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Heart Failure in Young Adults: Exploring the Risk Factors and Quality of Life

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Author`s Contribution

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ABSTRACT

Objective: To determine the risk factors and quality of life among patients presented with heart failure.

Methodology: A descriptive cross sectional study was carried out at cardiology department of Ghulam Muhammad Mahar Medical College Sukkur, during six months from June 2023 to December 2023. All the patients aged 18 to 45 years old, diagnosed as the cases of heart failure diagnosis (based on clinical guidelines, including symptoms such as dyspnea, fatigue, and evidence of cardiac dysfunction (e.g., reduced ejection fraction) for at least six months of either gender were included. Demographic information and clinical data were gathered through patient interviews and review of medical records, documenting symptoms, duration of heart failure. Risk factors were assessed by collecting data on lifestyle behaviors, family history and few laboratory investigations. Minnesota Living with Heart Failure Questionnaire (MLHFQ) was used for quality of life. Data were entered and analyzed using SPSS version 26.

Results: A total of 145 patients were studied with overall mean age of 42.43 years. Out of all 61 (59.2%) were males and 42 (40.8%) are females. 30 (29.1%) had overweight, and 7 (6.8%) patients were obese. Of these, 9 patients (8.7%) are diagnosed with right heart failure, 92 (89.3%) had left heart failure, and 2 patients (1.9%) had congestive heart failure. According to the risk factors 50.5% use tobacco, 12.6% consume alcohol, and 32.0% eat processed food. Chronic conditions include hypertension (24.3%), diabetes with hypertension (11.7%), lipid profile abnormalities 35.9%, and 64.1% are exposed to pollution.

Conclusion: Heart failure among young adults is associated with various modifiable risk factors and a considerable impact on quality of life. Despite the high prevalence of adverse conditions, interventions focusing on lifestyle modifications could potentially improve outcomes.

Keywords: Heart failure, Diabetes, Hypertension, Dyslipidemia, QOL

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Introduction

Heart failure represents a significant and growing health issue on a throughout the world.[1] It affects approximately 26 million individuals globally and is a major contributor to cardiovascular morbidity and mortality.[2] It is defined by the heart's inability to effectively pump blood, failing to meet the body's metabolic needs, resulting in debilitating symptoms, frequent hospital admissions, and elevated mortality rates. Its prevalence is rising, particularly in many middle- and low-income countriesy.[3]

The incidence of heart failure (HF) is known to rise with age, and in Western countries, the median age of HF patients is over 70 years.[4] As a result, HF is largely

regarded as a condition affecting older adults, with the majority of studies focusing on this population.[4] While Recent research has shown that the burden of heart failure is rising among younger individuals, specifically those under 50 years of age.[4-6]

Recently conducted studies investigated the different risk components and quality of life (QoL) in young adults who were diagnosed with heart failure. Young adult individuals in cardiac settings often face more negative psychological consequences.[7] Young adult patients frequently struggle to adapt to their condition, encounter distinct challenges and coping mechanisms, and report higher levels of depression, anxiety, post-traumatic stress symptoms, and reduced quality of life compared to their older counterparts.[7-9] Furthermore, as the prevalence of heart failure is continuously rising and this increase can be partly attributed to the aging population and a greater prevalence of cardiovascular risk factors, including diabetes, hypertension, and obesity.[1] Heart failure also presents a substantial economic burden, with healthcare costs associated with the condition totaling billions of dollars annually.[1,10] However, some studies have indicated that young adult HF patients face a greater risk of all-cause mortality and cardiovascular-related hospitalizations compared to elderly HF patients.

Additionally, individuals with coronary heart disease may experience emotional distress over time, potentially affecting their daily functioning and role performance.[11,12] Consequently, various aspects of managing can adversely influence the physical and emotional dimensions of survivors' perceptions of health, commonly referred to as health-related quality of life. It is important to note that QoL differs from health status; it is a multidimensional construct that reflects an individual's assessment of their physical and emotional functioning in relation to their perception of disease burden.[11,13] Furthermore, comorbidities are a crucial factor that significantly contributes to disease progression and influences each patient's quality of life. Health status not only affects outcomes but also directly influences healthcare expenditures. Patients with the lowest health-related quality of life (HRQoL) consume three times more of the annual healthcare budget compared to those in the higher HRQoL range. These factors underscore the importance of including HRQoL instruments in the baseline assessment of patients presenting with cardiovascular disease.[14,15] The progression and risk factors related to heart failure in young adults, as well as their quality of life (QoL), remain inadequately understood, primarily due to a lack of focused research, particularly at the local level. Most existing studies tend to concentrate on older populations, leaving a significant gap in knowledge regarding how heart failure uniquely impacts younger individuals. Given this context, this study aims to explore these critical areas to provide a clearer understanding regarding risk factors of heart failure and QOL in young adults.

