

## Quality and lifestyle of people with hypertension associated or not with diabetes

*Qualidade e estilo de vida de pessoas com hipertensão arterial associada ou não ao diabetes*  
*Calidad y estilo de vida de personas con hipertensión arterial asociada o no a diabetes*

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### Abstract

**Objective:** To describe the sociodemographic and clinical profile and aspects of quality of life (QoL) of people with Systemic Arterial Hypertension (SAH) and/or Diabetes Mellitus (DM), as well as assessing the association between lifestyle and QoL in users of a Family Health Strategy (FHS) in Picos-PI. **Methods:** This is an observational, quantitative, analytical cross-sectional study. The sample consisted of 45 patients divided into two groups (SAH, and SAH+MD). The instrument used was the Medical Outcomes Short-Form Health Survey (SF-36). **Results:** The profile of the patients consisted of adult, female, brown, retired, and with a low level of education. There was a reduction in QoL in the domains of pain (SAH), and pain, vitality, and functional capacity (SAH+DM). When life habits were associated with QoL, there was a reduction in the mental health domain with smoking and a sedentary lifestyle ( $p<0.05$ ) (SAH) and an increase in QoL in the following domains: social, emotional, physical, vitality and functional capacity with physical exercise ( $p<0.05$ ) (SAH + DM). **Conclusion:** It is essential to understand the profile of hypertensive and diabetic patients in the FHS and to see how their lifestyle interferes with the treatment protocol and quality of life.

**Descriptors:** Life Quality; Hypertension; Diabetes Mellitus; Primary Health Care.

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### Whats is already known on this?

It is well known that chronic diseases generally compromise people's quality of life. SAH and DM, which are very prevalent in the adult and elderly populations, have their control directly affected by self-rated health.

### What this study adds?

For hypertensive patients alone, there was a reduction in quality of life due to pain associated with smoking in terms of mental health. The combination of hypertension and DM affected the quality of life of the study participants in terms of pain, vitality, and functional capacity. On the other hand, for individuals who practiced physical activity, there was an increase in quality of life related to social, emotional, physical aspects, vitality, and functional capacity. Thus, the quality of life of individuals with these morbidities tends to be reduced by the diseases, accentuated by smoking, but increased through physical activity.



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## Resumo

**Objetivo:** Descrever o perfil sociodemográfico, clínico e os aspectos da qualidade de vida (QV) de pessoas com Hipertensão Arterial Sistêmica (HAS) e/ou Diabetes Mellitus (DM), bem como avaliar a associação entre estilo de vida e QV em usuários de uma Estratégia Saúde da Família (ESF) em Picos-PI. **Métodos:** Trata-se de estudo observacional, de abordagem quantitativa do tipo transversal analítico. A amostra foi composta por 45 pacientes divididos em dois grupos (HAS; HAS+DM). O instrumento utilizado foi o questionário Medical Outcomes Short-Form Health Survey (SF-36). **Resultados:** Perfil dos pacientes é adulto, sexo feminino, pardo, aposentado e com baixo nível de escolaridade. Observou-se uma redução da QV nos domínios de dor (HAS) e de dor, vitalidade e capacidade funcional (HAS+DM). Na associação dos hábitos de vida com QV observou-se uma redução no domínio de saúde mental com o tabagismo e o sedentarismo ( $p<0,05$ ) (HAS) e um aumento da QV nos domínios: aspectos sociais, emocionais, físicos, vitalidade e capacidade funcional com a prática de exercícios físicos ( $p<0,05$ ) (HAS + DM). **Conclusão:** Conclui-se que é essencial entender o perfil dos pacientes assistidos hipertensos e diabéticos na ESF e verificar como seu estilo de vida interfere no protocolo de tratamento e na qualidade de vida.

