ORIGINAL ARTICLE

Evaluation of current care effectiveness: A survey of hypertension guideline implementation in Finnish health centres

SEIJA I. ALANEN¹, RIITTA JOHANNALA-KEMPPAINEN², JARJA J. IJÄS³,
MINNA KAILA^{4,5}, MATTI KLOCKARS⁶, MARJUKKA MÄKELÄ⁵ &
MARITTA A. VÄLIMÄKI⁷

¹Tampere University Hospital, ²Health Centre of the City of Kotka, ³Health Centre of the City of Järvenpää, ⁴Paediatric Research Centre, Tampere University Hospital and University of Tampere, ⁵Finnish Office for Health Technology Assessment, ⁶Department of Public Health, University of Helsinki, and ⁷Department of Nursing Science, University of Turku, Finland

Abstract

Objective. To assess the extent and style of implementation of the Hypertension Guideline (HT Guideline) in Finnish primary health centres, and to identify a scale of contrasting implementation styles in the health centres (with the two ends of the scale being referred to as information *implementers* or *disseminators* respectively). **Design.** A cross-sectional study. Development of a questionnaire and criteria for assessing the extent and style of implementation of the HT Guideline. **Setting.** Primary healthcare. **Subjects.** All head physicians and senior nursing officers in Finnish health centres (n = 290). **Main outcome measures.** The extent of adoption of the HT Guideline in health centres and the characteristics associated with the implementation style. **Results.** Responses were received from 410 senior medical staff (246 senior nursing officers and 164 head physicians) representing altogether 264 health centres (91%) in Finland. The HT Guideline had been introduced into clinical practice in most health centres (89%). The style of implementation varied widely between health centres: at opposite ends of the implementation scale were 21 *implementer* health centres, which used multiple implementation channels, and 23 *disseminator* health centres, which used few or no implementation channels. The implementers had typically larger population bases and had organized services around the family doctor system, while the disseminators were smaller and had organized services according to a traditional model (appointments could be with any doctor in the surgery). **Conclusion.** The Finnish HT Guideline has become well known in most health centres since being introduced into clinical practice. However, the style of implementation varies markedly between health centres.

Key Words: Clinical practice guidelines, family practice, hypertension, implementation, primary health care

Evidence-based clinical guidelines are systematically developed statements that assist practitioners and patients in decision-making concerning appropriate healthcare [1]. They have gained acceptance as tools for implementing research evidence in practice, reducing inappropriate variations in healthcare and thus improving the quality of care [2,3]. However, general acceptance of guidelines has not always led to their implementation in clinical practice. The challenges in introducing guidelines into clinical practice seem to depend on the type of health problem targeted by the guideline, on the specifics of the healthcare setting and on the implementation strategy used [4,5].

A general acceptance of evidence-based clinical guidelines has not always led to their implementation in clinical practice.

- A national evidence-based hypertension guideline was widely adopted in clinical practice in Finnish primary care.
- According to survey responses of senior medical staff, the style of implementation varied a lot among health centres.
- Larger health centres, and those using the family doctor system in organizing services, had more often used multiple strategies in implementation than smaller ones.

Finland has been among the pioneers in producing a collection of national clinical guidelines, the Current Care Guidelines (CC Guidelines; <http://www.kaypahoito.fi>). The national CC Guidelines are to be used locally by constructing house rules for one organization or regionally by constructing clinical pathways particular to the healthcare district, covering both primary and secondary care. The CC Guidelines are disseminated through scientific and professional journals and via the Internet, while patient versions have also been published. Although the CC Guidelines have been widely diffused and are well accepted, there is clearly room to improve implementation [6,7]. However, only a few studies [6–8] have so far evaluated the implementation and impact of guidelines in Finland.

A research consortium, *Evaluation of Current Care Effectiveness* (ECCE), was established in 2003 to study factors important to the implementation of the CC Guidelines. This multidisciplinary group assesses the processes and outcomes of guideline implementation from different viewpoints (that of the physician, other health professionals, and patients), with both primary and secondary care settings as the subject of assessment. This paper aims to describe the implementation of the Hypertension Guideline, which was published and distributed in January 2002 to Finnish primary care health centres. We will first describe the extent of adoption and second the styles of implementation. Third, some factors associated with the contrasting styles of implementation in the health centres will be discussed.

