ORIGINAL ARTICLE

Factors associated with adherence to pharmacological treatment in hypertensive patients enrolled in the HIPERDIA program

Fatores associados a adesão ao tratamento farmacológico em hipertensos cadastrados no programa HIPERDIA

Yuri Barbosa Araújo[1],* (ID) , **Jadyelle dos Santos Teixeira[1]** (ID) , **Emanuel Cardoso de Oliveira[1]** (ID) , **Glebson Santos Sobral[1]** (ID) , **Rafael Alexandre Meneguz-Moreno[1]** (ID) , **Ricardo Guimarães Amaral[2]** (ID), **Sandra Lauton Santos[2]** (ID) , **Luciana Nalone Andrade[1]** (ID)

[1]*Department of Medicine, Federal University of Sergipe. Lagarto, Sergipe, Brazil.*
[2]*Department of Physiology, Federal University of Sergipe. São Cristóvão, Sergipe, Brazil.*

ABSTRACT

Objective: To assess adherence to antihypertensive treatment in patients at a Family Health Strategy (FHS) unit.
Methods: quantitative, transversal, and observational study with 131 hypertensive patients registered in the HIPERDIA program of an FHS located in the city of Lagarto, Sergipe, Brazil, through the analysis of medical records and the application of structured questionnaires. The assessment of the degree of adherence was carried out through the Brief Medication Questionnaire.
Results: Factors related to poor adherence were illiteracy (PR: 0.61; 95%CI: 0.42 - 0.89), per capita family income < 1 minimum wage (PR: 0.51; 95%CI : 0.33 - 0.78) and high pharmacological complexity (PR: 0.66; 95%CI: 0.45 - 0.97), while only regular physical activity (PR: 2.64; 95%CI: 1.28 - 5.46) and a good quality of life (PR: 1.44; 95%CI: 1.02 - 2.04) remained positively associated with adherence.
Conclusion: As these are modifiable factors, the simplification of the therapeutic scheme and the regular practice of physical activity are key points for increasing adherence to the treatment of systemic arterial hypertension in Primary Care.

*Corresponding author:
Departamento de Medicina, Universidade Federal de Lagarto.
Adrr.: Av. Governador Marcelo Déda, 330. Bairro: São José. Lagarto, SE, Brasil | CEP: 49.400-000
Phone: +55 79 99988-9552
E-mail: yuriyba@gmail.com (Araújo YB)

PALAVRAS-CHAVE

Adesão à medicação
Hipertensão
Fatores de risco

RESUMO

Objetivo: Avaliar a adesão ao tratamento anti-hipertensivo em pacientes de uma unidade de Estratégia Saúde da Família (ESF).

Métodos: estudo quantitativo, transversal e observacional com 131 hipertensos cadastrados no programa HIPERDIA de uma ESF localizada na cidade de Lagarto, Sergipe, Brasil, por meio da análise de prontuários e aplicação de questionários estruturados. A avaliação do grau de adesão foi realizada por meio do *Brief Medication Questionnaire*.

Resultados: Os fatores relacionados à baixa adesão foram analfabetismo (RP: 0,61; IC95%: 0,42 - 0,89), renda familiar per capita < 1 salário-mínimo (RP: 0,51; IC95%: 0,33 - 0,78) e alta complexidade farmacológica (RP: 0,66; IC95%: 0,45 - 0,97), mantendo-se apenas atividade física regular (RP: 2,64; IC95%: 1,28 - 5,46) e boa qualidade de vida (RP: 1,44; IC95%: 1,02 - 2,04) positivamente associadas à adesão.

Conclusão: Por se tratar de fatores modificáveis, a simplificação do esquema terapêutico e a prática regular de atividade física são pontos fundamentais para aumentar a adesão ao tratamento da hipertensão arterial sistêmica na Atenção Básica.

INTRODUCTION

The Brazilian model of health care started with decentralization and regionalization, aiming at a preventive and resolutive care model that, among other measures, implemented the Family Health Strategy (FHS). The operation of multidisciplinary teams in assistance, disease prevention, and health promotion brought the population closer to the services[1].

Among the activities promoted by the FHS, the Hypertension and Diabetes (HIPERDIA) program stands out for taking care of users affected by one of the most prevalent chronic non-communicable diseases, systemic arterial hypertension (SAH). For a proper hypertensive patient's assistance, it is essential to correctly assess adherence to the proposed pharmacological treatment, which consists of the agreement between the medical prescription and the patient's daily use[2].

Furthermore, poor adherence can result from complete interruption of drug intake and irregular treatment compliance, either by delaying the medication or discontinuing one of the prescribed therapies[3].

