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RESEARCH DISSEMINATION REPORT—CARDIOVASCULAR DISEASES

An investigation into the current management of hypertension in Hong Kong: a two-phase study

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Key Messages

1. Reported practice by the majority of respondents corresponded to international guidelines for diagnostic practice, intervention levels, first-line drugs and lifestyle modification for smokers.
2. Reported practice by the majority of respondents did not correspond to the guidelines for goal blood pressure levels or the management of diabetics. There was uncertainty about treatment of the elderly.
3. Authoritative local guidelines on the management of hypertension (with specific advice on the management of the elderly and diabetic patients) are recommended.
4. A follow-up study examining blood pressure levels in patients treated for hypertension is recommended.

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Background

Hypertension is a common chronic disease in Hong Kong, affecting around 10% of the population.[1] High blood pressure (BP) is a major risk factor for stroke and coronary heart disease but the risk can be reduced by treatment.[2] There are many international and national guidelines that outline criteria for selection of patients for treatment and the content and frequency of monitoring for complications. Nonetheless, studies in other countries have shown variation in the management of hypertensive patients.[3] Such variation implies that some patients, at least, are not receiving an optimal standard of care. In order to determine strategies to overcome variations in care, we need information on current practices and levels of practitioner awareness.

As a first step in gaining some understanding of the current situation and the potential for improving care, we have surveyed family physicians about their management of hypertensive patients.

Aims and objectives

The aim was to identify current practice and any deficiencies in the management of hypertensive patients in Hong Kong. The specific objectives were:
1. To survey family physicians on their management of hypertensive patients.
2. To compare stated practice patterns with guidelines current at the time for the management of hypertension.
3. To explore what factors are associated with practices closer to international guidelines.

Methods

The sample was taken from the Hong Kong College of Family Physicians. At the start of the survey, in June 1999, there were 1002 members. Questionnaires were sent with an invitation letter to a random sample of 334 members. Follow-up surveys were conducted in July and October. Due to the low response rate, 188 questionnaires were distributed at the December 1999 Refresher Programme organised by the Hong Kong College of Family Physicians.

The questionnaire was based on one previously used to investigate management practices for hypertensive patients.[4] It presents profiles of typical hypertensive patients and asks questions on diagnosis and management.

Chi squared tests were used to compare proportions. Multivariate logistic regression was used to determine which of the doctors' characteristics (qualifications, experience, use of a hypertension register, use of guidelines, frequency of seeing hypertensive patients and sector-public or private) independently contributed to practices adhering to international guidelines, considered one by one or as overall scores. The World Health Organization[5] (WHO)– and the British Hypertension Society[6] (BHS)–published guidelines were used. Tests were two-tailed at the 5% level of significance. When reporting data in two categories any missing answers were assumed to be the lower response or a 'no'

answer so all responses were included; for more than two categories or averages the missing data were not included and number of responses is shown.

Results

In response to the initial mailing, 58 questionnaires were returned, 27 were returned after the first reminder and 19 after the second. From the Refresher Programme a further 18 responses were obtained. All 122 questionnaires were used for analysis.

Table 1 shows characteristics of the survey respondents. Between 17% and 26% of the College members have a fellowship compared with 32% of respondents.

Reported hypertension management
Table 2 shows reported hypertension management practices compared with the WHO and BHS guidelines that were current at the time of the survey. In addition, most respondents said they would screen for the presence of a positive family history (79%) or risk factors (84%).

The mean minimum observation period before starting drug treatment for a mild hypertensive with no other risk factors was 4.8 weeks, compared with the WHO guideline period of 3 to 6 months. The respondents' observation period is closer to the BHS guideline of 4 to 14 weeks for a patient with BP in the range of 160-199/100-109 mm Hg. The mean number of measurements before starting drug treatment is three, the BHS guidelines suggest four. The WHO guidelines are less specific but three measurements fit their criteria.

Systolic BP drug treatment thresholds clustered around 160 mm Hg, 150 mm Hg and 140 mm Hg, with the largest proportion (37%) choosing 160 mm Hg. The diastolic BP treatment thresholds clustered around 90 mm Hg, 95 mm Hg and 100 mm Hg, with 40% choosing 90 mm Hg. The WHO and the BHS guidelines recommend lower treatment thresholds for diabetics and 32% of respondents reported lower drug treatment thresholds for diabetics. Most respondents (62%) had an upper age-limit of 80 years for starting drug treatment; the BHS guidelines suggest treating in accordance with biological rather than chronological age.

