Research Article

PHYSICIANS' KNOWLEDGE, ATTITUDES AND PRACTICE ABOUT THE TREATMENT OF HIGH BLOOD PRESSURE ACCORDING TO THE SEVENTH REPORT OF THE JOINT NATIONAL COMMITTEE (JNC VII)

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ABSTRACT

Hypertension is one of the most frequently encountered chronic medical conditions in almost all societies. The Seventh Report of the Joint National Committee (JNC-7), published in 2003 is an important tool on Detection, Evaluation, and Treatment of High Blood Pressure. The present study was designed to assess the Knowledge, Attitude and Practice (KAP) of physicians towards JNC-7 hypertension guideline. In this cross sectional study, we used a predesigned questionnaire to evaluate knowledge, attitude and practice of a group of physicians with JNC-7 guideline. Two hundred physicians and residents in two different cities (Zabol and Mashhad) participated in this study. The majority of our study population had poor knowledge about 6 key concepts of JNC-7 guideline. General practitioners had the lowest knowledge in comparison to specialist and residency students (P: 0.014). Most of participants performed best at choosing an initial agent for the treatment of hypertensive patients and worst at identifying appropriate disease specific blood pressure lowering goals. Most of study population refer to American Heart Association (AHA) guideline as the most reliable and useful guideline in hypertension management. Considering the importance of evidence based medicine and its benefits, we suggest revision of the teaching curricula in medical schools regarding evidence based guidelines and regular Continuous Medical Education programs after graduation as potential solutions.

Keywords: Guideline Adherence, Hypertension, Health knowledge, attitudes, practice

INTRODUCTION

Hypertension is one of the most prevalent chronic disease and a known risk factor for cardiovascular (CV) morbidity and mortality resulting from target-organ damage to blood vessels in the heart, brain, kidney, and eyes[1,2]. Population-based studies showed that only 50 % of hypertensive patients are properly treated or their hypertensions are controlled[3,4]. Medical guidelines are documents with the aim guiding decisions and criteria regarding diagnosis, management and treatment in specific areas of healthcare in modern medicine. In contrast to previous approaches, which were often based on personal expertise or consensus between practitioners, modern medical guidelines are based on an examination of current evidence within the paradigm of evidence-based medicine[5,6]. The Seventh Report of Joint National Committee (JNC) on Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7)[7], published in 2003 based on different hypertension clinical trials and is one of the key references of hypertension chapters of different medical text books. Characteristics of this guideline facilitate its application in different settings. Because of the high prevalence of hypertension in our society, the burden of its mismanagement and the importance of evidence based medicine[8,9], this study was conducted to evaluate knowledge, attitude and practice of a group of physicians with JNC -7 guideline in two different cities of Mashhad and Zabol.

MATERIALS AND METHODS

A cross-sectional, observational, questionnaire-based study, carried out in a 6 months period from June to December 2012 in Zabol and Mashhad. The approval of the National Medical Ethical Committee was obtained. All general physicians (GPs), cardiologists and internal medicine specialists practicing in city (and owned private offices) of Zabol were asked for interview. In Mashhad, residents were randomly included from "Ghaem", "Emam Reza' and "22 Bahman" Hospitals (all teaching General hospitals affiliated to Mashhad University of Medical Sciences, Mashhad, Iran) and both specialists and GPs were randomly selected from mentioned hospitals and private offices. We obtained a comprehensive list of 350 licensed GPs and specialists in Mashhad and Zabol registered by the Iranian Medical Council, which is a requirement for all practicing GPs and specialists. A computer-generated random sample of 200 GPs was selected from this list. A total of 52 GPs and 148 internist and cardiologists were randomly selected from this sampling frame in Mashhad city. Each GP or specialist was visited by a trained research student who administered the study questionnaire after obtaining verbal consent. In case the selected GP was not present in the particular area, his/her replacement was chosen from the same location. On the basis of the assumptions of results from previous studies[10,11], which showed that at least 50 % of GPs used inappropriate medications and did not follow the guidelines for treatment of hypertension, with 80 % power and a 2-sided of 0.05 error, we calculated a total of 284 subjects. The Questionnaires consisted of 3 different parts. First section refer to six key concepts detailed in JNC 7 guidelines[7] which included staging of Blood Pressure (BP), laboratory evaluation of the newly diagnosed hypertensive, role of lifestyle modification in controlling BP, identifiable causes of hypertension, disease-specific BP goals and initial choice of an anti-hypertensive agent. Multiple answer choices were provided for each question, requesting the respondent