Thus, it stands out that poor treatment adherence is one of the critical challenges in combating SAH and one of the main responsibles for the negative outcomes in hypertensive patients[4]. Additionally, several factors contribute to the lack of adherence, ranging from adverse drug effects to a poor doctor-patient relationship, the asymptomatic characteristics of the disease, and its chronicity[2,5]. Thus, this study analyzed the factors associated with the adherence of users registered in the HIPERDIA program of a Family Health Clinic in the city of Lagarto, Sergipe, Brazil.

METHODS

Ethical aspects

This study was approved by the Research Ethics Committee of the Federal University of Sergipe under the National Council of Health Resolution 466/2012 (CAAE 33931720.5.0000.5546, decision nr. 4.330.444) and the Declaration of Helsinki. Participants were informed about the research objectives, and, after reading, understanding, and signing the Informed Consent Term, they answered the questions about the data collection instrument. The authors are in agreement with the Hong Kong Principles of Research Integrity concerning data acquisition, processing, and publication.

Study design

A quantitative, transversal, and observational study was conducted with hypertensive patients registered in the HIPERDIA program of a Family Health Clinic located in Lagarto, Sergipe, Brazil. The inclusion criteria were being 18 years old or older, registered in the HIPERDIA program, residing in the area covered by the referred unit, and being monitored by the medical team. Any communication deficit to being unable to respond to the research instrument was considered an exclusion criterion.

Data collection occurred between January and June 2021 through a non-probabilistic convenience sampling to seek a quantity close to all patients registered in the program. The analysis of medical records, interviews, and clinical examinations was conducted during the unit's opening hours in individual rooms with closed doors, respecting the participant's privacy.

The dependent variable was adherence to treatment with antihypertensive drugs. The prevalence of this adherence was measured by the Brief Medication Questionaire (BMQ), an instrument divided into three domains, which assess barriers to adherence related to medication regimen, patient's beliefs, and memory recall. For analysis, groups scoring 0 or 1 composed the outcome of "good adherence", while the groups that scored 2 or 3 composed the outcome of "poor adherence".

The study variables were

(1) biosocial factors: gender, age, ethnicity, education and marital status, and *per capita* family income.

(2) duration of antihypertensive drug treatment.

(3) adiposity: body mass index into adequate and overweight (≥ 25 kg/m^2 for adults and ≥ 27 kg/m^2 for the elderly), and waist circumference, categorized as

normal or increased (≥ 94 cm for men and ≥ 80 cm for women).

(4) comorbidities: *diabetes mellitus,* dyslipidemias, and a history of other cardiovascular comorbidities (cerebrovascular accident, chronic kidney disease, heart failure, or acute myocardial infarction).

(5) life habits: smoking, alcohol intake, and regular physical activity with moderate effort (at least 150 min/week).

(6) pharmacological complexity: assessed using the Medication Regimen Complexity Index (MRCI), an instrument validated for Portuguese[6], comprising three sections: therapeutic presentation, dose frequencies, and additional information, such as specific times and concomitant use with food. As there is no consensus on the ideal cutoff point to define high complexity through this tool, it was used the 75th percentile of the sample as such.

(7) Quality of life (QoL): measured through the application of the Mini questionnaire of Quality of Life in Hypertension (MINICHAL). To calculate the sum of the domains, the scores were converted to a scale from 0 to 100, in which values closer to 100 are related to a better QoL. The cutoff point for good QoL was valued above 69.7 points[7].

Additionally, the patients' systolic (SBP) and diastolic (DBP) blood pressures were measured, as well as the number of drugs used in the therapeutic scheme.

Statistical analysis

Continuous variables were investigated using the Kolmogorov-Smirnov analytical method to determine whether they were normally distributed. Those with a normal distribution were described as mean ± standard deviation, variables without normal distribution as median and interquartile range, and categorical variables as absolute and relative frequency. The prevalence of good adherence related to these variables was calculated, and the prevalence ratios (PR) were estimated, with their 95% confidence intervals (95%CI), to verify the degree of association with the outcome. In the regression model with multiple variables, all variables that presented a p-value < 0.20 in the crude analysis were tested, and, in the final adjusted model, those with p < 0.05 were considered statistically significant by Wald's x^2 test. The multivariate Poisson regression model with robust variance was chosen for estimating PR due to the high prevalence of the outcome. All analysis were performed using the Statistical Package for Social Sciences, version 20.0 (IBM Corp, NY, United States).

