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Baixo letramento em saúde em pacientes idosos com pressão arterial não controlada em nível secundário de atenção à saúde

Low health literacy in older patients with uncontrolled blood pressure at secondary care

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RESUMO

Introdução: O baixo letramento em saúde (BLS) é comum entre pacientes com doenças crônicas. Os estudos sobre a associação entre o BLS e a pressão arterial não controlada estão limitados aos níveis primário e terciário de atenção à saúde. **Objetivo:** Avaliamos a prevalência e a associação entre BLS e pressão arterial não controlada em pacientes hipertensos em um centro de atenção secundária à saúde no Brasil. **Material e métodos:** Nosso estudo teve delineamento transversal e incluiu 485 pacientes, no período de Agosto/2014 a Março/2016. Avaliamos letramento em saúde, pelo Short Assessment of Health Literacy for Portuguese-Speaking Adults (SAHLPA-18), e controle pressórico. Indivíduos com um escore ≤14 em SAHLPA-18 foram considerados com BLS, e indivíduos com pressão arterial ≥140/90 (ou ≥130/80 em pacientes diabéticos) foram considerados como tendo pressão arterial não controlada. **Resultados:** Um total de 56,0% eram mulheres, com média de idade de 62,0±12,6 anos. Os participantes analfabetos eram 61,6% e 65,4% recebiam até um salário mínimo. Tanto a pressão arterial não controlada quanto o BLS foram muito prevalentes (75,1% e 70,9%, respectivamente), entretanto não houve associação entre esses dois parâmetros. Na análise multivariada, a pressão arterial não controlada foi associada à idade (OR:0,96, IC:0,94-0,98, p<0,001), diabetes mellitus (OR:4,36, IC:2,54-7,51; p<0,001) e número de comprimidos (OR:1,16, CI:1,08-1,25, p<0,001). **Conclusão:** Mesmo encontrando alta prevalência de BLS, a falta de associação entre BLS e pressão arterial não controlada pode ser devido às características demográficas da amostra, ou seja, idosos com baixa renda e baixa escolaridade. A avaliação do letramento em saúde fornece informações importantes que apoiam ações para melhorar o controle e o tratamento da hipertensão.

Palavras-chaves: Hipertensão, Educação em saúde, Promoção de saúde, Letramento em saúde

ABSTRACT

Background: Low health literacy (LHL) is common among patients with chronic diseases. Studies on the association between LHL and uncontrolled blood pressure are limited to primary and tertiary levels of healthcare. **Objective:** We evaluated the prevalence and association between LHL and uncontrolled blood pressure in hypertensive patients in a secondary healthcare in Brazil. **Material and methods:** Our study had a cross-sectional design and included 485 patients, between August/2014 to March/2016**.** We evaluated health literacy, by Short Assessment of Health Literacy for Portuguese-Speaking Adults (SAHLPA-18), and the blood pressure control. Individuals with a score ≤14 in SAHLPA-18 were considered as LHL, and individuals with blood pressure ≥140/90 (or ≥130/80 in diabetic patients) were considered as having uncontrolled blood pressure. **Results:** A total of 56.0% female, with mean age 62.0±12.6 years. Illiterate participants were 61.6%, and 65.4% earned up to one reference wage. Both uncontrolled blood pressure and LHL were highly prevalent (75.1% and 70.9%, respectively), but there was no association between these two parameters. In multivariate analysis, uncontrolled blood pressure was associated with age (OR:0.96, CI:0.94-0.98, p<0.001), diabetes mellitus (OR:4.36, CI:2.54-7.51; p<0.001) and number of pills (OR:1.16, CI:1.08-1.25, p<0.001). **Conclusion:** Even we found a high prevalence of LHL, the lack of association between LHL and uncontrolled blood pressure may be due to demographic characteristics of the sample, i.e., elderly people with low income and low schooling. HL assessment provides important information that supports actions to improve hypertension control and treatment.

