Awareness of hypertension guidelines in general practice: a pilot study in Lombardy

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Key words:
Blood pressure monitoring; Guidelines; Hypertension.

Background. **An adequate knowledge of hypertension guidelines by primary care physicians is a fundamental step for the improvement of the diagnosis and treatment of hypertension in the general population. The aim of this study was to evaluate, in a local survey in the northern area of Lombardy, the general practitioners' knowledge of the WHO/ISH guidelines.**

Methods. **A 10-item mail questionnaire based on the 1999 WHO/ISH hypertension guidelines was sent to a sample of 280 primary care physicians. The number of answers in agreement with the guidelines was used as a measure of guidelines knowledge, that was considered adequate if a correct answer to 6 out of 10 questions, in addition to an adequate definition of hypertension, was provided.**

Results. **The analysis was based on 83 returned questionnaires, that means a 29% response rate. Guidelines knowledge was adequate in 23.5% of the total study population and the mean score of correct answers was 5.5 points. A significant negative correlation ($r = 0.27$, $p < 0.05$) was observed between the mean score of knowledge and the physician's age.**

Conclusions. **In a sample of primary care physicians from a northern region of Italy, the hypertension guidelines knowledge is inadequate; the reasons and the extent of this poor awareness will require further studies.**

(Ital Heart J 2002; 3 (1): 60-63)

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Received October 10, 2001; revision received December 11, 2001; accepted December 19, 2001.

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Introduction

A large body of evidence, accrued during four decades, demonstrates that hypertension is associated with an increased cardiovascular risk and that a substantial benefit is acquired when blood pressure (BP) is significantly reduced or normalized[1-3]. The early detection and treatment of arterial hypertension play a fundamental role in preventing cardiac and cerebrovascular diseases. In this perspective, since the late 1970s and according to evidence-based medicine, a number of international and national guidelines for the management of hypertension have been published. These guidelines are an important tool for the improvement of the quality of diagnosis and treatment of hypertension[4,5]. For a correct clinical approach, physicians should familiarize and try to comply with official recommendations for the non-pharmacological and pharmacological treatment of hypertensive patients. In the last few years many efforts have been made by scientific societies and professional medical associations to implement the new guidelines in daily clinical practice; all the same, a lot of work still remains to be done for a more rigorous application of these strategies by any single physician[6]. The clinical practice of physicians can be improved by stricter compliance to guidelines. In turn, this can only be achieved if knowledge of the guidelines is adequate[7]. The impact of physician compliance to evidence-based medicine and to official recommendations of guidelines in patient management decision taking and clinical outcomes such as effective BP control has not been fully explored. Furthermore, a very limited number of papers on hypertension guidelines awareness have been published. This study was addressed to investigate the extent of guidelines knowledge by primary care physicians in a pilot regional survey.

Methods

Study population. The survey sample involved all active general practitioners (n = 280) operating in the area of Lecco, in the north of Lombardy and including about 275 000 inhabitants. A complete address datafile of general practitioners was provided to the authors by the local medical association.

Survey design. This survey was carried out using a structured questionnaire formulated on the basis of the 1999 WHO/ISH guidelines as the standard reference; the international guidelines have been translated into Italian and widely distributed in our country in the last 2 years. A 10-item questionnaire was developed focusing on diagnosis (4 questions), BP control (2 questions) and treatment of hypertension (4 questions). The multiple-choice questions included one nonspecific answer, in order to offer the physician the opportunity to answer in an unlimited fashion (Table I). Information about the age and gender of the general practitioner and about the duration of clinical practice was to be provided in an additional sheet. All the questionnaire sheets were analyzed in a blinded fashion according to the current Italian legislation for the protection of personal data.

The 280 questionnaires were mailed in the second week of June 2001; the covering letter stressed the importance of an optimal treatment of hypertension and of the central role of general practitioners in the management of hypertensive patients; no financial incentives were offered to respondents. Two weeks later a postcard was sent to all participating physicians. The postcard acknowledged the contribution of the physicians who had already sent back their questionnaire and served as a reminder for those who had not yet answered.

Analysis of data. The answers to the 10 questions of the questionnaire were considered for the analysis of WHO/ISH guidelines awareness. A score of 1 point was attributed for each correct answer and the final result was analyzed at univariate analysis. Guidelines awareness was considered adequate if 6 out of 10 questions were answered correctly. As the appropriate detection of arterial hypertension in clinical practice has a paramount role in the primary and secondary prevention of cardiovascular diseases, the definition of hypertension according to the guidelines (first question) had to be included in the 6 correct answers. Of the remaining questions at least 5 out of 9 (> 50%) had to be answered in accordance to the hypertension guidelines.

Data were analyzed and expressed as means ± SD or percent. The Student's t-test was used with a 5% ($p \leq 0.05$) level of significance. The χ^2 test was used for bivariate comparisons between categorical variables. Correlation coefficients were obtained by using the Pearson's equation.

