

Health-related quality of life in cardiovascular patients*

Calidad de vida relacionada con la salud en pacientes cardiovasculares

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Abstract

The objective was to assess health-related quality of life in patients with cardiovascular disease. A cross-sectional study was conducted at a primary care institution in 2023. The EQ-5D-5L scale was administered to participants in the cardiovascular risk program. Dimensions and the visual analogue scale were analyzed according to the presence of specific conditions. A total of 2,282 individuals participated. Among patients with hypertension and diabetes, self-care was the least affected dimension, while in those with kidney disease, mobility and self-care showed less deterioration. Patients with two conditions presented better scores in self-care and mobility. The coexistence of all three conditions was associated with greater impairment in mobility and lower scores on the visual analogue scale. Hypertension and diabetes, when occurring alone, were associated with lower levels of anxiety and depression. In conclusion, quality of life is negatively affected by cardiovascular diseases, particularly when accompanied by kidney disease.

Keywords:

Cardiovascular diseases, chronic diseases, comorbidity, EQ-5D-5L, health-related quality of life.

Resumen

El objetivo fue evaluar la calidad de vida relacionada con la salud en pacientes con enfermedad cardiovascular. Se realizó un estudio transversal en una institución de atención primaria durante 2023. Se aplicó la escala EQ-5D-5L a los participantes del programa de riesgo cardiovascular. Se analizaron las dimensiones y la escala visual analógica según la patología. Participaron 2.282 personas. En pacientes con hipertensión y diabetes, el autocuidado fue la dimensión menos afectada, mientras, en enfermedad renal, movilidad y autocuidado mostraron menor deterioro. Los pacientes con dos enfermedades presentaron mejores puntajes en autocuidado y movilidad. La coexistencia de las tres patologías se asoció con mayor afectación en movilidad y menor puntuación en la escala visual. Hipertensión y diabetes, de forma aislada, se relacionaron con menores niveles de ansiedad y depresión. Se concluye que la calidad de vida se ve afectada por enfermedades cardiovasculares, especialmente cuando se asocian a enfermedad renal.

Palabras clave:

Comorbilidad, calidad de vida, calidad de vida relacionada con la salud, enfermedades cardiovasculares, enfermedades crónicas, EQ-5D-5L.

Introduction

Cardiovascular diseases (CVD) comprise a group of disorders affecting the heart and blood vessels. Cardiometabolic, behavioral, environmental, and social risk factors are the primary contributors to CVD (Ko et al., 2015). These diseases are the leading cause of disability and premature death worldwide, placing a significant burden on patients, families, and healthcare systems. Consequently, CVD prevention in primary care is essential (Tito et al., 2022). A comprehensive approach to managing CVD risk factors includes lifestyle counseling, weight control, cholesterol-lowering therapies, blood pressure regulation and consideration of health-related quality of life (HRQoL) (Ko et al., 2015).

According to the American Heart Association's 2022 report, an estimated 19 million CVD-related deaths occurred globally, with three-quarters in low- and middle-income countries (Roth et al., 2020). The global prevalence of cardiovascular disease (CVD) has grown remarkably in the last three decades. In 1990, about 271 million people were living with CVD (95% UI: 257–285 million), and by 2019 this figure had nearly doubled to 523 million (95% UI: 497–550 million). Mortality followed a similar progression, increasing from 12.1 million deaths (95% UI: 11.4–12.6 million) to 18.6 million (95% UI: 17.1–19.7 million). The burden is also evident when looking at disability-adjusted life years (DALYs) and years of life lost (YLL), which showed a substantial rise; YLL practically doubled, moving from 17.7 million (95% UI: 12.9–22.5 million) in 1990 to 34.4 million (95% UI: 24.9–43.6 million) in 2019 (Roth et al., 2020). These numbers demonstrate not only the extent of the problem, but also the increasing strain that CVD places on health systems and on patients' lives.

