# Impact of clinical characteristics on quality of life of heart failure patients

**Running title: Clinical characteristics & ~~(QOL)~~ quality of life of heart failure patients**


## ABSTRACT

**OBJECTIVE:** This study aimed to determine impact of clinical characteristics on quality of life (QoL) in heart failure patients.

**METHODS:** A cross-sectional study using a newly developed and validated research tool and Minnesota Living with Heart Failure (MLHF) research tool, was conducted in heart failure patients. Data was collected by convenience sampling method. Descriptive, comparative, and inferential statistics were used by Statistical Package for the Social Sciences (SPSS) ver. 24 to determine the sociodemographic correlates of QoL in heart failure patients.

**RESULTS:** The majority of the studied heart failure patients were male 103 (58.2%) and the females were 74 (41.8%). The most of the studied heart failure patients were from > 60 years of age group 73 (41.2%). In Spearman's correlation analysis, statistically non-significant ($p$ >0.05), weak and positive associations were observed. The studied clinical variables like disease duration, total no. of comorbidities, types of comorbidities i.e., HPT, dyslipidemia, renal problems, Diabetes mellitus (DM) and others, hospital admissions, no. of current medications were found to have positive correlation with patients overall QoL.

**CONCLUSION:** The study results concluded a weak but positive correlation between various studied clinical characteristics and QoL of the heart failure patients.

***Keywords:*** Heart failure, QoL, sociodemographic, correlates, Diabetes mellitus, MLHF, pharmacotherapy, WHO

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## INTRODUCTION

Heart failure is a major global health problem that affects every aspect of life among individuals. There are many daily activities and aspect which could be badly affected by the heart failure like daily chores, quality of life, employment and even premature death [1]. ~~It is a chronic, progressive condition that can result from any condition in which heart becomes unable to pump sufficient amount of blood in order to meet daily body and oxygen demands of the body and heart itself~~ [2] Heart failure is a chronic and progressive condition resulting from various reasons in which the heart is unable to pump sufficient amount of blood to meet oxygen demands of body as well as heart itself. According to the World Health Organization (WHO), it is ranked as one of the leading chronic and progressive disorder often resulting in significant interference with the daily chores of routine life [1-3].

It is a global disease that has affected more than 25 million individuals worldwide so far and the count is still increasing every day. In near future, it is expected that more than 8 million people will have this condition in next decade, accounting for a 45% increase in its prevalence worldwide [4-6]. As plentiful cases are not been reported hence the actual likelihood may be even more which pose a greater burden on the healthcare budgets of the several developing countries worldwide [7,8]. On the other hand, there are constant concerns over the consequences of delays in seeking treatment and resulting sudden paralysis and even deaths.

In literature, several studies showed that the perception of the patients' well-being by physicians and patients themselves focuses primarily on pharmacotherapy despite quality of life (QoL) [6-9]. In consequence, several countries are enforcing various policies and emergency healthcare programs to improve the standard and sustainability of quality of life of the individuals affecting by diseases like heart failure [10,11]. As a progressive disease, heart failure, if left untreated or not timely treated, can cause potentially fatal complications and disabilities which could badly affect quality of life of the individuals. This study aimed to determine the effect clinical characteristics and their effect on quality of life of the heart failure patients.

## Materials and methods

A cross-sectional study with a self-administered questionnaire was employed. The study subjects were screened for inclusion and exclusion criteria. Information sheet was handed to patients and informed consent was taken. The questionnaire was delivered personally to the patients by the researcher who also collected them back after they completed the ~~study~~ the questionnaires. The sampling method employed was convenient sampling. A pilot study was also conducted to further ascertain the reliability and validity of the research tool. Content validity of the questionnaire was checked before start of the study. Reliability of the questionnaire was assessed using Cronbach's alpha which is the most common tool to be used to measure internal consistency. A pilot study was also conducted to further ascertain the reliability and validity of the research tool. The mean score of all three domain of the MLHF research tool was taken and the total sum of the MLHF tool was used as an overall QoL among the studied heart failure patients. Then, the association between the QoL and clinical characteristics was analyzed.

