Blood pressure control and adherence/attachment in hypertensive users of primary healthcare

CONTROLE PRESSÓRICO E ADESÃO/VÍNCULO EM HIPERTENSOS USUÁRIOS DA ATENÇÃO PRIMÁRIA À SAÚDE

CONTROL DE PRESIÓN ARTERIAL Y ADHESION/VÍNCULO EN HIPERTENSOS PACIENTES DE LA ATENCIÓN PRIMARIA DE SALUD

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ABSTRACT

This is a population-based, descriptive, and analytic study conducted with a randomized and probabilistic sample comprising 340 hypertensive individuals representative of the Family Health Strategy (FHS) Service in João Pessoa, PB, Brazil. The present study corresponds to the first part of a cohort started in 2008. The instrument used was an adaptation of the *Primary Care Assessment Tool* revalidated in Brazil. Logistic regression was used to investigate the associations between blood pressure (BP) control, sociodemographic variables, and an indicator of adherence/attachment. Among the 340 hypertensive participants, 32.6% were followed up at the FHS, and 89.1% exhibited satisfactory adherence/attachment. The older adults were more likely to control BP, which suggests a more accurate self-care perception and greater adherence to treatment. The present study highlights the problem posed by the control of hypertension by means of the assessment of services. We expected the present model to be applied at other locations to generate parameters to compare different municipalities.

DESCRIPTORS
Hypertension
Primary Health Care
Health evaluation

RESUMO

Estudo descritivo e analítico, de base populacional, realizado com uma amostra aleatória e probabilística de 340 hipertensos, representativa da Estratégia Saúde da Família (ESF) de João Pessoa, PB. O estudo compõe a primeira parte de uma coorte iniciada em 2008. O instrumento utilizado foi adaptado do *Primary Care Assessment Tool*, revalidado no Brasil. A regressão logística avaliou a associação entre o controle pressórico, as variáveis sócio-demográficas e o indicador de adesão/vínculo. Dentre os 340 hipertensos, 32,6% era acompanhado pela ESF e 89,1% apresentou adesão/vínculo satisfatória. Os idosos apresentaram maior chance de controlar a pressão, o que sugere uma percepção melhor do autocuidado e maior adesão ao tratamento. O estudo permitiu dar visibilidade à problemática do controle da hipertensão por meio da avaliação do serviço. Espera-se que esse modelo possa ser adotado em outras localidades, gerando parâmetros para comparações entre municípios distintos.

DESCRITORES
Hipertensão
Atenção Primária à Saúde
Avaliação em saúde

RESUMEN

Estudio descriptivo y analítico, de base poblacional, realizado con muestra aleatoria y probabilística de 340 hipertensos, representativa de la Estrategia Salud de la Familia (ESF) de João Pessoa-PB. El estudio consiste en la primera parte de una cohorte iniciada en 2008. El instrumento utilizado fue adaptado del *Primary Care Assessment Tool*, revalidado en Brasil. La regresión logística evaluó la asociación entre el control de presión, las variables sociodemográficas y el indicador de adhesión/vínculo. Entre los 340 hipertensos, 32,6% recibía seguimiento de la ESF y 89,1% presentó adhesión/vínculo satisfactorio. Los ancianos presentaron mayores posibilidades de controlar la presión, lo que sugiere una mejor percepción del autocuidado y mayor adhesión al tratamiento. El estudio permitió poner en evidencia la problemática del control de la hipertensión mediante la evaluación del servicio. Se espera que este modelo pueda adoptarse en otras localidades, generando parámetros para comparaciones entre distintos municipios.

DESCRIPTORES
Hipertensión
Atención Primaria de Salud
Evaluación en salud

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INTRODUCTION

Systemic arterial hypertension (SAH) is a serious public health problem and one of the main risk factors for cardiovascular disease. As it is often asymptomatic, its diagnosis and treatment are neglected, while the poor adherence of patients to treatment makes its control difficult. Several policies for the promotion and protection of health and the fight against disease aim to control SAH, e.g., the Strategic Action Plan to Tackle Noncommunicable Diseases (NCDs)[1], recently launched in Brazil (2011-2022).

