

Do Brazilian Physicians Follow the Brazilian Guidelines for Hypertension?

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Summary

Objective: To evaluate whether procedures adopted by Brazilian physicians in the diagnosis and treatment of hypertension are in compliance with those advocated by the IV Brazilian Hypertension Guidelines.

Method: Survey carried out by means of telephone interviews with Brazilian physicians. The survey featured application of a questionnaire aimed to assess receipt of and compliance with the guidelines, and to evaluate various aspects regarding the treatment of hypertensive patients.

Results: 68.3% of the respondents had received the guidelines and answered the questionnaire in full. The total sample consisted of 483 physicians – 47% cardiologists, 31.7% internists, and 21.3% nephrologists. The survey showed high compliance with certain guideline topics such as more than one measurement at different times for the diagnosis of hypertension (94%), and providing guidance regarding lifestyle changes as a therapeutic strategy. As to arterial pressure levels used for diagnosis and therapeutic target, compliance with guideline recommendations lacks uniformity. The survey showed a clear preference for pressure levels lower than those recommended, especially in patients with comorbidities. Attempts to assess cardiovascular risk also proved to be low. Only 64.7% of the respondents reported that they seek to determine the presence of diabetes mellitus, and 56.4% check for dyslipidemia. The majority (59.3%) mentioned diuretics as the preferred drug class for initial drug treatment of hypertension.

Conclusion: We concluded that there is only partial compliance with Brazilian Hypertension Guidelines and that certain factors should be taken into consideration when drawing up future guidelines, such as: improved distribution; standardization of values for diagnosis and therapeutic target; more extensive coverage of ways for physicians to approach hypertensive patients to better evaluate their overall cardiovascular risk.

Key words: Guidelines; hypertension / epidemiology; physician's role.

Introduction

Clinical Guidelines are defined as a “systematically developed consensus regarding a set of rules and algorithms based on scientific evidence to help physicians’ decisions in specific clinical conditions, both in diagnosis and therapeutics”. Clinical Guidelines also constitute an important tool for reducing inappropriate approaches in medical care in addition to being a measurement of its quality³, and are therefore the best evidence-based cost-effective option for patients⁴.

Arterial hypertension is an important systemic disease that has a major impact on all levels of public health. In addition, it constitutes the intersection of various clinical and surgical specialties. Because of its importance and impact, Hypertension Societies throughout the world – especially the American, European, and Brazilian Societies – have published their guidelines⁵⁻⁷. These guidelines, updated periodically, advocate rigorous control of arterial blood pressure as the

most efficient way to reduce clinical complications.

Unfortunately, not only have significant gaps been reported between development and disclosure of the guidelines, but their implementation in clinical practice has also proved faulty since according to the National Health and Nutrition Examination Survey (NHANES)⁸, only 34% of hypertensive patients under treatment in the United States have their blood pressure under control (levels below 140/ 90mm Hg).

Farquhar et al, in a systematic review to approach physicians’ attitudes regarding the clinical guidelines, showed that most physicians agreed that the clinical guidelines were important and useful sources of information (75%), as well as good educational tools (71%). However, in a study conducted by Cabana et al⁹, 27% of physicians considered the guidelines to be of little practical use and too strict to be applied to patients, besides reducing physicians’ autonomy and simplifying medical care. They say that the guidelines are like a “medical cookbook”. However, it must be pointed out that these studies did not assess physicians’ compliance with the guidelines.

To evaluate the approach of general practitioners in the treatment of arterial hypertension, Oliveria et al⁹ carried out

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a survey in Detroit (USA) using a questionnaire based on the Joint National Committee Recommendations (JNC VI)¹⁰. All the physicians who responded to this survey said that they were familiar with JNC VI, and most claimed that they agreed with the recommendations. In regard to the guidelines, 62% claimed to follow them most of the time, while only 14% claimed to follow them in all cases.

The above-mentioned studies are further evidence that despite widespread disclosure, the effect of the clinical guidelines in terms of transforming physicians' clinical practice performance has been limited. In Brazil, no studies have been carried out with a view to assessing physicians' behavior vis-à-vis clinical guidelines in general or the Brazilian Hypertension Guidelines in particular.