Material and methods

Setting

The data were collected from head physicians and senior nursing officers in Finnish health centres. Both categories of medical personnel were included, since in Finnish primary care the treatment of a hypertensive patient is the joint effort of physicians and nurses, and the implementation of new innovations demands support from both senior officer groups.

Due to wide variations in the size of health centres, participants were selected in two strata: One head physician and one senior nursing officer were selected from every health centre with a population base of less than 60 000, while from the larger health centres the same types of senior officers were selected from each organizationally independent unit (varying from 2 to 10 units per centre). A total of 290 health centre units and 577 possible partici-

pants were represented in the study (three health centres did not employ a senior nurse).

Data collection

Data were collected between October and November 2004 by computer-assisted telephone interview (CATI) [9,10]. Trained interviewers at Statistics Finland carried out the interviews, including the piloting carried out in May 2004.

Instruments

The CATI questionnaire was developed by the ECCE consortium, which included several senior guideline researchers. The survey questions relate to the following topics:

1. characteristics of the respondent and the organization (10 questions);
2. adoption of the Hypertension Guideline (three questions);
3. informing the patients and the population about the Hypertension Guideline (six questions);
4. introduction and teaching of the Hypertension Guideline (seven questions).

Respondents were also asked about their willingness to participate in further studies.

The ECCE group developed criteria for identifying the style of implementation from different viewpoints: the organization, the professionals, and the patient (see Table II). The nine criteria were based on previous knowledge of the effectiveness of various interventions in implementation [2,4,5]. A criteria sum-score was also calculated by giving one point for each criterion met, except for two criteria that could each receive two points if fulfilled, thus giving a total sum-score value between 0 and 11. Two points were given if either the health centre had adopted a house rule or a clinical pathway, or if two or three representatives from a health centre had participated in the development of the guideline in use. Adding more weight to these two criteria was justified since commitments made at the organizational level and tailoring a guideline to fit the specific setting are both key in promoting guideline adherence [11–13].

The sum-score value was used to identify health centres at opposite ends of the implementation scale, referred to as disseminators (minimal or no implementation channels) and implementers (multiple implementation channels). The cut-off values for belonging to either the implementers (from 10 to 11) or disseminators (from 0 to 2) were chosen in part to ensure at least 20 health centres in each group, thus

providing sufficient participants for further studies to assess the impact of different implementation styles on clinical practices.

Statistical analyses

The SPSS 12.0.1 programme was used for statistical analyses. The data were described using percentages and means with standard deviation. A sum-score value for the style of implementation was calculated for every health centre: If both the head physician and the senior nursing officer of a health centre responded, a rounded mean value was used. Cross-tabulation and a chi-squared test were used in comparisons between disseminator and implementer health centres. A two-sided p -value <0.05 was considered significant.

Results

The final sample consisted of 410 respondents (response rate 71%) including 164 head physicians and 246 senior nursing officers. The respondents represent altogether 264 health centres in Finland (91%), since both the head physician and the senior nursing officer responded from 146 health centres and either the head physician or the senior nursing officer from 118 health centres. The main reason for dropout was difficulty in finding a convenient time for interviews, with only 3% not willing to participate. The characteristics of the respondents are presented in Table I.

The HT Guideline was adopted in clinical practice in most health centres: a total of 89% of the senior medical staff responded that the original HT Guideline, a local house rule, or a clinical pathway had been implemented, with a house rule being the most frequent implementation (Table II). Some senior medical staff (7%) responded that both the original HT Guideline and one of either a house rule or a clinical pathway had been adopted. Fulfilling the other eight criteria varied from 39% to 74% according to respondents (results are described in detail in Table II).

Table I. Characteristics of the respondents.

Characteristic	Profession		
	Head physicians n = 164	Senior nursing officer n = 246	All n = 410
Gender, female (%)	31	98	71
Age, years (mean, SD)	51 (8.0)	50 (6.8)	50 (7.3)
Professional experience, years (mean, SD)	25 (7.5)	26 (7.2)	26 (8.2)
Working years in health centre (mean, SD)	15 (10.3)	14 (10.6)	15 (12.0)

Table II. Criteria for implementation style: Viewpoints, criterion (maximum points), response options and the positive responses from senior medical staff.