**Descritores:** Qualidade de Vida; Hipertensão; Diabetes Mellitus; Atenção Primária à Saúde.

## Resumen

**Objetivo:** Describir el perfil sociodemográfico y clínico y aspectos de calidad de vida (CdV) de personas con Hipertensión Arterial Sistémica (HSA) y/o Diabetes Mellitus (DM), así como evaluar la asociación entre estilo de vida y CdV en usuarios de una Estrategia Familiar de Salud (EFS) en Picos-PI. **Métodos:** Se trata de un estudio observacional con un enfoque analítico cuantitativo transversal. La muestra consistió en 45 pacientes divididos en dos grupos (HSA; HSA+DM). El instrumento utilizado fue el Medical Outcomes Short-Form Health Survey (SF-36). **Resultados:** El perfil de los pacientes era adulto, mujer, morena, jubilada y con bajo nivel de estudios. Se observó una reducción de la CdV en los dominios de dolor (HSA) y dolor, vitalidad y capacidad funcional (HSA+DM). Cuando se asociaron los hábitos de vida con la CdV, se observó una reducción en el dominio de salud mental con el tabaquismo y el sedentarismo ( $p<0,05$ ) (HAS) y un aumento de la CdV en los dominios: social, emocional, físico, vitalidad y capacidad funcional con el ejercicio físico ( $p<0,05$ ) (HAS + DM). **Conclusión:** Concluimos que es fundamental conocer el perfil del paciente hipertenso y diabético en el SAH y ver cómo su estilo de vida interfiere en el protocolo de tratamiento y en su calidad de vida.

**Descriptores:** Calidad de Vida; Hipertensión; Diabetes Mellitus; Atención Primaria de Salud.

## INTRODUCTION

Since the 1960s, Brazil has experienced profound demographic, epidemiological, and nutritional changes, which have resulted in a significant increase in Chronic Non-Communicable Diseases (CNCDS).<sup>(1)</sup> Among these, hypertension<sup>(2)</sup> and diabetes mellitus<sup>(3)</sup> stand out. These conditions widely affect the adult and elderly population and are responsible for high morbidity and mortality rates and high costs to the health system.

In primary healthcare, the family health strategy plays a central role in the identification, monitoring, and ongoing care of people with these chronic conditions.<sup>(4)</sup> The FHS model allows for a comprehensive, multi-professional approach that goes beyond clinical management, incorporating psychosocial aspects and encouraging self-care. Thus, knowing the factors that influence the quality of life of these users is essential for planning more effective interventions.<sup>(5)</sup>

Quality of life has been recognized as an important indicator for assessing health status and the impact of chronic diseases on individuals' daily lives. In this study, we adopted the concept of QoL defined by Ware and Sherbourne, creators of the SF-36 instrument: "an individual's perception of his or her state of health in different domains: physical, mental, and social over time."<sup>(6)</sup>

Despite the extensive literature on SAH and DM, there are still few studies looking at the association between quality of life, lifestyle habits (such as smoking, alcohol consumption, and physical activity), and the care provided by the FHS, especially in regional contexts in the rural area of Brazil.<sup>(7)</sup>

This study aims to describe the sociodemographic and clinical profile and aspects of quality of life of people with systemic arterial hypertension and/or diabetes mellitus, as well as to assess the association between lifestyle and QoL in users of a family health strategy in Picos-PI.

## METHODS

This is an observational, quantitative, analytical cross-sectional study approved by the Ethics Committee of the Federal University of Piauí, under opinion no. 4.595.527. The research was conducted between May and June 2021, in the context of the COVID-19 pandemic, with all the recommended health precautions.

The study was conducted in a Basic Health Unit (BHU) in the municipality of Picos, Piauí (PI), as part of the municipal primary care network. In this setting, actions aimed at caring for hypertensive and diabetic patients are developed on an ongoing basis for individuals registered at the unit. The flow of care begins with a medical consultation, in which the diagnosis of systemic arterial hypertension is established,

with or without diabetes mellitus (DM). After the medical assessment, with the issuing of a personalized prescription, the patient takes part in monthly follow-ups carried out by the BHU nursing team. During these consultations, topics such as healthy eating, correct use of medication, and encouraging regular physical activity are addressed.