Therefore, the Brazilian Society of Cardiology, the Brazilian Society of Hypertension, and the Brazilian Society of Nephrology have hired Datafolha® – a well-known Brazilian public opinion research institute – to carry out a nationwide survey among physicians of various specialties in an attempt to evaluate how the guidelines of the various specialties have been used in clinical practice.

Methods

The physicians, chosen randomly from a list of members of three societies of medical specialties in Brazil – the Brazilian Society of Cardiology, the Brazilian Society of Internal Medicine, and the Brazilian Society of Nephrology – were interviewed by telephone.

A questionnaire was applied by an independent research institute (Datafolha® Research Institute) by non-medical interviewers previously trained by one of the authors (DMJ).

The complete questionnaire comprising 37 questions was designed to assess the following:

- 1-Receipt of guidelines and how the physician had contact with the document;
- 2-How much of the document the physician had read and the extent of compliance with the guidelines, in percentage;
- 3-How often the physician measures arterial blood pressure in the course of each medical appointment and how many measurements are necessary to diagnose arterial hypertension;
- 4-The type of instrument used to measure arterial blood pressure (aneroid, mercury column, or automatic oscillometric) and how often the instrument is calibrated;
- 5-Levels of arterial blood pressure used for diagnosis and treatment target in hypertensive patients with and without comorbidities (heart failure, chronic renal failure, and/or diabetes mellitus);
- 6-Whether the physician provides guidance regarding lifestyle changes in the treatment of hypertension;
- 7-Drug class preferably used for initial treatment of arterial hypertension;
- 8-Preference for monotherapy or combined therapy;
- 9-Complementary tests routinely performed on hypertensive

patients;

10-Whether the physician routinely uses alternative methods such as ambulatory blood pressure measurement (ABPM) or home blood pressure measurement (HBPM) to measure blood pressure, and;

11-The physician's impression as to the percentage of patients with blood pressure appropriately under control.

Depending on the question asked, the answers could be:

- a) stimulated and single (multiple options offered and respondent accepts only one)
- b) stimulated and multiple (multiple options offered and respondent accepts more than one)
- c) spontaneous and single (no options offered and only one answer accepted)
- d) spontaneous and multiple (no options offered and more than one answer accepted)

The data collection method will be presented with description of the findings. The questionnaire was not applied when the physician contacted denied having received the guidelines.

The survey was carried out between the months of May and August 2004, approximately two years after release of the guidelines to Brazilian physicians (August 2002).¹¹ The document was published in English at a later date.⁷

The research sample consisted of 483 physicians weighted according to distribution of medical specialties in the different regions of the country considering an unknown universe ($p=50$; $q=50$) and margin of error (e) of 4.5%, with a 95% confidence interval ($Z=1.96$), according to the following formula:

$$e = \sqrt{\frac{pq}{n}} \cdot Z$$

Data will be presented as percentage of responses. The differences among groups were considered statistically significant when they exceeded the maximum margin of error for the survey, calculated according to the sample size and rounded to the nearest integer as follows: cardiologists = 7.0 percentage points; internists = 8.0 percentage points; nephrologists = 10 percentage points and total sample = 4.5 percentage points ($p < 0.05$; confidence interval 95%).

Results

Of the total sample, 68.6% had received the guidelines. The percentage of physicians who received the guidelines was significantly higher among cardiologists (91.4%) and nephrologists (81.3%) than among internists (42.7%). Most cardiologists (69.1%) and nephrologists (59.5%) received the guidelines through their professional medical associations, while 28.6% of the internists named the pharmaceutical industry as their main source of receipt (spontaneous and multiple).

The profile of respondent physicians who received the guidelines and answered the complete questionnaire is

described in Table 1.

Asked about the use of guideline recommendations for the management of hypertensive patients in their several aspects in clinical practice, 42.5% of the respondents claimed full compliance with the guidelines, 49.8% reported only partial compliance, 2.1% said they did not follow the guidelines, 4.5% had not even read the guidelines despite having received them, and 1.1% did not know how to answer the question (stimulated and single).

Among the physicians interviewed, 97.5% reported that they measure arterial blood pressure in the course of all medical appointments and, to establish the diagnosis of hypertension, 94.0% claimed that they measure arterial blood pressure more than once at different times (stimulated and single).

As to the instrument used, the aneroid model was the most frequently mentioned (59.6%), followed by the mercury column device (36.0%), automatic oscillometric (1.9%), and 2.5% claim to use more than one type of instrument (stimulated and single). In regard to calibration, 72.9% of physicians claim to have their instruments calibrated at intervals of less than one year (spontaneous and single).

