

Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: a systematic review

Philip J van der Wees^{1,2}, Gro Jamtvedt³, Trudy Rebbeck⁴, Rob A de Bie¹, Joost Dekker⁵
and Erik JM Hendriks¹

¹Maastricht University, The Netherlands; ²Royal Dutch Society for Physical Therapy (KNGF), The Netherlands; ³Norwegian Knowledge Center for the Health Services, Norway; ⁴The University of Sydney, Australia; ⁵VU University Medical Center, The Netherlands

Question: What is the effectiveness of strategies to increase the implementation of physiotherapy clinical guidelines? **Design:** Systematic review. **Participants:** Physiotherapists treating any type of patients. **Intervention:** Single or multiple strategies to increase the implementation of physiotherapy clinical guidelines. **Outcome measures:** Professional practice, patient health, and cost of care. **Results:** Five papers reporting three cluster-randomised trials evaluated whether multifaceted strategies based on educational meetings increased the implementation of low back pain guidelines (2 trials) or whiplash guidelines (1 trial). Educational meetings were effective in increasing adherence to the following recommendations of low back pain guidelines: *limiting the number of sessions* (RD 0.13, 95% CI 0.03 to 0.23), *using active intervention* (RD 0.13, 95% CI 0.05 to 0.21), *giving adequate information* (RD 0.05, 95% CI 0.00 to 0.11), *increasing activity level* (RD 0.16, 95% CI 0.02 to 0.30), *changing attitudes/beliefs about pain* (RD 0.13, 95% CI 0.01 to 0.24). Educational meetings were effective in increasing adherence to the following recommendations of whiplash guidelines: *reassuring the patient* (RD 0.40, 95% CI 0.07 to 0.74), *advising the patient to act as usual* (RD 0.48, 95% CI 0.15 to 0.80), *using functional outcome measures* (RD 0.62, 95% CI 0.32 to 0.92). There was no evidence that patient health was improved or that the cost of care was reduced. **Conclusion:** This review shows that multifaceted interventions based on educational meetings to increase implementation of clinical guidelines may improve some outcomes of professional practice but do not improve patient health or reduce cost of care. These findings are comparable with results among other health professions. [van der Wees PJ, Jamtvedt G, Rebbeck T, de Bie RA, Dekker J, Hendriks EJ (2008) Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: a systematic review. *Australian Journal of Physiotherapy* 54: 233–241]

Key Words: Guideline adherence, Practice guidelines, Review systematic, Physiotherapy (Speciality)

Introduction

Development of clinical guidelines in health services is generally considered important for improving and managing the care process (Grimshaw et al 1995a, Grimshaw et al 1995b, Grol and Grimshaw 2003, Grol et al 2004). Clinical guidelines are systematically developed statements designed to help practitioners and patients to make decisions about appropriate health care (Field and Lohr 1992). Higher quality of care and improved cost-effectiveness are important goals in guideline development, optimally resulting in improved health (Woolf et al 1999). Moreover, the process of guideline development addresses the need to decrease variability in professional practice, and practitioners' desire to legitimise their profession in the eyes of external stakeholders (Eddy 1990, Grimshaw et al 1995a, Grimshaw et al 1995b, Grimshaw and Hutchinson 1995, Grol and Grimshaw 2003, Grol et al 2004). The concept of evidence-based practice, supported by clinical guidelines, is a common aspect of health care today.

