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# Problem-solving treatment during general practice residency

feasibility, and effectiveness  
for patients with emotional  
symptoms in primary care

Lieke J.A. Hassink-Franke



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feasibility, and effectiveness  
for patients with emotional  
symptoms in primary care

een wetenschappelijke proeve op het gebied van  
de Medische Wetenschappen

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rector magnificus prof. mr. S.C.J.J. Kortmann,  
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door

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**Voor mijn ouders**



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# 1 General introduction



## Background

Mental health problems are common, with one in four adults experiencing a problem.<sup>1</sup> They might suffer from formal mood or anxiety disorders but symptoms can also be at a sub-threshold level, for instance depressed mood, anxiety, irritability, stress, sleeping problems or psychosocial problems. Prevalence rates in primary care, for instance in the Continuous Morbidity Registration (CMR) Nijmegen database, vary from 1.2 to 33%.<sup>2-6</sup> These rates are increasing in all sociodemographic layers of the population.<sup>7</sup> The World Health Organization (WHO) Global Burden of Disease Survey estimates that by the year 2020, major depression will be second only to ischemic heart disease in the amount of disability experienced by sufferers.<sup>8</sup> Disability levels in terms of impaired functioning and number of work days lost are high.<sup>9</sup> Quality of life is often influenced negatively and in many patients symptoms are recurrent or chronic,<sup>10</sup> leading to frequent visits to their general practitioner (GP).<sup>11</sup> Therefore, mental health problems account for a substantial proportion of the GP's workload.

GPs are to provide and coordinate continuous and comprehensive care for the patient within the context of the patient's physical, psychological, social, cultural and existential dimensions. Therefore, GPs use a person-centered and holistic approach within their patient contacts.<sup>12</sup> An essential ingredient is the GP-patient partnership, because it offers the opportunity to empower patients to become active in managing their health. It has been advocated that patient empowerment should be

considered as one of the essential characteristics of family medicine.<sup>13</sup> Patient empowerment is a process of helping patients to assert control over factors that affect their health. This process begins with information and education and includes active participation of the patient in treatment decisions.<sup>14</sup> When patients are more informed, involved, and empowered, they interact more effectively with healthcare providers and strive to take actions that will promote healthier outcomes. Contrary to the biomedical model, the empowerment model requires that patients are viewed as experts on their own lives who are responsible for their own health. This may in case of somatic illness, for instance diabetes, lead to the one patient deciding to stop smoking and the other patient deciding to lose weight. In the case of mental illness it is important to empower patients so that they learn how to deal better with their emotional symptoms. This fits in with the wish of many patients with emotional symptoms to be treated non-pharmacologically.<sup>15-17</sup>

Most patients with mental health problems are treated adequately by their GP and only a minority of patients is being referred.<sup>18</sup> GPs often prescribe medication, usually benzodiazepines or antidepressants,<sup>18</sup> but medication is not always appropriate: it is not always indicated, has important side effects,<sup>19,20</sup> patient adherence is low,<sup>21</sup> the effectiveness of benzodiazepines is limited,<sup>22</sup> and the effectiveness of antidepressants is being disputed.<sup>23</sup> Pharmacological treatment mainly stems from the biomedical approach, whereas patients more frequently desire the

patient-empowering approach as they prefer non-pharmacological treatments.<sup>15-17</sup> Many GPs already incorporate non-pharmacological approaches in their mental health treatment, because counseling is nearly always part of the treatment by GPs.<sup>24</sup> Nevertheless, both GPs and GP registrars have expressed the wish to learn a more structured way to manage patients with mental health problems in general practice.<sup>25-28</sup> Although some educational interventions for GPs to manage mental health problems have been studied, patient outcomes have not significantly improved.<sup>29,30</sup> Problem-solving treatment (PST) could be an attractive non-pharmacological treatment option. It has a highly patient empowering character because the aim of PST is to teach patients how they can deal themselves with every-day problems. Patients are provided with tools to directly manage their actual behaviour on dealing with problems, rather than to manage their cognitions – as is common in cognitive behavioural therapy. Furthermore, it is a brief and practical treatment with a treatment protocol specifically designed for use by primary care workers.

### **Problem-solving treatment**

Problem-solving treatment (PST) is a brief and practical psychological treatment, derived from cognitive behavioural therapy (CBT). In the seventies, the American psychologists D'Zurilla and Goldfried described problem-solving *therapy* as a process with five stages<sup>31</sup>: problem orientation, problem definition, generation of alternative solutions, decision making, and solution implementation. This therapy was based on the principles

of CBT. In the nineties, the British psychiatrist Dr Mynors-Wallis developed an abbreviated form for usage in a primary care setting, and called it *problem-solving treatment*. This thesis is about the latter form.

The aim of PST is to teach patients how to use their own skills to cope with everyday life problems in a systematic way. It is assumed that symptoms reduce when patient (re) gain control over their problems. Common emotional symptoms include depressed mood, feeling stressed, loss of enjoyment in life, worries, poor concentration, feeling hopeless, and irritability. Common physical symptoms include sleep problems, bad appetite, tiredness, headaches, and non-specific pains. Most frequently mentioned areas of problems in everyday life are relational problems with partner, children, family or friends; work; money; housing; health; few recreation activities.

As Mynors-Wallis set out in his manual,<sup>32</sup> "the first goal of PST is to increase the patient's understanding of the link between their current symptoms and their current everyday problems, and that control over such problems will help to improve symptoms. The second goal is to increase the patient's ability to clearly define their current problems. Also, the importance of setting concrete and realistic goals is stressed and practised. The third goal is to teach the patient a problem-solving procedure how to solve their problems in a structured way. The fourth goal is to generate more positive experiences regarding the patient's ability to solve problems. In this way patient's confidence in their problem-solving

ability and their feelings of self-control during problematic situations increase. After PST the patient should be able to cope with current and future problems and thus minimise emotional symptoms. It is a collaborative treatment with an active role for the patient who takes more control in subsequent sessions whereas the therapist's role gradually decreases." These treatment goals are aimed for via seven specific stages during each session. The seven stages are:

1. Explanation of the treatment and its rationale;
2. Definition and breaking down of the problem;

3. Establishing achievable goals;
4. Generating multiple possible solutions;
5. Evaluating and choosing the solution(s);
6. Implementing the preferred solution(s);
7. Evaluating the outcome after the solution has been implemented.

In stage 6, the therapist and patient formulate an action plan for implementation of the preferred solution with the actual implementation happening between two sessions. Stage 7, evaluation of the implemented solution, takes place in the subsequent session and is

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## Case vignette

### Intake

Frank is a 37-year old man. He is married and has two sons (6 and 8 years old). He visited my practice for a low mood, irritability and long lasting low back pain. Physical examination, an X-ray and a visit to the neurologist had not revealed any abnormalities of his back. He has been in sick leave for six weeks now and is not starting to feel any better. He works in a big car factory, where many colleagues have been fired due to the economic recession. Therefore, the atmosphere has changed negatively over the last few months. Furthermore, his manager is complaining about his sick leave and wants him to come back to work. At home he's feeling tired all the time, not doing any sports or social activities. He is feeling a bad father for his children and he's feeling an unpleasant husband for his wife.

