



Research Article

Self-Reported Awareness of the Hypertension Guidelines Does Not Lead to Knowledge of the Treatment Thresholds

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Abstract

Objective: According to the published studies general practitioners were aware of the current care guidelines and their attitude towards hypertension treatment was positive. We determined among Finnish general practitioners the awareness of the Finnish current care hypertension guidelines and the trigger values to intensify the antihypertensive medication. **Methods:** One hundred general practitioners working in health centers in Finland were randomly selected for this study. Sixty-eight of them answered the questionnaire which was collected electronically through e-mail. In the first part of the questionnaire, the self-reported awareness of the guidelines (not aware, aware or familiar with) was asked. In the second part, the trigger value for intensifying the antihypertensive treatment in three different groups of hypertensive patients was questioned. **Results:** Participants were aware of the original year 2002 hypertension guidelines and the succeeding hypertension guideline updates. Despite, two thirds of the participants reported higher trigger blood pressure (BP) value for intensifying the antihypertensive treatment compared to those given in the guidelines. High BP limit policy was most often adopted in the treatment of patients with low-risk hypertension. On the contrary, in the treatment of patients with high BP and non-complicated diabetes, systolic BP trigger value exceeding the guideline values was reported as often as an equal or even BP value below the one stated in the guidelines. In patients with BP and complicated diabetes most physicians reported higher trigger values than stated in the guidelines. **Conclusions:** This study suggests that clinicians overestimate their adherence to hypertension guidelines as seen also in one earlier study. The BP trigger values to intensify antihypertensive medication were higher than suggested in current care guidelines. In most former studies the clinicians had only been asked for the adherence. In this study the adherence is assured by asking also the trigger values to intensify antihypertensive treatment. The results concerning the trigger values will be compared with the reported adherence.

Keywords: Hypertension, guidelines, awareness, adherence

Introduction

Guidelines for the diagnosis and treatment of hypertension have been published and actively promoted in Finland for more than a decade. Nevertheless, the blood pressure (BP) of patients with hypertension remains still suboptimal and the favourable development in cardiovascular risk factors seems to have come to an end during the first decade of this millennium as stated by Varis et al (2009). According to Vartiainen et al (2010) the probable explanation is weight gain, increased salt intake and usage of alcohol.

According to the former published studies, Finnish general practitioners (GP) are well aware of the current care guidelines, and attitudes towards hypertension treatment are mostly positive. Data collected in 2005 showed that the average awareness of all current care guidelines available at that time was 83% as published by Alanen et al (2007). Especially, hypertension and dyslipidemia guidelines were well-known. According to Alanen et al (2008) the attitude of the GPs towards the guidelines was more positive than the nurses who also followed guidelines less than physicians. According to a study by Steinman et al (2004) at three Veterans Affairs medical centers and Theodorou et al (2012) in Cyprus, clinicians appeared to overestimate their adherence to hypertension guidelines.

The objective of this study was to determine the awareness and adherence to the Finnish current care hypertension guidelines (2002, 2005).

Material and Methods

One hundred general practitioners working in health centers from all five university hospital districts in Finland were randomly selected for the study. The identification of the physicians was performed through interviewing of different medical sales representatives. The identified physicians received then in the year 2007 via e-mail an electronic questionnaire concerning their awareness of the Finnish

hypertension year 2002 guidelines and its update in 2005 and the trigger values suggested by the guidelines to intensify the antihypertensive medication.

The number of the physicians to participate to the study was evaluated to 100 through our economical and statistical resources. Participants were tried to get from both rural and urban centers.

The first part of the questionnaire evaluated the self-reported awareness of the hypertension guidelines (not aware, aware or familiar with). It was also assessed whether the physicians had participated in education about the guidelines either in their own health centre or outside it and if a local guidance based on the national guidelines were given. In the second part, the trigger value for intensifying the antihypertensive treatment in three different groups of hypertensive patients was questioned. The three groups were: 1. A patient with essential hypertension without organ damage, 2. A patient with hypertension and diabetes (without micro- or macrovascular complications) and 3. A patient with hypertension and complicated diabetes. The reported trigger values were compared to the corresponding values in the latest national hypertension guidelines.