Clinical guidelines in physiotherapy

The trend to carry out evidence-based practice affects the profession of physiotherapy and is the subject of discussion in the physiotherapy community (Herbert et al 2001). In the last two decades, the need for an evidence-base in the physiotherapy profession has resulted in a rapid increase in

its body of knowledge (Moseley et al 2002). The introduction of evidence-based clinical guidelines was a logical step to make explicit evidence-based recommendations for clinical practice, and was initiated by several professional organisations in physiotherapy. The Royal Dutch Society for Physical Therapy developed a national quality assurance program, including the development and implementation of clinical guidelines (Hendriks et al 2000, van der Wees et al 2003), resulting in the publication of 18 evidence-based guidelines by 2007. The Chartered Society of Physiotherapy also developed and endorsed evidence-based clinical guidelines. The Australian Physiotherapy Association has produced a series of evidence-based clinical statements outlining the efficacy of physiotherapy for management of conditions such as low back pain (Rebbeck 2002) and neck pain (Costello and Jull 2000). Collaboration between professional organisations within the World Confederation for Physical Therapy resulted in prioritising the development and implementation of clinical guidelines in order to facilitate evidence-based practice (Mead and van der Wees 2006, van der Wees and Mead 2004, van der Wees and Mead 2006).

Effects of guideline implementation strategies in health care

Grimshaw et al (2004) conducted a systematic review of the effectiveness and cost of different implementation strategies

Table 1. Criteria for assessment of methodological quality of studies based on EPOC Group data collection checklist (EPOC 2007b).

Criteria	Definition
1. Concealment of allocation	Allocation by institution, team or professional, and random process described explicitly
2. Follow-up of professionals	Outcome measures obtained for 80–100% of participants randomised
3. Follow-up of patients	Outcome measures obtained for 80–100% of participants randomised or for patients who entered the trial
4. Blinded assessment of outcome	Primary outcome variables were assessed blindly or outcome variables are objective
5. Baseline measurement	Performance or patient outcomes were measured prior to the intervention
6. Reliable primary outcome measures	Two or more raters with at least 90% agreement or kappa equal to or greater than 0.8, or outcome obtained from automated system
7. Protection against contamination	Allocation by community, institution or practice and it is unlikely that controls received the intervention

for health care guidelines from studies published up to 1998. Professional practice and patient health were considered and economic outcomes were reviewed separately. They identified 235 studies evaluating guideline dissemination and implementation among medically-qualified professionals. Guidelines targeting physiotherapists were not included in the scope of the review. Overall, the majority of the studies observed improvements in the process of care (professional practice), but large variation both within and across interventions was noted. The improvements were small to moderate with a median improvement of 10% across all studies. One important result was that multifaceted interventions did not appear more effective than single interventions.

Within the Cochrane Collaboration, the Effective Practice and Organisation of Care (EPOC) Group has published many systematic reviews of the effects of guideline implementation. The results of some updated Cochrane reviews show that different interventions can be effective in improving professional practice, but the effects are generally small (median improvement of 10% or less). The use of opinion leaders (12 studies) showed a median improvement of 12% (Doumit et al 2007), audit and feedback (118 studies) showed a median improvement of 5% (Jamtvedt et al 2006), educational outreach (69 studies) showed a median improvement of 6% (O'Brien et al 2007) and educational meetings and workshops (81 studies) showed a median improvement of 6% (Forsetlund et al 2008).

Many factors can influence the adherence by professionals to guidelines. Barriers that may reduce adherence can be professional, financial, organisational, or regulatory (EPOC 2007a). A review by Shaw et al (2005) showed that it is not clear which barriers are most important.

Implementation of clinical guidelines in physiotherapy

No reviews have been published which specifically review the effect of strategies to increase the implementation of physiotherapy guidelines. In a study by Rebbeck et al (2007), the effect of implementation of spinal pain guidelines was reviewed. Although 14 trials were included in the review, only three included physiotherapy interventions.

Although the results of published reviews of implementation strategies in health care may be useful for the physiotherapy profession, there is a need to establish a body of knowledge for guideline implementation in physiotherapy. State of the art and evidence-based physiotherapy intervention contains specific characteristics and barriers that may require unique implementation strategies to influence adherence to guideline recommendations. Physiotherapy intervention usually comprises a series of sessions over time and often requires behavioural change in the client; because of this complexity, adherence to recommendations from clinical guidelines is difficult. To assist physiotherapists to adhere to recommendations in their daily practice, the profession requires evidence of which strategies increase implementation. Therefore, the research question was:

What is the effectiveness of strategies to increase the implementation of physiotherapy clinical guidelines?

