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ORIGINAL ARTICLE

Awareness of hypertension guidelines among family physicians in primary health care

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KEYWORDS

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Abstract *Background:* Only 14% of patients on treatment achieve the recommended blood pressure target. Guidelines aim to assist clinicians in the management of patients with hypertension.
Objectives: The primary purpose of the study was to survey family physicians(FPs) in Kuwait about their awareness, and to understand better their reasons for not implementing specific guidance within the WHO/ISH guidelines.
Methods: This study is a cross-sectional survey that was carried out in the five health regions of Kuwait. All PHC physicians who were currently working as FPs were asked to participate in the study. Data were collected using a structured questionnaire of clinically oriented questions formulated on the basis of the 1999 World Health Organization/International Society of Hypertension (WHO/ISH), as standard reference.
Results: The study revealed that 49.1% and 42.1% of FPs were very familiar or somewhat familiar with the guidelines respectively, 92.1% were in agreement, and 79.8% indicated that they always or

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usually follow these guidelines when treating patients. Regarding the correct choice of the guideline statements, only 8.8% of the FPs choose correctly less than ten of the 20 statements, 64% choose 10 to less than 15, and only 27.2% choose $\geqslant$ 15 statements. When asked about perceived patient barriers to blood pressure control, 84.0% of the respondents ranked overcrowded clinics as important or most important barrier to blood pressure control while, 87.4% considered lack of patient knowledge as important or most important barrier. Non availability of the drugs in the clinic was considered by 88.4% of the physicians, and poor adherence to antihypertensive drugs by 90.1%.

Conclusion: There is a need to establish nationwide educational and quality monitoring programs to facilitate the correct implementation of hypertension guidelines in PHC clinical practices in Kuwait.

1. Introduction

Hypertension is the number one risk factor for mortality in the world and an important risk factor for cardiovascular disease and stroke.[1–3] Hypertension is typically diagnosed and managed in the outpatient setting and is one of the most common reasons to visit a family physician (FP).[4] With almost a quarter of the adult population and almost half of people aged 50 years and older having hypertension, the burden of this disease is undeniably high.[5] As treatment of hypertension is associated with a 20% to 25% reduction in cardiovascular events,[6] getting control of this generally asymptomatic disease might be one of the most important preventive measures that FPs can take.[4,6]

Despite incontrovertible scientific evidence that lowering blood pressure (BP) is markedly effective in reducing cardiovascular disease events, as pointed out in all major guidelines on hypertension management,[7,8] arterial hypertension is known to be poorly diagnosed and treated in general practice.[9]In developed countries, the proportion of hypertensive patients with well-controlled BP is generally less than 30%.[10,11] Appropriate antihypertensive treatment is rarely implemented even in high-risk patients, in whom BP reductions can induce quite large life-saving effects.[12]

This unsatisfactory BP control among treated hypertensive subjects has multiple causes, among which physician's behavior and patient's compliance have received particular attention.[13] Although FPs are often criticized for not following clinical practice guidelines closely and for failing to meet treatment targets for many conditions, there is strong evidence that they have made great strides in screening for and diagnosis and treatment of hypertension.[4] However, FPs adherence to evidence-based medicine and to guidelines recommendations on effective BP control has never been fully investigated.

The primary purpose of the study was to survey FPs in Kuwait to study their awareness, and to understand better their reasons for not implementing specific guidance within the WHO/ISH guidelines.

2. Subjects and methods

2.1. Setting

The health care system in Kuwait is divided into five regional health regions. Primary health care (PHC) is provided by 80 centers served by 157 family physicians (FPs) and 489 general practitioners (GPs). The study was carried out in the primary health care centers located in all health regions of Kuwait from October to December 2008.

2.2. Study design

An observational cross-sectional study design was adopted for this study. All available 157 FPs during the field work period of the study were the target population of this study. Out of them, only 114 agreed to share in the study with an overall response rate of 72.6%.

Data were collected using a structured self-administered questionnaire of clinically oriented questions formulated on the basis of the 1999 WHO/ISH, as standard reference.[9,10] The questionnaire consisted of three parts. The first part includes personal characteristics (age, gender, nationality, duration of work in PHC, specialty, average number of hypertensive patients seen per week). In the second part, questions were related to familiarity, agreement, following WHO/ISH guidelines. It consisted of 20 guideline statements and scenarios that explored the level of knowledge and agreement with (WHO/ISH) guidelines as well as implementation of these guidelines. The first 10-items were developed focusing on diagnostic issues (four questions), pharmacological treatment (three questions), therapeutic strategies (two questions) and target BP (one question). Another 10 multiple-choice questions included one specific answer in order to offer the physician an opportunity to choose the correct one. The last part includes 6 questions related to barriers for improving their hypertensive patient management. Physicians were asked to pick only one answer for each question within 5 min without guessing or discussing the answer with other colleagues.

