Association between quality of life and medication adherence in hypertensive individuals

Associação entre a qualidade de vida e adesão à medicação de indivíduos hipertensos

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Descritores
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Abstract

Objective: To evaluate the association between quality of life and medication adherence in hypertensive individuals.

Methods: Cross-sectional study carried out with 432 hypertensive subjects registered in a federal public computerized system. Data were collected in the households through a structured interview with questions related to socioeconomic and clinical variables, as well as assessment of treatment adherence, and the WHOQOL-BREF for quality of life. The Kruskal-Wallis H test was used to measure the association between the scales of quality of life and the classification of treatment adherence.

Results: The lowest scores were present in the self-assessment domain and the highest were found in the social domain. Individuals with extreme adherence to antihypertensive treatment showed higher scores in assessment of quality of life compared to individuals classified as extreme non-adherence to antihypertensive treatment.

Conclusion: The association between quality of life and medication adherence in hypertensive patients was not predictive. The hypertensive subjects with high medication adherence showed the best scores of quality of life, and the worst scores were presented by individuals classified as extreme non-adherence and as borderline to total non-adherence.

Resumo

Objetivo: Avaliar a associação entre a qualidade de vida e a adesão a medicação de indivíduos hipertensos.

Métodos: Estudo transversal, realizado com 432 hipertensos cadastrados em sistema informatizado público federal. Os dados foram coletados no domicilio por entrevista estruturada com questões relacionadas a variáveis socioeconômicas, clínicas, avaliação da adesão ao tratamento e o WHOQOL-BREF para a qualidade de vida. Utilizou-se o teste de H de Kruskal-Wallis para medir a associação entre as escalas da qualidade de vida e a classificação da adesão ao tratamento.

Resultados: Os escores mais baixos estavam presente no domínio autoavaliação e os mais altos foram encontrados no social. Os indivíduos que possuíam adesão extrema ao tratamento anti-hipertensivo apresentaram escores mais altos na avaliação da qualidade de vida em comparação com indivíduos classificados como não adesão extrema ao tratamento anti-hipertensivo.

Conclusão: A associação entre a qualidade de vida e adesão a medicação em indivíduos hipertensos não foi preditiva, sendo que os melhores escores estavam presentes nos indivíduos hipertensos que apresentaram alta adesão a medicação e os piores escores da qualidade de vida se apresentaram nos indivíduos de não adesão extrema e limítrofe a não adesão total.

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Introduction

Cardiovascular diseases are the third leading cause of the global burden of disease,[1] accounting for approximately 17 million deaths per year. Hypertension is considered the main risk factor contributing to the current epidemic of cardiovascular diseases.[2] Each year 7.1 million deaths worldwide are attributed to hypertension and its prevalence has reached nearly 1 billion in 2000 around the world. This figure is projected to increase by 29.2%, reaching 1.56 billion in 2025.[3]

Although the treatment for hypertension control reduces morbidity and mortality, the effective control of disease is concerning because the proportion of hypertensive patients with controlled disease has varied around 50% worldwide.[4,5]

As hypertension is a chronic disease, it requires continuous treatment, and the adequate control is directly related to the degree of adherence to antihypertensive therapy.[6] There is evidence that poor adherence affects the clinical evolution and quality of life of patients negatively, causing adverse outcomes such as increased morbidity and mortality.[7-9]

The quality of life of hypertensive patients is strongly related to how their blood pressure is controlled,[10] because symptoms caused by unsatisfactory disease control limit the performance of usual daily activities, resulting in financial difficulties, low self-esteem, feelings of incompetence, social isolation, among others.[11]

Some studies evaluating the quality of life of hypertensive individuals have suggested that the very chronic condition, side effects of the drug therapy and clinical complications interfere in the physical, emotional and intellectual state, in social interaction, and activities of daily living, which are decisive factors for quality of life.[12-14]

The quality of life is part of a complex structure with psychosocial characteristics that can negatively impact on individuals' ability to manage their own chronic disease, however, the exact mechanism by which quality of life is associated with treatment adherence is still unknown.[15]

Within this context, the present study aimed to evaluate the association between quality of life and medication adherence in hypertensive individuals.