Method

Identification and selection of studies

The following databases were searched until October 2007: MEDLINE (from 1966), EMBASE (from 1988), CINAHL (from 1982), PEDro, Cochrane Library (Issue 4, 2007). A broad search was performed to identify any type of publication, based on the assumption that few studies were published about guideline implementation in physiotherapy. The search was restricted only to three criteria: Guidelines AND (Implementation OR Implement) AND (Physiotherapy OR Physical Therapy). Reference lists were screened to identify additional studies.

Studies were included in the review if they were randomised trials, controlled trials, controlled before and after studies, or interrupted time series studies investigating the implementation of clinical guidelines by physiotherapists. The clinical guidelines included in this investigation needed to be produced under the auspices of a professional, health, or government organisation, and to be publicly available and based on results of a systematic review (PEDro 2007). Studies that involved physiotherapists in clinical practice treating any type of patients were included. Studies were included if they involved strategies to increase the

Table 2. Summary of included trials.

Trial	Participants	Intervention	Outcome	Results
Bekkering (2005a)	Design = Cluster RCT	Experimental (n = 52 physiotherapists; 247 patients):	Professional practice	
Bekkering (2005c)	n = 113 physiotherapists (aged 40.7 yr, SD 8.9) from 68 private clinics treated 500 patients (aged 45.2 yr, SD 14.1) with low back pain.	Two interactive educational sessions (2.5 hrs each) 4 weeks apart, including didactic lecture and role-playing. Dissemination of guidelines, self-evaluation form, forms to facilitate discussion, copy of Quebec Back Pain Disability Scale.	Limiting number of sessions	+
Hoeijenbos (2005)	Dropouts = 72 patients; 6 physiotherapists, 22 did not recruit patients.	Control (n = 61 physiotherapists; 253 patients): Dissemination of guidelines, self-evaluation form, forms to facilitate discussion, copy of Quebec Back Pain Disability Scale.	Setting functional goals	+
			Using active intervention	+
			Giving adequate information	+
			All 4 outcomes met	+
			Patient health	
			Physical functioning	0
			Pain	0
			Economic variables	
			Direct medical costs (6 wk)	+
			Direct medical costs (12,26,52 wk)	0
			Productivity costs (6,12,26,52 wk)	0
			Follow-up: 12 months	
Rebbeck (2006)	Design = Cluster RCT	Experimental (n = 14 physiotherapists; 67 patients):	Professional practice	
	n = 27 physiotherapists (age unknown) from 27 private clinics treated 103 patients (aged 35.6 yr, SD 12.6) with whiplash injury.	One educational session by opinion leaders (8 hours), including interactive sessions, practical sessions and problem solving. Follow-up of educational outreach (2 hours) after 6 months. Dissemination of guidelines.	Therapist score on knowledge test	+
	Dropouts = 4 patients; 1 physiotherapist, 8 did not recruit patients.	Control (n = 13 physiotherapists; 26 patients): Dissemination of guidelines.	Using functional outcomes	+
			Reassuring patient	+
			Advising patient to act as usual	+
			Prescribing function	0
			Prescribing exercise	0
			Prescribing medication	0
			Patient health	
			Disability (Functional Rating Index)	0
			Disability (Core Outcome measure)	0
			Global Perceive Effect	0
			Economic variables	
			Intervention costs	0
			Follow-up: 12 months	
Stevenson (2006)	Design = Cluster RCT	Experimental (n = 17 physiotherapists; 228 patients; 113 discharge forms):	Professional practice	
	n = 30 physiotherapists (age unknown) treated 306 patients (age unknown) with low back pain.	One interactive evidence-based educational session (5 hours), administered by local opinion leaders.	Advice about work situation	0
	Dropouts = patients unknown; 3 physiotherapists.	Control (n = 13 physiotherapists; 78 patients; 43 discharge forms):	Advice return to normal activities	0
		One standard in-service training session (5 hours) on clinical management of knee dysfunction.	Advice to increase activity level	0
			Encourage early return to work	0
			Encourage to undertake activities by themselves	-
			Change attitudes/beliefs about pain	0
			Follow-up: 6 months	

+ = statistically significant in favour of the experimental group, 0 = no difference between the experimental and control group, - = statistically significant in favour of the control group

Table 3. Methodological quality (see Table 1) of randomised trials.