Expansion of primary health care (PHC), particularly by means of the Family Health Strategy (FHS), have allowed for the implementation of health promotion and surveillance, disease prevention, assistance, and longitudinal follow-up of the users of the public healthcare facilities, which are crucial to improve the response to treatment of patients with NCDs. In addition, expansion of pharmaceutical care, including the distribution of more than 15 drugs for the treatment of hypertension and diabetes free of charge, has improved the assistance available to users[2]. However, poor compliance with treatment still poses a serious problem.

Some of the main determinants of the lack of adherence to treatment include factors related to treatment (prescription of inadequate therapeutic regimens, cost), the healthcare services (location, burdensome paperwork, shortage of human and material resources, organizational deficiencies), healthcare professionals (poor professional training, turnover of professionals), the healthcare professional – patient relationship (inadequate and insufficient communication, difficult relationship, inattention, rudeness), the severity of the disease, and the attitude of the patient relative to the disease (compliance with the prescribed treatment, changes in lifestyle, inadequate beliefs, lack of knowledge of the complications of hypertension)[3].

Knowledge of the users' healthcare needs and understanding of the objective reality and subjective meanings they attribute to their lifestyle, health, and suffering might reveal the transforming potential of some ongoing healthcare practices. Adoption of user-centered practices requires the use of relational practices, such as receptivity and bonding. By listening to the users' needs, healthcare professionals might broaden their capacity to treat patients and make treatments more effective[4]. Bonding with the users of healthcare facilities increases the effectiveness of healthcare interventions; enhances the users' involvement in their own care; promotes their role as citizens, their autonomy, the respect for their right to free speech, their right to make their own choices, and their reasoning abilities; and allows them to participate in the preservation of their own health and in the prevention of illnesses[4].

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The Plan for the Reorganization of Care for Arterial Hypertension and Diabetes Mellitus (2001-2003) was launched to improve the monitoring and control of SAH. This program seeks to improve the quality of life of patients with hypertension and diabetes by mitigating the risk factors. For that purpose, it trains many agents, performs active search of cases of hypertension and diabetes, and stimulates enrollment at healthcare facilities, in addition to the implementation of the HiperDia System (System for Registering and Monitoring Individuals with Hypertension and Diabetes)[2]. The registration of hypertensive patients in the HiperDia system allows doctors to identify the extension of the problem and ensures the treatment and monitoring of users of the primary healthcare network, in addition to providing useful information for the planning and management of public healthcare services[2].

Monitoring and control of SAH and diabetes within the primary healthcare setting might prevent the appearance and progression of their complications, reduce the number of hospital admissions due to complications, and reduce the mortality by cardiovascular disease[2]. Nevertheless, some patients with hypertension fail to control their blood pressure (BP) in spite of treatment and follow-up at public healthcare facilities, which suggests a lack of adherence to treatment or to inappropriate monitoring at the facilities. In spite of the various successful municipal experiences in the follow-up of cases with SAH in the primary healthcare setting, the patients often do not develop attachment to the healthcare services[2,5]. An assessment of the services provided within the context of primary healthcare might be performed according to eight dimensions, among which adherence/attachment evaluates the establishment of interpersonal relationships among users, healthcare professionals, and the community[6].

The present study is a part of the evaluation of the FHS performance focused on the associations between control of SAH, the adherence/attachment of users of primary healthcare facilities, and sociodemographic factors. The aim of the study was to assess the associations between BP control and sociodemographic variables, follow-up, and the users' adherence/attachment.

METHODS

This is a population-based, descriptive, and analytic study conducted in a randomized and probabilistic manner in two stages in a sample of 340 hypertensive patients who were representative of the FHS. The participants were older than 20 years, had enrolled at the Family Health Units of the city of João Pessoa, Paraíba, Brazil, in 2006/2007, where they were followed up until 2008. The sample was randomly selected at Family Health Units from the five municipal

sanitary districts from November 2009 to March 2010. The data are derived from the study *Assessment of effectiveness in the control of systemic arterial hypertension and association with risk factors comparing assistance at the Family Health Program and Health Basic Units in Northeastern Brazilian municipalities*, which represents the first step of a cohort started in 2008.

