

Educational implementation programme of guidelines on cardiovascular risk factors: an analysis of changes in familiarity, use and attitudes

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Aim: To explore changes in self-reported familiarity and use of guidelines dealing with cardiovascular risks (hypertension, dyslipidemia, adult obesity and smoking cessation) and general attitudes towards clinical guidelines before and after implementation programme, as well as the association of guideline training attendance and attitudes towards and use of guidelines. **Background:** The current care guidelines provide a useful tool in the management of cardiovascular risk factors. Evidence-based care and guideline use have a shorter tradition among nurses than among physicians. **Methods:** A self-administered questionnaire was sent to all primary health care nurses and physicians in Päijät-Häme Health and Social Care District, an area of 210 000 inhabitants in Southern Finland, before and after the guideline implementation programme VALTIT. **Findings:** Main outcome measures were self-reported familiarity with and use of guidelines on cardiovascular risks and items measuring attitudes towards clinical guidelines.

Among nurses, the reported familiarity with all the guidelines increased, but increase in use occurred only in respect of the dyslipidemia guideline. Among nurses, there was an association between participation in guideline training and guideline use. Physicians' reported familiarity with and use of the adult obesity guideline increased during the study period. The proportion of nurses and physicians who reported that they had been asked to use the guidelines increased. Perceptions concerning the readiness to adopt the guidelines changed positively among nurses and were more positive among those attending at least one training event.

Results are encouraging regarding familiarity with guidelines. Regarding usage our results suggest that a two-year programme might not be enough to alter the deep-rooted practices and attitudes concerning lifestyle change related guidelines. The challenge lies in multi-professional implementation of guidelines on cardiovascular risks with special emphasis on lifestyle change as a treatment option.

Key words: cardiovascular; guideline; health care personnel; implementation

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Background

Evidence-based clinical guidelines have become a key source of data in organising practices in health care (Grol and Buchan, 2006). The aim of the guidelines is to raise the quality of health care and remove variations in practices. The real challenge lies in creating changes in health care professionals' behaviour and practices (Oxman *et al.*, 1995).

In Finland, current care guidelines have been published since 1994 by the Finnish Medical Society Duodecim. Most are targeted at medical treatment. The guidelines can be freely accessed in the Internet (www.kaypahoito.fi) and the vast majority of health professionals have access to the Internet at their workplace. Although availability is good, the implementation of the guidelines is not systematic: methods vary markedly between health centres (Miilunpalo *et al.*, 2001; Alanen *et al.*, 2007).

Lifestyle-related diseases form a major challenge for primary health care in Finland (Peltonen *et al.*, 2006). Preventive measures are needed and the current care guidelines provide a tool in the enhancement of management of cardiovascular risk factors. Currently, physicians use guidelines in clinical decision making when treating diseases but less when considering primary preventive actions (Mazza and Russell, 2001).

We have shown in our previous study that health care professionals find the clinical guidelines in general reliable and trust that guidelines are evidence based and developed by experts (Kuronen *et al.*, 2006). As expected, nurses were less familiar with the guidelines related to cardiovascular risks than physicians. In Finland, however, primary health care nurses form a major professional group responsible for the lifestyle counseling in health care, although the management of cardiovascular risk factors is a multidisciplinary task. Although primary prevention is among major tasks within healthcare, it often falls behind treatment of diseases as healthcare organisations rarely set targets for effects or use incentives.

This study is a part of an implementation programme of current care guidelines on cardiovascular risks factors. The programme targeted both physicians and nurses. Hence, it provides valuable information on nurses, too, that have previously been ill-studied in respect of guidelines implementation (Thomas *et al.*, 2000; Grimshaw *et al.*, 2004; Thompson *et al.*, 2007).

The study questions were: 1) did familiarity with and use of the guidelines increase during the programme, 2) did attitudes towards guidelines change and 3) was the participation in guideline training associated with guideline use and attitudes towards guidelines.

Methods

This study reports the results of the Current Care Guidelines Implementation Programme (VALTIT), which was a part of the GOAL research and development project (Good Aging in Lahti Region) (Fogelholm *et al.*, 2006). VALTIT-programme was conducted between spring 2006 and autumn 2007 in Päijät-Häme Health and Social Care District. The biggest town in the region is Lahti (100 000 inhabitants). The programme was targeted at nurses, public health nurses and physicians in primary care and the health care personnel in secondary care treating metabolic syndrome and its consequences. The programme is described in Table 1. The training was marketed using emails to chief physicians and nurses, through the programme workgroup and in the programme regional extranet. Participation in the lectures and workshops was voluntary.