Key-words: Hypertension, Health education, Health promotion, Health literacy

INTRODUCTION

Hypertension is an important risk factor for the development of cardiovascular diseases,[1] currently the leading cause of mortality worldwide and is estimated to affect 25% of the adult population, with the prevalence predicted to increase to 29% by the year 2025.[2] According to the National Health and Nutrition Examination Surveys (NHANES), from the United States, between the years 2011 and 2014, hypertension prevalence was 29.3% (30.0% in men and 29.1% in women).[3] In Brazil, there is still an unmet need for accurate and representative epidemiological studies about the prevalence of hypertension. The most widely data were collected through the phone survey VIGITEL (Surveillance of Risk Factors and Protection for Chronic Diseases by Telephone Inquiry), which reported hypertension frequencies varying from 23.0% and 25.0%, between 2006 and 2014. However, it is limited to the population who has a phone number.[4]

Precariousness in the processes of detection, awareness, treatment and control of hypertension affects populations worldwide, making this condition a serious public health problem.[5] Hypertension also has a negative impact on the quality of life of patients: it causes lesions in target organs, triggering chronic degenerative diseases such as stroke, acute myocardial infarction, congestive heart failure, peripheral vascular disease and chronic kidney disease (CKD).[6] About 31% of the worldwide mortality is caused by cardiocerebrovascular diseases, especially coronary heart disease and stroke.[7]

One of the strategies that reduces the prevalence and improves the treatment of hypertension related chronic complications, especially in developing countries, is allocating patients to secondary healthcare centers [8, 9] In Brazil, this strategy led to the creation of the Hiperdia Minas Juiz de Fora Center in Juiz de Fora, Minas Gerais, which offers specialized treatment of chronic conditions associated with hypertension. The Center provides patient follow-up by a multi-professional team, access to complementary exams, educational actions and integration between the various levels of the system. In the medium- and long-term, this type of approach is expected to lead to a decrease in the number of hospitalizations, target organ lesions, and mortality.[10]

The care of chronic diseases, like hypertension, requires that patients understand and follow relatively complex medical recommendations to achieve therapeutic targets, such as life-long medication taking, regular laboratory testing and medical follow-up even in absence of symptoms.[11] Health literacy (HL) is defined as the level at which people are able to obtain, process, and understand basic health information and services that are necessary to take appropriate health decisions.[12] The association between low health literacy (LHL) and negative outcomes in hypertensive patients is controversial and limited, perhaps due to the absence of a standard method to assess HL.[13] Recent studies reported that LHL was associated with worse blood pressure control[1, 13-16] and with less knowledge of, and participation in treatment.[17, 18] But these studies were mainly performed at the primary[2, 14, 15] and tertiary[16] healthcare levels. Additionally, in Brazil, despite an estimated population of more than 50 million hypertensive patients, there are no studies evaluating HL in the context of hypertension.

Thus, this study evaluated the prevalence of LHL and its potential association with uncontrolled blood pressure in hypertensive patients at high cardiovascular risk in a secondary healthcare center in Juiz de Fora, Minas Gerais state, Brazil.

MATERIAL AND METHODS

Design of the study

This was a cross-sectional and observational study in a single secondary healthcare center in Brazil.

Sampling and study setting

Hypertensive patients were consecutively recruited during their first visit to the Hiperdia Minas Juiz de Fora Center, at the Fundação Instituto Mineiro de Estudos, Pesquisas em Nefrologia (Instituto Mineiro for Nephrology Research Foundation) of the Universidade Federal de Juiz de Fora, Juiz de Fora, Minas Gerais, Brazil, after referral from primary healthcare units.

The study enrolled hypertensive patients over 18 years-old who met the eligibility criteria of Hiperdia Minas Juiz de Fora Center, i.e., a high overall cardiovascular risk and/or target organ damage, resistant hypertension and secondary hypertension, and who were able to understand and answer the instruments used in data collection.[19] We excluded only patients who refused to participate.

From August 2014 to March 2016, 1,482 patients were referred from primary care to the first medical appointment at Hiperdia Minas Juiz de Fora Center. Using a convenience sampling approach and due to limitations in staff availability for data collection, only patients attending the center in the morning were invited to participate in the study. A total of 485 patients fulfilled the inclusion criteria and agreed to participate in the study by signing an informed consent form. The study was submitted to and approved by the local Ethics in Research Committee (Ethics Committee of the University Hospital of the Universidade Federal de Juiz de Fora), with approval number 501.749/2013.