Trial	1	2	3	4	5	6	7	Total (0 to 7)
Bekkering (2005c) Bekkering (2005a) Hoeijenbos (2005)	Y*	N	Y	Y	Y (patient) N (professional)	N	Y	5
Rebbeck (2006a)	Y*	N	Y	Y	Y (patient) Y (professional)	N	Y	5
Stevenson (2006)	N*	Y	?	N	Y (patient) Y (professional)	N	Y	3

* = cluster randomisation

implementation of clinical guidelines by physiotherapists in order to improve professional practice and/or patient health or reduce cost of care. We examined any type of intervention as classified by the EPOC Group (EPOC 2007a): distribution of educational materials, educational meetings, local consensus process, educational outreach visits, local opinion leaders, patient mediated interventions, audit and feedback, reminders, marketing, mass media. When interventions were combined, they were considered multifaceted.

Assessment of quality of studies

The methodological quality of the included randomised trials was evaluated using a checklist adapted from the EPOC Group data collection checklist (EPOC 2007b) which is shown in Table 1. Two reviewers independently assessed the methodological quality of the studies and disagreements were resolved by consensus or by consulting a third reviewer.

Data analysis

Two reviewers independently extracted data from the original studies and data were analysed^a. For dichotomous outcomes, risk difference (95% CI) and risk ratio (95% CI) were calculated, and for continuous data mean difference (95% CI) was calculated. In addition, effect sizes were adjusted for baseline differences when possible. For dichotomous outcomes, we estimated the adjusted risk difference and adjusted risk ratio as follows:

Adjusted risk difference = the difference in adherence after the intervention minus the difference before the intervention.

A positive risk difference indicates that adherence improved more in the intervention group than in the control group, eg, an adjusted risk difference of 0.09 indicates an absolute improvement in adherence of 9%.

Adjusted risk ratio = the ratio of the relative probability of adherence after the intervention over the relative probability before the intervention.

A risk ratio greater than one indicates that adherence improved more in the intervention group than in the control group, e.g. an adjusted risk ratio of 1.8 indicates a relative improvement in adherence of 80%.

When applicable, a random effects model was used to pool the outcomes of the studies.

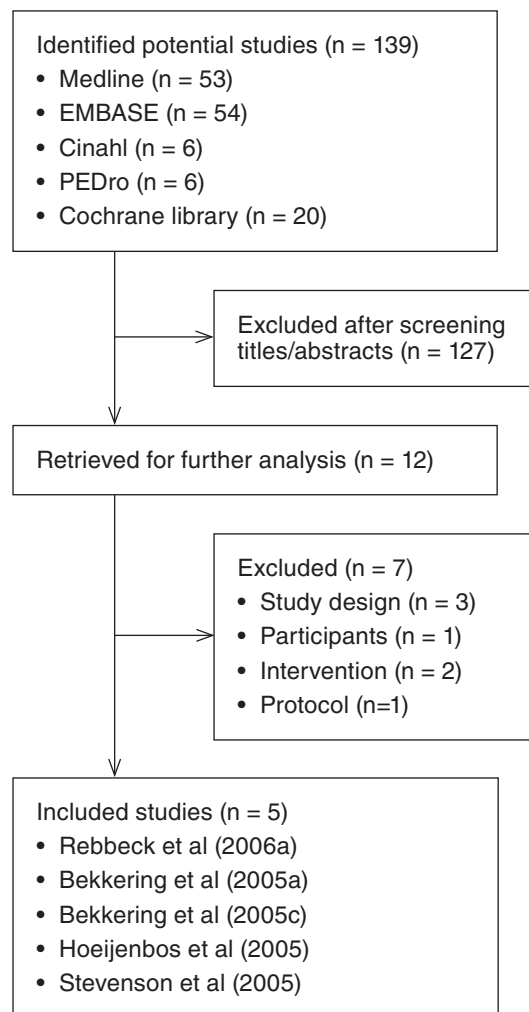


Figure 1. Flow of studies through the review.