The VALTIT programme was evaluated by a questionnaire study conducted before and after the programme. The baseline questionnaire was sent between October 2004 and January 2005 and the second questionnaire after the first round of intervention between November 2006 and January 2007. The questionnaires had two paper reminders. The second reminder on the latter round was sent as an e-mail to the physicians suggesting filling in the electronic questionnaire in the Internet.

The questionnaires were sent to all primary care physicians and nurses of the hospital district according to the lists provided for the research team by the chief nurses and head physicians of health centres and to physicians and nurses working with metabolic syndrome in central hospital. With regard to the nurses in primary care in Lahti, some units were not included in both rounds. For the purposes of this comparative study, we have included only nurses in the units included in both rounds. The present paper reports the results for primary care professionals, because the prevention of cardiovascular risks is a

Table 1 The components used in the Current Care Guidelines Implementation Programme (VALTIT)**Engaging the health centres**

- assembling the working group with nurses and physicians from primary and secondary care, nutrition specialist and teachers in nursing
- representatives of the project visited all the health centres in spring and summer 2005 and marketed the programme
- distribution of all reports and diaries of the project to the chief physicians and head nurses

The local clinical guidelines tool

- developed by a multi-professional group with representatives from the hospital district, municipalities and Public Health Institute
- included local chains of care in hypertension, dyslipidemia, adult obesity and tobacco dependency based on national guidelines and suggestion for division of work in lifestyle counselling
- collected previously documented good practices of primary prevention from the region to be included in the set of tools
- published on the extranet for the region's health professionals

Training the health professionals

- in spring 2006 five centralised training sessions (based on national guidelines if available, invitations via email to all health centres) were arranged: hypertension and adult obesity, dyslipidemia, type 2 diabetes, tobacco dependency, health counseling and communication
- interactive workshops with case method learning (Kiesling and Henriksson, 2002) were arranged in spring 2006 in 5 of 15 health centres. The cases were hypertension + dyslipidemia and type 2 diabetes + obesity

more central part of their daily tasks than it is among secondary care professionals.

The questionnaires covered attitudes towards, familiarity with and use of the current care guidelines in general and specially the guidelines on cardiovascular risks, which were used in year 2004 (hypertension, dyslipidemia, adult obesity and smoking cessation) (Kuronen *et al.*, 2006), as well as current practices in and attitudes towards lifestyle counseling (Jallinoja *et al.*, 2006; 2007). These separate guidelines were chosen because there is no guideline targeting specifically cardiovascular prevention in Finland. The questionnaire was piloted among participants attending a quality course on type 2 diabetes targeted at health care personnel of the health and social care district.

The present paper applies questions related to clinical guidelines in general and the four published national guidelines related to cardiovascular risks:

the guidelines on dyslipidemia, high blood pressure, adult obesity and smoking cessation. We measured the reported familiarity with these guidelines, participation in individual guideline training and use of these guidelines. Familiarity was measured with the statements '*I have read the guideline carefully*', '*I have got acquainted with the guideline*', '*I have browsed the guideline*', '*I have heard the guideline*' and '*I don't know the guideline*'. Options were agree or do not agree. In this paper we combine the first three to '*I have read or browsed the guideline*'. Participation in training was measured with the statement '*I have participated in the training related to this guideline*' (agree, do not agree) and use of the guideline with statement '*I have used the guideline during six months*' (agree, do not agree). To the statement '*I have been recommended at work to use the guideline*' answering options were also agree or do not agree. Regarding the general attitudes to the guidelines and the readiness to adopt the guidelines, we analysed the following items: '*My occupational competence is insufficient for adopting the latest guidelines*' and '*Guidelines are hard to find*' which are part of the Attitudes towards Guidelines Scale (Elovainio *et al.*, 1999) and '*The guidelines are too complicated*' which was included only in the second questionnaire. These statements were assessed with five-point Likert scale and answering options was 'totally agree', 'partially agree', 'in between', 'partially disagree' and 'totally disagree'.