RESULTS

Out of the 142 hypertensive patients eligible for the study, 9 were not located and 2 refused to participate, totaling 131.The "good adherence" group was composed of 69 (52.7%) individuals (BMQ: 0, n = 8; BMQ: 1, n = 61), while the "poor adherence" group was composed of 62 (47.3%) individuals (BMQ: 2, n = 38; BMQ: 3, n = 24). Regarding the domains that make up the BMQ,

the "recall" domain had the highest percentage of positive responses (score ≥ 1 point) (n = 103; 78.6%), followed by the "regimen" domain (n = 68; 51.9%) and from the "beliefs" domain (n = 38; 29.0%).

Most participants were female (78.6%), more than 60 years (60.3%); the sample average age was 59.5 ± 9.1 years. Non-white ethnicity (80.9%), illiterate (54.2%), those who had a companion (56.5%), who reported a *per capita* family income < 1 minimum wage (71.8%), who have been on antihypertensive drug therapy for at least 10 years (58.0%), and with good Quality of Life (72.5%) also prevailed. Furthermore, 62 participants reported practicing some physical activity; however, only 37 performed it for at least 150 min/week regularly. Forty-one individuals (31.3%) were diagnosed with dyslipidemia, 30 (22.9%) with some cardiovascular comorbidity, and 36 (27.5%) were diabetic, 11 of whom were on an insulin-associated scheme. Regarding lifestyle, 47 (35.9%) individuals reported current or previous smoking, whereas 39 (29.8%) reported current or previous alcohol intake. The participants had an average BMI of 28.7 ± 5.4 kg/m², 95.7 ± 14.2 cm of waist circumference, and a median MRCI score of 7.0 (5.0 – 11.0). Furthermore, the mean quantity of drugs used was 2.8 ± 1.5, while the number of antihypertensive drugs was 1.6 ± 0.8. The average systolic and diastolic blood pressures were 133.3 ± 21.0 mmHg and 80.7 ± 11.5 mmHg, respectively (Table 1).

In the crude analysis of adherence to pharmacological treatment, illiterate hypertensive individuals, without a partner, with a *per capita* family income < 1 minimum wage, diabetic, dyslipidemic, with cardiovascular comorbidities, smokers, alcoholics, and with a high degree of pharmacological complexity were negatively associated with good adherence.Hypertensive patients with adequate BMI for their age, adequate waist circumference for their gender, who practiced at least 150 min/week of regular physical activity, who had been undergoing antihypertensive treatment for at least less than 10 years, used less than 3 drugs, 2 of which being antihypertensive, and with good quality of life were positively associated with good pharmacological therapeutic adherence. In the adjusted model to control for possible confounding factors, illiteracy (PR: 0.61; 95%CI: 0.42 - 0.89), *per capita* family income < 1 minimum wage (PR: 0.51; 95%CI: 0.33 - 0.78), and pharmacological complexity (PR: 0.66; 95%CI: 0.45 - 0.97) remained with a negative association, while only a regular practice of physical activity (PR: 2.64; 95%CI: 1.28 - 5.46) and good quality of life (PR: 1.44; 95%CI: 1.02 - 2.04) remained positively associated with pharmacological adherence (Table 2).

DISCUSSION

The adherence rate found in this study (52.7%) is close to results found by previous studies in other regions of the country, ranging from 16.7% to 90,7%[8-16]. Different scales for assessing adherence may have contributed to this variation. A survey conducted in the South of Brazil identified a 66.2% adherence rate through the BMQ, with the memory recall domain being the one with the

Table 1 — Distribution of socioeconomic, demographic and clinical characteristics related to antihypertensive therapeutic adherence of users registered in the HIPERDIA program of a Family Health Clinic, Lagarto, Brazil, 2021.

