

Association between Family Support and Treatment Adherence in People with Hypertension

Asociación entre el apoyo familiar y la adherencia al tratamiento en personas con hipertensión arterial

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Received: 21/08/2025. Approved: 28/10/2025

Abstract

Introduction. The high prevalence of patients with resistant hypertension (HTN) is related to poor treatment adherence, which implies the need to investigate protective factors that contribute to achieving the general treatment goal of preventing cardiovascular disease. **Objective.** To determine the association between family support and treatment adherence in adults with HTN. **Methodology.** Cross-sectional correlational study. A sample of 300 individuals with HTN completed the Family Support Scale (FSS) for elderly people and the Treatment Adherence Questionnaire for Patients with Hypertension (TAQPH). Data were classified into two categories: family support (low, medium, and high) and treatment adherence (adherent and non-adherent), and were analyzed using Spearman's correlation coefficient and Fisher's exact test. The strength of the association was assessed using Cramer's V test. **Results.** Of the 300 participants, 61.67% were over 60 years old; 69.00% were women. Family support was positively and significantly associated with treatment adherence ($\rho = 0.416$; $p < 0.001$). The strength of the association was medium. **Conclusions.** The results support the hypothesis that greater family support is associated with greater treatment adherence in adults with hypertension. Further research is needed to test the effectiveness of interventions focused on family support to improve treatment adherence.

Keywords. Essential hypertension; Treatment adherence and compliance; Social support; Family; Family relations

Resumen

Introducción. La alta prevalencia de pacientes con hipertensión arterial (HTA) resistente está relacionada a la falta de adherencia al tratamiento, lo que implica indagar sobre factores protectores que contribuyan a alcanzar la meta general del tratamiento para prevenir la enfermedad cardiovascular. **Objetivo.** Establecer la asociación entre el apoyo familiar y la adherencia al tratamiento en adultos con HTA. **Metodología.** Estudio correlacional de corte transversal. Se tomó una muestra de 300 personas con HTA que completaron la Escala apoyo familiar (FSS, por sus siglas en inglés) para personas mayores y el cuestionario Adherencia al tratamiento para pacientes con hipertensión

Suggested citation: Herrera EP, Rivero JD, Amador C. Association between Family Support and Treatment Adherence in People with Hypertension. Salud UIS. 2026; 58: e26v58a01. doi: <https://doi.org/10.18273/saluduis.58.e26v58a01>



(TAQPH, por sus siglas en inglés). Los datos se clasificaron en dos categorías: apoyo familiar (bajo, medio y alto) y adherencia al tratamiento (adherentes y no adherentes) y fueron analizados calculando el coeficiente de correlación de Spearman y la prueba exacta de Fisher. Se evaluó la fuerza de asociación a través de la prueba V de Cramer. **Resultados.** De los 300 participantes, el 61,67 % fueron mayores de 60 años; el 69,00 % fueron mujeres. El apoyo familiar se asoció significativa y positivamente con la adherencia al tratamiento ($\rho = 0,416$ $p < 0,001$). El tamaño de la fuerza de asociación fue mediano. **Conclusiones.** Los resultados apoyan la hipótesis: a mayor apoyo familiar mayor adherencia al tratamiento en adultos con HTA. Se necesitan investigaciones para probar la eficacia de las intervenciones centradas en el apoyo familiar para mejorar la adherencia al tratamiento.

Palabras clave. Hipertensión Esencial; Cumplimiento y Adherencia al Tratamiento; Apoyo Social; Familia; Relaciones Familiares

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Introduction

Hypertension (HTN) is the leading modifiable risk factor for cardiovascular disease and other conditions such as chronic kidney disease and dementia¹. HTN is the leading cause of death and disability globally. The disease's epidemiology reveals that it is most prevalent among men in early adulthood across all ethnic groups². Currently, the overall treatment goal for hypertension is to achieve, in most patients, a systolic blood pressure < 120 mm Hg and a diastolic blood pressure < 70 mm Hg to prevent cardiovascular death, considering individual patient conditions³.