The study population is made up of users registered in the Electronic Health System (e-SUS) of the BHU selected to take part in this study in 2021. The selected unit has 344 patients with SAH and 105 patients with DM. The convenience sample consisted of patients diagnosed with SAH (N=25 patients) and SAH + DM (N=20 patients).

Inclusion criteria were individuals registered in the e-SUS system of the health center in the municipality of Picos-PI, aged  $\geq 18$  years, able to communicate verbally, and being monitored for antihypertensive or antidiabetic treatment. Also included were those who agreed to receive home visits from the health center team. Patients in temporary follow-up or transit from other regions due to travel, work, outings, etc., and those diagnosed with a mental disorder were excluded, as they could potentially interfere with the follow-up process.

The data were collected during home visits by the researchers responsible, who had been duly trained in data collection using the instruments of this study, as well as in ethical considerations regarding research with humans.

The questionnaires were administered at home, following the biosafety rules adopted by the National Health Surveillance Agency (ANVISA): such as social distancing, use of personal protective equipment (disposable masks, caps, gloves, goggles), alcohol gel, PVC films to isolate specific material for each patient, such as pens used to sign the Informed Consent Form and acrylic support. Data were collected in an open environment, with ventilation and natural light, avoiding closed environments, where the researcher himself read and filled in the questionnaire completely.

Sociodemographic aspects included the following variables: age, gender, years of schooling, marital status, color, and income. Clinical aspects included physical activity, smoking, and alcohol consumption. A socio-economic and clinical questionnaire was used, covering the following aspects:

### **Part I - Demographic and Socioeconomic Data**

Collect information on age group, gender, marital status, schooling, type of housing (own, provided by friends/relatives, nursing home, or other), and who they live with (alone, relatives, friends, spouse). It also records family income in minimum wages and professional occupations.

### **Part II - Lifestyle Habits**

Investigate aspects such as smoking, alcohol consumption, physical activity, and adherence to the recommended diet according to current therapy.

### **Part III - Health Data**

Gather information on the main diagnosis, associated chronic diseases, history of hospitalizations related to the pathology, time since diagnosis, and drug treatment regimen.

The Medical Outcomes Study Short Form Health Survey (SF-36) was used to assess the participants' health-related quality of life. This questionnaire contains 36 items distributed among eight domains: physical functioning (10 items), limitations due to physical aspects (4), pain (2), general perception of health (5), vitality (4), social functioning (2), limitations due to emotional aspects (3) and mental health (5). Each of these scales is scored from 0 to 100, with 0 being the worst possible state of health and 100 the best <sup>(6)</sup>.

The scores for each domain of the SF-36 were calculated according to the instrument's manual and transformed into a scale from 0 to 100, where higher scores indicate better quality of life. The scores are obtained by adding up the values of the items corresponding to each domain, followed by standardization according to specific formulas.

Participants were informed about the objectives of the research, as well as the risks and benefits of the study. In terms of risks, there could be embarrassment during the questionnaire interview, and in the event of embarrassment on the part of the participant, the research would be suspended immediately. In addition, the study could present a risk due to COVID-19, due to the physical presence of the researcher at the home visit during this pandemic period. To minimize the risks, the researchers used all the protocols recommended by the WHO.

In terms of benefits, the aim was to gain a better understanding of the patients' health conditions, as well as to promote changes in their lifestyle habits with the aim of improving control of chronic conditions and, consequently, minimizing the risks of complications, often caused by non-treatment. After the researcher had read the consent form, understood it, and signed it, the data instruments were collected.

Some numerical variables were used for descriptive analysis, such as physical activity, smoking, and alcoholism; then, means and standard deviations were calculated. The Shapiro-Wilk test was applied to determine whether the sample followed a normal distribution, with a result of  $p > 0.05$  for the variables applied; therefore, parametric tests were used for inferential statistics.

A comparison of means was then made (Student's t-test for physical activity and ANOVA test for smoking and alcoholism) between the variables of the SAH and SAH+DM groups, with  $p < 0.05$  as the parameter for statistical significance.