### First PST session

In the first session I ask him which of these problems he wants to address first. He chooses the feeling of being a bad father. We work this out via the specific problem-solving stages and define them as following:

Problem: "I'm feeling a 'bad father' because I don't do any nice things with my children anymore."

Goal: "To do at least two nice activities with my children within the next two weeks."

Brainstorm: "To go to the play garden; to the cinema; cycling; swimming; painting; cooking pan cakes"

Homework: "Taking them to the play garden, and preparing pan cakes with them."

### Follow-up session

They ate pan cakes together, and he went to the play garden with his two children. He was very satisfied about that and had enjoyed it a lot. When asking him how he had been feeling in the play garden, he looked surprised at me and said 'Actually I felt much better at that time'.

followed by addressing a new problem via the specific stages. The treatment consists of four to six sessions over a period of approximately 8-12 weeks with a duration of no more than 30 minutes, except for the first session which may last 60 minutes. During each session the therapist uses a PST work sheet: see appendix A.

PST is effective in depression.<sup>33-36</sup> Also, there is some evidence that it has positive effects for anxiety,<sup>37,38</sup> unexplained physical symptoms,<sup>39</sup> deliberate self-harm,<sup>40</sup> personality disorders,<sup>41</sup> and palliative care.<sup>42</sup> Various self-management programmes that include problem-solving, for instance for diabetes, low back pain and osteoarthritis, showed improved self efficacy and patient outcomes.<sup>43-45</sup> PST has been shown to be effective when delivered by different therapists, varying from psychiatrists and psychologists to nurses and research GPs, without relevant differences in effectiveness. These therapists were, however, all unfamiliar to the patient. There is no evidence available for PST being provided by patients' own physicians. Furthermore, most studies included distinct groups of patients – such as major and minor depression or dysthymia – whereas GPs are mostly confronted with a typical mixture of emotional symptoms or with patients not meeting diagnostic (DSM-IV) criteria for depressive and/or anxiety disorders. For this category of patients there is only little evidence for or against PST.<sup>37,46</sup> There have been performed three systematic reviews on PST.<sup>47-49</sup> However, these reviews did not specifically focus on studies performed in primary care nor did they specifically address the effectiveness

of PST for the broad range of mental health problems seen in primary care.

The fact that PST is effective for many (mental) health problems implies that problem-solving skills can be used more widely as a tool for patient empowerment in general. Together with its brief character, this makes problem-solving an attractive technique for GPs. However, PST was not yet available in the Dutch primary care setting.

### **This study**

Worldwide, teaching of the management of mental health problems in residency programmes has largely focused on accurate diagnostic skills and appropriate prescribing,<sup>28</sup> whereas GP registrars would welcome learning more counseling skills and an effective tool for non-pharmacological treatment of emotional symptoms.<sup>50</sup> By introducing PST in the GP residency programme we expected two advantages: a. the registrars' need could be met in an early stage, and b. the residency programme would provide optimal training and supervision circumstances. In the Netherlands, GP registrars follow a three-year residency programme. In the first and third year they are attached to a primary care practice in the community. In the second year they do a rotation between emergency room, nursing home and mental health care. Throughout the whole programme they come back to university one day every week for supervision and training in groups. An American pilot study with 11 GP registrars being trained in PST showed that registrars can be trained successfully in PST but the authors

recommended further investigation with a larger sample of registrars and evaluation of patient outcomes.<sup>51</sup> We aimed to include the broad range and/or mixture of emotional symptoms which characterises general practice as GPs often see mixed symptoms rather than specific, full blown DSM-IV disorders.<sup>52</sup>

Therefore, in this thesis the following research questions are addressed:

- I. What is the feasibility of PST training during GP residency?
- II. What is the effectiveness of PST delivered by trained GP registrars for patients with recurrent or chronic emotional symptoms?

We planned to compare the effectiveness of PST versus usual care for patients with emotional symptoms in a pragmatic randomised controlled clinical trial. PST and usual care were provided by GP registrars who were in their last year before qualifying as a GP. As we aimed to include the broad range of emotional symptoms typically seen in the primary care setting, we defined emotional symptoms as sub threshold as well as formal disorders of depressed mood, anxiety, stress, irritability, sleep disturbance, and psychosocial problems. With the terms emotional symptoms, emotional problems and mental health problems we meant the same category of patients. Thus, in this thesis the terms *emotional symptoms*, *emotional problems* and *mental health problems* are interchangeable.

## **Outline of this thesis**

### **Part I. Feasibility of PST training during GP residency**

*Chapter two* describes a feasibility study of GP registrars who were randomised to PST training. By observation and questionnaires, we measured registrars' participation in the training, the number of patients treated with PST, and registrars' opinions about the training and treatment.

*Chapter three* shows the views of GP registrars on PST in general practice and on PST during GP residency. For this objective we performed a qualitative focus group study.

*Chapter four* addresses the attitudes of GP registrars toward participation in research. One of the barriers we experienced during our study was the resistance of registrars to participate in the research project. We, therefore, were interested in their views on participation in research in general. We assessed their participation and opinions through observation and a questionnaire.

### **Part II. Effectiveness of PST for patients with emotional symptoms in primary care**

*Chapter five* shows the results of a systematic review according to the principles of the Cochrane Collaboration. We aimed to systematically review the evidence for and against the effectiveness of PST and to perform a meta-analysis, which generally provides a better overall estimate of a clinical effect than the results from individual studies. The review focused on the effectiveness of PST provided by specifically trained



GPs, nurses or other primary care health workers in primary care patients with all kinds of emotional problems.

Chapter six describes the results of an effectiveness study. We performed a controlled clinical trial to compare the effectiveness of PST and usual care in primary care patients with emotional symptoms. The main outcomes were symptom severity and quality of life.

Chapter seven contains a general discussion about the methods and findings of this thesis and ends with recommendations for general practice and GP residency programmes and for further research.

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## Appendix A

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### Problem-solving worksheet

1. Problem

.....  
.....  
.....

2. Goal(s)

.....  
.....  
.....

3. Solutions

- a) ..... pros: ..... cons: .....
- b) ..... pros: ..... cons: .....
- c) ..... pros: ..... cons: .....
- d) ..... pros: ..... cons: .....
- e) ..... pros: ..... cons: .....

4. Choice of solution(s)

.....  
.....  
.....

5. Steps to achieve solution (homework)

- a) .....
- b) .....
- c) .....
- d) .....

Next appointment .....

6. Evaluation

.....  
.....  
.....