to select a diagnosis or to make an initial decision on medical management. We categorized their level of knowledge as poor (< 50 % correct answer), medium (50-70 % correct answers) and good (> 70 % correct answers). No time limitations were made on completion of the questions. Questions related to physician's attitude toward the guidelines were developed in three areas of familiarity, usage and validity of different available hypertension guidelines and reasons for using guideline. Also participating physicians were asked about the frequency of referring to hypertension guidelines in their practice. Formal and content validity of the questionnaire was evaluated by five expert cardiologists and clinical pharmacists. Questions were revised until agreement was reached that the questions were clear and that sufficient information was provided to correctly diagnose and manage each case. The initial draft of the questionnaire was circulated to the members of the research team and modifications were carried out as per the suggestions. Upon receiving the responses from experts, its Internal Consistency Reliability was tested by finding the Cronbach's alpha Coefficient on a sample consisting of 20 randomly selected GPs and specialists. Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of the underlying construct[12]. Test-related Reliability was tested by finding the Intra-Cluster correlation on the same sample after a week. After this modification, the finalized questionnaire was employed, in order to collect data from the major sample. A cover describing the study's objectives and request for professionals' participation was attached. The names of the respondents were not requested to maintain anonymity and elicit an unbiased response that will better reflect the opinion of respondents.

Statistical Analysis

All data were expressed as mean ± standard deviation of mean. Independent T and One-Way ANOVA test was used for comparing quantitative variable. All statistical analyses were conducted using SPSS version 16 and significance was defined as P value of less than 0.05.

RESULTS

Two hundred forms completed and returned from 284 physicians that were asked for interview which is a 70 % response rate (the remaining did not fill out or return the questionnaire, some of them were not familiar with JNC 7 guideline). Internal Reliability for knowledge, attitude and practice variables was tested by finding the Cronbach's alpha Coefficient, which was greater than 0.8 for all of them. As the Cronbach's alpha Coefficient is large (conventionally > 0.7), it is assumed that the items are reliable[13]. The contributors included specialists in internal medicine and cardiology (n = 85), General practitioners (GPs) (n = 52) and residency training programs participants in cardiology and internal medicine (n = 63). Among the questionnaire, 180 of them (90 %) filled out in Mashhad and the remaining in Zabol city. The percentage of correct answers of key concepts in diagnosis and management of patients presenting with elevated BP are shown in Table 1. From all 1200 questions answered by 200 physicians, 51.6 % were correct. Analysis showed statistically significant difference (P <0.05) between cardiologists and internists with general physicians knowledge in four following concepts: setting the right stage of hypertensive patients, evaluating standards for diagnosis of hypertension, role of lifestyle changes in the management of hypertension and selecting the appropriate drug as the first step to for treatment of hypertension. 84.5 % of physicians performed best on the concept of choosing an initial agent for pharmacotherapy of hypertensive patients who had no compelling indications and performed worst at identifying appropriate disease specific BP lowering goals according to JNC 7 guidelines. Most of our study group chooses Thiazide diuretics for initial treatment of hypertensive patients without any compelling indication. As shown in Table 2, 94 % of physicians, especially

GPs, had poor knowledge about six key concepts of JNC7 guidelines. Level of General physicians' knowledge was significantly lower than residents and residents significantly lower than specialists (P: 0.014). Overall levels of physician's knowledge in Mashhad city were significantly higher than Zabol (P: 0.028). As shown in Table 3, the majority of physicians referred to American Heart Association guideline as the most popular and useful guideline in management of hypertension because they believed this is more up to date (29 %) and practical (37 %). About 20 % of physicians were not familiar with any of hypertension guidelines, 14 of them (7 %) referred to Harrison's Principles of Internal Medicine as their guide for practice. About half of the physicians practicing in Zabol referred to a guideline for hypertension management only once a year compare to 26.7 % in Mashhad (Table 4). About 27 % of physicians practicing in Mashhad claimed that previous month was their last time referring to guideline compare to 6 month ago by most of physicians (40 %) in Zabol.