Variables and measurements

We interviewed patients to collect sociodemographic data, including: gender, race (self-declared, white/non-white), age, marital status (married/stable partner, single, widower), schooling [years of study and categories: illiterates (<4 years), basic school (4-8 years) and high school (≥8 years)], family income (<1, 1-2, ≥2 reference wages – US$ 250.05), smoking (yes/no), alcoholism (yes/no), homeownership (own house/rent), number of rooms in the house, vehicle ownership (yes/no), means of transportation to treatment unit (public/private transport), private health insurance (yes/no), and access to medication (with/without cost).[1, 15] Clinical data, such as time of hypertension diagnosis, DM diagnosis, and medication regimen (number of antihypertensive drugs, number of dosing times/day, and number of pills/day) were obtained from the electronic records.

As part of routine consultation, at least two arterial blood pressure measurements in two positions (sitting and orthostatic positions) were performed. Hypertensive patients were classified as having controlled blood pressure if their Systolic Blood Pressure/Diastolic Blood Pressure (SBP/DBP) was <140/90 mmHg, or SBP/DBP <130/80 mmHg in the case of hypertensive and diabetic patients, according to international recommendations. Patients with SBP/DBP above these levels were considered as having uncontrolled blood pressure.[6]

HL was evaluated by the Short Assessment of Health Literacy for Portuguese Speaking Adults (SAHLPA) instrument.[20-22] This tool was chosen due to its previous validation in Brazilian-Portuguese in a sample of elderly individuals, and due to the fact that it can be applied in research environments to assess HL.[20] It contains 18 items that evaluate patients regarding their pronunciation skills and understanding of common medical terms. For each item that is correctly pronounced and understood, the patient receives 1 point, and the total score (ranging from 0 to 18) is calculated by adding up all items. Patients with scores ≤14 were classified as LHL and patients with scores >14 were classified as having HL.[20-22]

Data collection

Between August 2014 and March 2016, patients who attended the Hiperdia Minas Juiz de Fora Program in the morning and fulfilled the inclusion criteria of the study were invited to participate. After accepting to participate, by signing a written consent form, they were enrolled in the study. A pharmacist outside the healthcare team then applied the SAHLPA instrument and the sociodemographic questionnaire. The same person later collected clinical data from the medical record.

Statistical procedures

Sample characteristics were described as the frequencies or as mean ± standard deviation and median/interquartile, or frequency and percentages. We used the Kolmogorov-Smirnov test to assess normality. Whenever indicated, the Chi-square test, Student's t-test, Mann-Whitney, or Fisher's test were used to evaluate the association between sociodemographic and clinical characteristics and blood pressure control. Logistic regression analysis was performed to evaluate the association with uncontrolled blood pressure. We included in the model only variables (gender, race, age, number of antihypertensive drugs, number of pills/day and DM), which presented $p<0.05$ in the univariate analysis. The analysis was performed using the SPSS software (Statistical Package for the Social Science, Chicago, USA, version 19). A p value <0.05 was considered significant.

RESULTS

Sample characteristics

During the study period, primary healthcare units referred 1,482 patients to the first medical appointment at the secondary care program – the Hiperdia Minas Juiz de Fora Center. Of those, 520 scheduled their consultations in the morning period and attended their first visit, but 35 failed to meet the inclusion criteria. The remaining 485 eligible patients accepted to participate in the study (Figure 1).

Most patients were female (56.3%), non-white (46.8%), married (52.0%), illiterate (61.6%), had a monthly income up to one reference wage (approximately US$250.05, 65.4%), owned their homes (85.6%), had access to public transportation (60.6%), and to free antihypertensive medication (70.3%). Mean age was 62.0±12.6 years, and the mean SBP/DBP values were 145.7 ± 27.8 and 86.7±15.8 mmHg, respectively. Thirty-seven percent had diabetes, 13.0% were smokers, 19.6% were alcoholics, and 21.9% had private health insurance (Table 1).