Results

Identification and selection of studies

The initial search resulted in 139 papers from Medline (n = 53), EMBASE (n = 54), CINAHL (n = 6), PEDro (n = 6), Cochrane Library (n = 20). After correction for double studies and scrutinizing retrieved abstracts, 12 full papers were retrieved for further analysis (Bekkering et al 2005a,b,c, Evans et al 2005, Fritz et al 2007, Hoeijenbos et al 2005, Leemrijse et al 2006, Rebbeck et al 2006a,b, Stevenson et al 2006, van der Wees et al 2007, Willigendael

Table 4. Proportion of participants in each group and difference between group, expressed as relative risk (95% CI) and risk difference (95% CI) for professional practice outcomes. Difference between groups also adjusted for baseline scores.

Trial	Outcome	Groups		Difference between groups			
		Exp	Con	RR (95% CI)	Adjusted RR	RD (95% CI)	Adjusted RD
Bekkering (2005a) <i>Patient notes</i>	Limiting the number of sessions*	32/122	14/107	2.00 (1.15 to 3.55)		0.13 (0.03 to 0.23)	
	Setting functional goals	188/247	180/263	1.07 (0.96 to 1.19)		0.05 (-0.03 to 0.13)	
	Using mainly active interventions	183/247	154/253	1.22 (1.08 to 1.38)		0.13 (0.05 to 0.21)	
	Giving adequate information	229/247	221/253	1.06 (1.00 to 1.13)		0.05 (0.00 to 0.11)	
	All 4 recommendations	96/247	75/253	1.31 (1.03 to 1.68)		0.09(0.01 to 0.11)	
Rebbeck (2006a) <i>Patient notes</i>	Reassuring patients	7/14	2/12	3.00 (0.76 to 11.80)		0.33 (-0.00 to 0.67)	
	Advising patients to act as usual	4/14	1/12	3.43 (0.44 to 26.67)		0.20 (-0.08 to 0.49)	
	Prescribing function	3/14	1/12	2.57 (0.31 to 21.59)		0.13 (-0.13 to 0.40)	
	Prescribing exercise	12/14	12/12	0.87 (0.67 to 1.11)		-0.14 (-0.36 to 0.07)	
Rebbeck (2006a) <i>Response to questionnaire</i>	Reassure patient	8/14	2/12	3.43 (0.89 to 13.15)	9.23	0.40 (0.07 to 0.74)	0.65
	Advise patient to act as usual	9/14	2/12	3.86 (1.03 to 14.50)	4.15	0.48 (0.15 to 0.80)	0.48
	Prescribing function	4/14	1/12	3.43 (0.44 to 26.66)	3.69	0.20 (-0.08 to 0.27)	0.21
	Prescribing exercise	14/14	12/12	1.00 -	0.92	0.00 (-0.14 to 0.14)	-0.08
	Use functional outcome measures	11/14	2/12	4.71 (1.29 to 17.20)	5.08	0.62 (0.32 to 0.92)	0.67
Stevenson (2006) <i>Based on discharge summary</i>	Advice about work situation	42/113	15/43	1.07 (0.66 to 1.71)	0.60	0.02 (-0.15 to 0.19)	-0.13
	Advice about return to normal activities	34/113	13/43	1.00 (0.58 to 1.70)	0.41	-0.00 (-0.16 to 0.16)	-0.25
	Advice to increase activity level	36/113	7/43	1.96 (0.94 to 4.06)	1.10	0.16 (0.02 to 0.30)	0.00
	Encourage early return to work	5/113	1/43	1.90 (0.23 to 15.82)	1.25	0.02 (-0.04 to 0.08)	-0.01
	Encourage to undertake activities by themselves	16/113	18/43	0.34 (0.19 to 0.60)	0.37	-0.28 (-0.44 to 0.12)	-0.26
	Change attitudes/beliefs about pain	25/113	4/43	2.38 (0.88 to 6.43)	3.06	0.13 (0.01 to 0.24)	0.19