Nevertheless, high prevalence exists of patients with resistant HTN despite the demonstrated benefit of pharmacological treatment, due to the lack of adherence to pharmacological and non-pharmacological treatments⁴. Adherence to long-term treatment is defined by the World Health Organization as the "extent to which a person's behavior taking medication, following a diet, and/or making lifestyle changes corresponds with agreed recommendations from a health care provider"⁵. Based on this definition, Salcedo and Gómez defined adherence in individuals with HTN as the "degree to which a person with hypertension takes prescribed medications, follows a diet, and makes lifestyle changes to achieve the target blood pressure (BP) level"⁶.

To improve treatment adherence, diverse interventions have been proposed to promote healthy lifestyles, such as dietary control,⁷ physical activity⁸, decision-making support⁹, and self-management¹⁰, among others. The blood pressure (BP) management guidelines highlight the importance of self-management and follow-up in the management of HTN. Therefore, they recommend a multidisciplinary, patient-centered approach and monitoring of lifestyle habits, medication adherence, diet, and exercise³.

The multidisciplinary approach helps patients assume an active role in HTN at home; self-management includes BP monitoring for early detection of changes in BP readings and to enable timely treatment. To achieve this, patients with hypertension require family support to improve treatment adherence and, therefore, BP control³.

Families play a fundamental role in BP control through the support they provide to the patients to adhere to a low-sodium diet, attend follow-up visits, and take antihypertensive medications¹¹⁻¹⁴. In this regard, little is known about the association between family support and treatment adherence in people with HTN in Colombia. Previous studies have primarily focused on evaluating treatment adherence in this population and its relationship with socioeconomic, behavioral, and metabolic factors¹⁵⁻¹⁷, which implies inquiring into other factors that influence adherence to medication, given the need to broaden current knowledge.

The importance and novelty of this study lie in providing objective information necessary to inform health policies and optimize existing strategies to improve treatment adherence in people with HTN, recognizing the importance of family support in the management of chronic disease.

The study aimed to assess the association between family support and treatment adherence in adults with HTN enrolled in an HTN control program at a healthcare institution in Córdoba, Colombia.

Methodology

A cross-sectional correlational study was conducted. From the total population of adults enrolled in an HTN control program at a healthcare institution in Córdoba, Colombia ($n = 1,370$), a representative sample of 300 adults with HTN was selected. The sample size was calculated using a 95% confidence level and a 5% margin of error. Systematic probability sampling was used. The following inclusion criteria were applied: a HTN diagnosis for more than 1 year, participation in the control program for more than 6 months, and living with family. Patients with comorbidities or with cognitive or neurological impairment that prevented communication were excluded, as confirmed through medical record review.

Data were collected using a questionnaire assessing sociodemographic characteristics (age, sex, educational level, socioeconomic stratification) and clinical characteristics (antihypertensive treatment, weight, height, and BP). Family support was assessed using the *Family Support Scale (FSS) for elderly people*, developed by Uddin and Bhuiyan¹⁸, a 20-item instrument assessing love, respect, daily activities, religious activities, information, emotional support, important decisions, personal needs, social events, personal problems, assistance with problem solving, health, treatment, significant others, money, food, sleep, companionship, happiness, and satisfaction. Items are rated on a Likert-type scale (no = 0, little = 1, somewhat = 2, and much = 3). Total scores range from 0 to 60, with higher scores indicating greater perceived family support. Family support was categorized as low (0-20 points), moderate (21-40 points), or high (41-60 points). The scale has demonstrated validity and reliability (Cronbach's $\alpha = 0.94$)¹⁸.

Before this study, the FSS was translated from English into Colombian Spanish and back-translated. The Spanish version was validated in the study setting using a sample of 280 patients with hypertension, different from those included in the main study, showing good internal consistency (Cronbach's $\alpha = 0.94$). In the exploratory factor analysis, all 20 items were retained and grouped into three factors accounting for 80% of the variance. The results support the validity and reliability of the FSS for use in the Colombian context.