Blood pressure control

Seventy-five percent of the patients had uncontrolled blood pressure at the time of the evaluation, with mean values of SBP/DBP of 160.6±6.7 and 99.1±7.1 mmHg, respectively. Among patients with controlled blood pressure, SBP/DBP values were 126.0±11.3 and 75.0±14.1 mmHg, respectively. Univariate analysis associated uncontrolled blood pressure with female gender (59.6% vs. 46.3%, p = 0.011), non-white race (49.5% vs. 38.8%, p = 0.046), lower age (60.5±121.4

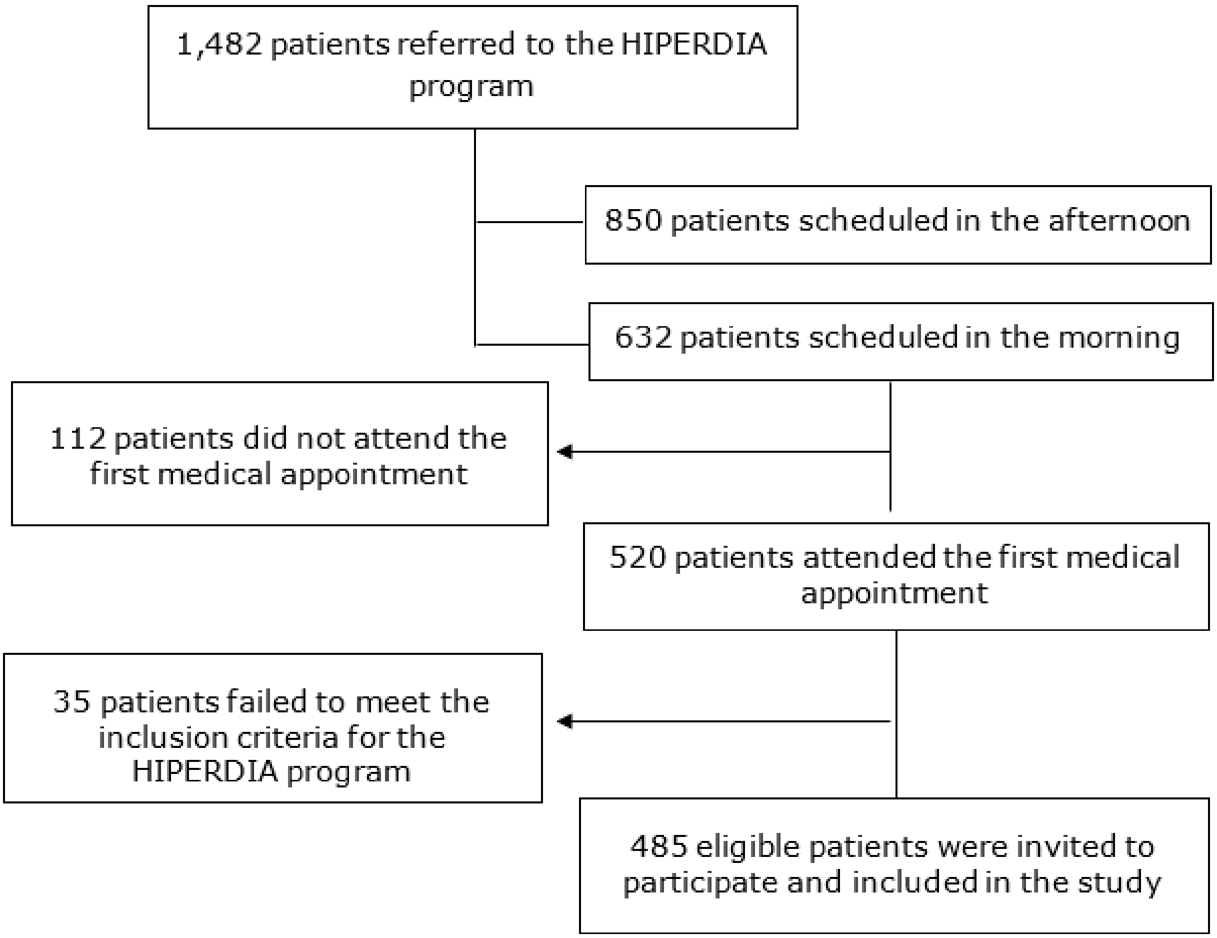

Figure 1: Flow of patients eligible for analysis, according to inclusion and exclusion criteria of the study.

vs. 66.6±12, p <0.001), and diabetes diagnosis (44.2% vs. 16.5%, p <0.001). Complex treatments, as indicated by the highest number of drugs prescribed (3.3±1.4 vs. 2.8±1.4, p = 0.002) and a higher number of pills (6.9±3.9 vs. 4.9±3.5, p<0.001) were also more frequently seen in patients with uncontrolled blood pressure. Groups with and without blood pressure control had similar levels of LHL (70.2% vs. 71.2%, respectively, p = 0.908). We found no association between uncontrolled blood pressure and demographic variables other than race and gender, social variables (income, house type, number of rooms in the house, health insurance, access to transportation, possession of own vehicle, free access to medication, smoking and alcohol consumption) or clinical variables other than diabetes, number of drugs and number of pills (Table 1).