Fifty-nine primary care physicians and 136 nurses returned a completed questionnaire in the first round and 58 physicians and 127 nurses returned one in the second round. The response rate in primary care was 59% (physicians 53%, nurses 62%) in the first round and 57% (physicians 48%, nurses 59%) in the second. The demographics of the respondents are presented in Table 2. Nurses in Finnish primary care work mainly with physicians as a pair assisting them and perform minor medical procedures. Public health nurses mainly work in child, in maternity and school care and in occupational health. Public health nurses' education is one year higher than nurses and with more focus in public health.

The distributions before and after were examined in cross tabs and statistical testing with χ^2 test with SPSS version 15. Individual before and after testing was not possible because participants in questionnaires were not necessarily the same.

Table 2 Background characteristics of the respondents in primary care, years 2004, 2006

	Physicians (%)		Nurses (%)	
	2004 (n = 59)	2006 (n = 58)	2004 (n = 136)	2006 (n = 127)
Gender				
Male	52	46	1	1
Female	48	54	99	99
Age				
Under 40 years	22	26	30	34
41–54 years	52	51	51	44
Over 54 years	26	24	18	22
Education				
Specialist (any speciality)	46	49		
Non-specialist	54	51		
Public health nurse			57	38
Nurse			30	46
Public health nurse and nurse			7	9
Some other health care education			6	8

Table 3 Familiarity with and use of the guidelines

	Nurses			Physicians		
	2004 (n = 136)	2006 (n = 127)	P-value	2004 (n = 59)	2006 (n = 58)	P-value
Have read or browsed the guideline						
Dyslipidemia	43	68	0.001	90	93	0.509
Adult obesity	49	65	0.007	60	76	0.064
Tobacco	33	49	0.007	63	67	0.608
Have used the guideline						
Hypertension	34	46	0.052	58	68	0.226
Dyslipidemia	13	22	0.034	54	63	0.313
Adult obesity	19	24	0.337	19	38	0.017
Tobacco	9	10	0.828	31	23	0.377
Have been recommended to use the guideline						
Hypertension	35	44	0.151	25	43	0.040
Dyslipidemia	9	18	0.035	12	28	0.025
Adult obesity	10	19	0.026	5	13	0.120
Tobacco	7	10	0.272	3	10	0.150

Proportion (%) of those nurses and physicians in 2004 and 2006 who reported that they have read or browsed the guideline, have used the guideline during the last six months and have been recommended at work to use the guideline.

The research plan for the questionnaire study was approved by The Institutional Review Board of the National Public Health Institute, Finland.

Results

Familiarity with the guidelines

In 2004, almost all of the physicians reported having read or browsed the hypertension and dys-

lipidemia guidelines and two-thirds had read or browsed the adult obesity and smoking cessation guidelines (Table 3). Four out of five nurses reported that they have read or browsed the hypertension guideline in 2004 (Table 3). The proportion of those nurses who reported have read or browsed the guideline increased during the study period with regard to all the guidelines. There was no statistically significant change in familiarity with the guidelines among the physicians during the study period.

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Use of the guidelines

Before the programme, over half of the physicians reported that they have used the hypertension and dyslipidemia guidelines during the past six months (Table 3). The increase in reported use among physicians occurred in the adult obesity guideline and among the nurses in the dyslipidemia guideline. There was a significant increase in the proportion of nurses and physicians reporting that they have been recommended to use a certain guideline (Table 3).

The association of participation in VALTIT training in use and attitudes

In 2006, 34% of the primary care nurses reported that they had participated in at least one centralised training session of VALTIT programme and 17% reported have participated in a local workshop of the VALTIT project. In total, 39% of nurses had participated in at least one training event. The corresponding proportions among physicians were 31% for centralised training, 15% for local workshops and 36% in some VALTIT training event.

As the number of physicians in the second round of the questionnaire was rather small, we could not analyse the association between the physicians' participation in VALTIT training sessions and the use of and attitudes towards the guidelines.

Among nurses, there was an association between the use of the guidelines on dyslipidemia, obesity and smoking cessation and participation in VALTIT training (Figure 1). Moreover, perceptions concerning readiness to adopt the guidelines were more positive among those nurses who had taken part in at least one VALTIT training event (Table 4).

