
4.	**Family History of Heart Disease**		
	Yes	31	21.0
	No	119	79.0

Table 2: Distribution of subjects based on clinical variables. (n = 150)

Sl No.	Clinical variables	Frequency (f)	Percentage (%)
1.	**BMI Group**		
	Normal	101	77.3
	Over Weight	37	24.7
	Obese	12	8.0
2.	**Smoking Habit**		
	Current Smoker	18	12.0
	Non-Smoker	125	83.0
	Ex-Smoker	7	5.0
3.	**Alcoholic Habit**		
	Current Alcoholic	18	12.0
	Non-Alcoholic	120	80.0
	Ex- Alcoholic	12	8.0
4.	**Dyspnea assessment**		
	No dyspnea	42	28.0
	Slight dyspnea	22	14.7
	Moderate dyspnea	54	36.0
	Severe dyspnea	32	21.3

Table 3: Descriptive Statistics based on fatigue (n = 150)

Dimensions	Minimum	Maximum	Mean	SD
General Fatigue	4	10	5.90	1.473
Physical Fatigue	4	9	6.19	1.392
Mental Fatigue	4	10	6.13	1.570
Reduced activity	4	11	6.18	1.750
Reduced Motivation	4	11	6.30	1.592

Table 3 shows that General fatigue score of the present subjects ranges in between 4 to 10 with mean score 5.90 and standard deviation 1.473. Physical fatigue score for the present subjects ranges in between 4 to 9 with mean score 6.19 and standard deviation 1.392. Mental fatigue score for the present subjects ranges in between 4 to 10 with mean score 6.13 and standard deviation 1.570. Score for reduced activity in the present subjects ranges in between 4 to 11 with mean score 6.18 and standard deviation 1.750 and that for reduced motivation also ranges in between 4 to 11 with mean score 6.30 and standard deviation 1.592.

The Pittsburgh Sleep Quality Index (PSQI)

(n = 150)

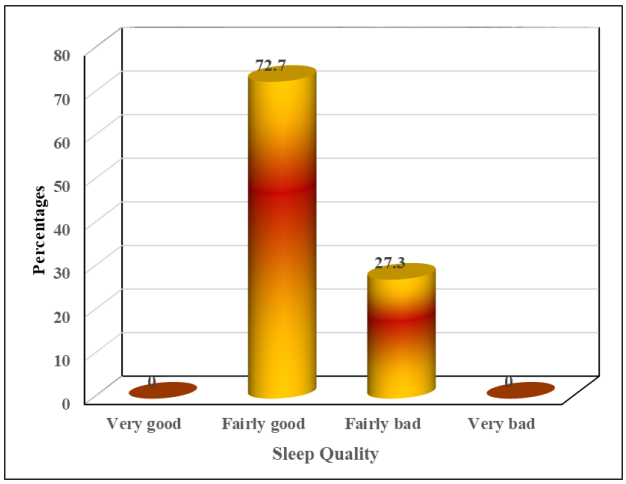


Fig.1. Distribution of subjects based on Level of overall sleep quality

The figure 1 shows that majority of the subjects 109 (72.7% had fairly good sleep quality) and 41 (27.3%) had fairly bad sleep quality whereas no one had history of very good and bad sleep quality level respectively.

Table. 4 Descriptive Statistics regarding Quality of Life (n = 150)

Dimensions	Range	Mean	SD
Physical	17 - 35	24.09	5.09
Emotional	7 - 23	14.70	3.49
Social	9 - 23	15.04	3.43
Total	38- 88	59.50	12.16

Table 4 shows that mean score of physical dimension of quality of life was 24.09 with a standard deviation of 5.09. While the range between the highest and lowest score was 17- 35. Mean score of emotional dimensional using MLHFQ for the present subjects ranges in between 17 to 35 with mean score 24.90 and standard deviation 5.09, that of emotional aspects of quality of life using MLHFQ for the present subjects ranges in between 7 to 23 with mean score 14.70 and standard deviation 3.49 and score for social aspects of quality of life using MLHFQ for the present sample ranges in between 9 to 23 with mean score 15.04 and standard deviation 3.43. Total score for quality of life using MLHFQ for the present subjects ranges in between 38 to 88 with mean score 59.50 and standard deviation 12.16.