A pilot study was carried out on 20 FPs. This study was formulated to test the clarity, applicability of the study tools, accommodate the aim of the work to actual feasibility, identify the difficulties that may be faced during the application. Also, the time needed for filling the questionnaire by the staff was estimated during this pilot study. The necessary modifications according to the results obtained were done.

All the necessary approvals for carrying out the research were obtained. The Ethics Committee of the Kuwaiti Ministry of Health approved the research. A written format explaining the purpose of the research was prepared and signed by the

physician before filling the questionnaire. In addition, the purpose and importance of the research were discussed with the director of the health center. In order to maintain confidentiality, questionnaires were made anonymous.

3. Statistical analysis

The Statistical Package for Social Sciences (SPSS-17) was used for data processing. Simple descriptive statistics were used (mean + standard deviation for quantitative variables, and frequency with percentage distribution for categorized variables).

4. Results

Table 1 describes the characteristics of participating FPs. Their mean age was 36.9 ± 6.8 years ranged from 25 to 52 years, about 62.3% of them were above 35 years of age. Females were predominating males (68.4% versus 31.6%). Most of the FPs (85.1%) were Kuwaiti and slightly more than half (51.8%) of them had 10 or more years of experience as PHC physicians. About one fifth (22.8%) of FPs examined less than 20 patients per week, 43.9% examined from 20 to 39 patients, another one fifth (21.9%) examined 40 to 59 patients and 11.4% examined 60 or more patients.

Table 1 Characters of participating doctors and their work features.

Characteristics	No.	%
Age (year)		
<35	43	37.7
35–	53	46.5
45+	18	15.8
Gender		
Males	36	31.6
Females	78	68.4
Nationality		
K	97	85.1
NK	17	14.9
Experience (year)		
<5	24	21.1
5–10	31	27.2
≥10	59	51.8
Average patients seen per week		
<20	26	22.8
20–39	50	43.9
40–59	25	21.9
60–79	7	6.1
80+	6	5.3
Familiar with WHO/ISH guidelines[a]		
Yes very familiar	56	49.1
Yes somewhat familiar	48	42.1
No	10	8.8
Agreement with WHO/ISH guidelines		
Yes	105	92.1
No	9	7.9
Following WHO/ISH guidelines		
Always	27	23.7
Usually	64	56.1
Sometimes	17	14.9
Rarely or never	6	5.3
Total	114	100.0

[a] ISH = International society of hypertension.

Concerning the new WHO/ISH guidelines, 49.1% and 42.1% of the participants stated that they were very familiar or somewhat familiar with the guidelines respectively and only 8.8% were not familiar with these guidelines. However, 92.1% mentioned that they were in agreement with WHO/ISH guidelines. More than three quarters (79.8%) of the FPs indicated that they always or usually follow these guidelines when treating patients, 14.9% indicated the use of these guidelines sometimes, and 5.3% rarely or never used them when treating patients.

Table 2 illustrated the proportion of FPs who answered correctly each of 20 statements related to the WHO/ISH guidelines. When they were asked about BP values that define elderly (>65 years) as hypertensive after repeated measures, 71.1% mentioned correctly the value ⩾ 140/90 mm Hg. Only 15.8% chose correctly the appropriate examinations to be prescribed for the minimum diagnostic work-up of hypertensive patients. 13.2% choose 125/80 mm Hg as correct choice when asked about the upper normal value for self-measured BP in hypertensive patients on antihypertensive treatment. However, 92.1% of the physicians correctly define "white coat" or isolated clinic hypertension as high office BP, normal ambulatory BP measurement, and normal self-measured BP.

When the physicians were asked about the duration of stay out of pharmacological treatment for an asymptomatic patient with recently diagnosed grade I hypertension, and no other risk factors only 37.7% choose 6 months as a correct answer.

Blood pressure measurement (<130/80 mm Hg) was correctly selected by 66.7% of the physicians as target BP to be reached in a hypertensive diabetic patient and Angiotensin receptor blocker was correctly selected by only 43.0% of the physicians as the most appropriate antihypertensive drug class for a 50-year old, grade I hypertensive patient with left ventricular hypertrophy in the echocardiogram. Angiotensin converting enzyme (ACE) inhibitor was correctly selected by the majority of physicians (93.0%) as the most appropriate antihypertensive drug class for a hypertensive patient with diabetic nephropathy.