Variables	Total (N = 131)	Good adherence (n = 69)	Poor adherence (n = 62)
Age (years)	59.7 ± 9.1	60.7 ± 8.9	58.7 ± 9.2
Female gender n (%)	103 (78.6)	54 (78.3)	49 (79.0)
Non-white ethnicity n (%)	106 (80.9)	53 (76.8)	53 (85.5)
Illiterate n (%)	71 (54.2)	28 (40.6)	43 (69.4)
With a partner n (%)	74 (56.5)	53 (76.8)	21 (33.9)
PCI < 1 minimum wage n (%)	94 (71.8)	41 (59.4)	53 (85.5)
Time on treatment (years)	10.3 ± 7.5	11.1 ± 7.3	9.8 ± 7.7
Body Mass Index (kg/m²)	28.7 ± 5.4	26.7 ± 5.5	30.9 ± 4.5
≥ 60 years	29.1 ± 5.8	27.2 ± 5.8	31.5 ± 4.2
18-59 years	28.4 ± 4.7	25.6 ± 4.6	30.2 ± 4.7
Waist circumference (cm)	95.7 ± 14.2	91.4 ± 13.1	100.4 ± 13.9
Male	99.2 ± 14.8	91.6 ± 13.6	108.8 ± 11.3
Female	94.7 ± 13.9	90.7 ± 11.8	98.2 ± 13.6
Diabetes mellitus n (%)	36 (27.5)	5 (7.2)	31 (50.0)
Dyslipidemias n (%)	41 (31.3)	8 (11.6)	33 (53.2)
Cardiovascular comorbidity n (%)	30 (22.9)	7 (10.1)	23 (37.1)
Regular physical activity n (%)	37 (28.2)	32 (46.4)	5 (8.1)
Smoker n (%)	47 (35.9)	14 (20.3)	33 (53.2)
Alcohol intake n (%)	39 (29.8)	11 (15.9)	28 (45.2)
MRCI	7.0 (5.0 - 11.0)	6.0 (4.0 - 9.2)	9.0 (6.0 - 11.0)
MRCI (A)	2.0 (1.0 - 3.0)	2.0 (1.0 - 3.0)	2.0 (1.0 - 3.0)
MRCI (B)	3.0 (2.0 - 5.0)	2.0 (1.0 - 4.0)	4.0 (3.0 - 5.0)
MRCI (C)	2.0 (1.0 - 3.0)	2.0 (1.0 - 3.0)	2.5 (2.0 - 4.0)
Good Quality of Life n (%)	95 (72.5)	61 (88.4)	34 (54.8)
Amount of drugs	2.8 ± 1.5	2.3 ± 1.2	3.3 ± 1.6
Amount of antihypertensives	1.6 ± 0.8	1.3 ± 0.4	1.9 ± 1.0
Systolic blood pressure (mmHg)	133.3 ± 21.0	123.2 ± 17.2	144.5 ± 19.2
Diastolic blood pressure (mmHg)	80.7 ± 11.5	77.1 ± 10.1	84.5 ± 12.0

PCI: *per capita* income; MRCI: Medication Regimen Complexity Index.

highest number of positive responses (71%), followed by the regime domains (40.7%) and beliefs (6.9%), similar to what was found in this study[3].

Other studies using the BMQ for multiple chronic diseases reported that oblivion is a significant barrier in the recall domain (and, consequently, in adherence) and highlighted a direct correlation of this domain with the older age of the participants[12,14,17]. Notably, there seems to be no consensus regarding this correlation with age, particularly in the hypertensive population. Similar to this study, others did not find an association between age and adherence[13,15,16,18], while others claimed that adherence is higher in older individuals[9,10,19], and still others claim an inverse association[3,11,14].

The proportion of women was higher in the assessed population, as in most studies, which can be explained by the greater demand for health services by this gender. Furthermore, women often take on the role of being responsible for the family's well-being and go to the pharmacy to get medication for other family members[8-10,20]. However, despite this higher proportion of females, there was no difference in adherence between the sexes, as mentioned by other studies[3,8,9,13,16,18].

Greater drug adherence was observed in patients who used the lowest number of drugs in the unadjusted analysis, corroborating other studies[3,10,11,21,22]. The use of multiple drugs defies the cognitive skills and exposes the patient to a more delicate treatment, requiring greater attention, memory, and organization to the drug administration[16]. Furthermore, the greater the number of prescribed drugs, the greater the risk of dangerous interactions and adverse effects, resulting in low treatment adherence. The many medications consumed also contribute to the increased complexity of pharmacotherapy and, consequently, to deviant forms of therapeutic follow-up[10].

Notably, as shown in the adjusted analysis, very complex regimens were associated with poorer adherence, regardless of the number of drugs, since schemes with the same amount of drugs may present different degrees of complexity, as assessed by the

Table 2 — Factors associated with hypertension pharmacological treatment adherence according to crude and adjusted models in the Family Health Clinic area, Lagarto, Brazil, 2021.