Viewpoint Criterion Response option	Maximum Points	Positive responses n = 410 %
Organizational		
1. Adoption of a guideline	2	
A house rule		40
A clinical pathway		22
The original CC Guideline		37
2. Participation in guideline development	2	
Doctor(s)		50
Nurse(s)		47
Representative from patient association		3
3. Updating the guideline	1	
Person nominated to be responsible		42
Professional		
4. Informing professionals	1	
Discussed at professional meetings twice or more often		44
5. Informing teams	1	
Discussed at multidisciplinary meetings twice or more often		39
6. Familiarisation of staff	1	
Used in familiarization of new staff always or often		51
7. Staff training	1	
Guideline-based training arranged		43
Patient		
8. Informing patients	1	
Information in waiting room		74
9. Informing population	1	
In local newspaper		21
On local radio or television channel		4
At events arranged with patient association		47
At health centres' own events		33

The styles of implementation in health centres varied. The sum-score values for the implementation style ranged from a minimum of 0 to a maximum 11, the mean value being 6.0 (SD 2.6) (Figure 1). Health centres with the lowest values in the sum score were classified as disseminators ($n = 23$)

Figure 1. Variation in the implementation style of the HT Guideline in Finnish health centres (n = 264).

and those with the highest values as implementers (n = 21).

There were two clear differences between the disseminator and implementer health centres (Table III). First, the implementers had larger population bases than disseminators. Second, in the implementer health centres, the organization of services was more often based on the family doctor system, where each general practitioner has his/her own panel of patients (81% vs. 35%, $p = 0.003$) than in the disseminator health centres, in which the organization of services was based on a traditional model, where patients are given appointments with any available physician.

Discussion

According to the findings of this study the HT Guideline has been widely implemented in clinical practice in Finnish health centres. However, the style of implementation varied widely: The implementer health centres used multiple strategies to promote the adoption of the guideline whereas the disseminators did little to facilitate adoption.

The HT Guideline has been introduced more widely and purposefully in clinical practice in Finnish primary care than could have been assumed in light of earlier studies [6–8]. Since earlier studies describe the implementation of other than the CC Guidelines and the situation relates to some years

ago, the results are not fully comparable. A more recent study by Ikäheimo et al. [14] assessed the achievements of the Finnish Asthma Programme (a complement of the Asthma CC Guideline) in primary healthcare with a similar level of dissemination to the HT guideline.

The size of health centre and the model used for organizing services were associated with the implementation style. This finding concurs with an earlier Finnish study [6] in which large health centres were more often found to be active and goal-oriented in implementation than smaller ones. Possible explanations for this are the greater need for multidisciplinary collaboration and greater opportunities to discuss recommendations with colleagues in large health centres, both factors that have been shown to facilitate guideline implementation [15,16]. Further, the larger centres may have a more structured management system whereby it is easier to monitor and describe activities. Smaller centres may use less formal decision-making, with decisions possibly unrecorded and therefore remembered less often. Implementers also used the family doctor system as an organizational model more often than disseminators. Because this organizational system is more typical in large health centres, these differences may be two sides of the same coin. Due to the cross-sectional nature of the data, associations between the style of implementation and the size of a health centre or the model of organizing services are only associations.

The study has some limitations. First, the interview questionnaire and the criteria for the style of implementation were developed for the needs of this study and neither their validity nor their reliability have been tested. However, the main aims of this study were achieved: to provide an overview of the extent and style of implementation for the HT Guideline in Finnish health centres and to identify those health centres that differed significantly in their styles of implementation. We are aware that another instrument may give a different classification of implementer and disseminator health centres. The data are also subject to recall inaccuracies, since

Table III. Characteristics of health centres according to the style of implementation.

Characteristic	Disseminator n = 23 %	Implementer n = 21 %	p-value
Size of the health centre			<0.001
≤9 999	78	19	
10 000–19 999	9	19	
≥20 000	13	62	
Organization of services			0.003
Personal physician system	35	81	
Traditional	65	19	

information covering a two-year or more time period was required.

Further, the results describe the style of implementation as assessed by senior medical personnel, not the clinical practitioners, who might have perceived the implementation activities differently. In addition, this was primarily a descriptive study and we did not have any process or outcome measures to define differences in the quality of care provided. Despite the wide adoption, the quality of care may not have been improved, since the decision to adopt a guideline does not necessarily lead to guideline adherence and individual variations in adherence may be significant [17,18].