To assess treatment adherence, the study used the Treatment Adherence Questionnaire for Patients with Hypertension (TAQPH), developed by Chunchua et al.¹⁹ in the Spanish version validated in Colombia by Esquivel and Díaz²⁰, showing acceptable internal consistency (Cronbach's $\alpha = 0.74$). Exploratory factor analysis identified six factors accounting for 54% of the total variance. The results support the instrument's validity and reliability.

The TAQPH has 28 items rated on a Likert-type scale (never = 1, sometimes = 2, most of the time = 3, and all of the time = 4), assessing six dimensions: medication, diet, stimulant control, exercise, weight control, and relieving stress. Total scores range from 28 to 112. The cutoff score for therapeutic adherence was 84; therefore, adherence was classified as adherent (> 84) and non-adherent (< 84)²⁰.

Data were collected in person at the outpatient clinic of a health institution in Córdoba, Colombia, after institutional authorization and written informed consent from each participant. To control possible bias, random sampling was used, validated and reliable instruments were applied, and instrument completeness was checked.

Data were analyzed using IBM SPSS version 25. Descriptive and inferential analyses were performed according to the study variables. The Shapiro-Wilk test was used to assess the normality of the data. As the data were not normally distributed, Spearman's rank correlation coefficient (ρ) was used to test the research hypothesis that the greater the family support, the greater the adherence to HTN treatment" ($p < 0.05$ was considered statistically significant). The association between family support and adherence to HTN treatment was examined using Fisher's exact test, and the strength of the association was assessed using Cramer's V test.

Results

The study included 300 adults receiving antihypertensive treatment, aged 38 to 94 years. The mean age was 64 ± 10.9 years, 61.67% were elderly adults (≥ 60 years), 69.00% were women, 69.32% had a low educational level, and 76.66% had a low socioeconomic stratum (Table 1).

Table 1. Demographic characteristics of the participants

Variable	Frequency (300)	%
Age		
Adult	115	38.33
Older adult	185	61.67
Sex		
Male	93	31.00
Female	207	69.00
Educational level		
No formal education	50	16.66
Primary education	158	52.66
Secondary education	76	25.34
Technical education	9	3.00
University	7	2.34
Socioeconomic stratum		
1	230	76.66
2	62	20.67
3	8	2.67
Ethnicity		
Mestizo	259	86.33
Afro-descendant	9	3.00
Indigenous	32	10.67

Family support

According to the FSS, most participants receive family support: 67.7% (203) were classified at a high level of family support, and 25.30% (76) at a moderate level. The mean overall score was 44 ± 13.10 . The areas that contributed most to the perception of family support were related to emotional aspects, such as family respect, love, being treated as an important person, and family awareness of the health of the adult with hypertension (**Table 2**).

Table 2. Family support in adult individuals with HTN. %(n)

Items	No	Little	Some	Much
1. My family loves me.	3.00 (9)	7.00 (21)	16.67(50)	73.33 (220)
2. I receive respect from my family.	1.67 (5)	4.67 (14)	12.33 (37)	81.33 (244)
3. My family helps me with daily activities.	22.33 (67)	17.33 (52)	31.33 (94)	29.00 (87)
4. My family helps me with religious activities.	28.67 (86)	16.67 (50)	27.36 (82)	27.36 (82)
5. My family provides useful information.	13.00 (39)	12.00 (36)	32.00 (96)	43.00 (129)
6. My family provides emotional support.	11.67 (35)	10.67 (32)	26.33 (79)	51.33 (154)
7. My family shares important decisions with me.	8.00 (24)	11.67 (35)	28.67 (86)	51.67 (155)
8. My family understands my personal needs.	5.67 (17)	15.00 (45)	30.00 (90)	49.33 (148)
9. My family helps me participate in social events.	25.00 (75)	20.67 (62)	26.67 (80)	27.67 (83)
10. My family listens to my problems.	9.00 (27)	13.67 (41)	32.00 (96)	45.33 (136)
11. My family helps me solve my problems.	10.00 (30)	13.00 (39)	37.30 (112)	39.67 (119)
12. My family is aware of my health.	2.67 (8)	8.33(25)	18.33(55)	70.67 (212)
13. My family helps me in my treatment.	15.67 (47)	9.67 (29)	22.00(66)	52.67 (158)
14. My family treats me as an important person.	3.33 (10)	5.33 (16)	19.67 (59)	71.67 (215)
15. My family gives me money when I need it.	11.67 (35)	9.67 (29)	36.67 (110)	42.00 (126)
16. My family is careful about my food.	12.33 (37)	6.33 (19)	32.00 (96)	49.33 (148)
17. My family is concerned about my sleep.	16.00 (48)	6.33 (19)	31.67 (95)	46.00 (138)
18. My family provides companionship.	8.67 (26)	15.00 (45)	22.67 (68)	53.67 (161)
19. My family helps me stay happy.	5.33 (18)	9.00 (27)	24.33 (73)	61.33 (184)
20. I am satisfied with the support my family provides.	3.33 (10)	7.33 (22)	26.00 (78)	63.33 (190)
Low family support (0-20) = 7.00 (21)				
Moderate family support (21-40) = 25.33 (76)				
High family support (41-60) = 67.67 (203)				