The values mentioned as used for diagnosis and treatment target in patients with and without comorbidities are shown in Figures 1 and 2 (spontaneous and single).

The survey showed clearly that the values used for diagnosis and treatment target by the physicians interviewed tend to be significantly lower in patients with comorbidities. The level of arterial blood pressure considered as "optimal" (120/80 mmHg) by the Brazilian guidelines⁷ was the most frequently cited (42.1%) as therapeutic target for this group of patients. A reading of 130/85 mmHg advocated by the Brazilian guidelines for initiation of anti-hypertensive treatment in patients with comorbidities was mentioned by 22% of respondents as diagnosis level, and by 17.8% of respondents as therapeutic target (Fig. 2 – mentions between 120/80 and 140/90 mm Hg).

Regarding treatment, 99.0% of the physicians interviewed report that they advise lifestyle changes for all hypertensive patients as part of the treatment plan (stimulated and single). As to initial drug treatment for mild arterial hypertension⁷, only 38.4% of the physicians interviewed use combined therapy, while 61.6% prefer monotherapy (stimulated and single).

Table 2 shows a comparison of the preferred drug classes selected to initiate treatment of mild arterial hypertension (spontaneous and multiple). Regardless of the medical specialty the survey shows a statistically significant preference for diuretics.

The six complementary tests most frequently requested to evaluate hypertensive patients were, in decreasing order: creatinine (80.2%), fasting glucose (64.7%), simple urine analysis (63.7%), electrocardiogram (63.5%), serum potassium (56.5%) and total cholesterol (56.4%), with no significant differences among physicians of different specialties as shown in Figure 3 (spontaneous and multiple).

Regarding alternative ways of measuring arterial blood pressure, ABPM is routinely indicated (70-100% of cases) by

Characteristics	Percentage of Physicians Interviewed (%)
n = 483	
Gender	
Male	73.5
Female	26.5
Age	
24 – 35	21.8
36 – 45	32.9
46 – 55	32.4
≥56	12.9
Time since Graduation	
Up to 12 years	25.1
13 – 20 years	28.2
21 – 25 years	20.8
≥25 years	25.9
Medical Specialty	
Cardiology	47.0
Internal Medicine	31.7
Nephrology	21.3

Table 1 - Characteristics of the Physicians Interviewed exchange

8.4% of physicians, while 9.9% of the physicians interviewed do not habitually request this measurement. Generally speaking, the test is indicated for 28% of all patients (spontaneous and single). The main indications cited for ABPM were suspected cases of white-coat (office) hypertension (53.7%), evaluation of treatment efficiency (41.6%), and resistant hypertension (11.1%) – (spontaneous and multiple).

When asked about providing specific advice to measure arterial blood pressure outside of the doctor's office, 67.9% of physicians say they recommend the procedure, especially nephrologists (84.7%) – (spontaneous and single).

As to the percentage of control of hypertensive patients, on an average, physicians consider that 60.0% of hypertensive patients are controlled patients (spontaneous and single).

Discussion

Compliance with the recommendations of clinical guidelines is an important tool for the quality of medical care because the guidelines constitute a document prepared by specialists based on scientific evidence – a set of recommendations that aids physician in both diagnostic and treatment decisions.

Taking into consideration the fact that hypertension is a highly prevalent disease that affects approximately 30% of the adult Brazilian population⁷, it would be very important for all medical specialties dealing with arterial hypertension to have access to the IV Brazilian Guidelines for Arterial Hypertension. However, of the sample surveyed, only 68.6% of the physicians reported having received the Guidelines, the majority consisting of cardiologists (91.4%) and nephrologists

	Diuretics (%)	ACE Inhibitors (%)	β -Blockers (%)	Calcium Channel Blockers (%)	Others (%)
Cardiologists (n=227)	56.7	29.4	20.1	7.7	1.4
Internists (n=153)	64.2	33.0	12.2	3.6	2.3
Nephrologists (n=103)	60.3	33.6	7.8	14.9	0.7
Total (n=483)	59.3	31.0	16.1	7.6	1.5