Biosocial factors	n	Good adherence (%)	Crude analysis		p-value	Adjusted analysis		p-value
			PR_{crude}	95%CI		$PR_{adjusted}$	95%CI	
Gender								
Male	28	53.6	1.02	0.69 - 1.51	0.914	-	-	-
Female	103	52.4	1.0					
Age								
≥ 60 years	79	56.8	1.23	0.86 - 1.76	0.230	-	-	-
< 60 years	52	46.0	1.0					
Ethnicity								
White	25	64.0	1.28	0.90 - 1.82	0.207	-	-	-
Non-white	106	50.0	1.0					
Education								
Illiterate	71	39.4	0.58	0.41 - 0.81	0.004	0.61	0.42 - 0.89	**0.012**
PS/HS/UE	60	68.3	1.0					
Marital status								
Without a partner	57	28.1	0.39	0.25 - 0.61	< 0.001	1.12	0.72 - 1.74	0.607
With a partner	74	71.6	1.0					
PCI								
< 1 minimum wage*	94	43.6	0.57	0.43 - 0.77	0.002	0.51	0.33 - 0.78	**0.003**
≥ 1 minimum wage*	37	75.7	1.0					
Time on treatment								
≥ 10 years	76	59.2	1.36	0.91 - 3.78	0.110	1.21	0.84 - 1.73	0.310
< 10 years	55	43.6	1.0					
Adiposity								
BMI (according to age)								
Adequate	40	67.5	1.46	1.07 - 1.99	0.024	1.04	0.67 - 1.63	0.847
Overweight	91	46.2	1.0					
WC (according to sex)								
Normal	45	75.6	1.86	1.37 - 2.52	< 0.001	1.46	0.90 - 2.38	0.126
Increased	86	40.7	1.0					
Comorbidities								
Diabetes mellitus								
Yes	36	13.9	0.21	0.09 - 0.47	< 0.001	0.72	0.48 – 1.08	0.111
No	95	67.4	1.0					
Dyslipidemia								
Yes	41	19.5	0.29	0.15 - 0.54	< 0.001	0.63	0.39 - 1.00	0.053
No	90	67.8	1.0					
CVA/CKD/HF/AMI:								
Yes	30	23.3	0.38	0.19-0.74	< 0.001	0.89	0.60 - 1.37	0.637
No	101	61.4	1.0					
Life habits								
Physical activity:								
Yes and regularly	37	86.5	2.20	1.66 - 2.91	< 0.001	2.64	1.28 - 5.46	**0.009**
No or irregular	94	39.4	1.0					
History of smoking								
Smoker or ex-smoker	47	29.8	0.45	0.26 - 0.73	< 0.001	1.09	0.66 - 1.81	0.723
Never smoked	84	65.5	1.0					
Alcohol intake								
Current or previous	39	28.2	0.44	0.28 - 0.72	< 0.001	0.95	0.64 - 1.41	0.819
Never	92	63.0	1.0					
Pharmacological complexity								
High	49	36.7	0.59	0.39 - 0.88	0.013	0.66	0.45 - 0.97	**0.036**
Low	82	62.2	1.0					
Drugs								
Total								
< 3	71	70.4	2.22	1.49 - 3.32	< 0.001	1.16	0.77 - 1.74	0.476
≥ 3	60	31.7	1.0					

Table 2 — Factors associated with hypertension pharmacological treatment adherence according to crude and adjusted models in the Family Health Clinic area, Lagarto, Brazil, 2021 (cont).

Biosocial factors	n	Good adherence (%)	Crude analysis		p-value	Adjusted analysis		p-value
			PR$_{crude}$	95%CI		PR$_{adjusted}$	95%CI	
Antihypertensives								
< 2	79	59.5	1.41	0.97 - 2.03	0.054	0.86	0.63 - 1.18	0.353
≥ 2	52	42.3	1.0					
Quality of Life								
Good	80	70.0	2.75	1.68 - 4.48	< 0.001	1.44	1.02 - 2.04	**0.039**
Bad	51	25.5	1.0					

PR: prevalence ratio; PS: primary school; HS: high school; UE: university education; PCI: *per capita* income; BMI: body mass index; WC: waist circumference; CVA: cerebrovascular accident; CKD: chronic kidney disease; HF: heart failure; AMI: acute myocardial infarction; SAH: systemic arterial hypertension.*Current minimum wage R$ 1.100,00. Source: prepared by the authors.

MRCI, due to other aspects evaluated by the tool[23]. It should be noted, for example, that carelessness with the administration schedules of medications has been mentioned as an essential factor that impacts treatment adherence[19,24]. Thus, adapting and simplifying the therapeutic regimen of patients is a strategy that professionals can use to promote adherence.

The results suggest that socioeconomic variables, such as *per capita* family income and illiteracy, were associated with poor pharmacological adherence. The patient's economic situation may influence the therapy, as those with lower purchasing power may find it difficult to buy medication[10,25-27]. Alternatively, there is no consensus on the impact of education on adherence. Although some studies show no evidence[3,8-11,16,28-30], others listed low education as a risk factor for adherence, given the complexity of therapeutic regimens, making it more challenging to accomplish, especially for the elderly population[5,31-33].