Methods

This is a cross-sectional study that included hypertensive individuals registered in the federal public computerized system in a city of southern Brazil, from August to November 2011. The inclusion criteria were age equal to or over 18 years, diagnosis of hypertension, being registered at the health district, and presence in the domicile at least once among the three visit attempts.

Two health districts were selected for convenience, where 1,357 hypertensive subjects were registered. A simple random sample was calculated with a sampling error of 5% and 95% significance level, resulting in 258 hypertensive people in District A and 231 in District B, and the total of 489 hypertensive subjects comprising the sample.

Data were collected in structured interviews conducted in the homes of registered hypertensive subjects. The interviews involved issues related to socioeconomic and clinical data, the Instrument to Assess Treatment Adherence and the WHOQOL-BREF.

The socioeconomic characteristics were age, gender, marital status, race, family income, educational level, height, weight, occupation, smoking and drinking habits. The clinical features investigated were type and amount of antihypertensive drugs administered, time from diagnosis of hypertension, systolic and diastolic blood pressure, type and amount of medications prescribed for sleep.

As participants are monitored monthly, information such as weight and height were collected from the records in the health booklet of the month in which was given medication for hypertension control. Blood pressure was measured by auscultation performed with the subject seated 15 minutes after initiation of the interview and the cuff at the level of the heart. Three measurements were taken with one-minute interval between each verification,

and the mean of the last two was considered. For blood pressure measurement were used the calibrated sphygmomanometer (Premium® brand) and the stethoscope Rappaport model (Premium® brand).

The Instrument to Assess Treatment Adherence was applied to measure users' treatment adherence. It is a questionnaire with ten questions: 1) Adequate consumption of salt; 2) Adequate consumption of fat; 3) Body mass index; 4) Smoking abstinence; 5) No alcohol intake; 6) Regular practice of physical exercises; 7) Effective stress coping; 8) Proper use of medicines, 9) Attendance at monthly visits and 10) Control of blood pressure levels. The score established for assessment of adherence to hypertension treatment is 0-10, with the following classification of levels of adherence: X≤3 = Extreme non-adherence (ENA); X>3 and ≤5 = Borderline to total non-adherence (BNA); X>5 and ≤7 = Medium range of adherence (MRA); X>7 and ≤9 = Borderline to total adherence (BA); and X>9 = Extreme adherence (EA). The higher the score, the greater the adherence to treatment.

For the evaluation of quality of life, we used the WHOQOL-BREF, an instrument developed by the WHO Quality of Life Group, validated in Brazil, which has 24 questions covering the following domains: physical, psychological, social relationships, environment, self-assessment and general assessment, providing a comprehensive look of quality of life. The questionnaire scores the individual from 0 to 100, and the higher the score, the better the quality of life.

Data were tabulated and analyzed by both the Microsoft Excel 2010® and the Statistical Package for the Social Sciences (SPSS), version 22.0. The absolute and relative frequencies were calculated for the qualitative variables, and mean and standard deviation for the quantitative variables.

Data normality was tested by the Kolmogorov-Smirnov test, and since data were not normally distributed, the Kruskal-Wallis H test was used to measure the association between the scales of quality of life and the classification of treatment adherence. Finalizing our analysis, for the evaluation between the domains of quality of life and classification of treatment adherence, was used the Chi-square test of Association or Independence. In all analytical tests was used a significance level of α=0.05 and confidence interval of 95%.

The development of the study met national and international standards of ethics in research involving human subjects.

Results

The 432 hypertensive participants had a mean age of 62.1 (±11.0 years), 68.5% were females, 67.8% had not completed elementary school, 44.9% stated to be retired, and 82.9% were white. As for marital status, 73.1% reported living with a partner, 78% reported family income of 1-3 times the minimum wage (Table 1).