ACE, Angiotensin-converting-enzyme

Table 2 - Distribution of the percentage of answers according to medical specialty and the class of anti-hypertensive used as the first choice for treatment of mild arterial hypertension (spontaneous and multiple)

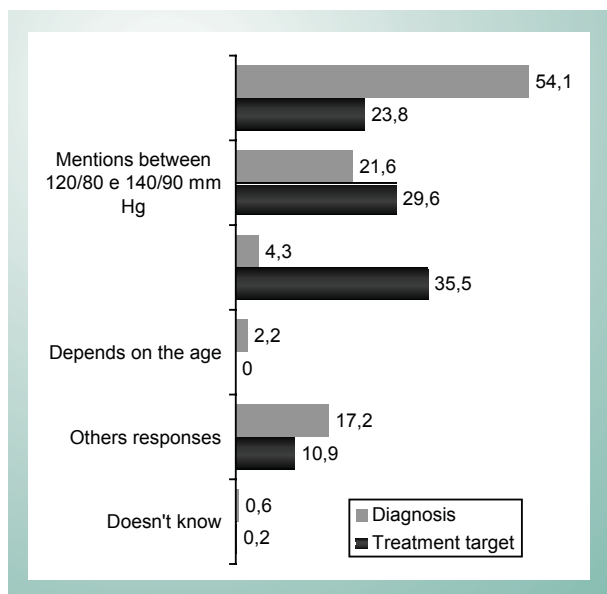


Fig. 1 - Distribution of the percentage of answers according to the levels of arterial pressure used in diagnosis and treatment target of hypertensive patients without comorbidities.

(81.3%). This was very probably due to the fact that most of these specialists received the guidelines through their own professional associations, the same associations that sponsored the report. This finding is in agreement with one of the obstacles described by Cabana et al⁹ in a study aimed at identifying the reasons for physicians' non-compliance with the consensual recommendations: difficulty of access to the documents.

Compliance with certain recommendations included in the Brazilian guidelines regarding some aspects related to the diagnosis and treatment of arterial hypertension is high, particularly concerning the measurement of arterial blood pressure in the course of every medical appointment (97.5%), the use of more than one measurement at different times to establish the diagnosis of hypertension (94.0%), and providing instructions about lifestyle changes as part of the anti-hypertensive treatment (99.0%). A similar survey carried out among British physicians also showed significant compliance

with the guidelines of the British Society of Hypertension in force at the time in regard to the measurement of arterial blood pressure and the prescription of non-drug therapy¹².

Mion et al.¹³ in a survey conducted in 1999, found that concerning the measurement of arterial blood pressure, 85.8% of the physicians reported that they measure patients' blood pressures in all medical appointments, and 86.9% performed more than one measurement on more than one occasion to establish the diagnosis of hypertension. This finding, if compared to the current study, suggests that in five years there was positive evolution in medical management related to the measurement of arterial pressure and in compliance with guideline recommendations.

As expected, in terms of the equipment used, the data point to the aneroid device as the most used (56.9%), followed by the mercury column device (36.0%). Surprisingly, 72.9% of physicians reported that they check device calibration at less than 12-month intervals. In the previously mentioned survey carried out five years ago by Mion et al¹³, aneroid devices were also the most frequently used, but without the same concern regarding calibration found in the current survey since only 1/3 of the physicians interviewed at that time reported that they checked the calibration of sphygmomanometers with a periodicity of less than one year.

The Brazilian report recommends that anti-hypertensive treatment should aim to reduce pressure levels to less than 140/90 mm Hg in patients without comorbidities, suggesting values under 130/85 mmHg as ideal in patients at high cardiovascular risk, such as diabetes mellitus, heart failure, and chronic renal failure. Although the research findings show that only 23.8% of physicians interviewed have opted for these values as therapeutic targets in patients without comorbidities, and 17.8% in patients with comorbidities, the current report's finding that physicians seek even lower normal values (Figs. 1 and 2) clashes with the previous research in 1999 which found that only 35.7% of Brazilian physicians reported diagnosing patients presenting arterial blood pressure \geq 140/90 mm Hg¹³ as hypertensive.