The instrument employed for the present study was based on the *Primary Care Assessment Tool* (PCAT), which has been validated to assess critical features of primary healthcare in industrialized countries[6]. In Brazil, PCAT was adapted and revalidated by a study conducted in the municipality of Petrópolis[7]. For the purpose of application in individuals with arterial hypertension in João Pessoa, a team of specialists performed further adjustment of the instrument.

The instrument was based on the eight dimensions of primary healthcare[6]: the health of the confirmed SAH case; access to diagnosis; access to treatment; adherence/attachment; list of services; coordination; family centeredness; and community orientation. The items in each dimension were rated on a five-point Likert scale with scores varying from 1 to 5, corresponding to *never*, *almost never*, *sometimes*, *almost always*, and *always*, respectively, in addition to the options *not applicable* and *I do not know* to cover all possible situations.

Following the Health Ministry (HM) guidelines, the participants were considered to comply with follow-up when they made at least three visits to the healthcare centers through 2008, and the BP measurements were registered in their clinical records[2]. In addition, follow-up was assessed from another perspective: taking into consideration all the BP measurements registered in the clinical records independently from the number of visits to the healthcare centers in 2008.

The following sociodemographic variables were recorded: gender, age range, user type, ethnicity, educational level, marital status, and adherence/attachment.

The primary healthcare dimension assessed in the present study (adherence/attachment) comprised eight questions that evaluated the hypertensive patients' adherence and attachment to the healthcare unit program. The total score of the adherence/attachment dimension was calculated by adding the scores of all eight items (each one of them varying from 1 to 5). That index was used to estimate the cutoff point to define satisfactory and unsatisfactory adherence/attachment, for which purpose we analyzed the receiver operating characteristic (ROC) curve.

Logistic regression was used to assess the association between the dependent variable, i.e., BP control (dichotomized as controlled or non-controlled) and the investigated variables. The P-value was established as 5%, and the raw and adjusted odds ratio (OR) was calculated with a 95% confidence interval (95% CI). BP control was classified following the guidelines of the Brazilian Societies of Hypertension, Cardiology, and Nephrology[8], with 120/80 mmHg as the lower limit of normal (controlled BP), and BP above 139/89 mmHg was considered non-controlled. BP was measured during the interviews, following the HM orientations[8].

The database was built using Microsoft Access® and Microsoft Excel®, and statistical analysis was performed using IBM SPSS Inc. PASW Statistics version 18.0. The study was assessed and approved by the Research Ethics Committee of Lauro Wanderley Hospital, Federal University of Paraíba, protocol N. 0101 dated April 29, 2009.

RESULTS

The results of the exploratory analysis of the participants are described in Table 1, both for the whole sample and stratified into controlled and non-controlled BP.

Table 1 – Absolute and relative distribution of hypertensive individuals according to sociodemographic variables, user type, and adherence/attachment to the Family Health Strategy – João Pessoa, PB, 2009

Variables	TOTAL (n=340)		Controlled BP		Non-controlled BP		χ^2	p- value
	N	%	N	%	N	%		
Gender								
Female	252	74.1	72	74.2	180	74.1	0.00	0.99
Male	88	25.9	25	25.8	63	25.9		
Age range								
Adult (20 to 59 years)	163	47.9	55	56.7	108	44.4	4.17	0.04*
Senior (above 60 years)	177	52.1	42	43.3	135	55.6		
Ethnicity								
White	111	32.6	37	38.1	74	30.5		
Non-white	227	66.8	59	60.8	168	69.1	1.97	0.19
Unknown	2	0.6	1	1.0	1	0.4		

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Rev Esc Enferm USP
2013; 47(3):583-9
www.ee.usp.br/reeusp/ 585