Treatment adherence

The minimum and maximum scores of the overall treatment adherence in the participants were 50 and 112, respectively. The mean overall adherence score was 89 ± 9.75 . A total of 67.67% of participants had a score ≥ 84 , indicating treatment adherence. Regarding the dimensions assessed by the TAQPH, adherence to pharmacological treatment (medication) showed higher scores than adherence to non-pharmacological treatment. Concerning the recommended healthy lifestyle, 57.00% reported following a low-sodium diet all the time, and 55.67% never exercised at least five times a week. Stimulant control, weight control, and relieving stress had better scores in the different items (**Table 3**).

Table 3. Treatment adherence in adult individuals with HTN. %(n)

Dimension	Item	Never	Sometimes	Most of the time	All of the time
Medication	1	1.00(3)	3.00(9)	7.67(23)	88.33(265)
	2	3.00(1)	20.00(6)	3.33(10)	94.33(283)
	3	7.00(2)	5.67(17)	42.67(128)	51.00(153)
	4	2.00(6)	13.67(41)	10.33(31)	74.00(222)
	5	1.00(3)	2.00(6)	1.33(4)	95.67(287)
	6	3.00(1)	2.00(6)	3.67(11)	94.00(282)
	7	45.67(137)	2.00(6)	51.00(153)	71.33(4)
	8	85.67(257)	2.33(7)	9.00(27)	3.00(9)
	9	2.33(7)	3.33(10)	2.33(7)	92.00(276)
Diet	10	6.00(18)	11.33(34)	25.67(77)	57.00(171)
	11	5.00(15)	13.67(41)	25.00(75)	56.33(169)
	12	10.33(31)	20.33(61)	37.33(112)	32.00(96)
	13	7.67(23)	11.00(33)	32.33(97)	49.00(147)
	14	19.33(58)	32.00(96)	15.33(46)	33.33(100)
	15	5.00(15)	18.33(55)	11.00(33)	65.67(197)
	16	18.00(54)	31.33(94)	17.67(53)	33.00(99)
	17	31.00(93)	36.00(108)	14.33(43)	18.67(56)
	18	54.00(162)	30.33(91)	10.67(32)	5.00(15)
Stimulant control	19	35.33(106)	14.00(42)	25.33(76)	25.33(76)
	20	5.00(15)	1.33(4)	4.67(14)	89.00(267)
	21	4.00(12)	3.00(1)	0.00(0)	95.67(287)
Exercise	22	55.67(167)	10.00(30)	4.00(12)	30.33(91)
	23	41.00(123)	8.67(26)	88.33(25)	42.00(126)
Weight control	24	4.33(13)	12.67(38)	24.00(72)	59.00(177)
	25	9.33(28)	19.00(57)	29.67(89)	42.00(126)
Relieving stress	26	9.00(27)	24.00(72)	15.33(46)	51.67(155)
	27	11.33(34)	23.00(69)	26.67(80)	39.00(117)
	28	11.67(35)	20.67(62)	24.67(74)	43.00(129)
TAQPH		Non-adherents to treatment (< 84) = 32.33 (97)			
		Adherents to treatment (≥ 84) = 67.67 (203)			

TAQPH= Treatment Adherence Questionnaire for Patients with Hypertension; HTN = Hypertension

Association between family support and treatment adherence

Figure 1 shows the Spearman correlation coefficient between family support and treatment adherence ($\rho=0.416$ ($p < 0.01$)), indicating a positive association between the variables, with greater family support corresponding to greater adherence to HTN treatment.