In addition to hypertension, the Brazilian Guidelines also include diabetes mellitus and dyslipidemia as major cardiovascular risk factors and recommend measurement of fasting blood glucose and serum cholesterol (total and fractions)

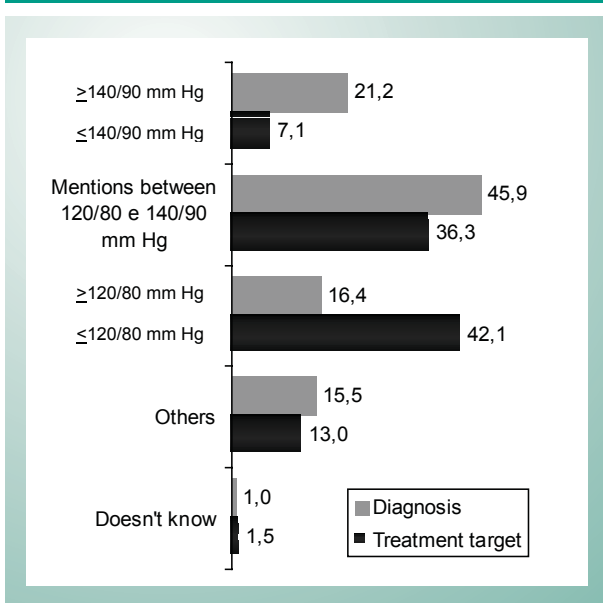


Fig. 2 - Distribution of the percentage of answers according to levels of arterial pressure used in diagnosis and treatment target of hypertensive patients with comorbidities.

upon initial routine evaluation of hypertensive patients. Survey findings showed that testing for these important risk determinants was below the desired level. Only 64.7% of the physicians interviewed claimed to check for the presence of diabetes mellitus, and only 56.4% for dyslipidemia in hypertensive patients. This point will therefore be approached differently in future guidelines for hypertension, in accordance with previous suggestions of other authors¹⁴.

The strong points of this survey are its innovation, and the fact that it has brought to light several aspects regarding

the management of hypertensive patients that Brazilian physicians claim to apply. However, it is open to criticism, and the limitations of the results are obvious since the answers were obtained from the physicians themselves through direct questioning and were not confirmed by analyses of medical records or even by interviews with patients. Thus, we must take into consideration the possibility of discrepancies between what was reported and what is effectively applied in daily clinical practice¹⁵.

Another aspect to be considered is the external value of this survey since the results cannot be extrapolated to all Brazilian physicians. The sample was composed mainly of physicians who deal with hypertension as one of the diseases of prime focus within their specialties, above all cardiologists and nephrologists. Therefore the results shown here do not necessarily reflect knowledge of and compliance with the guidelines for hypertension on the part of other physicians in Brazil, such as family doctors and general practitioners, who also deal with arterial hypertension.

Conclusions

Compliance with the Brazilian Guidelines is only partial on the part of Brazilian physicians, at least within the sample surveyed. The points that showed greater discrepancies between guideline recommendations and actual clinical practice, such as pressure levels used for diagnosis of hypertension and therapeutic targets, as well as ways of approaching hypertensive patients in regard to their overall cardiovascular risk, must be more emphatically addressed when drawing up future guidelines.