*Calculated for patients with normal course only (experimental group n = 122; control group n = 107)

Table 5. Mean difference (95% CI) between groups for patient health.

Trial	Outcome	Difference between groups	
		Week 6	Week 52
Bekkering (2005c)	Disability (QBPDS, 0 to 100)	1.96 (-1.44 to 5.37)*	3.55 (-0.25 to 7.35)*
	Pain (NRS, 0 to 10)	0.16 (-0.35 to 0.69)*	0.55 (-0.02 to 1.11)*
Rebbeck (2006a)	Disability (FRI, 0 to 40)	1.00 (-3.12 to 5.12)	-0.60 (-5.13 to 3.93)

*Mean difference based on multilevel regression coefficients as reported by authors (Bekkering et al 2005c), QBPDS = Quebec Back Pain Disability Scale, NRS = Numeric Rating Scale, FRI = Functional Rating Index

et al 2005). Three studies were excluded because they did not meet the design criteria (Leemrijse et al 2006, van der Wees et al 2007, Willigendael et al 2005), one study did not meet the participants criteria (Rebbeck et al 2006b), two studies did not meet the intervention criteria (Bekkering et al 2005b, Fritz et al 2007), and one study described a protocol (Evans et al 2005). An overview of the selection process is shown in Figure 1.

The five included papers were based on three separate randomised trials. The three trials evaluated strategies for increasing the implementation of whiplash guidelines in Australia (Rebbeck et al 2006a), low back pain guidelines in the Netherlands (Bekkering et al 2005a, Bekkering et al 2005c, Hoeijenbos et al 2005), and low back pain guidelines in the UK (Stevenson et al 2006). The three trials included a total of 909 patients who were treated by 170 physiotherapists. An overview of all included studies is shown in Table 2 which describes the participants, intervention, outcome measures, and findings as reported by the authors. All three trials evaluated the effects of multifaceted intervention based on interactive educational meetings to increase the implementation of guidelines. One trial of whiplash guidelines (Rebbeck et al 2006a), compared the effect of an interactive educational meeting administered by opinion leaders (8 hours) followed by an educational outreach visit (2 hours) versus dissemination of the guideline only, six months later. The meetings included interactive sessions, practical sessions, and problem solving. This trial included 27 physiotherapists who treated 103 patients with whiplash injury. A trial of low back pain guidelines (Bekkering et al 2005a, Bekkering et al 2005c, Hoeijenbos et al 2005) compared the effect of two interactive educational meetings administered by experts (2.5 hours each over 4 weeks) versus dissemination of the guideline only, 12 months later. The meetings included didactic lectures, discussion, role playing, feedback, and reminders. This trial included 113 physiotherapists who treated 500 patients with low back pain. Another trial of low back pain guidelines (Stevenson et al 2006) compared the effect of an evidence-based educational meeting administered by local opinion leaders (5 hours) versus a standard in-service educational meeting (5 hours), 12 months later. This trial included 30 physiotherapists who treated 306 patients with low back pain.

Quality of studies

The three trials scored a mean of 4 out of 7 points (range 3–5) on the EPOC Group criteria (Table 3).

Effect on professional practice

Three trials evaluated the effect on professional practice of interactive educational meetings to increase implementation of guidelines (Bekkering et al 2005a, Rebbeck et al 2006a, Stevenson et al 2006). The relative risk and risk difference for professional practice are presented in Table 4. Due to heterogeneity of interventions and outcome measures, outcomes were not pooled.