In response to the question, "which is the drug of third choice for an essential hypertensive patient whose BP is partially controlled by an ACE inhibitor plus calcium-antagonist?" 79.8% of the physicians correctly identified diuretics. Half of FPs completed correctly the statement stated "A low dose Aspirin for primary prevention in hypertension should be prescribed to:" as hypertensive patients with BP well controlled by treatment and at high cardiovascular risk.

The correct answers regarding the lowest systolic and diastolic BP (≤130/≤80 mm Hg) at which pharmacological treatment should be started to patients with co-morbidity were reported correctly by 57% and 40.4%, respectively. The corresponding proportions of FPs were 94.7% and 72.8% in case of the lowest systolic and diastolic blood pressure at which they would recommend pharmacologic treatment for those without co-morbidity (⩽140 mm Hg for systolic and ⩽ 90 mm Hg for diastolic).

The majority of physicians (86.8%) considered the target systolic BP should be ⩽ 130 mm Hg and 83.3% considered the target diastolic BP should be ⩽ 80 mm Hg during pharmacological therapy for patients with co-morbidity as recommended by WHO-ISH while 72.8% and 95.6% respectively

Table 2 Number of physicians with correct answers regarding the WHO/ISH guidelines.

Answers to ten awareness guidelines' questions	No. (114)	%
1. BP values define elderly (>65 years) as hypertensive after repeated measures	81	71.1
2. Appropriate examinations to be prescribed for the minimum diagnostic wok-up of hypertensive patients	18	15.8
3. The upper normal value for self-measured BP in hypertensive patients on antihypertensive treatment	15	13.2
4. Definition of "white coat" or isolated clinic hypertension	105	92.1
5. Duration of asymptomatic patient with recently diagnosed grade I hypertension, and no other risk factors stay out of pharmacological treatment.	43	37.7
6. The target BP to be reached in a hypertensive diabetic patient	76	66.7
7. The most appropriate antihypertensive drug class for a 50- year old, grade I hypertensive patient with left ventricular hypertrophy at the echocardiogram	49	43.0
8. The most appropriate antihypertensive drug class for a hypertensive patient with diabetic nephropathy	106	93.0
9. The drug of third choice for an essential hypertensive patient whose BP is partially controlled by an ACE inhibitor plus calcium-antagonist	91	79.8
10. A low dose Aspirin for primary prevention in hypertension should be prescribed for:	57	50.0
11. The lowest SBP at which the physician recommended pharmacotherapy to patient With co-morbidity(<=130)	65	57.0
12. The target SBP the physician would like to achieve for patient With co-morbidity(<=130)	99	86.8
13. The lowest DBP at which the physician recommended pharmacotherapy to patient With co-morbidity(<=80)	46	40.4
14. The target DBP the physician would like to achieve for patient With co-morbidity(<=80)	95	83.3
15. The lowest SBP at which the physician recommended pharmacotherapy to patient without co-morbidity(<=140)	108	94.7
16. The target SBP the physician would like to achieve for patient Without co-morbidity(<=140)	83	72.8
17. The lowest DBP at which the physician recommended pharmacotherapy to patient Without co-morbidity (<=90)	83	72.8
18. The target DBP the physician would like to achieve for patient Without co-morbidity (<=90)	109	95.6
10. First line drug choice for a patient aged 40 years, BP 150/95 with no compelling indications and no co-morbidity	46	41.8
20. The action taken for hypertensive patient on mono-therapy with uncontrolled BP for the last 6 months	89	84.8

considered the target systolic BP should be $\leqslant$ 140 mm Hg and the target diastolic BP should be $\leqslant$ 90 mm Hg for patients without co-morbidity.

Regarding the use of antihypertensive drugs when physicians were specifically asked about the most appropriate first-step drug for patients who were 40 years old, with BP 150/95 with no contraindication, and with no co-morbidity, 41.8% preferred Thiazide-diuretic as the first-line treatment. 84.8% of the physicians indicated that addition of second antihypertensive drug was necessary if mono-therapy had failed to control BP below the target level for the last 6 months.

Fig. 1 summarizes the proportion of FPs that answered correctly each of the 20 guideline statements. The mean value of the overall score was 12.8 $\pm$ 2.7 statement with a range of zero to 19 choices. Only 8.8% of the FPs choose correctly less than ten of the 20 statements, 64% choose 10 to less than 15, and only 27.2% choose $\geqslant$ 15 statements, no one choose correctly all the 20 statements.