### Statistical analyses

Percentages and frequencies were used for the categorical variables, while means and standard deviations were calculated for the continuous variables. Chi square and Spearman's correlation coefficient were used to evaluate correlations and impact of various clinical characteristics on overall QoL of the studied heart failure patients. Data from the research questionnaire were analyzed using Statistical Package for the Social Sciences (SPSS) version 24.0.

## RESULTS and DISCUSSION

This study consisted of 177 heart failure patients and their demographic characteristics are presented in figure 1. An approximate of the male patients in this study were n=103 (58.2%) and the females were n=74 (41.8%). The majority of the studied heart failure patients were from > 60 years of age group n=73 (41.2%). In educational background, patients with no formal education were 51 (28.8%), primary 44 (24.9%), secondary 57 (32.2%), and tertiary education were 25 (14.1%). A detailed information is given in figure 1.

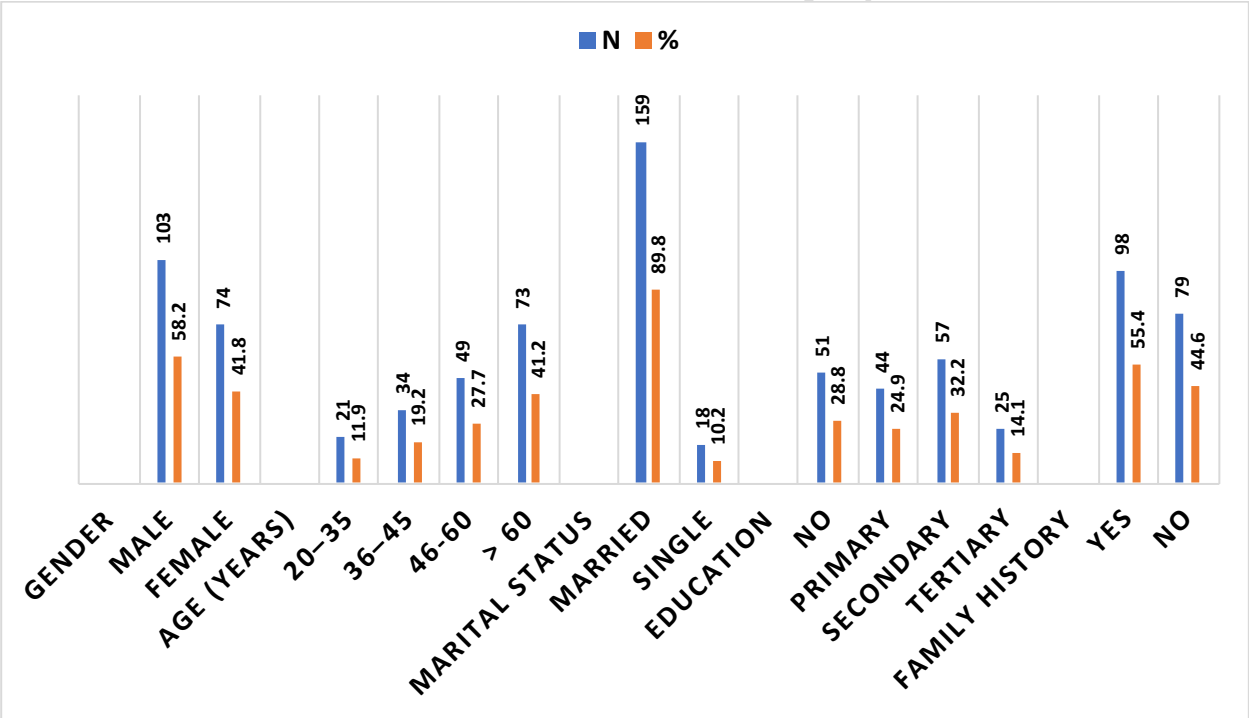


**Figure 1: Demographic characteristics of the patients**

The overall total sum QoL score of the heart failure patients was calculated based on the three domains of the MLHF research tool. Based on the total item analysis of MLHF tool, a total sum of the scores of 72.37 were observed showing a low level of QoL among the studied heart failure patients. MLHF determines patients' characteristics that are affected their ability to live as they

wanted during the past month (4 weeks). A study done in 2009, reported that a score of less than 24 on the MLHF tool represents a good QoL, a score between 24 and 45 represents a moderate QoL, and more than 45 reflects s poor QoL. And among the sub-scale scores of the MLHF tool, the physical domain had slightly higher score than the emotional domain while the others domain had higher scores than the rest two of the domains. From the results obtained, it is also evident that the studied patients had equally experienced difficulty in their daily chores either in physical or in emotional domains. Figure 2 displays the mean score of each domain.