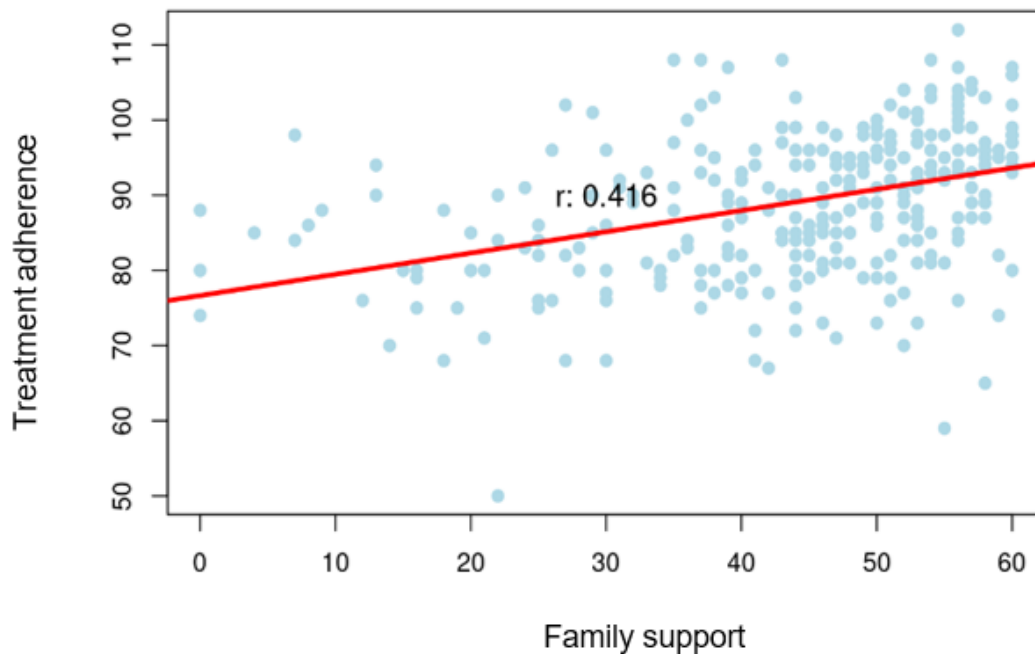


Figure 1. Family support and treatment adherence in people with HTN.

Fisher's exact test was used to determine whether an association exists between the two qualitative variables; that is, whether the proportions of one variable differ depending on the value of the other variable. Table 3 presents the frequency or proportion distribution of the categories between the two variables. Based on the previous results, Fisher's test of independence for categorical distributions was performed, considering the study's null and alternative hypotheses as follows: *H0: The variables are independent; therefore, one variable does not vary across the different levels of the other variable. H1: The variables are dependent; one variable varies across the different levels of the other variable.* The obtained p-value (< 0.001) indicated rejection of the null hypothesis. As Fisher's test confirms that the variables were related, the strength of association was then evaluated using Cramer's V test. There was evidence to reject H_0 and consider that both variables were related. The strength of association was medium (**Table 4**).

Table 4. Family support and treatment adherence in individuals with HTN.

Treatment adherence	Family support. %(n)				Fisher's exact test	Cramer's V
	Total	Low	Moderate	High		
Non-adherent	32.33 (97)	12.37 (12)	39.17 (38)	48.46 (47)	<0.001	0.286
Adherent	67.67 (203)	4.43 (9)	18.72 (38)	76.84 (156)		
Total	100 (300)	7.00 (21)	25.33 (76)	67.67 (203)		

Discussion

The aim of the study was to assess the association between family support and treatment adherence in adults with HTN. The results support the hypothesis that greater family support corresponds to greater adherence to treatment for HTN control. The findings are similar to those reported in previous studies²¹⁻²⁴. Family support has been identified as one of the most important predictors of adherence to antihypertensive treatment²⁴⁻³¹. Therefore, family support provided to patients with HTN, primarily through spouse, partner, or children, is strongly and positively associated with treatment adherence in adults with HTN²⁴.