The mean time from diagnosis of respondents was 12.0 years (± 9.4 years). More than half of respondents had undergone antihypertensive treatment for more than six years, with medication exclusively as the most prevalent type of treatment. Interviewees used more than four drugs for their antihypertensive treatment, and the daily dose of drugs varied between two to three doses in most cases. Physical activity practice was uncommon among participants, as 15.7% reported practicing it regularly, while 14.8% did not practice regularly. Smoking and alcohol consumption occurred among hypertensive respondents, representing 11.1% and 13%, respectively. Regarding consumption of salt in food, more than half revealed they considered it was little/weak (Table 1).

The analysis of the general classification of the quality of life and the classification of treatment adherence of respondents were carried out. The quality of life assessed by the WHOQOL-BREF revealed the lowest scores in the domains of self-assessment 59.69 (±18.70) and physical 61.84(±18.06). The highest scores were found in the psychological domain 67.89(±15.32) and the social domain 75.33(±13.20). As for treatment adherence, we found that 40.5% of hypertensive subjects were classified in the medium range of treatment adherence and 45.8% as borderline to total adherence (Table 2).

Table 1. Socioeconomic and hypertension profile of interviewed individuals

Variables	n(%) n=432
Mean age	62.1(±11.00)
Gender	
Male	136(31.5)
Female	296(68.5)
Family income	
<1 minimum wage	20(4.6)
1-3 minimum wages	337(78.0)
4-6 minimum wages	61(14.1)
>6 minimum wages	12(2.8)
Educational level	
Cannot read and write	37(8.6)
Literate (can read and write the name)	20(4.6)
Incomplete elementary school	293(67.8)
Complete elementary school	44(10.2)
Incomplete high school	8(1.9)
Complete high school	26(6.0)
Incomplete higher education	2(0.5)
Complete postgraduate education	2(0.5)
Marital status	
Living with partner	316(73.1)
Living with partner – unstable	4(0.9)
Does not live with partner	3(0.7)
No partner	60(13.9)
Living alone	49(11.3)
Occupation	
Retired	194(44.9)
Pensioner	47(10.9)
Homemaker	116(26.9)
Unemployed	3(0.7)
Others	72(16.7)
Religion	
Catholic	325(75.2)
Evangelic	97(22.5)
No religion	6(1.4)
Others	4(0.9)
Race	
White	358(82.9)
Brown	11.0(2.5)
Black	63(14.6)
Time from diagnosis (Standard Deviation)	12.0(±9.4)
Time of treatment	
<1 year	18(4.2)
1-2 years	35(8.1)
3-5 years	85(19.7)
6 years	27(6.2)
>6 years	267(61.8)
Type of treatment	
Exclusively pharmacological	252(58.3)
Exclusively nonpharmacological	2(0.5)
Pharmacological + Nonpharmacological	178(41.2)
Number of drugs/day	
A drug	40(9.3)
Two drugs	83(19.2)
Three drugs	80(18.5)
>4 drugs	229(53.0)
Number of doses/day	
A dose	40(9.3)
Two doses	206(47.7)
Three	159(36.8)
>4 Doses	27(6.2)
Daily use of medication	
Yes	344(79.6)
No	88(20.4)
Physical activity practice (three or more times per week)	
Regular	68(15.7)
Irregular	64(14.8)
No practice	300(69.5)
Smoking habits	
Yes	38(8.8)
No	303(70.1)
Sometimes	10(2.3)
Quit	81(18.8)
Alcohol intake	
Yes, every day	6(1.4)
Yes, on weekends	50(11.6)
No	371(85.9)
Abandoned alcohol	5(1.2)
Opinion of salt intake in food	
Normal	164(38.0)
Weak / Little	227(52.5)
Salty	41(9.5)

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Continuation

Source: Data of hypertensive individuals followed in regional health units, Criciúma (SC), 2011.
Values expressed in number (%) or mean (± Standard deviation)

Table 2. Global scores of quality of life and classification of treatment adherence