Bekkering et al (2005a) evaluated professional practice by measuring adherence to four recommendations of low back pain guidelines, derived from patient notes: *limiting the number of sessions, setting functional goals, using mainly active interventions, and giving adequate information*. Physiotherapists in the implementation group *limited the number of sessions* (RD 0.13; 95% CI 0.03 to 0.23), *used active interventions* (RD 0.13; 95% CI 0.05 to 0.21), *gave adequate information* (RD 0.05; 95% CI 0.00 to 0.11), and complied with all four recommendations of the guideline (RD 0.09; 95% CI 0.01 to 0.11) more than physiotherapists in the dissemination group.

Rebbeck et al (2006a) evaluated professional practice by measuring adherence to six recommendations of whiplash guidelines: *using functional outcomes, reassuring patients, advising patients to act as usual, prescribing function, prescribing exercise, and prescribing medication* by auditing patient notes and by using a questionnaire. Physiotherapists in the implementation group *reassured the patient* (RD 0.40; 95% CI 0.07 to 0.74), *advised patients to act as usual* (RD 0.48; 95% CI 0.15 to 0.80), *used functional outcome measures* (RD 0.62; 95% CI 0.32 to 0.92) more than physiotherapists in the dissemination group. There was no difference between the implementation group and the dissemination group for the other three recommendations. Furthermore, physiotherapists in the implementation group scored higher than those in the dissemination group on a questionnaire testing knowledge of the whiplash guidelines (MD 5.1, 95% CI 2.48 to 7.72).

Stevenson et al (2006) evaluated professional practice by measuring adherence to six recommendations of low back pain guidelines by analysing the discharge summaries in patient notes: *advice about work situation, advice about return to normal activities, advice to increase activity level, encourage early return to work, encourage to undertake activities by themselves, and change attitudes/beliefs about pain*. Physiotherapists in the evidence-based implementation group *increased patients' activity levels* (RD 0.16; 95% CI 0.02 to 0.30) and *changed attitudes/beliefs about pain* (RD

0.13; 95% CI 0.01 to 0.24) more than physiotherapists in the standard implementation group.

Effect on patient health

Two trials evaluated the effect on patient health of interactive educational meetings to increase implementation of guidelines (Rebbeck et al 2006a, Bekkering et al 2005c). The mean differences for patient health are presented in Table 5. Due to heterogeneity of interventions and outcome measures, outcomes were not pooled. No differences between the implementation group and the dissemination group on any outcome measure of patient health at any time were found for whiplash patients (Rebbeck et al 2006a) or low back pain patients (Bekkering et al 2005c).

Effect on cost of care

Two trials evaluated the effect of interactive educational meetings to increase implementation of guidelines on cost of care (Hoeijenbos et al 2005, Rebbeck et al 2006a). In the trial of whiplash guidelines (Rebbeck et al 2006a), cost of care for the implementation group was not different from the dissemination group. In the trial of low back pain guidelines (Hoeijenbos et al 2005) direct medical costs and productivity costs for the implementation group were not different from the dissemination group.

Discussion

Strategies to increase implementation of physiotherapy guidelines

The main outcome of this review is that multifaceted interventions based on interactive educational meetings can improve some areas of professional practice, but the results are not consistent and vary between studies. No differences were found for patient health or cost of care.

The studies of Bekkering et al (2005a) and Rebbeck et al (2006a) showed that professional practice can be improved by interactive educational meetings compared with dissemination only. However, the outcomes of the two studies were variable. The lack of effect for some outcomes can be explained by high adherence to the guidelines at baseline. For example, in the study of Rebbeck et al (2006a), there was high adherence to the recommendation to prescribe exercises at baseline (100% in the experimental group and 92% in the control group), which leaves little room for improvement. Stevenson et al (2006) did not find any benefit for professional practice. Rebbeck et al (2007) suggested that this was because Stevenson et al (2006) used a single educational meeting, as opposed to the two multifaceted interactive educational meetings used by Bekkering et al (2005c) and Rebbeck et al (2006a). Another explanation might be that both experimental and control groups received an educational session in Stevenson's study, albeit with different content (evidence-based content versus standard content), suggesting a lack of contrast between the two groups. Overall, this suggests that the quality and quantity of the strategies aimed at increasing implementation of physiotherapy guidelines may influence the degree to which professional practice changes.

