Approaches to Measure the Health-related Quality of Life among Patients with Cardiac Problems: A Narrative Review

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ABSTRACT

Introduction: The health-related quality of life (HRQoL) of cardiac patients provides a picture of the patient's perspectives on their psychological, social, and physical well-being. Assessment of HRQoL helps to understand how disease conditions and treatment modalities influence overall health outcomes. Various validated instruments are available to measure HRQoL of patients with cardiac problems. Thus, this review aimed to discuss the commonly used generic and disease-specific tools for measuring HRQoL in cardiac patients.

Methods: For the study, EMBASE, Medline, and CINHAL databases were searched which was published between 2018 and 2025. Titles and abstracts were screened for eligibility criteria, followed by full-text review of potentially relevant studies.

Results: Seven studies were included in the analysis. Generic questionnaires primarily assess subjective well-being in relation to overall health. Specific instruments reflected the specific disease›s impacts on a person's life. For the measurement of general health, WHOQOL-100, WHOQOL-BREF were developed by the World Health Organization, and the EuroQol Group developed EuroQol 5 instrument. These tools are widely used in the field of cardiac disease. The Seattle Angina Questionnaire is used to assess the effect of angina on cardiac patients' everyday life, while the Kansas City Cardiomyopathy Questionnaire and Minnesota Living tool measures disease-specific symptoms, especially for Heart Failure.

Conclusions: Assessment of quality of life is essential in the medical field, as it provides holistic information on the health and general well-being of the patients. So, healthcare professionals can deliver patient-centered care by identifying the hidden needs of the patients.

Keywords: Approaches, Cardiac Patients, Measurement, Quality of Life, Tools.

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INTRODUCTION

Quality of life is the subjective feelings towards illness.[(1)] According to the World Health Organization (WHO), "Quality of Life is an individual's perception of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards and concerns. [(2)] Likewise, the Centers for Disease Control and Prevention defines as Health-related quality of life (HRQoL) as an individual's or a group's perceived physical and mental health, which is affected by a medical condition or its treatment over time.[(3)] It is a multidimensional concept that incorporates a person's social, mental, emotional, and physical health.[(4)] So,

it acts as a bridge to fulfill the gap between clinical outcomes and a patient's experience, to address the meaningful care to them.[5]

QoL does not solely depend on personal experience or the satisfaction of people; it is based on the correctness of behaviour.[6] The second philosophical approach belief that people will choose things according to their personal preferences, which helps to achieve their goals. Regarding the experience of individuals, a person should have good feelings of joy and pleasure to be satisfied with life.[7] HRQoL study among CVDs patients in Malaysia revealed that significantly lower quality of life than those without CVDs. In addition to decreased mobility, sexual activity, and regular activities, the majority of participants experienced depression, physical pain, altered mental functions, and worse sleep patterns.[8]

A comparison study in New Delhi, India, on HRQOL among CVD patients using WHOQOL-BREF showed lower scores of qualities of life in all four domains, physical (21.1 vs 25.5), psychological (20.9 vs 21.6), social (7.2 Vs 10.0), and environment (26.9 vs 27.1) in comparison to healthy groups. Physical limitation, anxiety, depression, and lower treatment satisfaction were mostly detected problems of CVD patients.[9]

Studies investigating the health-related quality of life among patients experiencing myocardial infarction reported that a person with recent cardiac events has a low quality of life. Specifically, the score was seen less between the period of one year, then gradually it increased in an increasing range between the period of 1–2 years post-MI. Furthermore, sex differences have been noted; female participants have a lower quality of life than male participants.[10]

Valve replacement and valvular repair highly significant effect on the quality of life of the valvular heart disease patients. Heart surgery causes the person weakness and exhaustion and also cause imbalance in social, family, and work life. The general quality of life scores were reported as (mean ± SD: 32.33 ± 2.29 and 32.89 ± 2.60) for the valve repair group and valve replacement group, respectively. The Minnesota quality of life among the valve repair group was 60.89±17.67 and 63.42 ±12.13 in the valve replacement group. The general quality of life and the Minnesota scales did not significantly differ. The result suggests that both instruments are useful for assessing the individual's quality of life.[11]

Assessment of QoL provides a holistic understanding of patients' well-being.[12] It helps to analyze the effectiveness of clinical intervention and guides in planning to deliver health services according to patient needs.[13] Therefore, health professionals should have a thorough understanding of HRQoL about the patients they provide care to. This understanding enables them to plan appropriate responses to emerging needs and evaluate the impact of their interventions.