Variables	n(%) n=432
Domains of quality of life	
Physical	61.84(±18.06)
Psychological	67.89(±15.32)
Social	75.33(±13.20)
Environment	65.32(±11.10)
Self-assessment	59.69(±18.70)
General assessment	65.70(±11.80)
Classification of treatment adherence	
Extreme non-adherence	1(0.2)
Borderline to extreme non-adherence	31(7.2)
Medium range of adherence	175(40.5)
Borderline to total adherence	198(45.8)
Extreme adherence	27(6.2)

Source: Data of hypertensive individuals followed in regional health units, Criciúma (SC), 2011.
Values expressed in Number (%) or Mean (± Standard Deviation); Statistical test: Kruskal-Wallis H test

The distribution can be observed according to the domains of quality of life obtained by the WHOQOL-BREF questionnaire in relation to the classification of treatment adherence. In this analysis, the highest scores associated with quality of life were found in extreme adherence (to treatment), revealing a mean score of 66.80

in the physical domain, 72.38 in the psychological, 79.63 in the social, 68.28 in the environment, 65.28 in self-assessment, and 69.91 in the general assessment domain. The lowest scores in quality of life were found in the classifications of extreme non-adherence and of borderline to total non-adherence.

Although these results may suggest association between treatment adherence and the scores obtained in the physical, psychological, social, environment, self-assessment and general assessment domains, we did not find statistical significance, as shown in table 3.

Table 3. Distribution of data on quality of life x treatment adherence

Quality of life	Classification of treatment adherence					
Variables	Extreme non-adherence n= 1	Borderline to total non-adherence n= 31	Medium range of adherence n= 175	Borderline to total adherence n= 198	Extreme adherence n= 27	p-value
Physical						0.649
Mean	53.57	60.83	60.98	62.12	66.80	
Mean CI (95%)	-	54.65-67.00	58.13-63.83	59.61-64.63	61.72-71.87	
SD	-	16.84	19.11	17.94	12.83	
Psychological						0.151
Mean	50.00	63.84	67.24	68.58	72.38	
Mean CI (95%)	-	57.97-69.72	65.00-69.48	66.43-70.73	66.26-78.49	
SD	-	16.00	15.02	15.35	15.47	
Social						0.105
Mean	58.33	72.85	74.33	76.09	79.63	
Mean CI (95%)	-	67.62-78.08	72.44-76.23	74.18-78.00	75.30-83.95	
SD	-	14.27	12.71	13.62	10.92	
Environment						0.341
Mean	53.12	62.50	65.32	65.41	68.28	
Mean CI (95%)	-	57.57-67.43	63.72-66.93	63.84-66.98	64.74-71.83	
SD	-	13.43	10.76	11.22	8.95	
Self-assessment						0.403
Mean	37.50	57.66	58.64	60.29	65.28	
Mean CI (95%)	-	50.02-65.30	55.82-61.46	57.70-62.88	58.94-71.61	
SD	-	20.84	18.89	18.48	16.01	
General assessment						0.178
Mean	51.92	63.18	65.12	66.10	69.91	
Mean CI (95%)	-	58.47-67.89	63.39-66.85	64.40-67.80	66.55-73.27	
SD	-	12.84	11.59	12.10	8.49	

Source: Data of hypertensive individuals followed in regional health units, Criciúma (SC), 2011.
Mean (± Standard Deviation); Statistical test: Chi-square test of association or independence

Discussion

The results of this study are related to the cross-sectional design, which does not allow defining relationships of cause and effect between variables. Note that much of the collected data were self-reported, which can cause errors or distortions by participants.

Quality of life is a complex and subjective construct that evaluates people's health in a multifactorial way, in their physical and psychological condition, their level of independence, social relationships, personal beliefs and their relationship with the environment. In this study, the highest scores in quality of life were observed in the social and psychological domains, and the lowest scores were in the domains of self-assessment and physical. In relation to the classification of treatment adherence, most participants were classified in the category of borderline to total adherence.