In the cover letter sent to the physicians the aim of the questionnaire and how to complete it was explained. It was stated that the physicians should fill the questionnaire without using any literary material.

According to the year 2005 national hypertension guidelines antihypertensive treatment should be intensified in drug-treated hypertensive patients if blood pressure is $\geq 140/85$ mmHg, in patients with hypertension and non-complicated diabetes $\geq 140/80$ mmHg and in patients with hypertension and diabetes with complications $\geq 130/80$ mmHg (1).

Statistical analysis

The continuous variables are expressed as mean \pm SD. Database management and statistical analysis were performed using SPSS software, version 17.0. Group differences in continuous variables were assessed with unpaired Student's t test or one way analysis of variance as appropriate. The cut-off level for statistical significance was set at P-value <0.05 . The significance of correlation between variables was determined by Pearson's correlation analysis.

Results

Out of the 100 selected physicians, sixty-eight (68%) participated in the study representing all five university hospital districts. Twenty-one out of the 68

physicians were of rural origin, 27/68 were from Helsinki University district. Only 19/68 physicians were from the central part of Finland, no physicians from the northern part of Finland. They were graduated between the years 1973 and 2005. The largest groups were general practitioners working in the health care centers and the physicians working in the occupational health (85.3 %). Seven physicians (10%) were in charge of the care of diabetic patients and two (3%) in charge of the care of hypertensive patients (Table 1). The majority (94.1 %) of the physicians reported to be in a permanent position. The number of monthly patients treated was on average 250/physician (19 % hypertensives and 13 % diabetics). Detailed physician demographics are seen in Table 1.

Table 1: Demographics (mean \pm SD) of the interviewed physicians (n=68)

| | | |
|---|---------------------|----------------|
| Age (years) | | 44.7 \pm 8.5 |
| Years since graduation (years) | | 18.0 \pm 8.3 |
| Specialisation n(%) | | |
| | occupational health | 30 (44.1) |
| | general practice | 28 (41.2) |
| | internal medicine | 4 (5.9) |
| | other | 5 (7.4) |
| | no answer | 1 (1.5) |
| In charge of | | |
| | diabetes mellitus | 7 (10.3) |
| | hypertension | 2 (2.9) |
| | some other area | 18 (26.5) |
| | no area | 37 (54.4) |
| | no answer | 4 (5.9) |
| All patients seen/month (n) | | 250 \pm 113 |
| Hypertensive patients seen/month (n) | | 48 \pm 32 |
| Diabetic patients seen/month (n) | | 32 \pm 24 |

Nearly, all participants announced being aware of the original year 2002 hypertension guidelines and the hypertension guidelines 2005 update. Thirty-six % of the physicians had participated in local education of the hypertension guidelines. In 24.6 % of the centres an own local guideline based on the national guidelines had been introduced. Forty-two % of the physicians had

participated in education concerning the guidelines outside their workplace.

About two thirds of the physicians reported higher trigger BP values for intensifying the treatment of hypertension compared to those given in the guidelines (table 2). In the essential hypertension group, 73.1 % of the physicians reported higher systolic and 88.2 % higher diastolic

BP triggers values than stated in the guidelines (table 2). In diabetic patients high systolic BP trigger value was reported as often as a correct and BP value below

the guideline values (table 2). In patients with complicated diabetes, higher trigger values were reported by most of the physicians (table 2).