## RESULTS

45 people were interviewed, of whom 25 had systemic arterial hypertension (SAH) and 20 had systemic arterial hypertension and diabetes mellitus (SAH + DM). Table 1 shows the sociodemographic and clinical profile of the study participants.

**Table 1.** Distribution of the sociodemographic and clinical variables of the study participants (n=45)

Variables	HAS [n (%)]	HAS + DM [n (%)]
<b>Age</b>		
35 – 55	4 (16,0)	1 (5,0)
56 – 75	18 (72,0)	13 (65,0)
76 – 95	3 (12,0)	6 (30,0)
<b>Gender</b>		
Female	16 (64,0)	15 (75,0)
Male	9 (36,0)	5 (25,0)
<b>Schooling (Years)</b>		
None	9 (36,0)	7 (35,0)
1-4 years	13 (52,0)	8 (40,0)
5-8 years	3 (12,0)	3 (15,0)
> 9 years	0 (0,0)	2 (10,0)
<b>Marital Status</b>		
Single	2 (8,0)	8 (40,0)
Married/stable union	15 (60,0)	8 (40,0)
Divorced	2 (8,0)	1 (5,0)
Widowed	6 (24,0)	3 (15,0)
<b>Color</b>		
White	5 (20,0)	8 (40,0)
Black	3 (12,0)	2 (10,0)
Brown	17 (68,0)	10 (50,0)
<b>Family income</b>		
Participate	18 (72,0)	17 (85,0)
Do not participate	7 (28,0)	3 (15,0)
<b>Occupation</b>		
Working	6 (24,0)	4 (20,0)
Retired	12 (48,0)	13 (65,0)
Household	7 (28,0)	3 (15,0)
<b>Practice of physical activity</b>		

Yes	14 (56,0)	3 (15,0)
No	11 (44,0)	17 (85,0)
<b>Smoking</b>		
Yes	5 (20,0)	5 (25,0)
No	4 (16,0)	4 (20,0)
Ex-smoker	16 (64,0)	11 (55,0)
<b>Alcohol consumption</b>		
Yes	6 (24,0)	4 (20,0)
No	6 (24,0)	7 (35,0)
Ex-drinker	13 (52,0)	9 (45,0)
<b>Presence of other chronic diseases</b>		
Yes	14 (56,0)	7 (35,0)
No	11 (44,0)	13 (65,0)

Source: Elaborated by the authors (2021).

The prevalent age range in the sample was 56 to 75 years in both groups (SAH and SAH + DM), with a higher prevalence of women, brown people, and those with low levels of education (0 to 4 years of schooling). There was also a predominance of patients who were ex-smokers and ex-drinkers in both groups, and a greater lack of physical exercise in the hypertensive-diabetic group.

**Table 2.** Evaluation of the domains of the SF-36 instrument related to the quality of life of participants with SAH.

SF-36 domains (items)	SAH Average (SD)	SAH Median
Mental health (5)	73,4 (26,2)	80,0
Social aspects (2)	77,0 (28,3)	87,5
Pain (2)	52,7 (33,9)	61,0
Vitality (4)	68,0 (27,1)	75,0
Functional capacity (10)	60,8 (29,8)	65,0
General health status (2)	66,6 (26,1)	72,0
Emotional aspects (3)	62,7 (45,5)	100,0
Physical aspects (4)	72,0 (39,1)	100,0

Source: Elaborated by the authors (2021).

SF-36: Medical Outcomes Study 36 – Item Short Form Health Survey; SD: Standard deviation; SAH: Systemic Arterial Hypertension.

When assessing quality of life, the standardized mean scores for each domain of the SF-36 were obtained, where the values ranged from 52.7 to 77.0, characterizing the greater and lesser negative impact of systemic arterial hypertension on quality of life (Table 2). Only one domain had a median score below 60 (Pain), thus demonstrating greater impairment in this component.