It is now more important than ever to measure health-related quality of life (HRQoL) in the context of chronic disease, especially in cardiovascular conditions. It provides insight into how patients perceive their own decline in health, which is not always clear through clinical findings alone. HRQoL encompasses both physical and mental self-reported health, and it is a sensitive outcome for evaluating interventions in patients with established CVD (Ko et al., 2015). One commonly used tool is the EQ-5D-5L, a generic instrument developed to assess HRQoL in individuals with heart disease and other chronic noncommunicable conditions. It assesses five dimensions, each with five degrees of severity, and incorporates a visual analogue scale (VAS) to measure overall perceived health.

HRQoL is intrinsically broad and multifaceted, combining social functioning, emotional well-being, and physical limitations to reflect the everyday experience of living with a disease. This construct has become central in the management of chronic cardiometabolic disease (Juenger et al., 2002; Rumsfeld et al., 2013). Numerous studies have shown that patients with lower HRQoL scores face more frequent hospitalizations, difficulties maintaining adherence, and have higher mortality associated with cardiovascular disease (Dyer et al., 2010; Hobbs et al., 2002). Because of this, assessing HRQoL gives clinicians a dimension that traditional clinical measurements cannot fully capture and helping to understand what the disease means in real terms for patients.

As the focus on patient-centered outcomes has grown, the significance of HRQoL has also increased. By integrating physical, emotional, and social aspects, it highlights deterioration that may go unnoticed in laboratory or imaging parameters (Juenger et al., 2002; Rumsfeld & Ho, 2009). The evidence consistently links low HRQoL with higher hospitalization rates, reduced adherence, and worse survival in cardiovascular disease (Dyer et al., 2010; Hobbs et al., 2002). Therefore, the inclusion of this type of measurement enhances the understanding of clinical outcomes and gives a more comprehensive perspective of the patient's situation.

The EQ-5D-5L generates a single utility score based on population preferences, summarizing individuals' perception of their health status. This score serves as a valuable tool to quantify disease impact and evaluate the benefits and risks of interventions. HRQoL has become an essential metric not only for understanding patient outcomes but also for informing economic evaluations and decision-making in the health care sector (Tito et al., 2022). In this context, the objective of this study is to evaluate the health-related quality of life in patients with cardiovascular disease.

Methods

Study design

This cross-sectional analytical study was conducted in 2023 among participants enrolled in the cardiovascular risk program of a primary care institution in the Metropolitan Area of Bucaramanga, Colombia. This study aimed to evaluate health-related quality of life in adults living with cardiometabolic conditions that are typically managed in primary care.

Participants

Participants were invited to join the study during their scheduled consultations within the cardiovascular risk program. Eligible individuals were adults diagnosed with at least one of the following conditions: high blood pressure (HBP), diabetes mellitus (DM), or chronic kidney disease (CKD). Additional inclusion criteria were the ability to provide informed consent, willingness to participate, and the absence of cognitive impairments that could interfere with their understanding or completion of the questionnaires.

A total of 2,282 patients participated in the study. Sociodemographic data included age, sex, insurance affiliation regime, educational attainment, area of residence, and municipality. Clinical variables recorded were the presence of HBP, DM, and CKD and the total number of coexisting conditions. For analytical purposes, comorbidity profiles were categorized as: a single condition (HBP, DM, or CKD), paired conditions (HBP+DM, HBP+CKD, or DM+CKD), and the coexistence of all three conditions.

Ethical considerations

This study adhered to national ethical regulations and follows the principles outlined in the Declaration of Helsinki. All participants were informed about the purpose and procedures of the study, and they provided written informed consent prior to enrollment. Confidentiality was maintained throughout the process, and all identifying information was blinded in the database to protect privacy. This research was approved by the Institutional Ethics Committee of the Cardiovascular Foundation of Colombia under code 07461-25

Instruments

Health-related quality of life was evaluated through the EQ-5D-5L (“EuroQol 5-Dimensional 5-Level”) (Herdman et al., 2011), a standardized questionnaire widely used to measure perceived health status. The tool evaluates five dimensions, mobility, self-care, usual activities, pain/ discomfort, and anxiety/depression, each with five possible response levels that reflect increasing severity.