METHODS

Search strategy

A comprehensive literature search from 2018 to 2025 was done to identify relevant studies. At first screening of the title and abstract was performed, and full text of potentially eligible studies was reviewed thoroughly. Cardiovascular problems and behavioral lifestyle intervention were included in this study. The electronic databases searched were Google Scholar, PubMed, Elsevier, Clinical Keys, Scopus library, ProQuest, and Hinari. The Boolean search was done using the following keywords: "cardiovascular disease" OR "heart disease" AND "quality of life" "psychological well-being" OR "emotional well-being" OR "health-related quality of life" AND "CVDs".

RESULTS

A total of twenty-one studies were identified, and seven studies are included for analysis, which met the inclusion criteria. In this review, the studies were included that were conducted in the year from 2019 to 2024. The quality of life of the cardiac patients was assessed by using various approaches across countries like China, India, Indonesia, Slovakia, Spain, Saudi Arabia (Table 1). The sample sizes were between 83 to 397 patients, including Chronic heart failure, Coronary artery bypass grafting, Percutaneous coronary intervention, Hypertension, Coronary Heart Disease, Ischemic heart disease, and Myocardial Infarction. Randomized controlled trials and descriptive studies are included in this review.

Table 1: Description of the Study using Different Approaches for Assessing Quality of Life

Study author, year, country	Research Design	Sample / Population	Approaches for assessing quality of life	Outcomes
Arjuna & Trichur, 2020.[14] India.	Randomized controlled trial	200 Chronic heart failure patients	General QoL: Short Form 36 Health Survey Disease-specific QoL: Minnesota Living with Heart Failure Questionnaire	After the cardiac rehabilitation, significant changes are shown in the physical component, mental component, and disease-specific (t = 2.23, p = .02, t = 11.17, p < .001, t = 5.92, p < .001) components of QoL in the intervention and control group. Regarding the disease-specific QoL more significant improvement was seen in the intervention group than the control group (t = 2.19, p = .02).
Nagyova et al., 2020.[15]	Randomized controlled trial	83 Coronary artery bypass grafting or Percutaneous coronary intervention patients	Short Form 36 Health Survey	After the Nordic walking intervention among patients with coronary artery disease the mental components quality of life was seen to improve (ΔMCS: -0.4 vs. +2.2, P=0.400), but no significant differences were found in the eight dimensions of SF-36.
Komalasari *et al.*, 2019.[16] Indonesia.	Descriptive Study	397 Hypertension, Coronary Heart Disease, Heart failure, Ischemic heart failure patients	WHOQOL-BREF	Among the CVD patients, 94% patients had a good quality of life, 85% patients had an adequate environmental quality of life, 60.7% had active social relationships, 54.7% respondents had good physical quality of life, and 44.8% psychological components were found stable.

Study author, year, country	Research Design	Sample / Population	Approaches for assessing quality of life	Outcomes
Sahanaa *et al.*, 2023.[10], India	Cross-sectional study	330 Myocardial Infarction patients	Short form 36 questionnaire	Quality of life among cardiac patients is significantly associated with age. The QOL in the different domains, like physical functioning, general health, energy, and social functioning, was found to significantly decrease with advancing age.
Bahall *et al.*,2020[17], Spain	Cross-sectional study	396 patients attending the cardiac clinic	12-item Short-Form (SF-12)	Comorbidities' effect on the quality of life of the cardiac patients. The increasing score of PHQ is related to the decreasing score of the physical component and mental component of QOL (PCS: $p = 0.028$; MCS: $p \leq 0.001$).
Alzahrani *et al.*,2022[18] Saudi Arabia.	Cross-sectional study	343 Cardiac Patient	World Health Organization quality of life (WHO-QOL-BREF)	Patients who attend cardiac clinics have 27.1% psychiatric disorders (QOL: 4.25 ± 0.85). Patients who have psychiatric problems have statistically significantly lower QOL than those without psychiatric disorders in all the WHOQOL-BREF domains. The psychological domain has the highest difference (76.9 vs. 87.8, $P < 0.001$), the lowest difference was found in the environment domain (80.2 vs. 87.9, $P < 0.001$).
Zheng *et al.*,2024,[19] China	Randomized Controlled Study	106 patients' Percutaneous coronary intervention	12-item Short-Form (SF-12)	Home Cardiac Rehabilitation has very significant impact on improving physical: 47.46±9.86 vs 43.28±8.21; and Mental: 50.68±9.82 vs 48.26±9.69) (P<0.05) Component Summary of quality of life.