Methodology

A cross-sectional study was carried out at cardiology department of Ghulam Muhammad Mahar Medical College Sukkur. Study duration was six months from June 2023 to December 2023. All the patients aged 18 to 45 years old, diagnosed as the cases of heart failure diagnosis (based on clinical guidelines, including symptoms such as dyspnea, fatigue, and evidence of cardiac dysfunction (e.g., reduced ejection fraction) of either gender were included. Individuals with congenital heart defects or other congenital conditions leading to heart failure were excluded. Demographic information, including age, gender, and ethnicity, was recorded.

Clinical data were evaluated through patient interviews and review of medical records, documenting symptoms, duration of heart failure. All the risk factors were assessed by collecting data on lifestyle behaviors such as smoking history, alcohol consumption, stats physical activity, and dietary habits. A thorough family history of cardiovascular diseases was also obtained to determine hereditary influences. Data on comorbid conditions such as hypertension, diabetes, and obesity were recorded. SPSS version 26 was used for data analysis.

Results

This study included 145 patients, with 59.2% being male (n=61) and 40.8% female (n=42). In terms of occupation, the majority were housewives (26.2%), followed by laborers (21.4%), shopkeepers (13.6%), and others with smaller representations like teachers, businesspersons, and private job employees. Socioeconomically, 65% of the patients were classified as poor, 28.2% as middle-class, and 6.8% as upper-class. Family history of similar conditions was reported by 73.8% of participants. Regarding BMI, 64.1% had a normal BMI, while 29.1% were overweight and 6.8% were obese. (Table I)

Out of 103 patients with heart failure, the majority (89.3%) were diagnosed with left heart failure. Right heart failure was in 8.7% patients, while 1.9% of patients had congestive heart failure. (Figure I)

Table I: Demographic and clinical characteristics of the patients. (n=145)

Study variables		N	%
Gender	Male	61	59.2
	Female	42	40.8
Occupation	Housewife	27	26.2
	Shopkeeper	14	13.6
	Teacher	8	7.8
	Labour	22	21.4
	Housemaid	1	1.0
	Police	1	1.0
	Business	4	3.9
	Barber	1	1.0
	Nurse	4	3.9
	Lawyer	2	1.9
	Tailor	2	1.9
	Judge	1	1.0
	Private job	13	12.7
	Technician	1	1.0
	Clerk	1	1.0
	Student	1	1.0
SES	Poor	67	65.0
	Middle	29	28.2
	Upper	7	6.8
Family. history	Yes	76	73.8
	No	27	26.2
BMI	Normal	66	64.1
	Overweight	30	29.1
	Obese	7	6.8

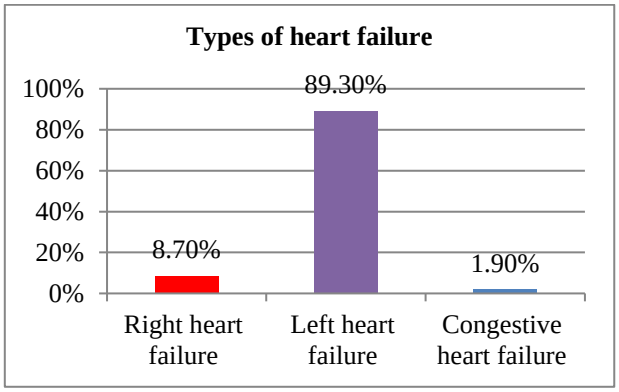

Figure 1. Types of heart failure. (n=145)

Out of all, 50.5% cases were smoker and 12.6% had history of alcohol consumption. Processed food consumption was reported by 32%. Nearly half (45.6%) had chronic medical disorders, with hypertension being the most common (24.3%). Lipid abnormalities were found in 35.9% of patients and 64.1% were exposed to high pollution levels. The majority (64.1%) rated their quality of life as fair, 31.1% reported poor quality, and only 4.9% rated it as good. (Table II)

In this study differences in quality of life by gender and SES were not statistically significant (p-values of 0.230 and 0.336, respectively as shown in Table III.

Table II: Risk factors and quality of life of heart failure. (n=103)

Study variables		N	%
Use tobacco	Yes	52	50.5
	No	51	49.5
Alcohol	Yes	13	12.6
	No	90	87.4
Processed food	Yes	33	32.0
	No	70	68.0
Chronic medical disorders	No	56	54.4
	Diabetes	6	5.8
	Diabetes and hypertension	12	11.7
	Diabetes and renal disease	1	1.0
	Hypertension	25	24.3
	Kidney disease	3	2.9
Lipid profile abnormalities	Yes	37	35.9
	No	66	64.1
Pollution level	Yes	66	64.1
	No	37	35.9
Other risk	No any	102	99.0
	Pregnancy	1	1.0
Quality of life	Good	5	4.9
	Fair	66	64.1
	Poor	32	31.1