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# 2 Feasibility of training in problem- solving treatment for general practice registrars

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## Introduction

In primary care patients frequently present with emotional symptoms and/or psychosocial problems.<sup>1</sup> Most of these patients are treated without specialist referral.<sup>2</sup> Usual care by general practitioners (GPs) mostly consists of counseling and medication.<sup>2,3</sup> However, medication is not always the best option<sup>4,5</sup> nor does it meet patients' preferences,<sup>6</sup> and the effectiveness of counseling is unclear. Many GPs and GP registrars have expressed the need for more practical skills training in managing emotional symptoms.<sup>7,8</sup> We therefore introduced training in problem-solving treatment (PST) into the GP residency programme. PST is a brief, psychosocial intervention teaching the patient a systematic way of dealing with problems of everyday life. The treatment has shown effectiveness in depression and other emotional symptoms,<sup>9,11</sup> and it also improved self-efficacy in patients with diabetes, low-back pain, and osteoarthritis.<sup>12-14</sup> This implies that problem solving skills can be used as a tool for patient empowerment in general. Together with its brief character, this makes problem solving an attractive technique for GPs. In this pilot study, we assessed the feasibility of PST training in GP residency.

## Methods

We performed an observational study with GP registrars in the GP residency programme in the Netherlands. We randomly selected 21 third-year GP registrars, who were in their last year of training to qualify as a GP. After training in PST, registrars selected and treated patients with emotional or psychosocial problems

with PST in their teaching practice. By observation and questionnaires, we measured: registrars' participation in the training; time spent on training, supervision, and treatment; number of patients treated with PST; registrars' performance in treating patients; and registrars' opinions about the training and treatment.

## Problem-solving treatment and Training

PST is a brief psychological treatment, derived from cognitive behavioural therapy, specifically developed for primary care.<sup>15</sup> Patients receive an explanation about the link between their emotional symptoms and current psychosocial problems. They learn how to use their own skills to resolve problems and improve their symptoms. PST comprises the following stages: clarification of the problems; establishing achievable goals; generating solutions; selecting and implementing preferred solution; and evaluation. The full treatment consists of four to six sessions of about 30 minutes (first session 60 minutes). The registrars received a two-day training by experienced PST trainers, followed by five months' supervision on treatment of patients in the registrars' practice.

## Results

Twenty registrars completed the two-day training and evaluated it as useful (see Table 1). They all practised PST and treated in total 52 patients under supervision (median 2.5 patients per registrar; range 1-5). The median number of sessions per patient was 3 (range 1-6). All 20 registrars received feedback on their treatment techniques. Average attendance



rate during the three group-feedback sessions (1½ hours each) was 70%. Sixteen registrars received individual feedback (5-30 minutes per contact). Overall, the supervisor reported good performance of PST in 18 registrars.

At the end of the supervised treatment period, 17 registrars completed a questionnaire (see Table 1). Aspects that registrars liked most included the clarifying character of the treatment (n=7), thinking in terms of practical solutions (n=7), the active role of the patient (n=4), and helping patients to increase insight in and control over

their own problems (n=4). Aspects that registrars liked less included the extra time they needed for treatment (n=10) and the difficulty in defining their role as a GP whilst providing psychological treatment (n=3). Some registrars (n=4) liked the structure of the treatment; others (n=5) disliked it.

At the end of their third year, 15 registrars completed the last questionnaire: 14 assessed education in PST as positive, and 14 assessed the amount of time necessary for treatment as negative.

**Table 1** Registrars' opinions about the PST training programme

Item of questionnaire	Average on 5-point scale <sup>a</sup> (range)
Two-day training (20 participants):	(20 respondents)
- Usefulness overall	3.8 (3-5)
- Relevance of lectures	4.0 (1-5)
- Relevance of role-play	4.2 (2-5)
- Relevance of video feedback	3.9 (1-5)
- Feeling of being sufficiently trained	3.8 (3-5)
Supervised treatment period (20 participants):	(17 respondents)
- Usefulness of group feedback	3.6 (2-4)
- Usefulness of individual feedback	3.9 (3-5)
- Difficulty with selecting appropriate patients	3.8 (2-5)
- Difficulty with patients willing to start	2.6 (1-4)
- Difficulty with defining the problem clearly	3.7 (2-5)
- Difficulty with stating achievable goals	3.6 (2-5)
- Difficulty with finding solutions	2.8 (1-4)

## **Discussion**

This study demonstrated that training in PST is feasible during GP residency. Despite the compulsory character of the training and some critical comments, registrars stated that it brought them relevant, new skills. It met the need for practical skills training in the treatment of emotional symptoms in primary care. We therefore recommend PST training to be implemented as a core part in GP residency programmes. Experience from the US suggests that registrars will continue using PST, or parts of it, once qualified.<sup>16</sup> This will be primarily for patients with mental health problems. However, the skills can be used more generically for a much larger part of the primary care population. It is most satisfying that our registrars themselves stressed the generic character of problem-solving skills: they appreciated having learnt

how to clarify patients' problems, to think of practical solutions, and to activate patients. These patient-empowering skills are useful in many other patient contacts and do not have to take much time. The fact that registrars themselves expressed this potential of problem-solving skills supports our reason of introducing PST during residency.

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# 3 Problem-solving treatment in general practice residency: a focus group study of registrars' views

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## **Abstract**

### *Introduction*

General practitioner (GP) registrars often express the need for more expertise of non-pharmacological treatments for patients with mental health problems. Problem-solving treatment (PST) could be an attractive option. We aimed to explore GP registrars' views on PST training during residency and on the actual use of PST in general practice.

### *Methods*

We performed a qualitative study with four focus groups, interviewing 18 Dutch registrars who had been trained in PST during residency. Data were analysed according to the principles of constant comparative analysis.

### *Results*

Registrars thought that PST training during residency was feasible, interesting and helpful, but found that it took too much time in everyday practice and was not a GP's task. All registrars, however, said they would use specific elements in a variety of consultations, for instance concretising problems, brainstorming about practical solutions, and activating patients.

### *Discussion*

Registrars regarded PST training during residency feasible and helpful. In daily practice they would apply specific elements of the treatment. We recommend residency programmes to offer training in PST or another psychological treatment with comparable elements. Training should fit in with the registrars' needs and level of training and experience.