Participants also completed the EQ-VAS, a visual analogue scale ranging from 0 (worst imaginable health) to 100 (best imaginable health). The EQ-5D-5L has shown strong validity in populations with chronic cardiovascular and metabolic conditions and is frequently employed in clinical assessments and economic evaluations. Reported reliability is .761 (95% CI: .712–.797) and the validity in asymptomatic patients at .901 and in symptomatic patients at .785 (Wiethoff et al., 2024).

Procedure

Data collection was carried out by trained personnel during routine program visits. Participants were informed about the study and invited to participate, after which the EQ-5D-5L and EQ-VAS were administered in a private, quiet environment to ensure comfort and minimize distractions. Sociodemographic and clinical information was cross-checked against the program’s medical records to ensure accuracy and completeness.

Data analysis

Continuous variables were summarized using measures of central tendency and dispersion, while categorical variables were presented as absolute frequencies and percentages. For the EQ-5D-5L, the distribution of responses across each of the five severity levels was analyzed. Health profiles, reflecting combinations of responses across the five dimensions, were also evaluated to identify recurrent patterns in perceived impairment.

EQ-VAS scores, which showed a non-normal distribution, were described using the median and interquartile range. Differences in HRQoL dimensions and comorbidity groups

were assessed using Chi-square tests. All data were initially organized in Microsoft Excel and subsequently analyzed with Stata version 16.

Results

Sociodemographic analysis: The EQ-5D-5L quality of life scale was measured in the 2,282 patients who participated in the study. Of these, 54.86 % were women and 45.14 % were men, 81.20 % were affiliated to the contributory regime. In terms of educational level, 38.59 % had completed high school and 33.25 % had elementary school education. Socioeconomic strata are 1 and 2 predominated with 61.74 % of the population. Regarding the area of residence, 83.46 % lived in urban areas. Likewise, the municipalities with the highest percentage of patients are Piedecuesta and Bucaramanga with 48.77 % and 38.56 %, respectively. Regarding the number of diseases, 67.05 % presented only one diagnosis of the diseases evaluated and 4.6 % presented all three diseases.

Of the patients, 67.05 % (n=1,530) had only one disease, 28.36 % (n=647) had two diseases and 4.6 % (n=105) had three chronic diseases. Of the total number of patients to whom the questionnaire was applied, 54.56 % (n=1,245) had HBP as the only diagnosis, 11.92 % (n=272) diabetes and 0.57 % (n=13) CKD as the only chronic disease. Similarly, 14.77 % (n=337) had HBP+DM, 12.93 % (n=295) HBP + CKD and 28.35 % (n=647) DM+CKD, and only 4.6 % (n=105) presented all three conditions (HBP+DM+CKD) (see Table 1).

Across most conditions, there was a slight predominance of affected women, except among patients with DM and CKD as the only diagnosis. The majority of patients in all disease categories were affiliated with the contributory regime. Educational attainment differed significantly across comorbidity groups: patients with a single condition predominantly had high school education, whereas those with two or three conditions more often had elementary education. Socioeconomic stratum 1 was most common overall, except in HBP+DM, where stratum 2 predominated, followed by stratum 1; however, no statistically significant differences were observed between strata. Patients were predominantly from the municipalities of Piedecuesta and Bucaramanga (see Table 1).