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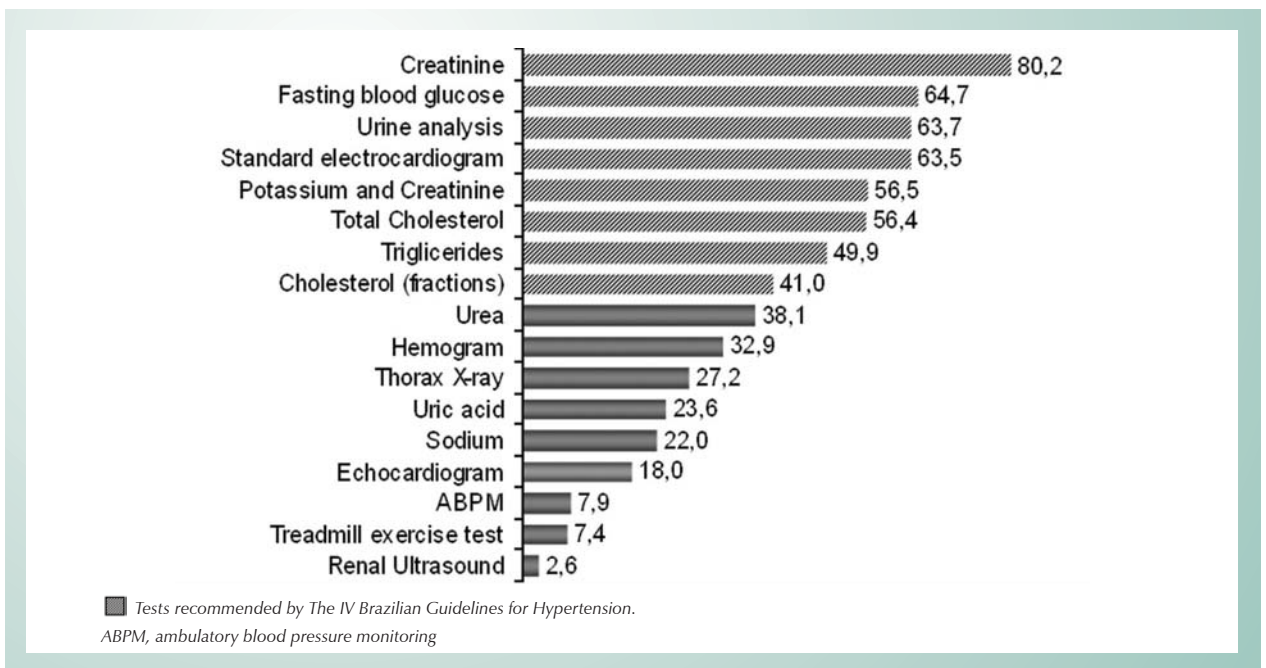


Fig. 3 - Distribution of the percentage of answers according to tests requested for evaluation of hypertensive patients.

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References

1. Farquhar CM, Kofa EW, Slutsky JR. Clinicians' attitudes to clinical practice guidelines: a systematic review. *Med J Aust.* 2002; 177: 502-6.
2. Baker R. Is it time to review the idea of compliance with guidelines? *Br J Gen Pract.* 2001; 51: 7.
3. Wagner EH. Chronic disease management: what will it take to improve care for chronic illness? *Eff Clin Pract.* 1998; 1: 2-4.
4. Leape LL, Weissman JS, Schneider EC, Piana RN, Gatsonis C, Epstein AM. Adherence to practice guidelines: the role of specialty society guidelines. *Am Heart J.* 2003; 145: 19-26.
5. Chobanian AV, Bakris GL, Black HR, Aushman WC, Green LA, Izzo JL Jr, et al. The Seventh Report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. *JAMA.* 2003; 289: 2560-72.
6. Guidelines Committee. 2003 European Society of Hypertension - European Society of Cardiology guidelines for the management of arterial hypertension. *J Hypertens.* 2003; 21: 1011-53.
7. IV Brazilian guidelines in arterial hypertension. *Arq Bras Cardiol.* 2004; 82 (Suppl 4): S7-22.
8. Cabana MD, Rand CS, Powe NR, Wu AW, Wilson MH, Abboud PA, et al. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA.* 1999; 282: 1458-65.
9. Oliveria SA, Lapuerta P, McCarthy BD, L'Italien CJ, Berlowitz DR, Asch SM. Physician-related barriers to the effective management of uncontrolled hypertension. *Arch Intern Med.* 2002; 162: 413-20.
10. The sixth report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure. *Arch Intern Med.* 1997; 157: 2413-46.
11. IV Diretrizes Brasileiras de Hipertensão Arterial. *Hipertensão.* 2002; 5: 129-63.
12. Dickerson JE, Garratt CJ, Brown MJ. Management of hypertension in general practice: agreements with and variations from the British Hypertension Society guidelines. *J Hum Hypertens.* 1995; 9: 835-9.
13. Mion D Jr, Pierin AMG, Lessa I, Nobre F. Aparelhos, técnicas de medida da pressão arterial e critérios de hipertensão adotados por médicos brasileiros. Estudo exploratório. *Arq Bras Cardiol.* 2002; 79: 593-6.
14. Gluckman TJ, Baranowski B, Ashen MD, Henrikson CA, McAllister M, Braunstein JB, et al. A practical and evidence-based approach to cardiovascular disease risk reduction. *Arch Intern Med.* 2004; 164: 1490-500.
15. Milchak JL, Carter BL, James PA, Ardery G. Measuring adherence to practice guidelines for the management of hypertension: an evaluation of the literature. *Hypertension.* 2004; 44: 602-82.