According to Yuniartika et al.²⁸, families can help individuals with hypertension overcome problems by providing support that increases self-confidence to improve health. In the same sense, Maslampak et al.²⁹ reported that family participation in patient education improves HTN control in terms of treatment adherence.

Rosland³⁰ highlights that family members are crucial for successful control in patients with HTN, as they decide which foods to purchase and prepare, and provide emotional support to manage stress when facing the disease. Therefore, the family influences patient self-management, as diet, physical activity, and stress management occur within the family environment. Lee et al.³¹ recommend that intervention strategies aimed at individuals with uncontrolled HTN should consider family support to improve self-care, which contributes positively to HTN control.

The findings of the study confirm the importance of the family's role in treatment adherence among patients with chronic diseases, as families usually support the patient and strengthen the patient's ability to conduct activities related to following healthcare providers' instructions regarding food preparation, comfort, good treatment, monitoring of medication intake, and attendance at medical follow-up visits³². Similarly, family members influence the patient's psychological adjustment in disease management and support adherence to treatment to achieve the best outcomes in health and well-being³³.

Scientific evidence indicates that family support is promising for improving HTN control due to its statistically significant relationship with treatment adherence, as shown in the results of this study. Nonetheless, the low level of knowledge among patients with HTN and their families could act as an intervening variable by creating substantial barriers to treatment adherence²⁴; whereas greater family knowledge on health aspects favors family support, increasing the probability of therapeutic adherence for HTN control³²⁻³⁵.

According to the above, Ayodapo et al.³⁶ state that many educational interventions aimed at people with HTN fail because family contexts are not taken into account. To achieve effective results, the family must be part of the educational plan according to the needs of the adult with HTN.

The results of this study can be translated into recommendations or implications for the clinical practice and health policy formulation by providing knowledge that confirms family support as key for patients with HTN in treatment adherence, as they do not feel alone and have confidence that their family is a fundamental support while experiencing long-term treatment on a daily basis, which involves challenges and barriers that influence adherence and, therefore, health outcomes.

Finally, the study limitations should be considered. First, this is a cross-sectional study conducted in patients attending a HTN management program in an urban area who lived with their families. Therefore, the results of this study cannot be generalized. Additionally, the use of self-report may overestimate adherence due to social desirability or recall bias, as self-assessment may be influenced by the patient's perception and subjectivity.

Conclusions

The study findings provide important empirical evidence of a positive association between family support and treatment adherence in adults with hypertension in Colombia. Further explanatory studies are recommended to deepen different types of analyses and provide explanations of the influence of intervening variables related to family support and its influence on treatment adherence, based on the formulation of multivariate causal

hypotheses. More research is needed to test the effectiveness of interventions focused on family support to improve adherence to HTN treatment and its impact on health outcomes.

Authors' contributions

EPHG, JDRD, and CAA contributed to the conception, design, analysis, and data interpretation; EPHG and CAA contributed to drafting and critical revision of the intellectual content of the work and to the final revision for publication.

Ethical considerations

The study was approved by the Ethics Committee of the Master's Program in Public Health at the Universidad de Córdoba (ethics approval No. 015). Authorization was also obtained from the healthcare institution where the study was conducted, as well as written informed consent from each participant. All phases of the study complied with international and national ethical guidelines for health-related research involving human subjects, as established in the Declaration of Helsinki, the Council for International Organizations of Medical Sciences (CIOMS)³⁷, and Resolution 8430 of 1993³⁸. The study was classified as minimal risk.

Conflicts of interest

The authors declare no conflict of interest.

Funding

This research was funded by the authors' own resources.

AI technological support

The authors declare that no artificial intelligence (AI)-assisted technologies, language models, machine learning, or similar technologies were used to aid in the preparation of this article.

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