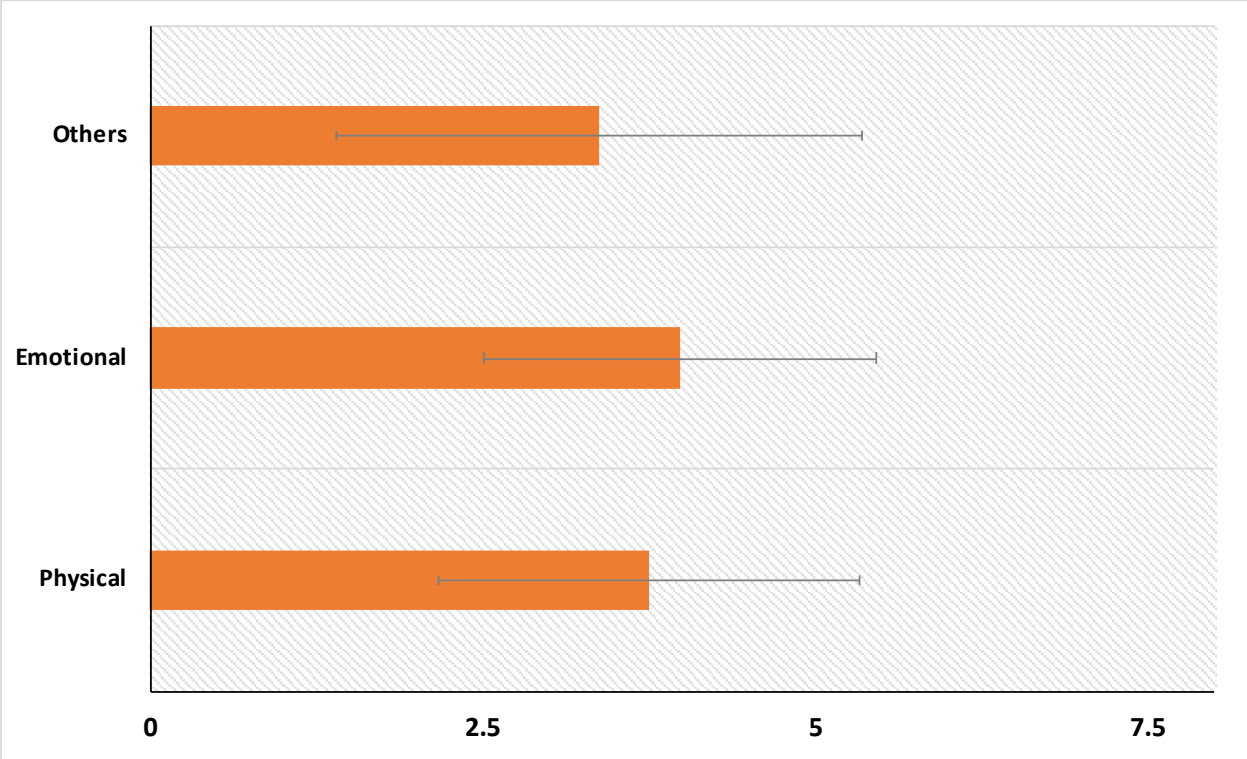


**Figure 2: Mean QoL scores of the participants**

The clinical data of the patients are shown in table 1. The duration of heart failure patients ranged from 0 year to more than 5 years. Most of the studied patients, 112 (63.3%) were diagnosed or had heart failure $\leq$ 5 years. Around 44 (24.9%) of the patients had > 3 comorbidities. Out of the total 177 study participants, there were 157 (88.7%) had hypertension (HPT), 135 (76.3%) were diagnosed with dyslipidemia, 76 (42.9%) with renal problems, and 129 (72.95%) had DM. The details of the patients' clinical characteristics are given in in table 1.