## Introduction

Many general practitioners (GPs) perceive educational needs with regard to the management of mental health problems. Mental health problems are common – with one in four adults experiencing a problem<sup>1</sup> – and further increasing in prevalence in primary care. The vast majority of these patients are treated by their own GPs,<sup>2</sup> causing a considerable proportion of GPs' workload. In the teaching and training of (future) GPs the emphasis is on diagnostic skills and pharmacological treatment, at the expense of non-pharmacological treatment.<sup>3</sup> Nevertheless, support and counseling are used in almost every case,<sup>3,7</sup> but interventions for GPs to manage mental health problems did not improve patient outcomes significantly.<sup>8,9</sup> GPs and GP registrars – doctors in training to become a GP – have expressed the need for more specific, practical (counseling) skills training in managing emotional symptoms.<sup>3,10,11</sup> This fits in with the many patients who prefer non-pharmacological treatment within primary care for their mental health problems.<sup>12-14</sup> In this light, a different focus of mental health training in residency programmes has been proposed.<sup>15</sup>

Problem-solving treatment (PST) is a brief, practical psychological intervention, teaching the patient a systematic way to gain control over their own (mental health) problems of everyday life.<sup>16</sup> (Re)gaining control will decrease symptoms. PST is effective in the treatment of depression and emotional symptoms.<sup>17,18</sup> And there are indications that it is effective for

unexplained physical symptoms<sup>19</sup>, in palliative care,<sup>20</sup> and in stroke patients.<sup>21</sup> It has a maximum of six sessions, each limited to no more than 30 minutes. Furthermore, PST incorporates skills such as patient empowerment that can be used in many patient contacts outside mental health problems. This makes it an attractive technique for GPs. PST training could meet the needs of registrars to learn a non-pharmacological intervention in an early stage of their career. An American pilot study showed that registrars are able to learn PST.<sup>22</sup>

We introduced training in PST into a Dutch GP residency programme. An earlier Dutch study confirmed that PST training was feasible during GP residency,<sup>23</sup> but a number of registrars did not apply it to eligible patients.<sup>24</sup> The aim of this study was to explore the registrars' views on PST and its use in general practice for patients with emotional symptoms.

## Methods

We conducted focus group interviews with GP registrars in Nijmegen, the Netherlands, nested in a clinical trial.<sup>24</sup> This trial had randomised 20 third-year registrars into PST treatment for emotional symptoms and provided PST training during their residency training. PST is a brief psychological treatment, derived from cognitive behavioural therapy, aiming to increase patients' awareness of a link between everyday life problems and symptoms, and to teach them to cope with these everyday problems in a systematic way.<sup>16</sup> Each PST session comprises



seven stages in which problems are identified and clarified, goals are set, and solutions are worked out (Figure 1). This is a collaborative process between GP and patient, with the patient gradually taking over control. By learning better problem-solving skills patients can deal better with current and future problems. The treatment consists of four to six consultations over a period of approximately 8-12 weeks with a duration of no more than 30 minutes each, except for the first session which may last 60 minutes. The registrars were trained by experienced PST trainers in a two-day course and trainers supervised treatment during 5 months through individual and group feedback sessions.<sup>23</sup> This was followed by a six-month period of the clinical trial.

Focus group interviews took place at the end of the trial (February 2004). We chose focus group interviews rather than individual interviews because of the benefit of group interaction which stimulates participants to explore and clarify their views into more depth.<sup>25</sup> We grouped the registrars into four focus groups, taking into account their

gender and their attitude towards PST. We received information about their attitudes from one of the trainers who met the registrars regularly during group feedback sessions in the 5-month supervised treatment period. By putting registrars with negative attitudes in one and the same group, they got ample space for their (negative) comments. The minority of male registrars were spread over the groups. Two GP registrars were unable to attend the focus group interviews, leaving 18 participants (12 females) for two groups with four and two with five registrars. Their mean age was 32 (range 27-41) and they had treated on average 4.3 patients with PST each (range 1-9).

The interviews lasted approximately 60 to 90 minutes and were facilitated by two independent skilled moderators (one psychologist, one GP) and by using an interview guidebook. Through the guidebook (see Table 1) registrars' views were explored on: a. PST as a treatment for patients with emotional symptoms; b. PST in general practice; c. PST during GP residency. Both enabling and disabling factors for its use were discussed. In the fourth focus group interview saturation

### **Figure 1. Problem-solving treatment (PST)**

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A brief psychological treatment with 7 stages:

1. Explanation and rationale
2. Clarification and definition of the problems
3. Establishing achievable goals
4. Generating solutions through brainstorming
5. Selecting preferred solution
6. Implementing solution
7. Evaluation of progress

was reached with no new major themes arising. The interviews were audio-recorded with the participants' consent and ethical approval for the project was provided by the University of Nijmegen.

### **Analysis**

Data collection and analysis was conducted as an iterative process which means that the three researchers (LH, ToH, EvW) added relevant topics to the guidebook after a preliminary analysis of each interview. All interviews were transcribed verbatim. The first author checked the transcripts and entered all data into Atlas.ti, a software package to support the analysis of qualitative data. According to the principles of constant comparative analysis<sup>26</sup> in which transcripts are subsequently thematically coded, transcripts were read and re-read by LH, ToH and EvW to identify recurring themes. They independently made a first categorisation by coding meaningful sentences. Initial codes were discussed, seeking agreement on their content, and then grouped into themes to identify registrars' views on PST. Recurrent and important themes were frequently discussed and refined as part of an ongoing iterative process.<sup>27</sup> The emerging themes were then re-read.

To enhance the validity of our findings we triangulated our data by comparing them with the results of a questionnaire survey among registrars of the subsequent year.<sup>28</sup> The written answers to these open questions were qualitatively analysed by two researchers.

### **Results**

Five major themes evolved from the focus groups: registrars' 1. views on GPs' role in mental health care; 2. positive experiences with PST; 3. negative experiences with PST; 4. views on PST in general practice; and 5. views on PST during residency. In general, those registrars who had treated more patients with PST were more positive about PST than those who had treated fewer patients. We did not find major differences between registrars who were grouped as having a more positive attitude and those with a more negative attitude.

### **Role of GPs in mental health care**

Registrars expressed that mental health care certainly is part of the GP's function. Firstly, GPs should be able to diagnose mental health problems. And secondly, they should be able to manage mental health problems up to a certain level. They saw their role more in support than in treatment of these problems, and in particular in case of relatively new and uncomplicated problems. They would refer patients who had more complicated or chronic problems, or who needed more long-lasting counseling, or who did not improve. They emphasised the importance of the GP-patient relationship: in a good relationship they would tend to counsel longer, as this was often associated with better outcome. Applying a specific psychological treatment is not the task of a GP, according to the registrars, although it could be the interest of some GPs.

*"I would like to be able to map the problems out and diagnose them and then it's either done or I can refer them or maybe I can help them - not in the sense of developing a long-term treatment plan but more in the sense of, uhm, offering support. I can't do much more than that." (14, male, FG4)*

*"I do think I can play a role but that role would be small. That means short treatments. I would do that myself [...] If I think that it is going to take longer or that the problems are more complicated, then I would be more inclined to refer patients to someone else." (01, male, FG1)*

### **Positive experiences with PST**

Most registrars appreciated the structure of PST as this provided them with a model how to set the agenda of the consultation. They were happy with addressing 'here and now' problems because it made the treatment very practical. Also, they all liked that PST forced them to make the problems of the patients as concrete as possible. This enabled them to define problems, goals and homework more precisely. Furthermore, they explicitly stated they liked the activating character because the treatment has a patient-centred approach in which the goals and solutions are set and carried out by the patient. Specific parts of PST they had appreciated were linking symptoms to problems, the patients' insight in their problems, focusing at only one problem during each session, setting goals, and brainstorming about solutions.