This review found no effect on patient health as a result of strategies aimed at increasing implementation of physiotherapy guidelines. Rebbeck et al (2006a) suggested that this was the result of the high quality of current intervention, providing no opportunity for health to improve. Similarly Bekkering et al (2005a) concluded that

it is possible that no further benefit was to be expected for patients with low back pain. The outcomes in both groups showed an important improvement in the first 12 weeks, and it may be difficult to further improve these results. In general it might be plausible that improvement in patient health is too small to detect.

These findings are similar to a systematic review of the effectiveness of implementing clinical guidelines for spinal pain (Rebbeck et al 2007) that included 14 trials of clinical guidelines for general practitioners, physiotherapists, and surgeons. It found that implementation was effective in terms of professional practice (11 trials), but not in terms of patient health (3 trials) or cost of care (2 trials).

Limitations of this study

The limited number of trials included in this review makes it difficult to draw explicit conclusions. Only five studies based on three separate cluster-randomised trials were included, and there is variability in the findings across studies. More studies are needed to further explore the effects of implementation strategies of clinical guidelines. Most studies only concern the process of care, and therefore mainly provide information for improvement of professional practice. Most interventions are effective under some circumstances but none under all circumstances. It is not clear what the best intervention strategy is and what factors may explain the variance. Our study confirms the positive effects of interactive educational meetings on professional practice in physiotherapy, although the findings might not be relevant to all health care professions.

Factors that influence adherence to guideline recommendations

It has been noted (Grol et al 2004, Grol and Wensing 2006) that certain barriers must be overcome if change of professional behaviour is to result. The key message is that barriers must be identified and systematically addressed by a diversity of activities which have been shown to be effective. There are many different types of barriers that prevent implementation of clinical guidelines (EPOC 2007a).

Alternatively, if potential barriers to guideline adherence are not identified, it is difficult to determine whether the lack of effect can or cannot be explained by these barriers. Poorer guideline adherence in physiotherapy has been related to less physiotherapy experience and patient characteristics (van der Wees et al 2007). In this systematic review, such characteristics were not consistently measured in the primary studies.

Implications for the physiotherapy profession

Although physiotherapy is following the current trend towards evidence-based practice by producing many guidelines, it lags behind the medical profession in evaluating the effects of implementing these guidelines. There is a wealth of research on the effects of guideline implementation; however, these studies have usually concerned themselves with guidelines on interventions for specific medical diagnoses. In addition, most clinical guidelines are not specific to a particular discipline and have been developed in a multidisciplinary context. To date there are only three separate trials reporting the effects of implementation of clinical guidelines in physiotherapy, highlighting the need for further implementation trials in our profession.

This review has shown that multifaceted interventions based on educational meetings aimed at increasing the implementation of physiotherapy clinical guidelines may improve professional practice, but not patient health or cost of care. These findings are in keeping with results of reviews among other health care professions and add to the argument for the further development of strategies to increase the implementation of guidelines. Evaluation of the effect of strategies to increase the implementation of guidelines is necessary so that conclusions can be drawn about how future guidelines in physiotherapy can be implemented effectively and efficiently. It is only by carefully evaluating the effect of implementing clinical guidelines that we can identify the specific barriers and impediments that need to be overcome for the successful implementation of guidelines.

Footnotes: ^aReview Manager (RevMan), Version 5, The Cochrane Collaboration.

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Correspondence: Philip J van der Wees, Department of Epidemiology, Maastricht University, PO BOX 616, 6200 MD Maastricht, The Netherlands. Email: philip.vanderwees@epid.unimaas.nl

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