Variables	TOTAL (n=340)		Controlled BP		Non-controlled BP		χ²	p- value
	N	%	N	%	N	%		
Educational level								
Illiterate	66	19.4	18	18.6	48	19.8	0.06	0.88
Attended school	274	80.6	79	81.4	195	80.2		
Marital status								
Lives with partner	271	79.9	75	77.3	196	80.7		
Lives without partner	67	19.5	22	22.7	45	18.5	0.69	0.45
Unknown	2	0.6	-	-	2	0.8		
User type (Health Ministry classification)								
Followed up	111	32.6	40	41.2	71	29.2	4.58	0.03*
Not followed up	229	67.4	57	58.8	172	70.8		
User type (visit frequency)								
Followed up	163	47.9	56	57.7	107	44.0	5.21	0.03*
Not followed up	177	52.1	41	42.3	136	56.0		
Adherence/attachment								
Unsatisfactory	37	10.9	13	13.4	24	9.9	0.41	0.52
Satisfactory	303	89.1	84	86.6	219	90.1		

* Adjusted for *adult* age range, white ethnicity, and followed-up user type.

The present sample of hypertensive individuals comprised mostly females (74.1%) and seniors (52.1%). Ethnicity was classified as white or non-white (brown-skinned, Amerindians, Asians, and blacks), whereby the latter predominated (66.8%). Approximately 19.4% of the participants were illiterate, and most lived with a partner (79.9%).

The profile of the participants with non-controlled hypertension was similar to the overall profile, i.e., they were mostly females, seniors, non-whites, educated, and classified as non-followed-up users, and exhibited satisfactory adherence/attachment. The cutoff point of the adherence/attachment compound index calculated by ROC curve analysis was 3.94. That is, values equal or higher than this indicated satisfactory, and lower values indicated unsatisfactory, adherence/attachment. On these grounds, 89.1% of the sample exhibited satisfactory adherence/attachment.

According to the follow-up classification formulated by HM (three or more visits and registration of the BP measurements in the clinical records), the percentage of participants classified as followed up was 32.6%. However, in some cases, although the participants had attended the due appointments, the BP measurements had not been registered in their clinical records. For that reason, a second classification of users based on the number of visits (without mandatory registration of the BP measurements in the clinical records) was formulated (to avoid the confounding factor), the application of which increased the percentage of users classified as followed up from 32.6% to 47.9%, whereas the percentage of non-followed-up users decreased from 67.4% to 52.1%. There was a significant difference (p<0.001) between the proportions of both classifications. In this case, the type of follow-up might represent a confounding factor. Thus, two separate logistic regression analyses were performed with the two types of classification (one with mandatory registration of BP and another without mandatory registration of BP).

Logistic regression (Table 2) revealed a statistically significant association between age range and user type (HM classification). This is to say, BP control was associated with older age (compared to the *adult* age group) and the follow-up condition (compared to not followed up) (p < 0.05).

Table 2 – Associations between control of blood pressure, sociodemographic variables, user type, and adherence/attachment to the Family Health Strategy – João Pessoa, PB, 2009

Variables	Raw OR (95%CI)	p-value	Adjusted OR* (95%CI)	p-value
Gender				
Female	0.99 (0.57 – 1.69)	0.97	–	–
Male	1			
Age range				
Adult (20 to 59 years)	0.61 (0.38 – 0.98)	0.04*	0.58 (0.35 – 0.94)	0.02*
Senior (above 60 years)	1		1	
Ethnicity				
White	0.70 (0.42 - 1.15)	0.16	0.70 (0.42 – 1.16)	0.17
Non-white	1		1	

Continue...

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Variables	Raw OR (95%CI)	p-value	Adjusted OR* (95%CI)	p-value
Educational level				
Illiterate	1.08 (0.59 – 1.97)	0.80	–	–
Attended school	1			
Marital status				
Lives with partner	1.27 (0.71 - 2.27)	0.40	–	–
Lives without partner	1			
User type (Health Ministry classification)				
Followed up	0.58 (0.36 - 0.96)	0.03*	0.56 (0.34 – 0.93)	0.02*
Not followed up	1		1	
Adherence/links				
Unsatisfactory	1.27 (0.61 - 2.66)	0.51	–	–
Satisfactory	1			

95% CI: 95% confidence interval.
*Adjusted for *adult* age range, white ethnicity, and followed-up user type.