*"I think that it is a good method for exploring things concretely and it gives people a tool by which they can start to work on things right away. It gets them started." (05, female, FG2)*

*"You guide the patient but, really, it's the patient that does the work (sounds of agreement); he or she comes up with the solutions." (07, female, FG2)*

*"What I think is really good is that you can help the patient to explore his or her own problems and they learn something from that. I think it's good that they then can start dealing with those problems on their own. So it promotes independence." (06, female, FG2)*

*"I do make that link now between the complaints and the, the reasons behind them - the way all things [symptoms and problems] are related to each other. That is definitely a useful, uh, useful element." (13, female, FG3)*

They had experienced PST sometimes as a diagnostic tool, because in some cases many more problems became clear during treatment. They also appreciated that patients came to the insight that symptoms decrease when they work on their problems. Most registrars found it advantageous to teach patients how they can look at and manage problems, as these skills can be used in future problems too.

*"It is not just the treatment at that point in time but also the method or the way of thinking that you try to give them so that they can later apply it themselves." (01, male, FG1)*

## Negative experiences with PST

The most important negative experiences were: 1. the structure of PST; 2. registrars' competence; 3. doubt about the effectiveness; 4. time investment.

Some registrars described the structure of PST as rigid or artificial and not giving them enough space to listen to patients' new stories, symptoms or problems because the psychological treatment kept them focusing on the problem of today's session. They felt hindered to react empathically. Furthermore, it was emphasised that PST can only address some problems and only to some extent, whereas some patients brought up many more (complicated) problems.

*"If people have had complaints again, then, all of the sudden, they end up sitting down with their general practitioner who then doesn't want to talk about physical complaints but actually wants to work on other problems, and I found that difficult sometimes. It was difficult to keep those two things separate for me but it was particularly difficult for the patients and it was hard to be clear about that [...] It was like you had to say, uh, 'If you want to deal with the physical complaints, then you need to come back for another appointment.'" (O3, female, FG1)*

*"What I experienced every time, or at least almost every time, was that people come back with 'yeah, but' and then mention their fatigue again or whatever they came for, and, yeah, you*

**Table 1. Focus group interview guidebook**

1.	Non-pharmacological treatment of emotional symptoms	<ul style="list-style-type: none"> <li>• How do you regard your role in the non-pharmacological treatment of emotional symptoms?</li> <li>• Is there a need for a tool to treat emotional symptoms?</li> <li>• How did you treat emotional symptoms before PST training?</li> </ul>
2.	Problem-solving treatment (PST)	<ul style="list-style-type: none"> <li>• What do you think of PST?</li> <li>• When or what patients suit PST? When not?</li> <li>• What do you think about the role of the doctor versus the role of the patient?</li> <li>• What do you think about the effectiveness of PST?</li> </ul>
3.	Feasibility of PST in general practice	<ul style="list-style-type: none"> <li>• What is the place of PST in general practice?</li> <li>• Can GPs provide PST? Why (not)?</li> <li>• What are the most useful elements of PST?</li> <li>• What do you think of your competence of PST?</li> </ul>
4.	Feasibility of PST during GP residency	<ul style="list-style-type: none"> <li>• Do you think PST could and/or should be part of the residency programme? Why (not)?</li> <li>• What elements of PST are especially helpful during residency?</li> </ul>

*don't really have enough time to go into those things because you have to stick to the PST protocol and I have to admit that I find that kind of restrictive." (06, female, FG2)*

*"It is that the method is so fixed, and I think that's what I struggle with [...] It's like it's all or nothing." (03, female, FG1)*

Most registrars judged their competence of PST as unsatisfactory. They said they had had too little education and experience in this field. The perceived lack of competence demotivated some registrars to start PST. Furthermore, they found it hard to leave it to the patient to do the work.

*"I think that I've only had a small taste of it, at least that's how it feels. And it kind of feels like that's a little unfair to patients because you offer the patients something that I am not sure I can give them in the way it is intended." (05, female, FG2)*

*"I think that, in general, we are 'do-ers' and so we want to determine how it can best be done." (16, female, FG4)*

Registrars had doubts about the effectiveness of PST, because it did cost a lot of their energy and time but resulted in varying outcomes. Some believed the effect to be the result of time and attention. The likelihood that symptoms would improve over time without doing a formal treatment like PST was a barrier to start PST. Once treatment results were less positive than expected, some registrars perceived this as a barrier to apply PST in further patients.

*"Some patients have really been helped with it but there have also been a few patients whereby I really wasn't satisfied. I would like to see some more evidence." (03, female, FG1)*

*"I have consciously chosen not to suggest it but I've thought to myself 'What on earth am I subjecting this patient to with PST?' (sounds of agreement). I think that a lot of issues resolve themselves in time and with a few consultations instead of six, uh, half hour consultations. And it demands a lot from the patient, which doesn't always seem to be better." (02, female, FG1)*

Registrars experienced time investment as the most important barrier. They thought that PST took too much time for an individual patient. They stated that the strong structure and repeating, long sessions did not fit into the common structure of Dutch general practice with a 10-minute consultation system. Some of them had solved this problem by doing only 3 to 4 sessions with each patient or giving the patient homework.

*"I think that the way in which the treatment is conducted does not fit well with general practice. The number of consultations and the length of those consultations [...] I think it demands too much time from a family doctor's practice [...] and it messes up your consultation hours. It is a lot of hassle and it is very different work than what we are used to." (02, female, FG1)*

*"I have to say that I indeed held three consultations and then I was pretty*

*much done with it. I dealt with two problems and when we got to the third, I sent the patient home with homework and said, 'Write up a list of problems and do your homework.' I wouldn't want to do a six session PST." (09, female, FG3)*

We identified two groups of registrars in terms of more flexible and more rigid. The first group regarded PST as a helpful tool they tried to use in a tailor-made way for many patients. They were satisfied with their competence. The other group regarded PST as an inflexible method without any space for the patient. They saw only few indications for PST and did not feel very competent. The first group was more positive about PST than the latter group.

*"I noticed that the more, uh, you get used to it and develop the skills, the more you can let go and that you then kind of make it your own thing." (07, female, FG2)*

*"You don't really consider who is sitting across from you. The procedure is pretty much the same for everyone." (01, male, FG1)*

### **PST in general practice**

Most registrars thought that PST did not fit into general practice because of the aforementioned time investment, structure and doubts about the effectiveness. There were some more barriers. Some registrars emphasised that they were not happy with their role during PST. They felt a 'double role' of being a psychologist and a GP at the same time. They thought it could be a

barrier for patients to come to them as a GP again after PST, because patients might see them as a psychologist.