Results

Of the 280 physicians who were invited to participate in the survey, 83 (29%) completed and returned the questionnaire. Of these respondent physicians, 75% were men and 25% women. Their mean age was 49 ± 8 years and the mean duration of their clinical practice was 21 ± 8 years.

Analysis of the replies to the questionnaires revealed that 23.5% of the participants had adequate knowledge of the WHO/ISH guidelines. The mean score of correct answers was 5.5 points. The absolute number of the guidelines-conforming answers in the total study population is shown in figure 1. The rate of correct answers varied from 13 to 88% (Fig. 2). The question concerning the normality of home BP (no. 3) was most often answered incorrectly; in fact, only 11 physicians (13%) knew the BP cut-off value of 125/80 mmHg reported in the WHO/ISH guidelines. In contrast, most physicians (88%) knew that low-dose aspirin should be preferentially prescribed for primary prevention only in well controlled hypertensives with a high cardiovascular risk profile. Finally, only 25 physicians (31%) correctly answered question no. 1 concerning the definition of hypertension in the elderly. The age of the physicians was significantly associated with the results. A significant negative correlation ($r = 0.27$, $p < 0.05$) was found between the mean score of knowledge and the physician's age. The closest negative association with the physician's age was observed for question no. 1 ($r = 0.39$, $p < 0.01$).

Discussion

The data of our pilot study showed that less than a quarter of the respondent physicians had adequate guidelines knowledge about the diagnosis, follow-up and treatment of arterial hypertension. The limitations of this survey should be considered first. As commonly happens in most mail surveys, the results may have several potential biases. The response rate obtained in this study (equivalent to 29%) is below the average of 54% estimated by Asch et al.[8] in their analysis on response rates to mail surveys published in medical journals. However, it is well within the range of 10 to 45% found in other studies[9,10] and, as pointed out by Asch et al., it does not necessarily follow that there is any relation between the response rate to a survey and bias in the results obtained. The relatively low response rate observed in our study was probably related to the simplified mailing design, structured in only two phases: a first questionnaire mailing followed only by one reminder postal card. Higher response rates were documented in similar previous studies using more complex and expensive approaches based on the total design method by Dillman[11] who described detailed survey methods to obtain high response rates. A second poten-

Table I. Questionnaire.

1. What are the BP values, that after repeated measurements, define elderly subjects (> 65 years) as hypertensive?
   - *140/90 mmHg*
   - 135/85 mmHg
   - 165/95 mmHg
   - 150/90 mmHg
   - Other
2. What are the appropriate examinations to be prescribed for the minimum diagnostic work-up of hypertensive patients?
   - *Serum potassium, urine analysis, serum creatinine, serum glucose, cholesterol*
   - Serum potassium, urine analysis, urea, serum glucose, cholesterol
   - Complete blood count, urine analysis, serum creatinine, serum glucose, cholesterol
   - Microalbuminuria, serum potassium, serum creatinine, serum glucose, cholesterol
   - Serum sodium, serum potassium, serum creatinine, serum glucose, cholesterol
   - Other
3. Which is the normal value for self-measured BP in hypertensive patients on antihypertensive treatment?
   - 140/90 mmHg
   - 135/85 mmHg
   - 130/85 mmHg
   - *125/80 mmHg*
   - Other
4. What is the definition of "white coat" or isolated clinic hypertension?
   - *High office BP; normal ABPM; normal self-measured BP*
   - High office BP; normal ABPM; high self-measured BP
   - Normal office BP; high ABPM; normal self-measured BP
   - Other
5. How long can a patient with recently diagnosed grade I hypertension, no other risk factors and asymptomatic reasonably stay out of pharmacological treatment?
   - 1 week
   - 1 month
   - 3 months
   - 4 months
   - *6 months*
   - Other
6. What is the target BP to reach in a hypertensive diabetic patient?
   - < 140/90 mmHg
   - < 150/90 mmHg
   - < 120/80 mmHg
   - *< 130/85 mmHg*
   - Other
7. What is the most appropriate initial treatment for a 50-year-old, grade I hypertensive patient with left ventricular hypertrophy at the echocardiogram?
   - Lifestyle changes
   - *One-drug therapy*
   - Association therapy
   - Other
8. What is the most appropriate antihypertensive drug class for a hypertensive patient with diabetic nephropathy?
   - Diuretic
   - Beta-blocker
   - Calcium-antagonist
   - Alpha-blocker
   - *ACE-inhibitor*
   - Other
9. What is the drug of third choice for an essential hypertensive patient whose BP is partially controlled by an ACE-inhibitor plus calcium-antagonist?
   - Beta-blocker
   - Alpha-blocker
   - *Diuretic*
   - Clonidine
   - Angiotensin II receptor antagonist
   - Other
10. Low-dose aspirin for primary prevention in hypertension should be prescribed to:
    - All hypertensive patients
    - Hypertensive patients with a BP well controlled by treatment
    - *Hypertensive patients with a BP well controlled by treatment and with a high cardiovascular risk*
    - Other

The correct answers, according to WHO/ISH guidelines, are in italics. ABPM = ambulatory blood pressure monitoring; BP = blood pressure.