Table III: Quality of life of heart failure according to gender and SES. (n=103)

	Quality of life				p-value
Variables	**Good**	**Fair**	**Poor**	**Total**	
Gender					
Male	5	37	19	61	
	4.9%	35.9%	18.4%	59.2%	0.230
Female	0	29	13	42	
	0.0%	28.2%	12.6%	40.8%	
Socio-Economic status					
Poor	2	44	23	69	
	1.9%	42.7%	22.3%	67.0%	
Middle	3	20	6	29	0.336
	2.9%	19.4%	5.8%	28.2%	
Upper	0	2	3	5	
	0.0%	1.9%	2.9%	4.9%	

Discussion

Heart failure poses a significant public health challenge and is linked to a diminished health-related quality of life (HRQoL). There is a scarcity of data on the quality of life of heart failure patients in Pakistan**.** This study has been done on 145 heart failure patients evaluate the risk factors and quality of life with an overall mean age of 42.43 years and male predominance 59.2% and 40.8% female. In comparison, a study by Shabana et al.[16] reported a mean age of 59 ± 12.7 years, with a male majority of 58.2%. Similarly, Shripad Vithalrao Dhanorkar et al.[17] found that most patients were over 45 years old, with a predominance of males. The higher mean age in other

studies compared to this study may be due to the fact that this study focused only on younger patients up to 45 years old. The male predominance observed across all studies, including the current study, could be due to difference in life style, such as higher rate of smoking and alcohol consumption among males.

In this study according to the risk 50.5% cases were smoker and 12.6% had history of alcohol consumption. Processed food consumption was reported by 32%. Nearly half (45.6%) had chronic medical disorders, with hypertension being the most common (24.3%). Lipid abnormalities were found in 35.9% of patients and 64.1% were exposed to high pollution levels. In the comparison of this study Chamberlain AM et al[18] reported that the hypertension, coronary artery disease, diabetes and the arrhythmia were more significantly linked to heart failure in younger individuals than in older patients and according them heart failure due to hypertension was twice as high in patients with heart failure with preserved ejection fraction (38.7%) compared to those with heart failure with reduced ejection fraction (17.8%).[18]

According to another study by Mulugeta H et al[20] the regression analysis indicated that age, the presence of diabetes mellitus, score of the social support and score of depression were significant factors affecting overall health-related quality of life (HRQoL). According to previous studies by Dunlay SM et al[21], hypertension was the most prevalent condition among patients with newly diagnosed heart failure, affecting 66% of individuals.

Additionally, in the Framingham Heart Study, it was found that hypertension preceded heart failure in 91% of cases.[22] Our findings were also supported by the Lawson CA et al.[22] Bui AL er al[23] also reported that the several risk factors have been identified that not only predict the incidence of heart failure (HF) but also its severity. These include ischemic heart disease, hypertension, diabetes, obesity, and smoking.[23] Furthermore in this study majority (64.1%) rated their quality of life as fair, 31.1% reported poor quality, and only 4.9% rated it as good. Socioeconomically, 65% of the patients were classified as poor, 28.2% as middle-class, and 6.8% as upper-class. Family history of similar conditions was reported by 73.8% of participants. Regarding BMI, 64.1% had a normal BMI, while 29.1% were overweight and 6.8% were obese. Furthermore, the quality of life based on gender and SES was statistically insignificant (p->0.05).

In aligns to this study Johansson I et al[24] observed that the health-related quality of life (HRQoL) serves as a robust and independent predictor of all-cause mortality and hospitalizations due to heart failure (HF) across various geographic regions. This relationship holds true for patients experiencing both mild and severe symptoms of heart failure, as well as those with preserved and decrease ejection fraction.[23] Consistently McCormick AD et al[25] reported that many adolescents and young adults with heart failure, along with their caregivers, report experiencing impaired health-related quality of life (HRQOL). However, specific cardiac diagnoses and certain demographic groups have been linked to better reported HRQOL outcomes. Similar to this study, it is recognized that quality of life is a primary objective in preventive and therapeutic cardiology. It plays a crucial role not only as an outcome measure in clinical trials for congestive heart failure (CHF) but also in guiding the therapeutic decisions made by individual physicians.[26] Furthermore, there is a pressing need for more research with carefully selected quality of life measures, which should be specifically chosen for their relevance to patients and the hypotheses under investigation.

Conclusion

As per the study findings the Heart failure in young adults observed to be linked with different risk factors that significantly affect their overall health and well-being. Commonest risk factors include CHD, obesity, hypertension, diabetes and smoking, all of which can exacerbate the severity of heart failure and lead to poorer health outcomes. The impact of heart failure on quality of life can be profound, often resulting in limitations in daily activities, emotional distress, and a diminished sense of overall well-being.

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