The main strength of the study is that it is the first study assessing guideline implementation in all Finnish health centres. The CATI method proved to be effective for data collection and the high response rate made it possible to provide an overview of HT Guideline adoption in Finnish primary care. The fact that healthcare staff show a positive attitude towards the CC Guidelines [19] and that hypertension is a major health problem treated mainly in primary healthcare may have increased participants' interest in the study and also the response rate.

In conclusion, the HT Guideline has been adopted in clinical use in the majority of Finnish health centres, but further studies are needed to assess whether the different implementation strategies used in health centres have had an impact on the care provided. The identification of the implementer and disseminator health centres done in this study enables us to focus further studies on these different groups and assess the impact of the implementation style on general practitioners and primary care nurses in clinical practices. It also enables us to detect connections between the implementation style and other factors important in guideline implementation, such as attitudes or team atmosphere, which it is hoped will enhance understanding of the factors that are most important in guideline implementation.

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References

- [1] Institute of Medicine. Guidelines for clinical practice: From development to use. Washington, DC: National Academic Press; 1992.
- [2] Grol R, Grimshaw J. From best evidence to best practice: Effective implementation of change in patients' care. *Lancet* 2003;362:1225–30.
- [3] Chassin MR. Practice guidelines: Best hope for quality improvement in the 1990s. *J Occup Med* 1990;32:1199–206.
- [4] Bero LA, Grilli R, Grimshaw JM, Harvey E, Oxman AD, Thomson MA. Closing the gap between research and practice: An overview of systematic reviews of interventions to promote the implementation of research findings. *BMJ* 1998;317:465–8.
- [5] Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay CR, Vale L, et al. Effectiveness and efficiency of guideline dissemination strategies. *Health Technol Assess* 2004;8.
- [6] Miilunpalo S, Toropainen E, Moisio P. Implementation of guidelines in primary health care: A challenge for the municipal health centres in Finland. *Scand J Prim Health Care* 2001;19:227–31.
- [7] Roine RP, Kaila M, Nuutinen M, Mäntyranta T, Nuutinen L, Auvinen O, et al. Käypä hoito-suositusten toimeenpano erikoissairaanhoidossa [Implementation of Current Care Guidelines in specialized health care]. *Duodecim* 2003; 119:399–406.
- [8] Miilunpalo S, Toropainen E, Mäkinen M. Miten valtakunnalliset suositukset tunnetaan terveyskeskuksissa? [How well are national guidelines known in health care centres?]. *Duodecim* 2002;118:613–9.
- [9] Harris D, Grimshaw J, Lemon J, Russell I, Taylor R. The use of a computer-assisted telephone interview technique in a general practice research study. *Fam Pract* 1993;10:454–8.
- [10] Ketola E, Klockars M. Computer-assisted telephone interview (CATI) in primary care. *Fam Pract* 1999;16:179–83.
- [11] DiCenso A, Virani T, Bajnok I, Borycki E, Davies B, Graham I, et al. A toolkit to facilitate the implementation of clinical practice guidelines in healthcare settings. *Hosp Quart* 2002: Spring.
- [12] Lobo CM, Frijling BD, Hulscher M, Bernsen R, Braspenning J, Grol R, et al. Organisational determinants of cardiovascular prevention in general practice. *Scand J Prim Health Care* 2003;21:99–105.
- [13] Cheater FM, Closs SJ. The effectiveness of methods of dissemination and implementation of clinical guidelines for nursing practice: A selective review. *Clin Effect Nurs* 1997;1: 4–15.
- [14] Ikäheimo P, Tuuponen T, Hartikainen S, Kiuttu J, Klaukka T. Achievements and shortcomings of Finnish asthma care. *Scand J Public Health* 2004;32:310–6.
- [15] Stone TT, Schweikhart SB, Mantese A, Sonnad SS. Guideline attribute and implementation preferences among physicians in multiple health systems. *Q Manage Health Care* 2005;14:177–87.
- [16] Davis D, Taylor-Vaisey A. Translating guidelines into practice: A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *Can Med Assoc J* 1997;157:408–16.
- [17] Rogers EM. Diffusion of innovations, 5th ed. New York: Free Press; 2003.
- [18] Fleuren M, Wiefferink K, Paulussen T. Determinants of innovation within health care organisations. *Int J Qual Health Care* 2004;16:107–23.
- [19] Elovainio M, Mäkelä M, Sinervo T, Kivimäki M, Eccles M, Kahan J. Effects of job characteristics, team climate, and attitudes towards clinical guidelines. *Scand J Public Health* 2000;28:117–22.