DISCUSSION

We found that our physicians' knowledge of several key concepts of diagnosis and management of hypertension as described in JNC 7 guideline is poor. In particular, physician knowledge of appropriate staging, role of lifestyle modification in controlling BP by treating underlying causes and disease-specific BP goals was poor. We also found that specialists refer more to guidelines for practice than residents and GPs. Assessment of physician's knowledge on diagnosis, management and treatment of hypertension based on six key concepts of JNC-7 guideline in United States, showed the same results. Of 1280 physicians participated in this study, only 51 % of them had average knowledge about the 6 key concepts of hypertension[10]. Despite overall poor knowledge of JNC-7 guideline, the role of diuretics as initial pharmacotherapy in hypertension has been widely accepted by the physicians in this study. We also found that they had lowest knowledge about disease-specific BP goals among other 6 key concept of JNC-7. This study suggests that a significant proportion of physicians remain vague about this point, which may contribute to the inadequate BP control documented in patients with diabetes and renal disease[14]. Spranger et al.[15] showed that physicians did not correctly staging blood pressure, assess cardiovascular risk factor and titrate multiple anti-hypertensive medications to achieve blood pressure goal based on the JNC guideline, these gap between clinical practice and implementation of guidelines will be result in under treatment of patients and increase in morbidity and mortality. Our respondents also had poor knowledge about role of life style modification in management of hypertension while physicians practicing in United States had relatively good knowledge about non pharmacologic therapy of hypertension[16]. Specialists had overall better knowledge compare to GPs and residents which may be related to their longer practice and more frequent need to guideline for solving clinical dilemmas. Hagemeister et al.[17] evaluated awareness of German physicians regarding German Hypertension Society guideline; they found that 37 % of cardiologists, 25.6 % of internists and 18 % of GPs had adequate awareness. Duration of private practice had significantly influenced participant's awareness. Most of the participants in this study referred to American Heart Association guideline in hypertension, as most useful and reliable guideline for practice and JNC as the second one. While JNC guideline has a unique clinical importance all around the world and the Harrison textbook that most of the participants were familiar with, based its hypertension chapter on this guideline. It is questionable why this controversy exists. It seems the credit of American Heart Association name has an effect on choosing the guideline between participants. It also points out those physicians didn't have the familiarity with most credible guideline in this field[18]. Most of our physicians refer to a guideline for their practice every 6 months or less. A study in United States in 1995 reported that more than three quarter of practitioners referred to guidelines at least every month[19].

Table 1: Physicians correct answers to the six key concepts of JNC 7 guideline regarding to control and treatment of hypertension

Physicians Concepts of JNC7	General physicians (%)	Cardiologists (%)	Internists (%)	Resident of Cardiology (%)	Resident of Internal Medicine (%)	Total (%)
Staging of BP	25	65.6	73.6	52.2	62.5	55
Laboratory evaluation of the newly diagnosed hypertensive	59.6	96.9	86.8	87	80	80
Role of lifestyle modification in controlling BP	26.9	65.6	54.7	43.5	40	45
Identifiable causes of hypertension	19.2	40.6	32.1	30.4	32.5	30
Disease-specific BP goals	7.7	18.8	22.6	21.7	10	15.5
Initial choice of an antihypertensive agent	69.2	100	92.5	82.6	82.5	84.5

Table 2: Level of physician's knowledge based on JNC-7

Level of knowledge	Good		Intermediate		Poor	
	number	%	number	%	number	%
General Physicians	1	1.9	2	3.8	49	94.2
Internists	16	18.8	33	38.8	36	42.4
Residents	7	11.1	16	25.4	40	63.5
Total	24	12	51	25.5	125	62.5

Table 3: Physicians' attitudes about guidelines in hypertension

Guideline	Zabol			Mashhad			Total		
	Familiarity (%)	Usage (%)	Validity (%)	Familiarity (%)	Usage (%)	Validity (%)	Familiarity (%)	Usage (%)	Validity (%)
American Heart Association	40.75	47.06	47.06	36.57	47.62	48.32	37	47.56	48.19
British Hypertension Society	14.81	0	5.88	12.85	1.36	1.34	13.03	1.22	1.81
International Society of Hypertension Guidelines	3.7	5.88	5.88	3.11	0	0	3.16	0.61	0.60
Joint National Committee VII	25.93	35.3	29.42	32.65	42.18	40.27	32.03	41.46	39.16
National Institute of Health	0	0	0	0.8	0	0	0.7	0	0
National Institute forHealth andClinical Excellence	3.7	0	0	0.4	0	0	0.7	0	0
WHO guidelines	11.11	11.76	11.76	13.62	8.84	10.07	13.38	9.15	10.24

WHO: World Health Organization

Table 4: Frequency of physician's referral to hypertension's guidelines

Refer to the guidelines	Zabol		Mashhad		Total	
	Number	%	Number	%	Number	%
At least once a week	1	5	0	0	1	0.5
At least once a month	2	10	30	16.7	32	16
At least once in 6 months	5	25	63	35	68	34
At least once in a year.	9	45	48	26.7	57	28.5

The study conducted about two decade ago when the evidence based medicine was not as popular as today. This reflects prompt need to more emphasis on evidence based medicine and the importance of guidelines in medical education. There are several limitations to our study like small study population and low participation of target population. We did not evaluate impact of physician knowledge of JNC 7 guidelines on clinical outcomes. In conclusion, our results showed poor knowledge and attitude about JNC in our study population. Considering the importance of evidence based medicine and its benefit and the definite role of education in altering prescribing practices in management of hypertension, we can suggest more precise education in medical schools and regular Continuing Medical Educations (CMEs) after graduation from medicine, the Internet can also be used to increase knowledge of JNC-7 guidelines. Randomized controlled trials of educational interventions on the impact of clinical Outcomes are needed to better define strategies to meet national goals on BP control.

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