**Table 3.** Evaluation of the domains of the SF-36 instrument related to the quality of life of participants with SAH + DM

SF-36 domains (itens)	SAH + DM Average (SD)	SAH + DM Median
Mental health (5)	70,8 (27,1)	74,0
Social aspects (2)	65,0 (35,5)	75,0
Pain (2)	57,4 (28,3)	61,0
Vitality (4)	48,3 (26,2)	47,5
Functional capacity (10)	52,0 (34,3)	65,0
General state of health (2)	60,8 (28,6)	64,5
Emotional aspects (3)	70,0 (44,6)	100,0
Physical aspects (4)	66,3 (46,1)	100,0

**Source:** Elaborated by the authors (2021)

SF-36: Medical Outcomes Study 36 – Item Short Form Health Survey; SD: Standard deviation; SAH: Systemic Arterial Hypertension.

Table 3 also shows the mean and median of the 8 domains of the hypertensive-diabetic group, where the mean ranged from 48.3 to 70.8. In this group, two domains stood out with a mean score between 50 and 60 (Functional Capacity and Pain), and only one domain had a median score below 50 (Vitality), which corresponds to less than half the maximum value of 100, thus demonstrating greater impairment in this component.

Tables 4 and 5 seek to verify the association between smoking, alcoholism, and physical activity with the SAH (Table 4) and SAH+MD (Table 5) groups and the SF-36 domains.

**Table 4.** Association of smoking, alcoholism, and physical activity with the SF-36 domains of participants with SAH

Domains of the SF-36 – SAH	Smoking*				Alcohol consumption*				Physical activity**		
	Yes	No	Ever smoked	P	Yes	No	Ever drank	P	Yes	No	P
	M (SD)	M (SD)	M (SD)		M (SD)	M (SD)	M (SD)		M (SD)	M (SD)	
Mental health	48,0 (29,7)	77,0 (16,1)	80,5 (23,3)	0,044	60,7 (36,2)	74,7 (21,9)	78,8 (26,2)	0,389	84,0 (13,9)	60,0 (32,3)	0,039
Social aspects	77,5 (31,1)	84,4 (23,1)	75,0 (29,7)	0,850	77,1 (27,9)	72,9 (25,5)	78,8 (31,6)	0,921	79,5 (28,8)	73,9 (28,7)	0,634
Pain	53,4 (30,3)	36,5 (26,3)	56,5 (37,0)	0,592	59,5 (24,5)	41,2 (37,3)	54,8 (37,1)	0,629	55,3 (35,8)	49,4 (32,7)	0,674
Vitality	75,0 (29,2)	56,3 (21,0)	68,8 (28,4)	0,597	75,8 (26,3)	68,3 (30,1)	64,2 (27,4)	0,704	76,4 (25,3)	59,5 (30,0)	0,171
Functional capacity	71,0 (23,0)	51,3 (45,9)	60,0 (28,2)	0,666	68,3 (18,1)	51,7 (46,2)	61,5 (26,0)	0,639	65,7 (33,5)	54,5 (36,8)	0,393
General state of health	60,6 (24,7)	54,8 (31,3)	61,4 (25,6)	0,458	68,3 (20,4)	60,8 (27,7)	68,5 (27,5)	0,836	65,8 (27,3)	67,6 (25,6)	0,864
Emotional aspects	73,3 (43,5)	66,7 (54,9)	58,8 (49,3)	0,412	77,8 (40,4)	72,2 (44,3)	51,3 (48,3)	0,436	66,7 (47,1)	57,6 (40,9)	0,630
Physical aspects	85,0 (33,5)	62,5 (31,5)	71,2 (43,3)	0,372	83,3 (30,3)	62,5 (39,3)	71,2 (39,3)	0,668	67,9 (36,7)	54,5 (36,8)	0,561

**Source:** Elaborated by the authors (2021)



SF-36: Medical Outcomes Study 36 – Item Short Form Health Survey; M: Mean; SD: Standard deviation; \* ANOVA test; \*\* Student's t-test.

The relationship between the participants' lifestyle habits (smoking, alcoholism and physical exercise) with SAH and the health-related quality of life measures showed a statistically significant association between the Mental Health domain ( $p < 0.05$ ) and a worse evaluation of this component of the SF-36 in patients who smoked and did not practice physical activities (Table 4).