Logistic regression performed with the classification that did not include mandatory registration of BP revealed a significant association relative to the followed-up participants only ($p<0.05$). Therefore, the type of follow up could not be considered a confounding factor, which led us to analyze the data according to the HM classification (with mandatory registration of BP), as done above. Neither gender nor educational level exhibited a significant difference relative to adherence/attachment.

DISCUSSIONS

According to the VI Brazilian Guidelines of Arterial Hypertension[8], the indices of BP control are very low due to the patients' poor adherence to treatment. The present study identified a high percentage of hypertensive patients with non-controlled BP. Similar results were found in a study of adults from the municipality of Bambuí: in that study, although 40.5% of the hypertensive patients were under treatment, only 10.4% exhibited controlled BP (<140/90 mmHg)[9].

In the case of hypertensive patients, follow-up presupposes satisfactory attachment to the program of the healthcare center, resulting in adequate control of BP. However, satisfactory adherence to the treatment depends on a global attitude relative to one's own health, and that requires the active participation of hypertensive patients as the subjects, rather than the objects, of the process. Compliance with the required appointments and measurement of BP on a regular basis are crucial for the control of hypertension.

Some interviewees said that their BP had been measured at every visit, but the corresponding records were missing. These findings suggest an institutional flaw in the care of users, as the assessment of the patients' progression requires measurement and recording of BP. In addition, in some healthcare centers where the participants were seen by nurses, the BP values were not registered in the patients' clinical records but rather in nursing logbooks or forms.

As a function of the prevailing biomedical model, healthcare is still centered on the doctor's role, and it is difficult to change this situation[10]. However, consultations led by nurses are explicitly included in the hypertension control programs, which further allow for direct assistance and educational actions by multidisciplinary teams. In the case of hypertension, nursing care focuses on the prevention, effective control, and delay of the occurrence of the complications of the disease[11].

Attachment, integrality, and satisfaction of needs are products of the work process of healthcare professionals. The principle of integrality must rule over the whole process of assistance. For that purpose, receptivity, the ability to listen and to take decisive actions, as well as humane practices promoting empathy between the healthcare services users and the professionals are needed to facilitate the adherence to the therapeutic intervention and the success of treatment. According to some studies, users give particular value to the attention paid to them by healthcare professionals from their arrival at the healthcare center through the consultation. The attachment of users to the FHS leads to relationships based on trust and to the sharing of responsibility between professionals and users[4,10].

Receptivity involves simple gestures, such as explaining why a user will have to wait before a consultation. This type of courtesy shows the users that they are considered truly important by the healthcare center staff, and this factor contributes to the success of treatment. Sound ties to the healthcare system allow for the application of treatments that are most appropriate to the actual living conditions of the subjects, which in turn might enhance their adherence to treatment, promote their autonomy, and increase their decision-making power regarding their health[10].

The present study identified the proportion of hypertensive patients enrolled at Family Health Units in the municipality of João Pessoa, the percentage of individuals who were effectively followed up, the adherence/attachment indicators, and the percentage of individuals with non-controlled BP. Most participants were female, which agrees with the distribution found in other studies. The predominance of females in the healthcare services is thought to be due to cultural factors based on the organization of the services (healthcare center hours, location), for which reason the males tend to adhere less to treatment compared to the females. The literature also suggests a greater prevalence of hypertension among females compared to males in the economically productive age range. Some authors attribute

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Rev Esc Enferm USP
2013; 47(3):583-9
www.ee.usp.br/reeusp/
587

that fact to the insertion of women in the job market and the process of urbanization and technological development that have occurred in recent decades[12].

Psychosocial, economic, and educational factors, as well as emotional stress, are involved in the appearance and maintenance of SAH and might hinder the adherence to treatment and the change of lifestyle required to remedy SAH[13]. Although marital status imposes some patterns of relationships and attitudes that might favor the lack of adherence to treatment, no association was found in the present study between the marital status and adherence to treatment.