*"Perhaps that's why people haven't come back to see me. Perhaps they've gone to another GP for their other complaints because I treated their emotional symptoms. I can imagine that patients would find it more difficult to come back to me for just a sore toe or something." (02, female, FG1)*

Many registrars found it hard to decide on the proper indications for PST. They thought PST was applicable in only a small group of patients. They thought that the more longstanding the GP-patient relationship was, the easier it was to decide which patients would benefit from PST.

*"I think that the training GPs are more suitable because they have already built a relationship with the patient and they are better able to assess the patient." (18, female, FG4)*

Nevertheless, most registrars were able to specify the indications for PST. They thought it was especially appropriate for patients with recently arisen, daily life problems – such as problems with work, relationship, family, house, et cetera – or patients who put forward their problems so that it became a chaos resulting in symptoms of mild depression, burn-out or varying physical symptoms. These patients don't see where to start managing their problems. According to the registrars, PST could give them the feeling of being in control of their lives again. Some registrars stated that

they did not think PST was appropriate for patients with many or complex problems because they thought they could reach too few effects, whereas others were happy to make at least a starting point.

*"I think that it is particularly useful for giving people a sense that they can have control over their own lives and that they can deal with their problems again, and, yeah, it is not really that you can treat someone's depression with it but it does give people something to hold onto and gives them the idea: 'I can do something about this.'" (11, male, FG3)*

*"You try to solve something and I find that that kind of falls short. People have such huge problems and you can only deal with a tiny little part of those problems in those few sessions." (05, female, FG2)*

*"But even if there are more problems, you have to start somewhere, right?" (03, female, FG1)*

According to the registrars PST was less suitable for patients with moderate, severe or long-lasting depressive symptoms and contraindicated in suicidal patients. Also, patients with (alcohol) addiction, personality disorders or dependent personality traits, and patients who could not link symptoms to problems did not benefit from PST.

*"A major depression or a minor depression: I don't think I can [handle that]." (02, female, FG1)*

*"What is contraindicated?" (Moderator)*

*"Alcohol abuse, addition." (02, female, FG1)*

*"I don't think it works that well with all patients because often they cannot make that link where, uhm, they move away from focusing on the complaints and towards dealing with the problems." (06, female, FG2)*

Some registrars thought that it also depended on specific patient characteristics, for PST to be appropriate. They thought it was easier in patients with some intellectual capacities, whereas others thought that the patient's character and motivation was more important: patients must be willing to take the initiative to improve their situation.

*"I don't think intelligence would be a barrier at all but it is more about whether or not it fits with a particular personality. [...] I think it really fits with someone who wants to take things into their own hands but with someone who is quite dependent on others and who, uhm, maybe is looking for a compliment, I don't think it fits as well with those kinds of people." (11, male, FG3)*

*"I would compare it to quitting smoking: If someone isn't motivated, I can put all my energy into trying to motivate him but I don't really want to do that, and I don't think it would have much effect." (01, male, FG1)*

Because of the above reasons, not all GPs should learn PST, according to the registrars. Nevertheless, they emphasised that GPs are able to master PST and that this would be

interesting for GPs with a particular interest in mental health care. Other GPs might in their view involve a (mental health) nurse or colleague-GP in their practice to actually perform the PST intervention. This would be interesting for patients, as registrars experienced that patients were happy to receive treatment for this type of problems in their own practice, rather than being referred.

*"I think it is a good method and I think it would work just fine with a psychologist or a nurse but, as a GP, I just don't have enough time for it."* (05, female, FG2)

*"[Similar] to how we choose a certain drug, it's a method that needs to fit with somebody and if it does, then you choose that method."* (05, female, FG2)

*"I think that an advantage for the patient is the fact that it's offered at the GP's practice. It lowers the threshold significantly."* (06, female, FG2)

Instead of using the entire treatment, registrars said that they would rather use elements of it, for instance concretising problems, setting goals, or brainstorming about solutions. Also, they preferred leaving more parts of PST as homework with the patient. By doing so, they thought that PST sessions could fit into regular double consultations of 20 minutes.

*"I think that PST contains elements that I can use very well. For example, making things concrete and, uh, trying to work towards a goal and, uh, giving people homework."* (03, female, FG1)

*"Maybe a double consultation, twenty minutes. I think that would probably be enough, you could quickly go through all the steps and then I would probably give people more homework so they do more of the work at home."* (07, female, FG2)

## **PST during residency**

Before PST training, registrars felt that their diagnostic skills in mental health problems were satisfying but that this was not the case for their management skills. All registrars expressed the need for a more practical, structured tool to manage mental health problems and they thought that the current residency programme did not provide enough tools.

*"Despite the fact that we have known, for a long time, that many of the complaints that present to the GP have a psychological aspect, I think that the GP residency programme pays too little attention to that."* (10, male, FG3)

*"I have always been frustrated that I didn't have any tools to deal with that. It has always been limited to just talking through things and those conversations are relatively unstructured, [...] sure, people can get things off their chests but there was nothing concrete you could do for them."* (09, female, FG3)

*"I have never really been trained in how to conduct a, uhm, therapeutic treatment, not even during my psychiatry rotation where I had really hoped to have been taught something like this."* (06, female, FG2)



*"It seems to be useful to have some kind of structure that, let's say, outlines how you should approach that." (18, female, FG4)*

Registrars were positive about the PST training, because they found PST a useful and practical technique. Registrars thought that PST training during residency was feasible. However, in the opinion of the registrars the training should have been spread throughout the whole 3-year residency programme rather than being put solely in the 'over-filled' third year. Also, registrars had experienced the limitation of being in training: they felt that many patients with mental health problems consulted their own GP rather than a registrar. Whether PST should be a standard part of the residency programme was being discussed: some thought it would be useful, especially the two-day training. All registrars thought, however, it could well be an optional part for interested registrars.

*"I found the [two day] course to be very useful." (06, female, FG2)*

*"I think that if it were to be incorporated in the residency programme, that it should not be crammed into the third year [...] but that maybe it should be spread out over the entire programme." (12, female, FG3)*

*"When I hear from four people who have done it that they will not use it in the future, then I wonder if it should be incorporated in the residency programme where registrars already have too little time to learn what they*