The BHS guidelines recommend a thiazide diuretic as the first-line treatment of choice; less than half of the respondents (43%) gave a diuretic as their first-line drug. The WHO and the BHS guidelines recommend a treatment goal under 140/90 mm Hg. Around a quarter of the respondents (26%) had a goal systolic BP under 140 mm Hg and less than half (47%) a goal diastolic BP under 90 mm Hg. Both guidelines recommend a lower treatment goal for diabetics but fewer than half (40%) would decrease the goal for diabetics. Lifestyle modification is recommended as an important part of hypertension management in both

Table 1. Characteristics of survey respondents

	No. (%)
Work in the private sector	76 (62.3)
Have higher qualifications	72 (59.0)
More than 5 years of experience	89 (73.0)
Have a hypertension disease register	39 (31.9)
Use guidelines for goal blood pressure	56 (45.9)
Would welcome guidelines for drug therapy	111 (91.0)

guidelines; 30% of respondents provided educational programmes for their hypertensive patients. Both guidelines suggest 3-monthly review is sufficient; most respondents reported reviewing more frequently.

Factors affecting hypertension management
Screening—respondents with more experience and those working in the private sector were more likely to report screening for hypertension, but these associations were not significant in the multivariate model.

Diagnosis—respondents with more experience, more qualifications or working in the private sector were more likely to take three or more BP measurements before starting treatment. In the multivariate model qualifications and experience contributed to taking at least three measurements. Those with a hypertension register were more likely to observe over 12-24 weeks, but this association was not significant in the multivariate model.

Drug intervention—respondents with higher qualifications or more experience were more likely to intervene at or below the WHO recommended systolic BP levels. The multivariate model showed no significant associations.

Risk factors—doctors working in the public sector were more likely to set lower intervention levels for diabetics, but this association disappeared in the multivariate model. Respondents in the public sector with guidelines were more likely to treat those over 80 years than those in the private sector, with or without guidelines, and those in the public sector without guidelines.

Drug therapy—respondents in the public sector were more likely to use a diuretic as a first-line drug; this association remained significant in the multivariate model.

Goal BPs—respondents with higher qualifications or not using a hypertension register were more likely to have a goal systolic BP under 140 mm Hg, but these relationships were not significant in the multivariate model. Higher qualifications were associated, in the multivariate model, with having a goal diastolic BP under 90 mm Hg. Those with less experience or working in the public sector were more likely to decrease the goals for diabetics but these associations were not significant in the multivariate model.

Ongoing management—almost all respondents said that they asked about smoking and advised quitting.

Table 2. Summary of reported practices and international guidelines

Reported practices		BHS 1999 guidelines	WHO 1999 guidelines
Diagnostic procedure			
Period of observation prior to drug treatment (n=119)		BP 160-199/100-109 mm Hg:	3-6 months
Mean	4.8 weeks	4-12 weeks; BP 140-159/90-	
Mode	2 weeks	99 mm Hg: 12 weeks	
Median	4 weeks		
Minimum BP measurements prior to drug treatment (n=111)			
Mean	3.4	4	Multiple measurements on several
Mode	3		separate occasions
Median	3		
Intervention levels			
Minimum level of established systolic BP to start drug treatment (n=121)		Systolic BP≥160 mm Hg	BP≥150/95 for men under 55 and
Mean	155.48		women under 65 years
Mode	160		
Median	160		BP≥140/90 for men of 55 years or
% at 140	18.2%		over and women of 65 years or over
% at 150	21.5%		
% at 160	37.2%		
Minimum level of established diastolic BP to start drug treatment (n=121)		Diastolic BP≥100 mm Hg	
Mean	93.72		
Mode	90		
Median	95		
% at 90	39.7%		
% at 95	30.6%		
% at 100	22.3%		
Lower level to start drug treatment for diabetics (n=122)		BP≥140/90 mm Hg	BP≥130/85 mm Hg
% Yes	32.0%		
Start drug treatment in patients over 80 years (n=122)		Treat according to biological age	No age limits; uncertainty about
% Yes	38.5%		value of treatment for over 80 years
Drug therapy			
1st line anti-hypertensive drugs usually prescribed (n=111)		Thiazide diuretic	All classes for patients under 60
Diuretics	43%		years; consider cost, patient
Beta-blockers	28%		preferences and other conditions
CCA/CCB	13%		
ACE1	14%		
Other	2%		
Ongoing management			
Treatment goal BP—systolic BP (n=120)		Systolic BP<140 mm Hg	Systolic BP<140 mm Hg for elderly
Mean	142.86		Systolic BP<130 mm Hg for
Mode	140		younger
Median	140		
% <130	1.7%		
% <140	25.6%		
Treatment goal BP—diastolic BP (n=120)		Diastolic BP<85 mm Hg	Diastolic BP<90 mm Hg for elderly
Mean	88.19		Diastolic BP<85 mm Hg for younger
Mode	90		
Median	90		
% at <85	15.8%		
% at <90	46.7%		
% at <95	98.3%		
Decrease goal for diabetics (n=122)		Diastolic BP<80 mm Hg,	Diastolic BP<85 mm Hg, systolic
% Yes	40.2%	systolic BP<140 mm Hg	BP<130 mm Hg
Educational programmes (n=122)		Non-pharmacological advice	3-12 month trial of lifestyle advice
% Yes	29.5%	should be offered to all	initially
		hypertensive people	
Measurement frequency (n=119)		3 monthly should suffice	See every 3 months
Mean	8.2 weeks		
Mode	4 weeks		
Median	8 weeks		