Low health literacy and blood pressure control

According to the SAHLPA assessment, 70.9% of the patients had LHL. Compared to patients with HL, LHL patients were mainly male (46.8% vs. 36.2%, p=0.035), of non-white race (50.3% vs. 38.3%, p=0.017), with low schooling level (<4 years, 70.6% vs. 39.7%, p<0.001), fewer schooling years (3,9±3.3 vs. 7.1±3.9, p<0.001), and family income up to 1 reference wage (68.9% vs. 56.7%, p=0.021), (Table 2).

In the multivariate analysis, only age (OR:0.96, CI:0.94-0.98, p<0.001), diabetes (OR:4.36, CI:2.54-7.51, p<0.001) and the number of pills (OR:1.16, CI:1.08-1.25, p<0.001) were associated with uncontrolled blood pressure (Table 3).

DISCUSSION

This is the first study assessing the association between LHL and blood pressure control in patients with high cardiovascular risk at a secondary healthcare level. In this sample of elderly patients with low educational level and low income, we found a high prevalence of both uncontrolled blood pressure control (a cause to specific reference to this secondary health care level) and LHL, despite the lack of association between these two factors.

In recent years, similar to what has happened

Table 1: Sociodemographic and clinical characteristics of hypertensive patients included in the study.

Variables	All patients	Uncontrolled blood pressure	Controlled blood pressure	p
Demographic				
Gender: female	56.3% (273/485)	59.6% (217/364)	46.3 (56/121)	0.011
Age	62 ± 12.6	60.5 ± 12.4	66.6 ± 12.1	<0.001
Race: non-white	46.8% (227/485)	49.5% (180/364)	38.8% (47/121)	0.046
Marital status				
Married/steady partner	52.0% (252/485)	50.8% (185/364)	55.4% (67/121)	0.402
Schooling				
Illiterate (<4 years)	61.6% (299/485)	61.3% (223/364)	62.8% (76/121)	
Basic (4-8 years)	19.8% (96/485)	19.8% (72/364)	19.8% (24/121)	0.923
Medium-high (≥8 years)	18.6% (90/485)	19.0% (69/364)	17.4% (21/121)	
Schooling years	4.9 ± 3.8	4.9 ± 3.7	4.5 ± 4.1	0.263
Low health literacy	70.9% (344/485)	71.2% (259/364)	70.2% (85/121)	0.908
Social				
Income				
1 reference wage	65.4% (317/485)	66.2% (241/364)	62.8% (76/121)	
1 to 2 reference wages	26.0% (126/485)	25.5% (93/364)	27.3% (33/121)	0.756
≥2 reference wages	8.7% (42/485)	8.2% (30/364)	9.9% (12/121)	
Houseowners	85.6% (415/485)	85.2% (310/364)	86.8% (105/121)	0.756
Number rooms in the house	4.9 ± 1.0	5.0 ± 1.0	4.8 ± 1.0	0.236
Private health insurance	21.9% (106/485)	20.6% (75/364)	25.6% (31/121)	0.255
Access to transportation				
Public	60.6% (294/485)	59.1% (215/364)	65.3% (79/121)	0.239
Private	39.4% (191/485)	40.9% (149/364)	34.7% (42/121)	
Vehicle owners	23.3% (113/485)	22.8% (83/364)	24.8% (30/121)	0.710
Free access to anti-hypertensive medication	70.3% (341/485)	69.5% (253/364)	72.7% (88/121)	0.566
Smoking	13.0% (63/485)	12.9% (47/364)	13.2% (16/121)	1.000
Alcoholism	19.6% (95/485)	20.1% (73/364)	18.2% (22/121)	0.694
Clinical				
SAP (mmHg)	145.7 ± 27.8	160.6 ± 6.7	126.0 ±11.3	-
DAP (mmHg)	86.7 ± 15.8	99.1 ± 7.1	75.0 ± 14.1	
Time of hypertension (diagnosis, years)	13.4 ± 11.2	13.3 ± 10.8	13.9 ± 12.5	0.548
Number of antihypertensive drugs	3.2 ± 1.4	3.3 ± 1.4	2.8 ± 1.4	0.002
Number of pills/day	6.4 ± 3.9	6.9 ± 3.9	4.9 ± 3.5	<0.001
Number of dosing times/day	2.2 ± 0.9	2.3 ± 1.0	2.1 ± 0.8	0.153
Diabetes mellitus	37.3% (181/285)	44.2% (161/364)	16.5% (20/121)	<0.001

SAP: Systolic Arterial Pressure; DAP: Diastolic Arterial Pressure; SD: standard deviation.