*need to learn [...] Perhaps it should be an elective." (03, female, FG1)*

## **Discussion and Conclusion**

### **Discussion**

This study aimed to explore the views of GP registrars on training of PST during residency and the use of PST in general practice for patients with emotional symptoms. It showed that registrars perceived a shortcoming in the residency programme with regard to providing them with skills to manage mental health problems. They stated that PST training during residency was feasible, interesting and helpful. They, however, thought that the training had been intensive within one year, and therefore suggested to spread the training over the full three years of their residency training. All said they would use particular elements of PST in general practice, rather than applying the *entire* treatment which they did not regard as part of the GP's tasks. They especially appreciated concretising problems, brainstorming about practical solutions, and activating patients. They thought that implementing specific elements could fit into relatively regular 20-minute consultations. This corresponds with Hegel's study in which registrars mostly used abbreviated versions of PST, when evaluated at 3-year follow-up after training.<sup>22</sup> Furthermore, the mentioned elements fit in with the point of view on mental health care in general practice, published by the Dutch College of General Practitioners, stressing the importance of defining problems and helping patients to use their own

resources to solve problems.<sup>29</sup>

Our findings fit in with research among experienced GPs. For instance, our registrars mentioned the same barriers and enablers of using PST as GPs did in an earlier Australian study about PST.<sup>30</sup> Both mentioned the useful, practical character of the treatment, which fits into the pragmatic nature of many GPs' approach. Both regarded time as a precondition. Also, both registrars and GPs experienced the change from giving advice to facilitating the patient finding a solution that the patient owns. Although our registrars thought this was sometimes difficult to do, they valued this treatment characteristic highly. In a Danish study, GPs considered non-specific factors such as attentive listening very important.<sup>31</sup> Our registrars too thought that good listening is important but they thought that PST did not always give them enough space to do so, because they felt pressured by the structure of the treatment. They often experienced the structure as a handicap, which is striking since we know that most young physicians are positive about using highly structured guidelines for somatic illnesses.<sup>32</sup> Perhaps they need some more confidence both in the contact with patient with emotional problems and in 'playing' with the treatment structure.

In some aspects, the registrars expressed different experiences than experienced GPs. Because it takes time to build a good doctor-patient relationship and because this relationship is needed in treating patients with emotional symptoms,

they experienced a disadvantage of working in the same training practice for just one year. Obviously, they were aware of the importance of the GP-patient relationship, which is known to correlate highly with patient outcomes.<sup>33</sup> Due to the short-standing relationships they had difficulties deciding on 'the adequate patients' for PST. On the other hand they were able to mention many indications for PST, which reflects the relatively general character of PST.

The registrars stated that applying a full psychological treatment did not belong to the GP's tasks. In the light of the registrars' experience that mental and physical health problems are interwoven frequently, combined with the strong wish of patients to be treated by their GP,<sup>34</sup> this attitude can be seen as somewhat unsatisfactory, as this interplay of mental and physical health problems was reason to propagate the integration of mental health into primary health care.<sup>35</sup> An important factor that might play a role is that some registrars are not intensively enough exposed to mental health problems, because these patients prefer to contact their own GP rather than the resident as patients value longstanding relationships. It stresses the need - for residency programmes - to secure that registrars see the whole range of primary care patients, including those with mental health problems. This may strengthen their perception of their role in mental health care. Furthermore, registrars might still be predominantly biomedically oriented in order not to miss any illness. Considering these arguments, PST training could

probably be optimised by offering them generic elements of PST in an early stage of residency and repeat these in more detail in a later stage when they perceive a greater need.

In our view, the registrars expressed an ambiguity towards their involvement in mental health. They complained of a lack of tools provided in the residency programme – a complaint that has been aired before.<sup>11,36</sup> But at the same time, they objected to the compulsory nature of the PST training module, and expressed a restricted task for themselves and for GPs in general in mental health. In order to solve this ambiguity, as there is currently a strong advocacy to *intensify* GPs' and primary care's role in mental health,<sup>35</sup> we propose to insistently discuss this antinomy within residency programmes.

There were some limitations in our study. We evaluated in this focus group study the experiences with the very first Dutch PST training in residency. It is likely that this training suffered from its newness, influencing registrars' experiences negatively. On the other hand, the availability of a supervisor may have facilitated the use of PST. Also, registrars had been obliged to participate in the PST study, which caused a lot of resistance amongst them and made them experience PST training as 'something extra' in an already full programme. This influenced their opinions negatively.

It was a strength of our study that we involved a relatively large number of registrars who had all participated in

the full training programme. By doing a qualitative study we explored and clarified what they thought about PST during residency and about PST in daily practice. We succeeded to collect both positive and negative experiences. Triangulation of our data showed that the positive and negative experiences identified in this focus group study were more or less identical to those expressed in a questionnaire of another group of registrars.

This qualitative study examined registrars' perceptions about PST and not their actual behaviour. By studying these perceptions we identified the experienced needs, barriers and enablers which can help in the implementation of PST or other psychological treatments in residency and everyday practice. Tape-recording the discussions, multiple coding during analysis and our triangulation strategy added to the rigour of the study.

## Conclusion

Registrars thought that PST training is feasible and helpful during GP residency, especially because they had perceived a lack during residency in the tools being provided for the management of emotional symptoms. All registrars liked to use specific elements of the treatment in a variety of consultations within general practice. They especially appreciated concretising problems, brainstorming about solutions, and activating patients. However, they thought that the entire treatment costs too much time in everyday practice and is not part of the GP's tasks.

## Practice implications

We recommend residency programmes to offer training in PST or another psychological treatment with comparable useful elements. It should be part of the standard programme, rather than being part of a research project in order to avoid 'study resistance'. Based on the experiences with the registrars of these focus groups, we have implemented an adapted PST training programme in the first year of residency in Nijmegen since 2008. This programme focuses specifically on the generic elements of concretising, brainstorming and activating patients. We encourage our registrars to find multiple uses for their skills to increase the learning process and to transfer these skills into their practice patterns. Evaluation results of this new programme were good. Subsequently, we offer an *optional* programme with training in the *full* psychological treatment in the second and third year. This will be evaluated in a later stage. Offering a training programme with generic skills at the start of residency and more specific skills in a later stage seems to fit in with the registrars' needs and their level of training and experience.

In general, we highly recommend residency programmes to address the ambiguity of registrars' need for practical skills training against their restricted view on GPs' task in mental health.

Based on our results and those of an Australian study with GPs experiencing PST as useful,<sup>30</sup> PST training might also be useful for GPs as a support in their management

of mental health problems. In the Netherlands, the Dutch College of General Practitioners is offering a PST training since 2007. We recommend ongoing follow-up with booster sessions to consolidate the new skills, because training then is most likely to be effective.<sup>37</sup>

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# 4 General practice registrars and research - Attitudes toward participation

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## **Abstract**

### *Introduction*

Early exposure of general practitioners to research is recommended to increase family medicine research capacity. However, vocational training programmes encounter difficulties in engaging general practice registrars in research projects. We investigated registrars' opinions of research and their participation in research in daily practice.

### *Methods*

Sixty- seven Dutch general practice registrars participated in a trial concerning patients with emotional symptoms. We assessed the registrars' participation and opinions through observation and a questionnaire.

### *Results*

Response rate was 82%. Registrars recruited 208 patients. The participants liked learning a new skill and participating in research. Obligatory participation, lack of time and difficulties with patient recruitment were important barriers to participation.

### *Discussion*

Registrars report that participation in research during vocational training is interesting but that it should not be compulsory, and that they prefer to choose their own research subjects. We recommend implementing an attractive research program during vocational training.