Distribution of subjects based on Hospital Anxiety and Depression Scale (HADS) (n = 150)

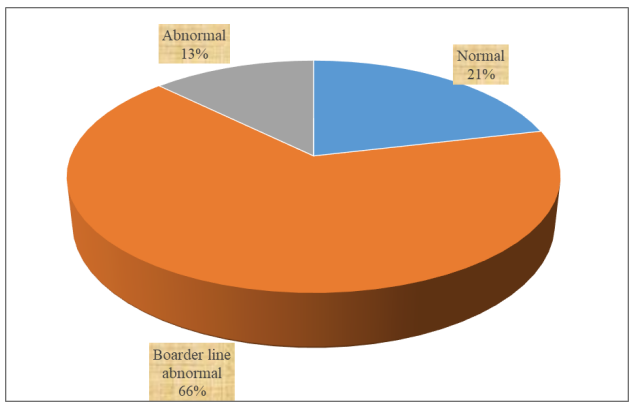
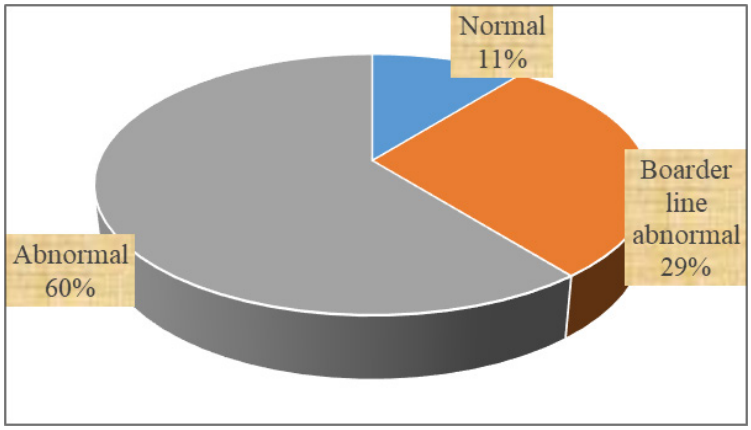


Figure 2: Distribution of subjects based on anxiety level

Figure 2 depicts that majority (66%) subjects had border line abnormal level of anxiety whereas (21%) and (13%) subjects included in normal and abnormal anxiety respectively.



(n= 150)

Figure 3: Distribution of subjects based on level of depression

Figure 3 shows that majority (60%) of the subjects had abnormal level of depression whereas (29%) and (11%) had border line abnormal and normal level of depression respectively.

Correlation between fatigue and quality of life among patients with heart failure

Table 5. Correlation between Fatigue and Quality of Life (n = 150)

Fatigue dimension	**Quality of life (MLHFQ)**			
	Physical	**Emotional**	**Social**	**Total**
General Fatigue	0.052^{ns} (0.528)	0.182* (0.026)	-0.109^{ns} (0.185)	0.004^{ns} (0.965)
Physical Fatigue	0.021^{ns} (0.799)	0.232** (0.004)	0.009^{ns} (0.917)	0.051^{ns} (0.532)
Mental Fatigue	0^{ns} (0.997)	-0.008^{ns} (0.925)	-0.001^{ns} (0.994)	-0.010^{ns} (0.902)
Reduced activity	-0.014^{ns} (0.864)	0.055^{ns} (0.504)	-0.121^{ns} (0.139)	-0.098^{ns} (0.234)
Reduced Motivation	0.117^{ns} (0.155)	0.293** (<0.001)	0.083^{ns} (0.315)	0.137^{ns} (0.094)

Values in the brackets are P-values

*** Significant at 0.01 level; * significant at 0.05 level*

Table 5 shows that correlation between different dimensions of quality of life with fatigue level was carried out by using Spearman's Rank Correlation. Correlation of the fatigue level with physical and social aspects and overall quality of life was found to be non-significant indicating that there exists no significant relationship between fatigue level and physical and social aspects and overall quality of life. Emotional aspects of quality of life is significantly correlated with general fatigue, physical fatigue and reduced motivation.

Correlation of fatigue with anxiety and depression

Table 6. Correlation of fatigue with anxiety and depression (n = 150)

Fatigue dimension	Anxiety		Depression	
	Correlation	P-value	Correlation	P-value
General Fatigue	-0.094^{ns}	0.590	0.359**	< 0.001
Physical Fatigue	0.165*	0.043	0.082^{ns}	0.319
Mental Fatigue	0.111^{ns}	0.178	0.275**	0.001
Reduced activity	0.056^{ns}	0.499	0.184*	0.024
Reduced Motivation	-0.013^{ns}	0.876	0.350**	< 0.001

**** significant at 0.01 level; * significant at 0.05 level; ns - non-significant**

Table 6 shows that correlation between different fatigue level with level of anxiety and depression was carried out by using Spearman's Rank Correlation. In the case of anxiety, all correlation except with physical fatigue was found to be non-significant as the p-value is >0.05 indicating that there exists no significant relationship between general fatigue, mental fatigue, reduced activity and reduced motivation with anxiety. In the case of depression correlation with physical fatigue was found to be non-significant. However, p-value for the correlation of the anxiety with physical fatigue and the correlation of depression with general fatigue, mental fatigue, reduced activity and reduced motivation was found to be significant as the p-value was less than 0.05.