Table 2: The statements of the interviewed physicians for trigger blood pressure value to intensify the treatment of hypertension compared to the guidelines

| Patient group | too low* | | correct* | | too high* | |
|---|----------|----|----------|----|-----------|----|
| | % | n | % | n | % | n |
| 1. Essential hypertension, systolic BP | 1.5 | 1 | 25.4 | 17 | 73.1 | 49 |
| 1. Essential hypertension, diastolic BP | 1.5 | 1 | 10.3 | 7 | 88.2 | 60 |
| 2. Diabetics, systolic BP | 34.3 | 23 | 32.8 | 22 | 32.8 | 22 |
| 2. Diabetics, diastolic BP | 0.0 | 0 | 14.7 | 10 | 85.3 | 58 |
| 3. Complicated Diabetics, systolic BP | 10.6 | 7 | 25.8 | 17 | 63.6 | 42 |
| 3. Complicated Diabetics, diastolic BP | 0.0 | 0 | 37.3 | 25 | 62.7 | 42 |

Correctly reported systolic pressure in patients with complicated diabetes (130 mmHg) correlated with younger age of the physician ($r=0.330$, $p=0.007$). The correct diastolic pressure in patients with hypertension and complicated diabetes (80 mmHg) correlated with a given local instruction ($r=0.295$, $p=0.020$). Otherwise no correlation to demographic factors was seen.

The mean \pm SD blood pressure suggested by the physicians was $150.1\pm 10.1 / 91.8\pm 4.8$ mmHg, median 150/90 in group 1 essential hypertension, $141.4\pm 8.4 / 87\pm 4.0$ mmHg, median 140/85 in group 2 diabetic patients and $135.6\pm 7.2 / 84.1\pm 4.3$ mmHg, median 135/85 in group 3 diabetes with complications.

Discussion

The self-reported awareness of the hypertension guidelines was good in Finnish general practice in the present study as also in the earlier Finnish studies by Alanen (2007,2008), at least reported by the physicians themselves. However, in spite of the apparent awareness nearly two thirds of the physicians reported higher

trigger blood pressure values for intensifying the antihypertensive treatment compared to the guidelines (2005). Our study confirms the earlier results by Steinman et al (2004) and the Cypriot study (2012) that clinicians overestimate their adherence to hypertension guidelines. In the Cypriot study 95.6 % of the physicians declared to be aware of the hypertension guidelines. However, more than one-fourth of high risk hypertensive patients remained untreated and 60 % of low risk patients received inappropriate medication.

Although only roughly 70% of the physicians selected answered the questionnaire the response was quite satisfactory, compared for example to the 34% seen in the self BP monitoring study of Tyson et al (2003) using mailed questionnaires. Some physicians may have experienced the study as an interrogation of guideline knowledge and thus not answered the questionnaire. The number of general practitioners in Finland is 3500, altogether. Thus, our sample represented only about 2 % of them. However, considering the homogeneity of the Finnish population and physicians, we believe that

reliable conclusions can be drawn despite the modest amount of physicians who completed the questionnaire. Previous studies by Alanen et al (2007, 2008) discussing the implementation of guidelines have almost solely been based on the opinions of the chief of the centre or the chief nurses and concerned the implementation in general. The benefit of this study was that the actual values of intensifying antihypertensive treatment were asked from the treating physicians themselves. The physicians were not controlled if they were using the literature for answering, but the results show that they probably did not check the trigger values when answering.

According to a recent Finnish study by Sipilä et al (2011), multifaceted implementation intervention has not led to significant changes in antihypertensive drug prescribing performance. The results of our study were alike. Despite the self-reported knowledge of the guidelines, the reported trigger values for intensifying the antihypertensive treatment differed from those mentioned in the Finnish guidelines (2005) in over 60% of cases and were about 5-10/5 mmHg higher than those suggested in the guidelines. Particularly alarming were the high trigger values reported in the treatment of patients with uncomplicated essential hypertension. Probably reluctant treatment intensification partly explains the suboptimal treatment results seen in reaching BP targets in recent Finnish studies by Varis et al (2009) and Vartiainen et al (2010). Either the physicians had not read the guidelines thoroughly or they disagreed with them. We cannot find the proper answer from our study. Although the trigger values for essential hypertension followed by the physicians had been 140/90 mmHg for essential hypertension and 130/80 mmHg for diabetics as suggested by the European Society of Hypertension and the European Society of Cardiology (2003) at that time, the trigger values suggested by the physicians in this study were clearly higher.