This study evaluated the relationship between pharmacological adherence and four combined cardiovascular comorbidities: acute myocardial infarction, chronic kidney disease, heart failure, and stroke. However, unlike a cross-sectional study in Londrina, Paraná, Brazil, no association was found with 356 hypertensive patients aged 20 to 79 years, which found a relevant association between pharmacological adherence and acute myocardial infarction[9].

Regular physical activity contributes to physical and psychological improvement, as well as controls blood pressure levels. In this study, the association between physical activity and treatment adherence remained significant in the multivariate analysis and was quite expressive since 86.5% of respondents who stated regular exercise were good adherents to drug treatment. These data raise the hypothesis of a potentially better individual's perception of the influence of non-pharmacological treatment on pharmacological treatment adherence. A study conducted in the Primary Health Care context did not find this association significant[9]; however, different scales were used to measure pharmacological adherence, as well as different minimum periods of regular physical activity: 90 min in the first study and 150 min in this study, following the most recent recommendations[34].

A significant association was found between good adherence and a better quality of life, similar to another study that used the MINICHAL as an assessment tool, with associations higher in the domain of somatic manifestations[20]. From this perspective, the importance of medication adherence to prevent and minimize the negative impacts caused by disease complications in patients is highlighted. Alternatively, studies that used other scales found different relevant aspects, such as the possibility that a lower BMQ recall domain may indicate greater difficulty in changing lifestyle habits that require daily adaptation, like dietary changes and physical activity[35,36], due to the loss of cognitive ability over the years[17].

Regarding the limitations of this study, note that most of the information obtained was self-reported, with the three questionnaires used, which can generate errors arising from memory or other distortions. Thus, some results may be overestimated or underestimated, such as treatment adherence itself. Furthermore, since the studies reviewed used different methods to measure adherence, the associations observed in different risk factors may manifest themselves in some situations but not in others. The choice of the Brief Medication Questionnaire was due to its greater sensitivity and specificity compared to the questionnaires classically used[21]. Another limitation of this study concerns the sampling itself, as non-probabilistic, which may have suffered a selection bias since hypertensive people were identified on the basis of the register prepared by the health team of the evaluated FHS. Consequently, some people with hypertension may not have been registered, especially borderline cases. One last point that deserves to be highlighted is related to the study's cross-sectional nature, which allows inference only for the time the questionnaire was applied.

The high prevalence of non-adherent to antihypertensive treatment implies the need for intervention in the risk factors discussed. Thus, the Family Health Teams must pay attention to the most susceptible patients to treatment dropout, as well as promote educational strategies for a better understanding of the population about the disease and its complications, aiming for better adherence to non-pharmacological treatment by changing lifestyle habits, together with drug treatment.

CONCLUSION

The study identified a low rate of adherence to drug treatment, which corresponded to approximately only half of the respondents. The main factor associated with good adherence was regular physical activity. Furthermore, it was verified that adherence was related

to a better QoL. However, a higher risk of poor adherence was observed in patients with less education, *per capita* family income below the minimum wage, and high pharmacological complexity. These factors are relevant to promoting interventions to improve the follow-up of hypertensive patients.

A potentially modifiable factor is the simplification of the therapeutic scheme, one of the critical points for increasing adherence to SAH treatments in Primary Care. Thus, reducing the medication number and the frequency of drug dosages can favor adherence and improve blood pressure control in hypertensive patients.