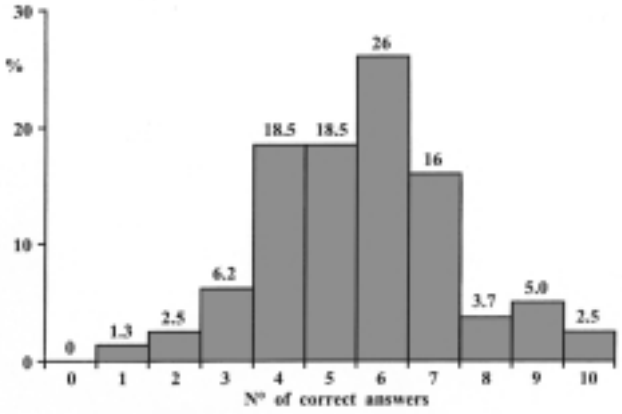

Figure 1. *Percentage of absolute correct answers in the study population.*

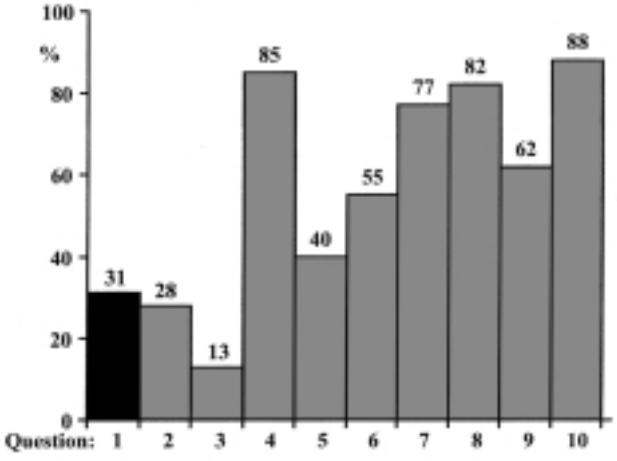

Figure 2. *Percentage of correct answers to each question in the study population. 1 = definition of arterial hypertension (see table I for details).*

tial limit is the lack of any information about the demographic characteristics of nonrespondent physicians. Such information would have been necessary in order to ascertain significant differences regarding age, gender, duration of clinical practice among respondents and nonrespondents. Despite these limitations, the information obtained from this survey appears to be highly relevant as it documents that most general practitioners had limited familiarity with two fundamental issues dealt with not only in the 1999 WHO/ISH report but in all national and international guidelines: the definition of hypertension and the minimum diagnostic work-up. On the other hand, the low rate of correct answers concerning some specific questions, such as the normal value of self-measured BP or the initial treatment for grade 1 hypertensive patients with left ventricular hypertrophy could be related to different definitions of normal home pressure reported in major hypertension guidelines[4,5] and to existing uncertainty regarding the better treatment approach for recently diagnosed hypertensives: monotherapy versus low-dose or very low-dose associations[12]. Considering these impressive data, we cannot completely exclude a significant bias as the large majority of the physicians did not answer the questionnaire. It is unlikely that nonrespondent physicians, probably not interested to this survey which elicited comments on very common problems of every-day clinical practice, would have fared better. Furthermore, our results are in substantial agreement with recently published data by Hyman and Pavlik[13] who conducted a mail survey aimed at obtaining estimates of physicians' approaches to the treatment of hypertension in the United States and investigating how JNC guidelines influence their decisions. They demonstrated that 41% of the 316 physicians included in the study had not heard of or were not familiar with the JNC guidelines. Besides, a large proportion of these primary care physicians used higher BP thresholds for the diagnosis and treatment of hypertension than the 140/90 mmHg criterion recommended by the JNC. In a large, nationwide survey on guideline awareness conducted in Germany, Hagemeister et al.[14] found that only about a quarter of the participating physicians (n = 11 547) had sufficient guideline-conforming knowledge about the diagnosis and treatment of hypertension. In this study the guideline awareness appeared to be significantly influenced by the duration of private practice (after 20 years it was reduced among general practitioners and internists) and by the individual specialization (significantly higher among cardiologists than among internists and general practitioners). In conclusion, though arterial hypertension is a highly prevalent chronic disease and is one of the most common reasons for medical visits worldwide and, in particular in our country, the results of the present study underscore the fact that, similar to what reported in the United States and in Germany, guidelines indications for the management of hypertension seem to have only a limited impact on primary care physicians operating in Northern Italy. The precise nature and the relevance of this preliminary observation needs further studies.

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