*Equivalent to US$250.05

The T-Test, Chi-square, Mann-Whitney, or Fisher´s tests were used to compare uncontrolled blood pressure with controlled blood pressure. Normality was assessed with the Kolmogorov-Smirnov and Shapiro-Wilk tests.

Table 2: Sociodemographic characteristics in relation to health literacy

Variables	Low health literacy	Health literacy	p
Gender: female	53.2% (183/344)	63.8% (90/141)	0.035
Race: non-white	50.3% (173/344)	38.3% (54/141)	0.017
Schooling			
Illiterate (0-4 years)	70.6% (243/344)	39.7% (56/141)	
Basic (4-8 years)	17.7% (61/344)	24.8% (35/141)	<0.001
Medium-high (≥ 8 years)	11.6% (49/344)	35.5% (50/141)	
Schooling years	3.9 ± 3.3	7.1 ± 3.9	<0.001
Income			
1 reference wage	68.9% (237/344)	56.7% (80/141)	
1 to 2 reference wages	24.1% (83/344)	30.5% (43/141)	0.021
≥ 2 reference wages	7.0% (24/344)	12.8% (18/141)	

Health literacy: SAHLPA score >14, low health literacy: SAHLPA score ≤14. The Chi-square test was used to compare adequate health literacy with low health literacy. Normality was assessed with the Kolmogorov-Smirnov and Shapiro-Wilk tests.

Table 3: Multiple logistic regression for uncontrolled blood pressure as the outcome

Variable	OR	Lower-Upper	*p*
Age (years)	0.96	0.94-0.98	<0.001
Diabetes Mellitus	4.36	2.54-7.51	<0.001
Number of pills/days	1.16	1.08-1.25	<0.001

Model adjusted for variables with p<0.05 in the univariate analysis: age, gender, race, number of antihypertensive treatments, number of pills/day, and Diabetes Mellitus.

in other countries, the average age of the Brazilian population has increased, which, together with economic globalization and unhealthy habits, has contributed to expose populations to chronic non-transmissible diseases, such as hypertension.[8] In fact, our population sample was largely composed of elderly patients (64.1%).

In addition to age, other factors that may have influenced the high prevalence of uncontrolled blood pressure in our study were the precarious economic status of the patients, as two-thirds of the sample reported family income up to one reference wage and low schooling levels. Together, these results suggest that patients were at great risk of developing hypertension-associated chronic complications and thus, were eligible for the program.[8] High morbidity secondary to hypertension, such as that found in our sample, has been described, in association with precarious economic and cultural conditions, in developing countries,[23] including Brazil.[24]

The Hiperdia program was created to assist patients referred by the primary healthcare network who are diagnosed with hypertension, DM and CKD. The program accepts patients with a high risk of cardiovascular disease and/or target organ damage, with resistant hypertension or secondary hypertension; in short, patients with severe disease and who already present hypertensive target organ lesions. We believe that it was due to these criteria for patient referral to the program that we found a high prevalence of uncontrolled blood pressure in the first medical appointment of the participants. The detection of high blood pressure values in hypertensive patients that had been previously diagnosed may be due to low treatment adherence or to precarious access to health services,[25] or yet to the failure of those services in delivering health promotion, protection and recovery actions.[26] Besides the poor treatment adherence, uncontrolled blood pressure is associated with difficulties in coping with hypertension, such as poor self-care management, poor hypertension knowledge and LHL, which involves cognitive and social skills.[15]