Table 1
Sociodemographic characteristics of the population in the cardiovascular risk program

Variable	Category	One disease						Two diseases						Three diseases		Total		p value
		HBP		DM		CKD		HBP+DM		HBP+CKD		DM+CKD		HBP+CKD+DM		n	%	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%			
Sex	Woman	687	55.18	135	49.63	5	38.46	187	55.49	174	58.98	8	53.33	56	53.33	1252	54.86	.354
	Men	558	44.82	137	50.37	8	61.54	150	44.51	121	41.02	7	46.67	49	46.67	1030	45.14	
Affiliation to SGSSS*	Contributory	1053	84.58	214	78.68	11	84.62	266	78.93	220	74.58	12	80	77	73.33	1853	81.2	<.001
	Subsidized	192	15.42	58	21.32	2	15.38	71	21.07	75	25.42	3	20	28	26.67	429	18.8	
	None	15	1.44	1	0.47	1	10	4	1.48	13	4.92	-	-	3	3.13	37	1.94	
Schooling*	Early childhood	20	1.92	4	1.86	-	-	7	2.59	8	3.03	1	9.09	7	7.29	47	2.46	<.001
	Elementary	280	26.9	46	21.4	1	10	113	41.85	139	52.65	5	45.45	50	52.08	634	33.25	
	High	444	42.65	93	43.25	4	40	95	35.19	68	25.76	3	27.27	29	30.21	736	38.59	
	Technician	77	7.4	18	8.37	2	20	11	4.07	7	2.65	2	18.18	3	3.13	120	6.29	
	Associate	40	3.84	14	6.51	-	-	9	3.33	3	1.14	-	-	-	-	66	3.46	
	Bachelor	136	13.06	33	15.35	2	20	27	10	23	8.71	0	0	4	4.17	225	11.8	
	Postgraduate	29	2.79	6	2.79	-	-	4	1.48	3	1.14	-	-	-	-	42	2.2	
Socioeconomic stratum*	1	279	31.17	60	31.41	5	50	75	31.65	73	32.44	2	20	28	35.44	522	31.69	.879
	2	265	29.61	55	28.8	1	10	81	34.18	65	28.89	3	30	25	31.65	495	30.05	
	3	276	30.84	60	31.41	4	40	66	27.85	59	26.22	5	50	22	27.85	492	29.87	
	4	59	6.59	11	5.76	-	-	12	5.06	19	8.44	-	-	4	5.06	105	6.38	
	5	10	1.12	3	1.57	-	-	2	0.84	7	3.11	-	-	-	-	22	1.34	
	6	6	0.67	2	1.05	-	-	1	0.42	2	0.89	-	-	-	-	11	0.67	
Area**	Rural	724	67.54	154	68.44	6	54.55	192	68.33	167	61.4	6	54.55	61	61.62	131	16.54	.324
	Urban	348	32.46	71	31.56	5	45.45	89	31.67	105	38.6	5	45.45	38	38.38	661	83.46	
Residence municipality	Bucaramanga	506	40.64	109	40.07	4	30.77	131	38.87	100	33.9	3	20	27	25.71	880	38.56	<.001
	Floridablanca	120	9.64	26	9.56	1	7.69	19	5.64	43	14.58	1	6.67	14	13.33	224	9.82	
	Giron	26	2.09	8	2.94	1	7.69	8	2.37	14	4.75	1	6.67	7	6.66	65	2.84	
	Piedecuesta	593	47.63	129	47.43	7	53.85	179	53.12	138	46.78	10	66.67	57	54.29	1113	48.77	

Note. HBP= High blood pressure, DM= diabetes mellitus, CKD= chronic kidney disease.

In patients with high blood pressure (HBP), the least affected dimension is self-care, with 96.47 % reporting no problems. Pain/discomfort and usual activities were the only dimensions in which the highest level of impairment was observed, preventing these activities from being performed. Among patients with diabetes mellitus (DM), self-care was also the least affected dimension (98.16 %), while mobility and pain/discomfort were the only categories in which the maximum severity was reported, corresponding to responses such as "I cannot walk" or "I have extreme pain or discomfort". In chronic kidney disease (CKD), self-care and mobility dimensions were the least affected dimensions with (94.96 %), and no patient reported severe impairment in any of the five dimensions (see Table 2).