Table 3 shows perceived physicians' barriers to BP control. Poor patient compliance to life style modifications was on the top of the list as 95.4% of FPs considered it as important or most important. This was followed by poor adherence to antihypertensive drugs (90.1%). Non availability of the drugs in the clinic was considered as important or most important barrier to blood pressure control by 88.4% of the physicians, lack of patient knowledge (78%), overcrowded clinic and lack of time (84%), and finally follow up by different physicians (79.5%).

5. Discussion

The prevention and management of hypertension are major public health challenges. If the rise in BP with age could be prevented or diminished, much of hypertension-related cardiovascular, renal disease and stroke might be prevented.[14,15]

The present study indicated that FPs did not fully adhere to all hypertension guidelines despite that 92.1% of them agreed to apply. Only 49.1% of the participants were very familiar with WHO/ISH guidelines and only 23.7% always follow them. In agreement with that, in a survey of 1878 Canadian physicians, only 52% reported that they used guidelines at least once a month, and more than 25% expressed concerns about the source of the guidelines, their rigidity, and the fear

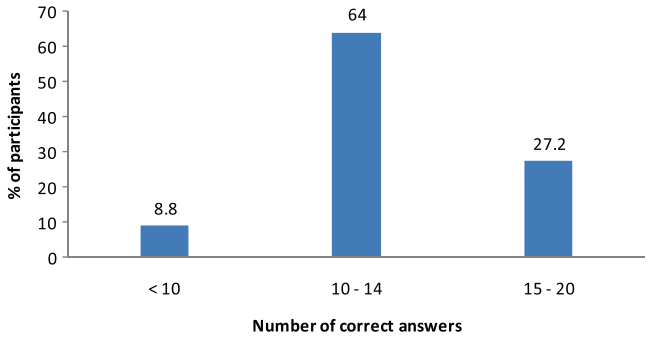

Figure 1 Percentage of participants answered correctly different numbers of statements related to the WHO/ISH guidelines.

that physicians might lose their sense of professional autonomy if they followed the guidelines.[13]

About two third of FPs defined correctly the BP value as hypertensive for elderly after repeated measures. This is in agreement with data available from other studies using the definition of high BP according to WHO/ISH guidelines report.[16–18] The information obtained appeared to be highly relevant, as it documents that a large proportion of FPs has limited familiarity with the fundamental issues dealt within the 1999 WHO/ISH guidelines: The low or limited rate of correct answers concerning a question such as the definition of the upper normality value of self-measured BP is related to different normalcy thresholds reported in the major hypertension guidelines.[8,14]

Regarding pharmacological treatment and therapeutic strategies, in agreement with other studies and as recommended in the 1999 WHO-ISH guidelines, diuretics are correctly chosen by 79.8% of the study FPs as a drug of third choice for essential hypertensive patients partially controlled by an ACE inhibitor plus calcium-antagonist. The ALLHAT trial indicated that thiazide-type diuretics are superior to doxazosin, an alpha-blocker, in preventing one or more major forms of cardiovascular disease.[19] In spite of the low cost and clearly defined clinical efficacy of diuretics, it was not the first-line drug of the physicians who participated in the survey for treatment of patients aged 40 years with no hypertension, as only 41.8% of them would initiate drug therapy with a diuretic. Physicians may rationalize that goals are within reach and that more time may be needed to see the effects of therapy, reasons that are typically without pharmacological basis.[20] Psaty et al. emphasized[21] that despite the various benefits of diuretics, they remain under- utilized. Ernest reported that in spite of the fact that diuretics are superior in the prevention of cardiovascular morbidity and mortality associated with hypertension, nearly 40% of the physicians preferred to prescribe other anti- hypertensive drugs, which suggests that diuretics still remain underused in the treatment of hypertension.[22] Moreover, studies on the prescribing patterns of health care physicians revealed that most physicians lack detailed knowledge of hypertension guidelines and tend to prescribe more expensive drugs without evidence of efficacy.[23]

Based on a study in Saudi Arabia many PHC physicians in the Aseer region lack the necessary knowledge to define and to correctly diagnose hypertension, especially among diabetic patients.[24]Most PHC physicians do not adhere to the guidelines of hypertension management. With regard to the management of hypertensive patients with diabetes, the current study revealed that two thirds of the FPs answered correctly that patients with diabetes should be treated to a systolic blood pressure < 130 mm Hg and a diastolic blood pressure < 80 mm Hg. This was in agreement with several randomized clinical trials that demonstrated the impact of elevated blood pressure as a risk factor for both micro-vascular and macrovascular diseases in diabetes.[25–27]

With regard to the specific measures to improve hypertension control, 92.1% of the physicians correctly define ''white coat'' or isolated clinic hypertension as high office BP, normal ambulatory BP measurement, and normal self-measured BP. This highlights the importance of BP self- measurement for BP control in addition to lifestyle modification, weight reduction, sodium restriction, physical exercise, and behavioral improvement.[24]

ACE inhibitor- or Angiotensin receptor blocker (ARB)-based treatments favorably affect the progression of diabetic nephropathy and reduce albuminuria and ARBs have been shown to reduce progression to macro-albuminuria.[28] In agreement with that, ACE inhibitor was correctly selected by the majority of participants (93.0%) as the most appropriate antihypertensive drug class for a hypertensive patient with diabetic nephropathy.