Adherence to treatment includes therapeutic and educational factors and involves features related to the recognition and acceptance of the individual's health conditions. Therefore, in addition to the need for individuals to adapt to their health conditions, the risk factors in their lifestyles must be identified, and the habits and attitudes that improve the quality of life must be enhanced, as should their awareness of and participation in self-care. The treatment of patients with chronic diseases must favor their adaptation to their chronic condition and supply them with means to develop the mechanisms needed to acquaint themselves with their own process of health and disease, so that they become able to identify, avoid, and prevent the progression of disease, its complications, and, above all, an untimely death[13]. Mere information, however, does not suffice to induce shifts in behavior, so the situation many patients find themselves in is one of an inaccurate understanding of and approach to the problem posed by the adherence to SAH treatment[13].

Analysis of the participants' profiles showed that most were older adults with a low educational level, which can lead to greater difficulty in developing a critical view on what a properly organized healthcare service should include to meet their needs in terms of follow-up and adherence to treatment. For individuals who in the past had no access to healthcare services, the simple fact of being able to make visits to a healthcare center, schedule appointments, and receive the medication needed is reason enough to attribute high scores to the items in PCAT, as was the case for all the items included in the dimension investigated in the present study.

Most of the participants in the present study exhibited satisfactory adherence/attachment, but ROC curve analysis did not identify a truly accurate cutoff point to establish whether adherence/attachment was satisfactory or unsatisfactory, as the variability of the interviewees' responses was small and thus did not allow us to detect significant differences between the two groups. The Study of Social Perception Indicators System (Sistema de Indicadores de Percepção Social - SIPS), put forth by the Institute for Applied Economic Research (Instituto de Pesquisa Econômica Aplicada - IPEA), indicates that although the Brazilian population faces hindrances in the access to the public healthcare network, once they succeed in receiving the assistance needed, they tend to rate the services as good[14]. The Family Health program is the highest-rated: 80.7% of the assisted interviewees rated it good or very good[14], which corroborates the degree of satisfaction found in the present study

The logistic regression analysis showed an association between BP control and the condition of being followed up at a healthcare service. This is to say, the individuals classified as followed up were the ones who had the greatest difficulty controlling their BP. These findings might be explained by the fact that most likely, the individuals who visit healthcare facilities more often are particularly concerned with controlling their BP. However, satisfactory adherence to the treatment does not merely involve complying with the scheduled appointments or taking the medication exactly as prescribed, and it transcends a mere shift in lifestyle. Attachment means much more than the mere referral to a healthcare service or formal enrollment in some program because it involves developing a steady, personal, and non-transferable relationship that promotes the encounter between human subjects[5]. Satisfactory adherence/attachment is related to factors inherent to the healthcare institution, whose aims must be to promote and stimulate actions in the involved individuals that set them on the path to therapeutic efficacy and high quality[13].

Strengthening and stimulating the families regarding the treatment or the incentives given by the healthcare professionals for users to comply with treatment can help the users give new meanings to symbolic values[12]. Adherence to treatment is a complex phenomenon to analyze, as it consists of a behavioral processes under the influence of the environment, the healthcare professionals, medical care, and the perception of and strategies to cope with adversities, problems in life, and support networks[13].

In the present study, seniors exhibited better control of BP compared to the younger adults. This might suggest that older adults exhibit more thorough self-care awareness and better adherence to treatment as concerns the proper use of medication and the adoption of healthy diet and lifestyles; however, this hypothesis could not be confirmed, as it did not lie within the scope of the present study. According to some studies, lack of BP control might induce fear of death, health problems, and hospitalization. Such feelings might be stronger among seniors, resulting in increased self-care[12].

CONCLUSIONS

The present study highlights the problem of SAH by means of an innovative approach to the assessment of its control. No representative studies conducted in northeast Brazil have revealed a particular concern of the HM with the control of NCDs via the FHS or the formulation of specific programs. As a consequence, we investigated some public-health aspects of BP control and generated data to

serve as a basis for health managers to identify the groups that are vulnerable to non-adherence to treatment and the consequent lack of BP control. Therefore, the present study contributes to the process of decision-making by providing health managers sound data on which to base the elaboration and implementation of rational public policies and more efficient health practices to achieve the control of SAH.

It is expected that the model of assessment applied in the present study will be used in other locations to generate parameters to compare healthcare facilities among different municipalities. It is also expected that the present study will encourage complementary qualitative studies on potential improvements to the organization of the healthcare system to meet the users' health needs.

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