**Table 5.** Association of smoking, alcoholism, and physical activity with the SF-36 domains of participants with SAH + DM

Domains of the SF-36 - SAH + DM	SMOKING*				ALCOHOL CONSUMPTION*				PHYSICAL ACTIVITY**		
	Yes	No	Ever smoked	<i>p</i>	Yes	No	Ever drank	<i>p</i>	Sim	No	<i>p</i>
	M	M	M		M	M	M		M	M	
	(SD)	(SD)	(SD)		(SD)	(SD)	(SD)		(SD)	(SD)	
Mental health	73,6 (19,9)	49,0 (17,1)	77,5 (30,1)	0,197	65,0 (24,3)	84,6 (22,7)	62,7 (29,7)	0,258	82,7 (23,4)	68,7 (27,8)	0,426
Social aspects	70,0 (32,6)	71,9 (31,3)	60,2 (30,4)	0,816	90,6 (32,6)	76,8 (31,0)	44,4 (44,4)	0,043	87,5 (12,5)	61,0 (12,5)	0,044
Pain	55,8 (35,6)	58,8 (14,9)	57,6 (26,5)	0,988	54,8 (28,4)	61,4 (21,3)	53,3 (34,6)	0,755	55,3 (15,3)	57,8 (30,4)	0,895
Vitality	58,0 (30,3)	35,0 (18,7)	48,6 (26,7)	0,446	43,6 (44,3)	57,1 (23,4)	43,3 (32,5)	0,562	71,7 (24,7)	44,1 (24,8)	0,093
Functional capacity	78,0 (21,7)	55,0 (42,0)	39,1 (41,3)	0,102	51,3 (37,0)	61,4 (35,4)	43,3 (35,4)	0,592	90,0 (17,3)	45,3 (32,2)	0,017
General state of health	60,6 (31,3)	52,3 (14,4)	63,9 (32,5)	0,801	55,1 (36,1)	66,4 (25,0)	46,0 (25,0)	0,061	52,0 (39,7)	62,3 (27,5)	0,579
Emotional aspects	66,7 (47,1)	75,0 (50,0)	69,7 (45,8)	0,955	66,7 (50,7)	85,7 (35,0)	47,1 (46,0)	0,134	100,0 (0,0)	64,7 (46,4)	0,006
Physical aspects	85,0 (22,4)	100,0 (0,0)	45,5 (52,2)	0,065	100,0 (0,0)	71,4 (48,8)	58,3 (46,8)	0,798	100,0 (0,0)	60,3 (47,6)	0,017

Source: Elaborated by the authors (2021)

SF-36: Medical Outcomes Study 36 – Item Short Form Health Survey; M: Mean; SD: Standard deviation; \* ANOVA test; \*\* Student's t-test.

Among hypertensive and diabetic patients who practiced physical activity, there was a better assessment of quality of life compared to those who did not, with a statistically significant relationship between social aspects, functional capacity, emotional aspects, and physical aspects ( $p < 0.05$ ). (Table 5)

## DISCUSSION

Systemic arterial hypertension and diabetes mellitus are among the main chronic non-communicable diseases (NCDs) in Brazil, having a major impact on the longevity of the population. <sup>(7)</sup> In the context of the Unified Health System (SUS), the primary care, organized mainly through the family health strategy, operates as the main entry point to the health system. In addition, it plays an essential role in the continuous and comprehensive care of individuals with NCDs, including hypertension and diabetes. <sup>(5)</sup> Primary care is the primary field for prevention, diagnosis, and treatment, where the FHS has made a significant contribution to reducing inequities in care. <sup>(8)</sup> Evidence shows that the rate of detection of hypertension and diabetes is high among those who go to the basic health unit; however, there is a need to improve strategies for detecting those who do not use the service.

In the family health strategy, understanding the sociodemographic and clinical profile of the population is essential for planning actions that encourage adherence to treatment for conditions such as

hypertension and diabetes mellitus. This understanding strengthens the control and prevention of complications associated with these diseases. In this study, in addition to characterizing this profile, an analysis was made of the participants' quality of life from the perspective of the social determinants of health.