In patients with two conditions, those with HBP+DM, reported self-care as the least affected dimension (93.47 % with no problems) and no patient reported a severe condition in the dimensions evaluated; however, severe pain or discomfort was present in the 2.08 % of cases. In HBP+CKD, self-care was the least affected dimension (86.82 %), with no patient reporting maximum severity in the five dimensions. In patients with DM+CKD, 86.67 % of patients reported no impairment in mobility, self-care, usual activities, or pain/discomfort, and none reported maximum severity in any dimension (see Table 2).

Overall, patients with a single condition reported fewer problems compared to those with two or three conditions. Patients with three conditions had the highest proportion reporting maximum severity (19 %). These differences between groups were statistically significant ($p = .013$).

Table 2
Analysis by dimensions of the EQ-5D-5L scale of patients with cardiovascular risk

Variable	Category	HBP		DM		CKD		HBP+DM		HBP+CKD		DM+CKD		HBP+CKD+DM		p value
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	
Mobility	I have no problems walking	1155	92.77	257	94.49	12	92.31	284	84.27	228	77.03	13	86.67	71	67.62	.013
	I have slight problems walking	52	4.18	12	4.41	1	7.69	30	8.9	53	17.91	-	-	23	21.9	
	I have moderate problems walking	33	2.65	1	.37	-	-	21	6.23	14	4.73	1	6.67	7	6.67	
	I have severe problems walking	5	0.4	1	.37	-	-	2	0.59	1	.34	1	6.67	2	1.9	
	I can't walk	-	-	1	.37	-	-	-	-	-	-	-	-	2	1.9	
Self-care	I have no problem with washing or dressing	1201	96.47	267	98.16	12	92.31	315	93.47	257	86.82	13	86.67	82	78.1	<.001
	I have slight problems with washing or dressing	30	2.41	2	.74	-	-	14	4.15	34	11.49	1	6.67	18	17.14	
	I have moderate problems with washing or dressing	11	.88	1	.37	1	7.69	6	1.78	4	1.35	1	6.67	2	1.9	
	I have severe problems with washing or dressing	3	.24	2	.74	-	-	2	0.59	1	.34	-	-	1	0.95	
	I can't wash or dress	-	-	-	-	-	-	-	-	-	-	-	-	2	1.9	
Usual activities	I have no problems performing my usual activities	1163	93.41	260	95.59	11	84.62	301	89.32	248	83.78	13	86.67	75	71.43	<.001
	I have slight problems performing my usual activities	53	4.26	8	2.94	1	7.69	26	7.72	46	15.54	1	6.67	24	22.86	
	I have moderate problems performing my usual activities	25	2.01	3	1.1	1	7.69	9	2.67	1	.34	-	-	3	2.86	
	I have severe problems performing my usual activities	3	.24	1	0.37	-	-	1	0.3	1	.34	1	6.67	3	2.86	
	I can't perform my usual activities	1	.08	-	-	-	-	-	-	-	-	-	-	-	-	

Variable	Category	HBP		DM		CKD		HBP+DM		HBP+CKD		DM+CKD		HBP+CKD+DM		p value
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	
Pain/ discomfort	I have no pain or discomfort	1014	81.45	225	82.72	11	84.62	257	76.26	191	64.53	13	86.67	68	64.76	<.001
	I have slight pain or discomfort	111	8.92	31	11.4	1	7.69	40	11.87	71	23.99	-	-	23	21.9	
	I have moderate pain or discomfort	99	7.95	12	4.41	1	7.69	33	9.79	29	9.8	1	6.67	12	11.43	
	I have severe pain or discomfort	20	1.61	3	1.1	-	-	7	2.08	5	1.69	1	6.67	2	1.9	
	I have extreme pain or discomfort	1	0.08	1	0.37	-	-	-	-	-	-	-	-	-	-	
Anxiety/ depression	I am not anxious or depressed	1126	90.44	254	93.38	10	76.92	292	86.65	244	82.43	12	80	89	84.76	.04
	I am slightly anxious or depressed	81	6.51	12	4.41	2	15.38	28	8.31	44	14.86	2	13.33	14	13.33	
	I am moderately anxious or depressed	34	2.73	5	1.84	1	7.69	17	5.04	6	2.03	1	6.67	2	1.9	
	I am very anxious or depressed	4	.32	1	0.37	-	-	-	-	2	.68	-	-	-	-	
	I am extremely anxious or depressed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Analog visual scale	Median (RI)	97 (90-100)		97 (915-100)		95 (80-96)		95 (89-99)		92 (83-99)		97 (94-100)		90 (80-98)		<.001