Respondents working to guidelines or working in the public sector were more likely to have educational programmes and these associations were significant in the multivariate model.

Working in private practice and not having higher qualifications independently contributed to more frequent review. No associations were found between doctor characteristics and referral to a public sector specialist but the multivariate model showed that respondents in the private sector were more likely to refer to Government Outpatient Clinics.

Overall scores—to summarise the findings, scores were allocated to each respondent according to the correspondence between stated practice and published

guidelines and the associations between doctors' characteristics and scores were explored. Two scores were created. The WHO score consists of the following items: at least three measurements in the observation period, observe the patient over at least 12 weeks, start drug treatment at or above 140 mm Hg systolic, start drug treatment at or above 90 mm Hg diastolic, intervene at lower levels for diabetics, have a goal systolic BP under 140 mm Hg, have a goal diastolic BP under 90 mm Hg, review a stable patient less often than monthly and have an educational programme. A point was allocated for each criterion met. Possible WHO scores range from 0 to 9 with 4 or more considered closer to the guidelines. The BHS score consists of the following: at least three measurements in the observation period, observe for at least 1 month, start drug treatment at or above 160 mm Hg systolic, start drug treatment at or above 100 mm Hg diastolic, start lower for diabetics, use diuretic as first-line treatment, treat those over 80 years old, have a goal systolic BP under 140 mm Hg, have a goal diastolic BP under 85 mm Hg, have a lower goal for diabetics, review a stable patient less often than monthly and have an educational programme. Possible BHS scores range from 0 to 12 with 5 or more being counted as closer to the guidelines.

Respondents with higher qualifications were more likely to score highly against the WHO guidelines and those in the public sector were more likely to score highly against the BHS guidelines. In the multivariate model, higher qualifications and working in the public sector independently contributed to practising closer to both guidelines.

Discussion

This study is limited by the low response rate (31%) and the nature of voluntary audit of reported practice. It is possible that the respondents are not typical of family physicians in Hong Kong. Not all the physicians providing primary care in Hong Kong are members of the College and the respondents appeared to be slightly more qualified than the College members, both of these factors would suggest that the respondents might be better informed and motivated than the non-respondents. Previous studies have found that there is not always a strong relationship between what a doctor reports in a hypothetical case and what happens in practice. Most people are motivated to show themselves in a good light. The implications are that the practice reported here may be overly optimistic and actual practice is likely to be, on average, poorer. However, the relationships identified in the analyses are less likely to be affected by this limitation. In the multivariate analysis, adjusting for sample member status (ie random or volunteer) had no effect on the results, nor did adjusting for when the questionnaire was returned. This supports a conclusion that the relationships between characteristics and practice were unaffected by the main limitation.

Respondents had good knowledge of some aspects of optimal hypertension management guidelines, but there are gaps and corresponding implications for actual practice. Most respondents reported practice that fell within the WHO or BHS guidelines for diagnostic practices, intervention levels, first-line drugs and lifestyle modification for smokers. Reported practice was less likely to correspond to either set of guidelines in frequency of review and treatment goals. There was particular lack of conformity to guidelines in treatment of diabetics and the elderly.

Higher qualifications were associated with reported practices closer to the guidelines, thus demonstrating the importance of continuing education and the role of the College of Family Medicine. Working in private practice was associated with less adherence to the guidelines. We speculate that the organisation of care is the key factor to guideline adherence. The majority of respondents did not use management guidelines. Almost all reported that they would welcome guidelines for drug therapy. Hence authoritative guidelines, perhaps from the College, which focus on the continuing management of hypertension, with additional advice on the elderly, diabetic patients and lifestyle modification would be one way forward.

Given the potential shortcomings identified in this survey it is imperative that this study is followed up by an audit of actual practice. This could be carried out by auditing the treatment of a group of hypertensive patients or by examining how well BP levels in treated hypertensives meet goal BPs in a random sample of Hong Kong residents.

Acknowledgements

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