REFERENCES

1. Ribeiro ÍJS, Boery RN de O, Casotti CA, Freire IV, Boery EN. Qualidade de Vida de hipertensos atendidos na Atenção Primária à Saúde. Saúde Debate. 2015;39(105):432-40. https://doi.org/10.1590/0103-110420151050002011
2. Leite SN, Vasconcellos MPC. Adesão à terapêutica medicamentosa: elementos para a discussão de conceitos e pressupostos adotados na literatura. Cien Saude Colet. 2003;8(3):775-82. https://doi.org/10.1590/S1413-81232003000300011
3. Gewehr DM, Bandeira VAC, Gelatti GT, Colet CF, Oliveira KR. Adesão ao tratamento farmacológico da hipertensão arterial na Atenção Primária à Saúde. Saúde Debate. 2018;42(116):179-90. https://doi.org/10.1590/0103-1104201811614
4. Strelec MAAM, Pierin AMG, Mion Jr. D. The influence of patient's consciousness regarding high blood pressure and patient's attitude in face of disease controlling medicine intake. Arq Bras Cardiol. 2003;81(4):349-54. https://doi.org/10.1590/S0066-782X2003001200002
5. Busnello RG, Melchior R, Faccin C, Vettori D, Petter J, Moreira LB, et al. Characteristics associated with the dropout of hypertensive patients followed up in an outpatient referral clinic. Arq Bras Cardiol. 2001;76(5):349-54. https://doi.org/10.1590/S0066-782X2001000500001
6. Melchiors AC, Correr CJ, Fernández-Llimos F. Tradução e validação para o Português do medication regimen complexity index. Arq Bras Cardiol. 2007;89(4):210-8. https://doi.org/10.1590/S0066-782X2007001600001
7. Melchiors AC, Correr CJ, Pontarolo R, Santos FODS, Paula e Souza RA. Qualidade de vida em pacientes hipertensos e validade concorrente do Minichal-Brasil. Arq Bras Cardiol. 2010;94(3):357-64. https://doi.org/10.1590/S0066-782X2010000300013
8. Ferreira MA, Iwamoto HH. Determinants of adherence to treatment of hypertension patients registered in the hiperdia program of the primary health care. REME Rev Min Enferm. 2017;21:e1037. https://doi.org/10.5935/1415-2762.20170047
9. Girotto E, Andrade SM, Cabrera MAS, Matsuo T. Adesão ao tratamento farmacológico e não farmacológico e fatores associados na atenção primária da hipertensão arterial. Cienc Saude Colet. 2013;18(6):1763-72. https://doi.org/10.1590/S1413-81232013000600027
10. Santa-Helena ET, Nemes MIB, Neto JE. Fatores associados à não-adesão ao tratamento com anti-hipertensivos em pessoas atendidas em unidades de saúde da família. Cad. Saude Publica. 2010;26(12):2389-98. https://doi.org/10.1590/S0102-311X2010001200017
11. Barreto MS, Matsuda LM, Marcon SS. Factors associated with inadequate blood pressure control in patients of primary care. Esc Anna Nery - Rev Enferm. 2016;20(1):114-20. https://doi.org/10.5935/1414-8145.20160016
12. Mantovani MF, Mattei AT, Arthur JP, Ulbrich EM, Moreira RC. Utilização do Brief Medication Questionnaire na adesão medicamentosa de hipertensos. Rev Enferm UFPE. 2015;9(1):84-90.
13. Barreto MS, Reiners AAO, Marcon SS. Conhecimento sobre hipertensão arterial e fatores associados à não adesão à farmacoterapia. Rev Latino-Am Enferm. 2014;22(3):491-498. https://doi.org/10.1590/0104-1169.3447.2442
14. Tavares NUL, Bertoldi AD, Thumé E, Facchini LA, França GVA, Mengue SS. Factors associated with low adherence to medication in older adults. Rev Saude Publica. 2013;47(6):1092-101. https://doi.org/10.1590/S0034-8910.2013047004834
15. Souza CS, Stein AT, Bastos GAN, Pellanda LC. Blood pressure control in hypertensive patients in the "hiperdia program": A territory-based study. Arq Bras Cardiol. 2014;102(6):571-8. https://doi.org/10.5935/abc.20140081
16. Schmitt Júnior AA, Lindner S, Santa Helena ET. Assessment of adherence in elderly patients in primary care. Rev Assoc Med Bras. 2013;59(6):614-21. https://doi.org/10.1016/j.ramb.2013.06.016
17. Kasper M, Vargas T, Santos A, Raasch J, Betti A, Perassolo M. Adesão à terapia medicamentosa e qualidade de vida de usuários de uma unidade de saúde da família de Novo Hamburgo - RS. Rev Bras Farm Hosp Serv Saúde. 2017;08(04):11-7. https://doi.org/10.30968/rbfhss.2017.084.003
18. Carvalho ALM, Leopoldino RWD, Silva JEG, Cunha CP. Adesão ao tratamento medicamentoso em usuários cadastrados no Programa Hiperdia no município de Teresina (PI). Cien Saude Colet. 2012;17(7):1885-92. https://doi.org/10.1590/S1413-81232012000700028
19. Tavares NUL, Bertoldi AD, Mengue SS, Arrais PSD, Luiza VL, Oliveira MA, et al. Factors associated with low adherence to medicine treatment for chronic diseases in brazil. Rev Saude Publica. 2016;50(supl 2):10s. https://doi.org/10.1590/s1518-8787.2016050006150
20. Maciel APF, Pimenta HB, Caldeira AP. Quality of life and medication adherence in hypertensive patients. Acta Paul Enferm. 2016;29(5):542-8. https://doi.org/10.1590/1982-0194201600075
21. Ben AJ, Neumann CR, Mengue SS. The brief medication questionnaire and Morisky-Green test to evaluate medication adherence. Rev. Saude Publica. 2012;46(2):279-89. https://doi.org/10.1590/S0034-89102012005000013
22. Morgado MP, Morgado SR, Mendes LC, Pereira LJ, Castelo-Branco M. Pharmacist interventions to enhance blood pressure control and adherence to antihypertensive therapy: Review and meta-analysis. Am J Heal Pharm. 2011;68(3):241-53. https://doi.org/10.2146/ajhp090656
23. Contreras-Macías E, Gutiérrez-Pizarraya A, Robustillo Cortés MA, Morillo-Verdugo R. High level of medication regimen complexity index correlate with worse quality of life in people living with HIV. Rev Esp Quimioter. 2021;34(2):93-9. https://doi.org/10.37201/req/097.2020
24. Garfield S, Clifford S, Eliasson L, Barber N, Willson A. Suitability of measures of self-reported medication adherence for routine clinical use : A systematic review. BMC Med Res Methodol. 2011;11(1):149. https://doi.org/10.1186/1471-2288-11-149
25. Loyola Filho AI, Uchoa E, Firmo JOA, Lima-Costa MF. Estudo de base populacional sobre o consumo de medicamentos entre idosos: Projeto Bambuí. Cad Saúde Pública. 2005;21(2):545-53. https://doi.org/10.1590/S0102-311X2005000200021
26. Vasconcelos FF, Victor JF, Moreira MTM, Araújo TL. Utilização medicamentosa por idosos de uma Unidade Básica de Saúde da Família de Fortaleza - CE. Acta Paul Enferm. 2005;18(2):178-83. https://doi.org/10.1590/S0103-21002005000200010
27. Rozenfeld S. Prevalência, fatores associados e mau uso de medicamentos entre os idosos: uma revisão. Cad Saúde Pública. 2003;19(3):717-24. https://doi.org/10.1590/S0102-311X2003000300004
28. Demoner MS, Ramos ERP, Pereira ER. Factors associated with adherence to antihypertensive treatment in a primary care