Note. HBP= High blood pressure, DM= diabetes mellitus, CKD= chronic kidney disease. Dark green indicates the best health states for each dimension (no problems), light green indicates mild problems, yellow indicates moderate problems, light orange indicates severe problems, and finally dark orange indicates the worst state (total incapacity).

With respect to self-care, patients with HBP and DM alone reported better outcomes compared to those with two or three conditions. The group with three conditions had the lowest proportion without impairment (78.1 %). Patients with CKD showed greater impairment compared to those with HBP+DM; with 92.31 % of CKD patients reported no problem in self-care, while in HBP+DM the proportion was 93.47 % a statistically significant difference.

A similar pattern was observed in usual activities; patients with HBP or DM alone reported fewer impairments compared to those with multiple conditions, with the three-disease group showing the lowest proportion without impairment. This difference was statistically significant. Pain/discomfort was the dimension with the highest percentage of patients reporting impairment overall, with those in the HBP+CKD group most affected; this difference was statistically significant (see Table 2).

Regarding anxiety/depression, patients with HBP and DM alone reported the lowest levels compared to the other disease groups, and this difference was statistically significant. In the visual analog scale (EQ- VAS), patients with three conditions had the lowest median score of 90 points, and the difference was statistically significant (see Table 2).

Discussion

Conceptualizations of quality of life have been developed based on different variables and studies; however, there is consensus that quality of life represents the subjective perception of well-being and satisfaction that a person experiences in daily life (Ardila, 2003; Urzúa y Caqueo-Urizar, 2012). Among the variables or aspects considered are physical and mental health, income level, access to basic services, education, employment, social relationships, and environmental factors (Fernández-López et al., 2010; Karimi & Brazier, 2016; Urzúa y Caqueo-Urizar, 2012). Quality of life varies among individuals and is influenced by social and economic factors. Therefore, it can be defined as «the individual's perception of their position in life in the context of the culture and value system in which they live and their relationship with goals, expectations, standards, and interests» (Urzúa y Caqueo-Urizar, 2012, p. 67). In general, a good quality of life is characterized by a satisfactory balance across these aspects and the ability to enjoy a full and meaningful life.

Health conditions can significantly impact quality of life; depending on the severity and nature of the disease, it can affect different aspects of a person's life, such as physical health, mental health, social relationships, work, and the ability to carry out usual activities (Aguirre-Chávez et al., 2023; Aimara et al., 2023; Bayliss et al., 2007; Fernández, 2023; Moussavi et al., 2007; Muñoz-Rey et al., 2024). With respect to physical health, the disease may cause symptoms and limitations that impair activities such as walking, eating, or sleeping (Alonso et al., 2004; Marín et al., 2024; Villota et al., 2023; Wexler et al., 2006). It may also require invasive or prolonged medical treatments, resulting in pain, discomfort, and adverse effects (Gallegos-Espinoza et al., 2024). In terms of mental health, the disease can lead to stress,

anxiety, depression, and various other emotional disorders (Juenger et al., 2002; La Rosa-Longobardi et al., 2023; Marín et al., 2024).

The psychological impact of chronic or severe disease can be particularly significant, with individuals often experiencing fear, uncertainty, and constant worry about their health and future (Muñoz-Rey et al., 2024; Rumsfeld & Ho, 2009). This, in turn, can affect their relational aspect by reducing social participation and leading to isolation and loss of support networks. Regarding employment, the disease can affect a person's ability to work, either due to lack of energy, physical limitation, or the need for frequent medical care (Daudén et al., 2024), which can reduce their purchasing power and potentially lead to economic dependence. In summary, the disease can have a significant impact on a person's quality of life, affecting his or her physical and mental health, social relationships, ability to work and general well-being. It is important to have adequate support, both medical and emotional, to cope with the challenges that the disease may present and to seek ways to improve the quality of life despite the limitations of the disease.