Combinations of two or more drugs are usually needed to achieve the target goal of $< 130/80$ mm Hg.[29,30] Thiazide-diuretics are beneficial in reducing CVD and stroke incidence in patients with diabetes.[31] Regarding the use of antihypertensive drugs and when FPs specifically asked about the most appropriate first-step drug for patients who were 40 years old, with BP 150/95 with no contraindication, no co-morbidity, 41.8% preferred Thiazide-diuretic as the first-line treatment and 84.8% of the FPs indicated that the addition of second antihypertensive drug was necessary if mono-therapy had failed to control blood pressure below the target level for the last 6 months. Other study reported that most PHC physicians do

Table 3 Physicians related barriers to hypertension management.

Barriers	Most important		Important		Less important		Total	
	No.	%	No.	%	No.	%	No.	%
Poor patient compliance to life style modifications	70	63.6	35	31.8	5	4.5	110	100.0
Non adherence of patients to their medications	48	42.9	53	47.3	11	9.8	112	100.0
Non availability of the drugs in the clinic	52	46.4	47	42.0	13	11.6	112	100.0
Lack of patient knowledge	27	24.3	70	63.1	14	12.6	111	100.0
Overcrowded clinic (lack of time)	63	56.3	31	27.7	18	16.1	112	100.0
Follow up by different physicians	42	37.5	47	42.0	23	20.5	112	100.0

not duly consider the importance of thiazide-diuretics as the basis of initial antihypertensive therapy, either alone or in combination with one of the other classes of drugs[24].

The present study has found that most FPs are aware of the recommendations of hypertension guidelines, as about 91.2% of FPs choose correctly more than 10 statements out of 20 related to guidelines. Phillips and colleagues have proposed that the reason for this may be due to overestimation of adherence to guidelines.[25]

Numerous surveys have shown that about three- quarters of all patients with hypertension do not have optimal blood pressure control.[9,10,32] Reviewing articles that investigated barriers to physician's use of clinical practical guidelines revealed that few studies examined the full variety of barriers that may affect the use of practice guidelines. Lifestyle modification, such as low salt and high potassium diet, regular exercise and weight reduction, facilitates pharmacological control of blood pressure, and should be recommended to all patients whenever appropriate.[33] Lifestyle modification has been one of the most frequently cited impediments to blood pressure control.[34]

In the present study, 97.8% of the FPs reported poor patient compliance to life style changes to act as a barrier for BP control. Moreover, 84.5% of them ranked lack of patient knowledge as most important or important barrier, 73.6 ranked non- availability of the drug in clinic, while, 76.9% attributed the poor control to follow up by different physicians, and 87.5% reported lack of time due to overcrowded clinics. A survey of a group of physicians in England found several barriers to the use of hypertension treatment guidelines.[35] Some physicians did not think the data used for the guidelines applied to their patients. Others did not follow the guidelines because they thought they were outdated, they did not feel a sense of ownership toward the guidelines, or they simply did not know about them. Still others claimed that the time and financial pressures they felt made the treatment of hypertension and the use of guidelines a low priority. Ironically, these seem to be the very practitioners who should have been using the guidelines. Patient's adherence to pharmacotherapy has been identified as one of the main reasons for uncontrolled hypertension.[10,14] Consistent with previous findings, most of our respondents (97.8%) reported poor adherence to antihypertensive drugs as the leading patient-related barrier to BP control. The costs of medication and hospital visits have been identified as a major contributing factor for poor patient adherence to pharmacological treatment by one study. This is not the case in Kuwait as medication is free in all PHC centres.

6. Conclusion

Several factors may account for FPs' lack of adherence to practice guidelines for hypertension, including knowledge deficits, overestimation of compliance with guidelines, disagreement with guidelines, or reluctance to make therapeutic changes. The results of this survey indicate that there is a need to establish nationwide educational and quality monitoring programs to facilitate the correct implementation of hypertension guidelines in PHC clinical practices in Kuwait. We strongly urge each family physician to re-examine all patients for hypertension and to re-examine his/her role in the detection, evaluation, management and control of hypertension.

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