unit. Acta Paul Enferm. 2012;25(spe1):27-34.
https://doi.org/10.1590/S0103-21002012000800005

29. Bezerra ASM, Lopes JL, Barros ALBL. Adesão de pacientes hipertensos ao tratamento medicamentoso. Rev Bras Enferm. 2014;67(4):550-5. https://doi.org/10.1590/0034-7167.2014670408

30. Gomes e Martins A, Chavaglia SRR, Ohl RIB, Martins IML, Gamba MA. Adesão ao tratamento clínico ambulatorial da hipertensão arterial sistêmica. Acta Paul Enferm. 2014;27(3):266-72. https://doi.org/10.1590/1982-0194201400045

31. Piccini RX, Facchini LA, Tomasi E, Siqueira FV, Silveira DS, Thumé E, et al. Promotion, prevention and arterial hypertension care in Brazil. Rev Saúde Pública. 2012;46(3):543-50. https://doi.org/10.1590/S0034-89102012005000027

32. Yiannakopoulou EC, Papadopulos JS, Cokkinos DV, Mountokalakis TD. Adherence to antihypertensive treatment: A critical factor for blood pressure control. Eur J Prev Cardiol. 2005;12(3):243-49. https://doi.org/10.1097/01.hjr.0000160601.41762.44

33. Soares MM, Silva LOL, Dias CA, Rodrigues SM, Machado CJ. Adesão do idoso ao tratamento da hipertensão arterial sistêmica: revisão integrativa. Cogitare Enferm. 2012;17(1):144-50. https://doi.org/10.5380/ce.v17i1.26389

34. Barroso WKS, Rodrigues CIS, Bortolotto LA, Mota-Gomes MA, Brandão AA, Feitosa ADM, et al. Diretrizes Brasileiras de Hipertensão Arterial - 2020. Arq Bras Cardiol. 2021;116(3):516-658. https://doi.org/10.36660/abc.20201238

35. Rabelo DF, Lima CFM, Freitas PM, Santos JC. Qualidade de vida, condições e auto-percepção da saúde entre idosos hipertensos e não hipertensos. Rev Kairós. 2010;13(2):115-30.

36. Tavares DMS, Guimarães MO, Ferreira PCS, Dias FA, Martins NPF, Rodrigues LR. Quality of life and accession to the pharmacological treatment among elderly hypertensive. Rev Bras Enferm. 2016;69(1):122-9. https://doi.org/10.1590/0034-7167.2016690118i