In an Austrian study by Fürthauer et al (2013) hypertensive patients were quite well controlled, only 17.9 % of the patients were above the blood pressure target. The most important reason was the physician not providing an appropriate treatment due to the lack of awareness of the existence of the guidelines or lack of familiarity of the guideline. Small amount (2.9 %) was due to a deliberate decision to counteract the guideline. Dechend et al (2012) suggested according to their large Prospective 3A registry study that major efforts are required to improve hypertension management as recommended by the current guidelines, also shown in our much smaller study. Also in Ontario, Canada Dickson et al (2013) indicated according to their results that blood pressure measurement according to Canadian Hypertension Education Program was felt to be important, but there is still room for improvement in the conduction.

In a Chinese study among general practitioners by Chen et al (2013), the average accuracy rate of hypertension prevention knowledge was 49.2 %, ranging from 10.5 to 94.7 %. The factors associated to accuracy rate were the education level of the physician and type of centre. According to our study, young age of the physician and local guidelines were important to achieve the knowledge of the guidelines. Most Chinese physicians (87.8 %) reported being willing to attend training courses regularly. The preferred course was medical treatment of hypertension and the most favoured training approach expert lectures.

In an Austrian study (2013) during the eleven year follow-up in pediatric obesity care, screening for co-morbidity increased significantly in overweight and obese children and adolescents. Adherence of guidelines was still insufficient in some institutions. They suggested that quality control based on benchmarking would improve obesity care. In a randomized study in Veterans Affairs outpatient clinics by Petersen et al (2013), individual financial incentives, but not practice-level or combined incentives, lead to a greater blood pressure control or appropriate

response to uncontrolled blood pressure. However, none of the incentives resulted in greater use of guideline-recommended medication or increased incidence in hypotension compared with controls.

In contrary, in our study in patients with hypertension and non complicated diabetes systolic BP trigger value was reported as an equal or even lower in one third of the physicians. However, one third of them reported too high values, as over 80 % reported too high diastolic blood pressure. It probably suggests that the guideline message had come through a little better concerning systolic pressure. This is perhaps due to the fact that low BP recommendations for diabetics have been expressed both in diabetic and hypertension guidelines. Of course, it is also possible that it only reflects higher concern of diabetic patients and had nothing to do with the published guidelines. The reported trigger values in patients with complicated diabetes were a little better but still over 60 % of the physicians reported too high values.

Results from the present study support the view that the implementation of hypertension guidelines needs intensifying, especially concerning the patients with uncomplicated essential hypertension. According to the study there has been some activity among physicians concerning local guideline education and community-sponsored conference visits but it seems that it has not succeeded effectively as the guidelines are not followed in everyday practice. Naturally, every patient is an individual and treatment should be tailored accordingly, taking into account patient based factors like for example orthostatism. However, the treatment target is similar in all patients. Despite, as this study suggests, the majority of physicians had chosen target values exceeding those suggested in the guidelines. Also in the study by Hagemester et al (2001) the impact of hypertension guidelines on actual medical knowledge was modest. Adequate guideline awareness was found in 23.7 % of the total study population of 24 899 German physicians.

The hypertension guidelines in Finland are accessible by the patients in the Internet. If treating physician is satisfied with BP targets exceeding the guidelines, some patients may become astonished and their adherence to treatment decrease as discussed above. Besides reaching the treatment target the physicians also do not follow the suggestions concerning the choice of the medication and are partly resistant to use combination treatment adequately according to a study by Sipilä et al (2011). Beta-blockers are still the most used antihypertensive drugs in Finland as stated by Varis et al (2009).

Conclusion

This study suggests that clinicians overestimate their adherence to hypertension guidelines as seen also in one earlier study. The blood pressure trigger values to increase medication were higher than suggested in current care guidelines in over half of the physicians. In most former studies the clinicians had only been asked for the adherence, not trigger values.

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