Approaching measures

Individual quality of life can be explored by utilizing a variety of tools, but generic and specific tools are the most commonly used. Generic questionnaires are comprehensive and address subjective well-being about overall health. Disease-specific instruments reflect on specific impacts of diseases on a person's life.[7,20]

Disease-specific Measures

Minnesota Living with Heart Failure Questionnaire (MLHFQ)

The "Minnesota Living with Heart Failure Questionnaire" was a commonly used and widely accepted standard tool.[21] It was developed by Dr. Thomas S. Rector and Dr. Jay N. Cohn in 1984 at the University of Minnesota

to assess how heart failure impacted on quality of life among heart failure patients. This tool consists of 21 items.[22] This questionnaire addresses the physical symptoms, like breathing problems, fatigue, peripheral edema, insomnia, and psychological conditions like depression and anxiety. [23]

The physical and social functions address doing household chores, traveling away from home, climbing stairs, walking, working, taking rest, sleeping, engaging in family or social activities, sexual relations, and dietary habits. In cognitive aspects, it focuses on concentration, memory, and emotional issues. Additionally, questions about treatment side effects, hospital admissions, and healthcare expenses are included in patients' quality of life. [21]

Kansas City Cardiomyopathy Questionnaire (KCCQ)

The KCCQ is a standard tool, specially designed to measure the health status of the patient with heart failure. To assess the day-to-day variability of the symptoms of heart failure, a two-week recall period is given and which is the most specific and widely used self-reported questionnaire.[24] It consists of 23 items. This tool is also available in a short version of 12 items. [25,26]

The 23-item KCCQ is divided into seven domains. The physical limitation domain consists of six items, Symptom Stability includes one item, Frequency of symptoms includes four items, burden-related four items, Self-Efficacy includes two items, Quality of Life includes three items, and social limitation-related four items. [26]

Seattle Angina Questionnaire (SAQ)

The SAQ tool was developed to assess the quality of life related to coronary artery disease. It is a validated standard disease-specific tool. The original version consists of 19 items. Later, revised short version SAQ-7 was developed for patients with stable coronary artery disease with percutaneous coronary intervention.[27] The original version domain consists of nine items related to restrictions related to physical activity, angina stability, and frequency of angina pain. The four components are related to treatment satisfaction, and the remaining three components belong to quality of life. Item responses are rated on the Likert scale. Scores are generated from a summation of the domain of each value and range from 0 to 100. [27,28]

Generic measures

World Health Organization Quality of Life (WHOQOL)

Respecting the individual cultural, social, and environmental contexts, WHO developed WHOQOL-100 and its short version, the WHOQOL-BREF.

WHOQOL-100

This tool consists of 100 questions in 29 language versions. It has six domains with 24 subdomains. The first domain is physical health, which consists of Pain and discomfort, energy and fatigue, sleep and rest. The psychological domain is the second domain, which consists of emotional and cognitive aspects. It includes both positive and negative feelings, self-esteem, body image, learning, memory, and concentration. It also focuses on how physical symptoms affect the individual's daily life. Domain III is concerned with the level of independence. It encompasses daily living activities, reliance on medical treatment, physical mobility, and functional ability. Social Relationships domains include individual relationships. The fifth domain is related to the Environment. It encompasses physical safety and security, the home environment of the person, satisfaction with their work,

and satisfaction with financial resources that meet their needs. Opportunities for learning new information and technology, financial stability, participation in and opportunities for recreation/ leisure activities, and transportation facilities. Domain VI is related to Spirituality/Religion/ Personal Beliefs.[2]

WHOQOL-BREF

The standard WHOQOL-BREF tool consists of 26 items, which can be used to measure the person's perceived quality of life. This tool can be administered as a self-reported form or it may be interviewer-administered. When asking the questions, respondents are requested to recall the experiences of the previous two weeks. A five-point Likert scale is used to rate the respondents' quality of life, with 1 denoting "very poor" to 5 denoting "very good," based on how intensity of stress they perceive.(29) Domain scores were positively rated, where lower scores indicate lower quality of life and higher scores indicate a higher quality of life.[2]