Most of the patients in this study were middle-aged and elderly adults (56-75 years old). The older age of these patients corroborates the fact that both SAH and DM have a natural history of being associated with risk factors throughout life. Another aspect to note is the prevalence of women in both groups. A possible explanation for this difference in diagnosis between women and men is the greater tendency for women to take care of themselves and their perception of physical signs and symptoms, as well as their greater demand for medical assistance in health services.<sup>(9)</sup> Men, on the other hand, take longer to receive a diagnosis due to the lack of regular examinations and lack of care for their health.<sup>(10)</sup>

The prevalence of hypertensive and hypertensive-diabetic patients in the group with the shortest schooling may be directly related to one of the main problems of not taking treatment properly, which is a lack of knowledge about the disease.<sup>(11)</sup> Therefore, democratizing knowledge about the health-disease process is essential for achieving satisfactory treatment results. Health education initiatives, such as lectures, educational materials, and community actions, have proved to be effective in promoting healthy lifestyle habits and controlling chronic non-communicable diseases.<sup>(12)</sup> Although most of the study participants were retired, these people actively contribute to the family income. Thus, an important point to consider is follow-up by the FHS, as this can interfere with adherence to pharmacological treatment if it is not provided by the basic health unit.

Adopting healthier lifestyle habits is essential in the management of chronic diseases such as hypertension and diabetes mellitus as it helps control blood pressure and blood glucose levels, promoting better clinical outcomes.<sup>(13)</sup> A sedentary lifestyle plays an aggravating role in multiple conditions, especially cardiovascular diseases, increasing both morbidity and mortality.<sup>(14)</sup> Most of the patients in this study did not do any physical activity, and most of them were smokers and/or drinkers throughout their lives. Observing this severity about lifestyle, these habits were assessed using the quality-of-life domains of the SF-36.

Assessing quality of life is essential, as this indicator allows us to understand not only the patient's clinical state, but also the physical, psychological, and social impacts caused by diseases. It also contributes to a more comprehensive understanding of the patient's experience and their adaptation to the chronic condition.<sup>(15)</sup>

When analyzing the QoL of patients with SAH, it was noted that the domain with the highest score was Social Aspects, showing that this component improves patients' quality of life. The Pain domain, on the other hand, had an average score between 50 and 60, showing greater impairment in this component. The data show the association between the patients' advanced age, the presence of other chronic problems, as well as lifestyle habits that are not favorable to the condition of most patients.

When assessing hypertensive and diabetic patients, there was a reduction in quality of life in the domains of Vitality, which represents the energy, disposition, and tiredness of the participants; Functional Capacity, which represents the ability to carry out daily tasks; and Pain, which assesses how uncomfortable the patient feels when carrying out tasks. In general, there was interference in mood, especially when associated with fatigue, age, and the length of time the patient had been suffering from more than one chronic illness.

When analyzing the lifestyle habits of participants with systemic arterial hypertension, worse quality of life was observed in the mental health domain among those who were sedentary and had a history of smoking. Although these findings reveal a relevant connection, the relationship between blood pressure and emotional aspects such as stress and anxiety is still little explored in the literature. Studies<sup>(16)</sup> highlight that intense emotional states, such as stress and anxiety, are linked to the onset and worsening of cardiovascular diseases. From a neurobiological point of view, these emotions activate the sympathetic nervous system, triggering the "fight or flight" response, which increases heart rate, the release of adrenaline and cortisol, and, consequently, blood pressure. Research shows that this sympathetic activation ends up causing vasoconstriction, increased peripheral resistance, and vascular remodeling, processes that favor the development and maintenance of hypertension. In addition, evidence suggests that there are forms of hypertension in which sympathetic hyperactivity is predominant, while in others, this involvement may be minor or independent.<sup>(17)</sup> Thus, new data suggest the importance of a multi-professional team to monitor these patients. In addition to the care and nutritional aspects, it is necessary



to implement psychological and physical education professional support to help improve quality of life.

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