**Table 1: Clinical characteristics of the patients (n= 177)**

| Characteristics | N | % |
|---|---|---|
| **Duration** | | |
| ≤ 5 years | 112 | 63.3 |
| > 5 years | 65 | 36.7 |
| **No. of comorbidities** | | |
| ≤ 3 | 133 | 75.1 |
| > 3 | 44 | 24.9 |
| **HPT** | | |
| Yes | 157 | 88.7 |
| No | 20 | 11.3 |
| **Dyslipidemia** | | |
| Yes | 135 | 76.3 |
| No | 42 | 23.7 |
| **Renal** | | |
| Yes | 76 | 42.9 |
| No | 101 | 57.1 |
| **DM** | | |
| Yes | 129 | 72.9 |
| No | 48 | 27.1 |
| **Thyroid** | | |
| Yes | 152 | 85.9 |
| No | 25 | 14.1 |
| **Odema** | | |
| Yes | 78 | 44.1 |
| No | 99 | 55.9 |
| **Others** | | |
| Yes | 96 | 54.2 |
| No | 81 | 45.8 |
| **Hospital admission** | | |
| ≤ 3 | 128 | 72.3 |
| > 3 | 49 | 27.7 |
| **Current medications** | | |
| ≤ 3 | 148 | 83.6 |
| > 3 | 29 | 16.4 |

Relationship between the clinical characteristics and the mean QoL score is illustrated in table 2. Different clinical characteristics evaluated were disease duration, total no. of comorbidities, types of comorbidities i.e., HPT, dyslipidemia, renal problems, DM and others, hospital

admissions, no. of current medications. Based on the results obtained, it was noted that the clinical characteristics had deeply affected overall QoL of the studied heart failure patients. The studied clinical variables like disease duration, total no. of comorbidities, types of comorbidities i.e., HPT, dyslipidemia, renal problems, DM and others, hospital admissions, no. of current medications were found to have positive correlation with patients overall QoL. Furthermore, there was a weak and positive correlation was observed between various clinical characteristics and QoL. The detailed findings of these results are presented in table 2.

**Table:2 Correlation between clinical characteristics and QoL score**

| Characteristics | N | Mean (SD) | r-Value | *p*-Value |
|---|---|---|---|---|
| **Duration** | | | | |
| ≤ 5 years | 112 | 2.21 (1.37) | 0.123 | 0.099 |
| > 5 years | 65 | 2.89 (2.88) | | |
| **No. of comorbidities** | | | | |
| ≤ 3 | 133 | 3.11 (1.33) | 0.235 | 0.999 |
| > 3 | 44 | 3.72 (1.89) | | |
| **HPT** | | | | |
| Yes | 157 | 3.47 (2.53) | 0.251 | 0.077 |
| No | 20 | 3.83 (3.59) | | |
| **Dyslipidemia** | | | | |
| Yes | 135 | 3.03 (1.23) | 0.476 | 0.444 |
| No | 42 | 3.64 (1.32) | | |
| **Renal** | | | | |
| Yes | 76 | 2.93 (1.42) | 0.249 | 0.368 |
| No | 101 | 3.11 (2.64) | | |
| **DM** | | | | |
| Yes | 129 | 3.15 (1.59) | 0.321 | 0.663 |
| No | 48 | 3.48 (1.97) | | |
| **Thyroid** | | | | |
| Yes | 152 | 2.92 (2.43) | 0.147 | 0.076 |
| No | 25 | 2.16 (1.53) | | |
| **Odema** | | | | |
| Yes | 78 | 3.22 (1.76) | 0.128 | 0.897 |
| No | 99 | 3.63 (1.83) | | |
| **Others** | | | | |
| Yes | 96 | 3.64 (2.35) | 0.212 | 0.468 |
| No | 81 | 3.95 (1.48) | | |

| | | | | |
|---|---|---|---|---|
| **Hospital admission** | | | | |
| ≤ 3 | 128 | 2.38 (1.35) | 0.246 | 0.072 |
| > 3 | 49 | 2.32 (1.69) | | |
| **Current medications** | | | | |
| ≤ 3 | 148 | 2.99 (2.37) | 0.222 | 0.424 |
| > 3 | 29 | 2.93 (2.65) | | |

## CONCLUSION

In conclusion, our study confirmed a weak but positive correlation between various studied clinical characteristics and QoL of the heart failure patients.

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