The first objective of the study was to find the correlation between fatigue and quality of life among patients with heart failure. In the present study findings shows that samples had fatigue and the different fatigue dimensions are general fatigue, physical fatigue, mental fatigue, and reduced activity. Whereas p value corresponding to emotional quality of life less than 0.05 level of significant and there is a significant correlation between general fatigue, physical fatigue and reduced motivation.

The study findings where supported by a correlational study conducted by Hägglund L, Boman K, Olofsson M, Brulin C, the study titled fatigue and health-related quality of life in elderly patients with and without heart failure in primary healthcare in the city of Skellefteå in Northern Sweden. A questionnaire including the MFI, the SF-36, and the social provisions scale was used. The result of the study is Patients in the heart failure and non-heart failure groups reported worse physical QoL and more general and physical fatigue than the control group. Heart failure patients had worse general health than the non-heart failure group.[10]

The second objective of the study was to identify the related factors among patients with heart failure. This objective focused on the related factors included anxiety, depression and sleep. Majority (66%) of the subjects had border line abnormal level of anxiety whereas (21%) and (13%) subjects included in normal and abnormal anxiety respectively. Most of the subjects had abnormal level of depression (60%) and (29%) for border line abnormal level of depression and others had (11%) had no depression. Majority of the subjects had fairly good sleep quality 109 (72.7%) and (27.3%) had fairly bad sleep quality and rest of them had no history of very good and bad sleep quality level.

A predictive correlational research study on Descriptors of Insomnia among Patients with Heart Failure conducted by Janya Chimluang RN, Yupin Aungsuroch, Chanokporn Jitpanya. 340 heart failure patients followed-up at heart clinics, Research instrument included demographic questionnaire, state-trait anxiety inventory questionnaire, Center for Epidemiologic Studies Depression Scale, dyspnea questionnaire, Berlin Questionnaire, hygiene awareness and practice scale, and dysfunctional beliefs and attitudes about sleep and insomnia severity index. Thirty-two percent of heart failure patients had insomnia. Eighty-one patients had moderate insomnia (23.8%), and 8 patients had severe insomnia (8.2%). Most heart failure patients had insomnia of mixed types (73.40%), including difficulty falling asleep, difficulty staying asleep, and waking up too early. [11]

The third objective of the study was to find the correlation between fatigue and related factors among patients with heart failure. These objective focused on the relationship between fatigue and related factors among patient with heart failure.

Finding of correlating between score for physical fatigue with anxiety shows a positive mild correlation coefficient (r = 0.165) and was found to be statistically significant with p value = 0.043 because p value is <0.05 which represents as physical fatigue increases the score for anxiety also increases. In the case of general fatigue with depression shows a positive mild correlation coefficient (r = 0.359) and was found to be statistically significant with p value = 0.001 because p value is <0.05 which represents as general fatigue increases the score for depression also increases and mental fatigue with depression shows a positive mild correlation coefficient (r = 0.275) and was found to be statistically significant with p value = 0.001 because p value is <0.05 which represents as mental fatigue increases the score for depression also increases.

Conclusion and Acknowledgement

From the study findings it was crystal clear about assess the fatigue and its related factors among patient with heart failure. Emotional aspects of quality of life is significantly correlated with general fatigue, physical fatigue and reduced motivation. General Fatigue level increases the score for emotional dimension of Quality of life increases which in turn implies the decrease of emotional aspect of Quality of life. On correlating physical fatigue score level with emotional dimension of quality of life score shows the physical Fatigue level increases the score for emotional dimension of Quality of life increases which in turn implies the decrease of emotional aspect of Quality of life. In the case of physical fatigue with anxiety shows physical fatigue increases the score for anxiety also increases. General fatigue and mental fatigue with depression shows general and mental fatigue increases the score for depression also increases.

Acknowledgement: Nil

Sources of funding: Self

Conflicts of Interest: Nil

Ethical Clearance: Taken from Amrita Institute of Medical Sciences Institutional Review Board

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