EuroQol 5

The EQ-5D is a generic measure that measures the general health-related quality of life of the patient.[30] It was developed by the EuroQol Group. This questionnaire summarizes the well-being and illness aspects.[31] It comprises two main components. The descriptive section includes a questionnaire form, which includes "mobility, self-care, usual activities, pain/discomfort, and anxiety/ depression". In this dimension, responses are categorized into five levels: No problem, Moderate problem, Severe problem, and Extreme problem.[30,31] Another section is EQ Visual Analogue Scale (EQ VAS). In which individual records his/ her responses on a vertical analogue scale. Individual respondents are requested to tick on the visual analogue scale on the basis of their perception of their health. The scale, with zero representing the worst health to 100 indicating the best health, on their overall health.[30]

DISCUSSION

Generic and disease-specific tools were used to measure the health-related quality of life among cardiac patients. SF-36, WHOQOL-BREF, and EQ-5D were the most commonly used generic tools. Patients suffering from cardiovascular diseases (CVDs) experience a variety of problems related to physical, social, and emotional. Human psychological status, presence of comorbidities, age, and severity of heart disease are influencing factors for quality of life. Therefore, healthcare professionals need to adopt a comprehensive approach to care, considering the impact on how they perceive their quality of life. [32]

Research indicates that patients with cardiac problems have lower HRQoL scores than patients without cardiac problems.[33,34] Older adults and women experience a more negative impact on quality of life. This impact is observed in patients' mobility, breathing, elimination, usual activities, and overall comfort level. [33] Short Form 36, used to measure quality of life for PCI and CABG shows significant positive changes over the 3 months, but these changes are also affected by treatment modalities.[34] Similarly, patients who attended the cardiac rehabilitation center demonstrated significant improvement in quality of life for six months. However, a greater effect size was observed among male patients in the physical health domain, whereas in female patients larger effect size was observed in mental health domain.[35] Effective early symptom management is crucial for improving the quality of life. Early symptom management increases health status, recognition of the worsening condition, and prompt action. This approach facilitates positive treatment findings and improves quality of life.[10]

The Minnesota Living With Heart Failure Questionnaire was used to measure Quality of life among elderly patients with aortic stenosis with a median score 52 (range, 7–101).[36] In heart failure patients, the lowest scores were

role limitations physical (18 ± 33), in the domain of health change (25 ± 23), and in physical functioning (34 ± 26).[37] When assessing the internal consistency and reproducibility of the Kansas City Cardiomyopathy Questionnaire among patients with aortic stenosis, the quality-of-life domain demonstrated acceptable internal consistency (Cronbach's = 0.72). The serial assessments conducted between 6 and 12 months among clinically stable patients showed moderate-to-strong agreement in the intraclass correlation coefficient, supporting the reproducibility of the KCCQ.[38]

Different approaches have been developed to measure the valid and reliable way of measuring quality of life among cardiac patients. These tools help us to identify the patient's perception of life towards disease disease-specific condition.[39] Good mental health is crucial for the physical and social well-being of the individual, which enables an individual to maximize his/her potential in a meaningful way. Approximately 970 million people globally suffer from mental health problems, with a prevalence rate of 13.0%. Poor mental health often coexists with physical illness.[40]" Cardiovascular diseases lead to psychological challenges like feelings of pressure, loneliness, and inferiority. These emotional difficulties may result in isolation from work and social life, which also adversely affects in quality of life. [41]

Patients suffering from cardiovascular diseases (CVDs) experience a variety of problems related to physical, social, and emotional aspects. Human psychological status, presence of comorbidities, age, and the severity of the heart disease are also influencing factors for quality of life. Therefore, healthcare professionals need to adopt a comprehensive approach to care, considering the impact on how they perceive their quality of life.

CONCLUSION

Health-related quality of life Quality of Life is a comprehensive concept that encompasses an individual's physical, psychological, and social well-being. Quality of life, impact on a person's physical function, role limitations, bodily pain, and health perceptions. The psychology aspect focuses on emotional aspects, free from stress. Patient education and management of health status improved patients' QoL. Quality of life instrument provides valuable insights for policymakers and decision-makers, to prioritize patient needs, enable more efficient allocation of resources for various measures, too was also developed.

For disease-specific, especially for cardiac disease instrument like Minnesota Living with Heart Failure Questionnaire, Kansas City Cardiomyopathy Questionnaire, Seattle Angina Questionnaire, and Heart related quality of Life Scale are very useful. This instrument addresses the symptoms, functional limitation and concerns related to the cardiac disease. For general assessment generic quality of life tool like SF-36, WHOQOL-BREF addresses the physical, psychological, social, and environmental aspects of the patients. Therefore, future researchers are recommended to apply a combined approach using both generic and disease-specific instruments to identify the holistic view of the patients.

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