Attitudes towards guidelines

The number of those nurses who agreed with the statement '*My occupational competence is insufficient for adopting the latest guidelines*' decreased during the study period from 11% to 2% ($P = 0.016$), while among physicians there was no statistically significant change (5% versus 9%, $P = 0.470$). In the case of the statement '*Guidelines are hard to find*' there was no statistically significant change among the nurses (29% versus 24%, $P = 0.135$) or among the physicians (32% versus 16%, $P = 0.132$).

Discussion

The guidelines studied here can be divided into two groups by the task definition of the guideline. First, medication-oriented guidelines, the hypertension

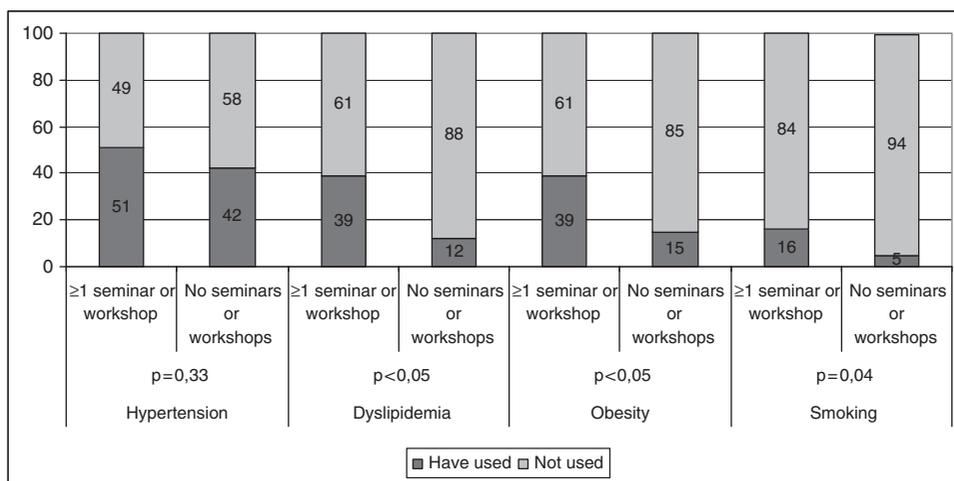


Figure 1 Reported use of guidelines and participation in training. Proportions (%) of nurses who reported in 2006 ($n = 127$) have used the guideline during six months among those who reported have participated in at least one training session or in local workshop ($n = 55$) and among those who reported have not participated in training session or workshop ($n = 77$).

Table 4 Attitudes towards clinical guidelines, proportions (%) of nurses who had participated in VALTIT training and who had not participated in training, year 2006

	Had participated in at least one seminar or workshop (<i>n</i> = 50)			Had not participated in any seminars or workshops (<i>n</i> = 77)			<i>P</i> -value
	Agree	Between	Don't agree	Agree	Between	Don't agree	
My occupational competence is insufficient for adopting the latest guidelines	0	2	98	4	12	84	0.042
Guidelines are too complicated	10	6	84	18	22	61	0.019
Guidelines are hard to find	14	12	74	31	16	53	0.063

Answering options were 'completely agree', 'partially agree', 'in between', 'partially disagree' and 'completely disagree'. First two options have been combined with 'agree' and the last two with 'don't agree'.

and dyslipidemia guidelines presenting medication as a major option of long-term treatment and second, behavioural change-oriented guidelines, the adult obesity and smoking cessation guidelines having lifestyle change as the central component of long-term treatment of these conditions.

This division was seen in the main items measuring familiarity with and use of guidelines and their changes. The hypertension guideline was the most familiar and the most often reported as used in clinical practice among physicians and nurses. This holds true for both before and after the educational intervention. Previous studies among Finnish health care professionals are in line with our results: the hypertension guideline has been well adopted into nurses' clinical practice (Alanen *et al.*, 2008) and the best known guidelines among Finnish physicians are those on hypertension and dyslipidemia (Kuronen *et al.*, 2006; Jousilahti *et al.*, 2007).

Moreover, although there was an increase in nurses' familiarity with all the guidelines studied here; there was no increase in the use of the guidelines focussing on lifestyle change – a results that was somewhat disappointing. Among the physicians only the use of the adult obesity guideline increased.