Although there are different methods to measure HL, no standard measurement tool fits all contexts.[27] There are two validated instruments in Portuguese used in HL research: the Short-Test of Functional Health Literacy in Adults (S-TOFHLA) and the Short Assessment of Health Literacy for Portuguese-Speaking Adults (SAHLPA). We chose the SAHLPA instrument because it is shorter (18 items) and more practical to apply than the others, and it has satisfactory psychometric properties.[20-22] All two tools have limitations, as they are restricted to medical terms and do not evaluate other HL skills, such as conceptual knowledge, and critical, interactive and mathematical skills.[22, 28] There is also no standard instrument for the assessment of HL in the context of hypertension, but previous studies have used S-TOFHLA,[15, 17] the Rapid Estimate of Adult Literacy in Medicine (REALM),[1, 14, 18] and the Brief Health Literacy Screen (BHLS). These last two are not validated in Portuguese and also share the same limitations as stated above to S-TOFHLA and SAHLPA.[16] The SAHLPA instrument was used in cross-sectional studies with diabetic patients at primary healthcare level[22] and patients undergoing anticoagulant therapy at tertiary healthcare level.[21]

HL is a new research field. LHL is directly associated to worse health outcomes and greater use of health services.[13, 17] There is still a lack of representative studies assessing HL level in the Brazilian population.[29] The only two HL studies available were carried out in populations that were attended at tertiary healthcare units, reporting a prevalence of LHL around 30%[28] and 51.6% in elderly individuals (older than 65 years).[30] There are few studies in hypertensive patients, among whom the prevalence of LHL varies between 33 and 57%.[1, 9, 15, 16, 18] In our sample, we found a much higher prevalence of LHL (70.9%) than that reported in these studies.

Older studies have shown no association between LHL and blood pressure control[14] and knowledge on blood pressure treatment.[17] However, recent studies have reported this association, suggesting that LHL could be a risk factor for uncontrolled blood pressure.[1, 9, 15, 16] Among these studies, two were performed at the primary level,[1, 15] one at the tertiary level of healthcare[16] and, finally, one from a community health center, of which the classification regarding level of health care is not available.[9]

In, our study, however, this association is lacking, as the patients with LHL did not present a greater prevalence of uncontrolled blood pressure. However, our sample was composed of elderly individuals, with low schooling and low income. We hypothesize such unfavorable specific characteristics could surpass and mitigate the effects of LHL in this population. These characteristics suggest they were exposed to social, economic and environmental disadvantages, probably had precarious health care and thus were more susceptible to have problems caused by lack of blood pressure control. Individuals with low schooling and income are more likely to have low levels of HL and are, consequently, predisposed to worse health status.[1] This is particularly notable among individuals belonging to ethnic/racial minorities, who are often victims of social adversity and tend to have worse health outcomes compared to more privileged groups.[31]

Age is also considered a risk factor for LHL.[32] However, in our study, higher age was an independent protective factor for uncontrolled blood pressure. This may be due to elderly individuals having a greater perception of self-care and adherence to treatment, or else to they being more likely to have someone who assists them in healthcare.[33]

Consistent with the findings in this study, hypertension together with DM is often more severe and difficult to control, as the therapeutic regimen is more complex – requiring taking and/or applying medications, as well as assistance with healthy eating habits, to control both glycaemia and blood pressure levels.[34]

Regarding medication, the significant association between number of pills and uncontrolled blood pressure reveals a barrier to blood pressure control – as patients need more pills, they may be less prone to adhere to the treatment, leading to poorer blood pressure control.[35]

Our study has some limitations. First, we evaluated the prevalence and association between HL and poor blood pressure control in a single healthcare center. However, due to the scarcity of studies in populations with these characteristics, we consider that our results bring relevant epidemiological information. Second, due to operational limitations, it was not possible to randomize the patients to be included in the study, as it was only possible to collect data from one period of the day. However, all the invited patients were included, which provided a large sample of patients.

CONCLUSION

For the first time, we evaluated HL and blood pressure control in a sample of 485 hypertensive patients referred for secondary healthcare due to their high cardiovascular risk. The studied population consisted of elderly individuals with low educational level, low income and a high prevalence of uncontrolled blood pressure. The demographic characteristics and the high prevalence of LHL may have masked the association of HL and uncontrolled blood pressure. However, based on HL high prevalence, assessment of health literacy is necessary to implement actions aimed at improving hypertension treatment and control. As well, the efficacy of measures designed aiming a better adequacy for LHL populations need to be tested in the future.

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DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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