The present study found that CVD was significantly associated with sociodemographic and clinical variables. The lower the educational level, the lower the affiliation regime, and the lower the socioeconomic stratum, the higher the risk of having one or more CVD-related comorbidities, which coincides with different studies (Fernández-López et al., 2010; Urzúa y Caqueo-Urizar, 2012, Zhou et al., 2021). All of them with statistical significance except the socioeconomic stratum variable. Women were more frequently affected by this disease, although this difference was not statistically significant for this study. These findings were consistent with the results of previous studies involving patients with established CVD (Liang et al., 2019, Dondo et al., 2022, Moreno Veásquez et al., 2025). High CVD risk has been shown to be significantly associated with impaired HRQoL after adjusting for demographic and clinical factors. These findings suggest that HRQoL assessment could be useful in cardiovascular risk management. A longer duration of hypertension and comorbidities has a negative impact on HRQoL, especially comorbidities such as stroke, heart failure, or chronic kidney disease (Dyer et al., 2010; Liang et al., 2019; Villota et al., 2023).

The aim of the study was to assess HRQoL in CVD patients with the EQ-5D-5L scale. Among patients with HBP and DM, the most frequently reported health problems was pain/discomfort, followed by anxiety/depression and in third place the most affected dimension was mobility. For patients with CKD, anxiety/depression was the most affected dimension, in second place, two dimensions usual activities and pain/discomfort were affected and in third place self-care and mobility (Aguilar-Delgado y Rivera-Ávila, 2023; García-Gordillo et al., 2015). As can be seen, patients with CVD and associated CKD have a greater negative impact on HRQoL. CKD appears more disabling than DM or HBP, as it affects all dimensions

For patients with CVD and have two simultaneous diseases HBP+DM and HBP+CKD, the dimension of pain and discomfort was affected, followed by anxiety/depression and thirdly mobility. For patients with DM+CKD, HRQoL results differed; the first dimension affected is anxiety and depression and in second place the 4 remaining dimensions.

For patients with CVD who have the three simultaneous diseases HBP+CKD+DM, the most affected dimension is pain/discomfort, the second most reported problem was mobility, and in third place, usual activities. It is observed that as the number of comorbidities increases, the daily routine of the patients begins to be affected to the point that the performance of daily activities tends to become more difficult, considering that there is already pain/discomfort and problems with mobility.

Self-care appears to be relatively preserved, generating positive outcomes for patients; however, it is essential to monitor the impact of the disease on psychosocial factors and, in turn, their impact on the evolution of the diagnosis. It is evident that having several diagnoses significantly influences the perception of pain and, therefore, affects the mental health of patients. This shows the need for interdisciplinary teams to prevent disability and ensure appropriate management.

Conclusions

Educational level, affiliation regime, and socioeconomic stratum were associated with a higher risk of presenting one or more diseases. Among the chronic diseases evaluated, the most frequently reported by patients were HTA and DM; however, HTA appears to have better HRQoL compared to CKD, which is more disabling. Moreover, a higher number of chronic diseases was associated with poorer quality of life, especially when one of them is CKD. Additionally, the most affected dimensions were pain/discomfort and anxiety/depression.

Finally, measuring quality of life is a complex process that involves evaluating different aspects of a person's life and his or her perception of well-being. There is no single way to measure quality of life, as it may vary according to context and measuring objectives. However, there are several common approaches and tools used to assess quality of life including surveys and questionnaires, indices and scales, objective indicators and subjective assessment. Quality of life is a multidimensional and subjective concept, so no single measure can fully capture all its aspects. Therefore, multiple approaches and tools are commonly used to obtain a more complete picture of the quality of life at the individual or population level.

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