Clinical guidelines typically focus on diagnostics and medical treatments, thus there is less research on guidelines focussing on behavioural change and its support. Among physicians, the activities of medical companies in providing training may further affect the use of the medication-centred guidelines. Furthermore, from the health care professionals' perspective, treating behavioural changes might be more challenging

than providing pharmacotherapy, because of the lack of confidence in lifestyle counseling skills and because lifestyle change outcomes are not usually observed within a short period and relapses often occur (Brotons *et al.*, 2005; Jallinoja *et al.*, 2007). Interestingly, nurses read and use medication-oriented guidelines more often than behavioural change-oriented guidelines though their role is central particularly in lifestyle counseling. This may be due to a situation where treatment chains for obesity and smoking cessation have not been identified and resourced, and where there is no need or opportunities to apply these guidelines. Equally, a single cardiovascular risk factor, such as elevated cholesterol and blood pressure, can be seen as a disease requiring a quick reaction.

Previous studies have shown that organisational and leadership support is a central element in the implementation of evidence-based practices and guidelines (Michie *et al.*, 2005; Gifford *et al.*, 2006; Ploeg *et al.*, 2007; Marchionni and Ritchie, 2008). As the proportion of those who reported have been recommended to use the guidelines increased, there might have occurred a shift to an atmosphere that is more favourable for guidelines. Moreover, among nurses the perception that one is incompetent to use the guidelines decreased. These changes are a good basis for the future guideline related programmes among nurses who traditionally have been less involved in evidence-based care and guideline use (Thompson *et al.*, 2007; Goossens *et al.*, 2008).

The primary care nurses' role is in transition as a whole and specifically in cardiovascular prevention in Finland and elsewhere, too (Buchan

and Calman, 2004; Graham *et al.*, 2007). Recently, it has been shown that a nurse-coordinated, preventive cardiology programme could improve the preventive care in routine clinical practice (Wood *et al.*, 2008). Our study suggests that among nurses there is willingness to become acquainted with guidelines. Guidelines address items aimed at nurses, but the sufficient use of guidelines needs organisational support for multi-professional collaboration (Sipila *et al.*, 2008).

The effect of educational meetings on the health care practices has been, if any, small (Oxman *et al.*, 1995; Grimshaw *et al.*, 2004). In guideline implementation they can be seen as methods predisposing awareness to the item (Pathman *et al.*, 1996). Combination of more active interventions, a multi-faceted approach, should be tailored to suit local circumstances taking into account any particular potential barriers. When building implementative measures, one must consider the resources needed for successful implementation (<http://www.sign.ac.uk/guidelines/index.html>). Beyond tailored approaches, organisational issues such as internal communication must be paid attention (Flottorp *et al.*, 2003). When a guideline is adopted it can have an impact on clinical practices and the division of labour between nurses and physicians and thus promote the systematic support of health behaviour change (Alanen *et al.*, 2008).

This was a live environment study and the major limitation of our study is that we did not have a control group. However, there were no other guideline implementation projects going on in the area during the study period. Although there might be a selection bias because participation in training was voluntary, we were able to compare nurses who had participated in guideline training and those who had not. The randomised controlled trial is recognised as the 'gold standard' in quantitative research, but in a real life setting an adequacy (rather than probability or plausibility) approach can be an acceptable method (Victora *et al.*, 2004). The response rate was rather low among physicians. It might also be that those professionals who returned the questionnaire are those who are more interested in guidelines. Our results cannot in all respects be generalised to health care systems of other countries, but health care system of our area is typical for Finland and so generalisation in Finland is good.

Conclusions

Our results are encouraging with regard to familiarity with clinical guidelines. The results are partly disappointing with regard to use and suggest that a two-year intervention might not be enough to alter the deep-rooted practices and attitudes regarding lifestyle change related guidelines. The real challenge lies in the multi-professional implementation of guidelines on cardiovascular risks with particular emphasis on lifestyle change as a treatment option.

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Competing interest

The authors declare that they have no competing interest.

Authors' contributions

RK, PJ, RA and KP participated in the design and data collection of the study. RK performed the statistical analysis and drafted the manuscript. PJ, RA and KP helped to draft the manuscript. All the authors read and approved the final manuscript.

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