The investigation on the relation between the quality of life and the adherence to antihypertensive treatment enables the development of strategies to expand assistance programs and policies, aiming to improve the adherence and quality of life of these individuals, and seeking to achieve adequate disease control goals. There is an increasing search for assessment of the quality of life of hypertensive subjects because this is considered an important indicator to identify the health status of individuals in face of the results of antihypertensive treatments.[16]

Besides medical treatment, it is essential that hypertensive individuals follow a nonpharmacological treatment, which consists of care for the management of weight control, diet, reduction of salt and alcohol consumption, smoking abstention, stress management and regular practice of physical activity.[17] The findings of this study showed that among the possible managements of nonpharmacological treatments, the regular practice of physical activity was the item of greatest commitment, since more than 50% of participants did not have this habit.

The quality of life of hypertensive individuals ends up being worse when compared to healthy individuals. Also, it is dependent on blood pressure levels, damage to organs, comorbidities (including

obesity) and treatment (both pharmacological and nonpharmacological).[18] A major challenge in controlling blood pressure is still due to non-adherence to treatment.[12]

A randomized clinical trial conducted at the Cardiology Institute in the city of Kanpur in India, evaluated the quality of life of 102 hypertensive subjects in follow-up by the service. The quality of life was similar to the findings of the present study, noting that the highest scores were in social and psychological domains, and the lowest scores were found in the domains of self-assessment and physical condition. Comparing variables such as age and gender, the profile of hypertensive individuals is similar.[17] Such a comparison may indicate that the hypertensive population has similar characteristics, given that a cross-sectional study carried out with 2,063 hypertensive patients who attended the hospital Isfahan in Iran has found similar data. It revealed that females were predominant over males, and the prevalence of hypertension is present in individuals aged 60 years or older.[19]

Comparing the mean values obtained from the scores of the quality of life instrument in our study, with data from a randomized clinical trial held in Hangzhou (China) with 73 hypertensive patients, the scores are similar, highlighting that the social domain had the highest score, and the domain of assessment of general health status had the lowest score in both studies.[6]

Another study showed that normotensive subjects had better scores, and a statistically significant difference was associated only to the environment domain. This matter suggests that hypertensive individuals may have lower quality of life scores than normotensive individuals, but their quality of life may not necessarily be associated with the disease.[11]

Poljičanin et al. suggested that hypertensive patients have the perception of being chronically sick, therefore, they feel more fragile, which ends up negatively affecting their quality of life.[20] The perception of having a chronic disease may be related to the problems faced by these individuals in self-care activities, such as in blood pressure control, nutrition, weight control, care of stress and physical activity.[21]

Within this context, a prevalence study was carried out in 2010 with 385 hypertensive in two hospitals that serve 70% of the Pakistani population. It showed that the relationship between treatment adherence and the quality of life of hypertensive subjects was apparent, i.e., it was not a determinant factor related to worse quality of life. This characteristic may indicate that other factors are affecting the quality of life during the course of treatment.[22]

A recent systematic review and meta-analysis of observational studies evaluating the quality of life in hypertensive patients found that hypertension reduces the quality of life, though in small magnitude.[4] However, the study carried out by Lambert and cols.[23] suggests that the quality of life in hypertensive individuals can be decreased, and also indicates that the actual effect of high blood pressure on the quality of life is still poorly understood.

Conclusion

The association between quality of life and medication adherence in hypertensive patients was not predictive. The hypertensive subjects with high medication adherence presented the best scores, while the worst scores of quality of life were presented by individuals classified as extreme non-adherence and as borderline to total non-adherence.

Collaborations

Hanus JS participated in the conception and design of the project, analysis and interpretation of data, article writing and critical review of the relevant intellectual content, and final approval of the version to be published. Tuon LGB and Simões PW contributed to the interpretation of data, relevant critical review and final approval of the version to be published. Ceretta LB and Amboni G collaborated with the project design and final approval of the version to be published.

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