## Introduction

Primary care research is important<sup>1</sup> but there is general concern about the difficulty of linking research to patient care.<sup>2,3</sup> Research development is even more problematic in primary care than in other disciplines.<sup>4</sup> Policies to enhance general practice research include the creation of research networks,<sup>5</sup> collaborations with research institutes,<sup>6</sup> and early exposure to research during undergraduate teaching and specialty training.<sup>7</sup> Early exposure prompts students to consider research as part of their future career, and better equips future practitioners to deliver evidence based patient care.<sup>8</sup>

The importance of early exposure to research is generally accepted by both general practice registrars and directors of vocational training programmes.<sup>7,9</sup> Most programmes include research curricula or related activities, including training in knowledge and skills, conducting research projects, or participation in research in daily practice.<sup>8,10</sup> Although research curricula create more positive attitudes toward research,<sup>11</sup> there are no indications that more registrars are participating in research,<sup>12</sup> and we still know little about the long term effects of such curricula.<sup>8,12</sup> Furthermore, most studies have assessed changes in registrars' attitudes toward performing a research project or undertaking education in research skills during vocational training, rather than assessing registrars' participation in research during daily practice.<sup>9,11</sup>

This study analyses registrars' participation in research tasks during their daily work with patients. The aim was to assess patient recruitment, factors influencing recruitment, and

registrars' views and suggestions with regard to participation.

## Methods

### Setting & design

Dutch general practice registrars undertake a 3 year specialty training program. They spend the first and third year in a training practice in the community, and in the second year they rotate between hospital posts. In 2003 and 2004 our training program included participation of all third year registrars (70) in a controlled clinical trial as part of their core program.

### The trial

A controlled clinical trial of the effectiveness of registrars using problem solving treatment (PST) - a brief psychological treatment to teach patients how to use their own skills to cope with problems - for patients with emotional symptoms. It is theoretically assumed that symptoms are reduced if problems can be resolved.<sup>13</sup> Registrars were randomly allocated to either the intervention group or the control group. Both groups recruited patients with emotional symptoms during their regular clinical work. We asked each registrar to recruit 4-6 patients who had presented for three or more consultations in the past 6 months, had a score of four or more on the 12 item general health questionnaire (GHQ-12), and who experienced emotional symptoms. Exclusion criteria were severe medical illness, current contact with psychiatric services (or contact in the past year), current psychological treatment or past cognitive behavioral therapy, severe mental disorder, organic psychiatric disorder or

substance misuse, active suicidal ideas, and lack of sufficient Dutch language to participate. Registrars in the intervention group received a 2 day training course in PST<sup>14</sup> and provided the psychological treatment to the patients they had recruited within 8 months. Registrars in the control group provided 'care as usual' and were asked to complete their patient recruitment within 4 months. The trial design was approved by the Medical Ethics Committee of the Radboud University Nijmegen Medical Centre, The Netherlands.

### Outcomes and analysis

We administered a self developed questionnaire to explore registrars' opinions about their participation in the trial, barriers they experienced in patient recruitment, and their opinions and suggestions with regard to enhancing research participation. Recruitment data were obtained from the trial records. Recruitment data and scaled answers from the questionnaire were analysed with descriptive statistics and independent sample t-tests using

SPSS statistical analysis software. The answers to open ended questions were independently ordered into categories.

### Results

Sixty-seven of the 70 registrars participated in the trial (37 in intervention group [27 women] and 30 as controls [18 women]). Registrars randomly allocated to the intervention or control group in 2003 expressed resistance to obligatory participation. We modified the process for the 2004 cohort, offering registrars an individual choice to participate in the training. Registrars who participated in PST training comprised the intervention group (17); the others, providing usual care, were regarded as the control group. The registrars were also offered more research assistance, and both groups were given 8 months to recruit patients.

### Patient recruitment

The registrars in the 2003 intervention group recruited 83 patients; the registrars in the control group

**Table 1** Recruitment of patients

	2003		2004		p-value
	Mean number of patients per registrar	Range	Mean number of patients per registrar	Range	
Intervention group	4.2	1-9	3.9	2-6	0.653
Control group*	1.0	0-3	2.5	0-5	0.007
Total	3.0		3.2		0.781

\* Control group recruitment in 2003 took 4 months; in 2004 8 months (intervention group recruitment in both years 8 months).

recruited 11 patients. The registrars in the 2004 intervention group recruited 66 patients; the control group 48 (Table 1). We explicitly asked registrars in 2004 to describe the difficulties they had experienced recruiting patients (Table 2).

### Registrars' opinions and suggestions

The questionnaire had a response rate of 84% (30 of 37 registrars in the intervention group, 26 of 30 registrars in the control group [ $p=0.54$ ]).

Positive points reported by the registrars included the interesting and relevant nature of the topic, the opportunity to learn a new skill, becoming acquainted with and contributing to research and evidence based medicine, good research support, becoming more attentive to diagnosing and treating emotional

problems, and developing a critical view.

Negative points included the time investment required (this was especially mentioned by intervention group registrars). All registrars in 2003 criticised obligatory participation; only control group registrars were negative about obligatory participation in the 2004 cohort.

To improve participation, registrars suggested they be allowed to choose between several research projects to better match the research topic with their personal interests. They felt they needed to spend enough time in clinical practice training, early and good information about a research project, and involvement of their general practitioner tutors in patient recruitment.

**Table 2** Important factors in the recruitment of patients (2004, 31 respondents)

Response to question 'Did the following reason play a role in the inclusion of patients?' in questionnaire	Numbers of registrars (%)		
	Yes	No	Missing
Lack of patients who met inclusion criteria	18 (58)	12 (39)	1 (3)
Lack of time	16 (52)	14 (45)	1 (3)
Patients refusing to start the intervention*	10 (67)	4 (27)	1 (7)
Patients refusing to participate in research	12 (39)	18 (58)	1 (3)
Too many administrative actions	12 (39)	17 (55)	2 (6)
Difficulties in explaining the research	8 (26)	23 (74)	
Difficulties leaving the role as a GP and asking patients for research participation	8 (26)	22 (71)	1 (3)
Lack of patients with emotional symptoms	3 (10)	28 (90)	

\* Intervention group (15 respondents)

In 2003, all respondents said that they wanted to be involved in research in the future; in 2004 this was the case for 14 of 15 intervention group respondents and nine of 13 control group respondents (Table 3).

### Discussion

Sixty-seven registrars recruited 208 patients in total. Registrars expressed an interest in participation and appreciated contributing to research. They enjoyed learning a new skill and being more attentive to a particular disease and/or symptoms. Nevertheless, their patient recruitment rate was below our expectations. Initially the obligatory nature of participation was considered to be an important barrier. Engaging registrars by offering the choice to voluntarily take part in the training did not

however, result in major improvements in recruitment: the doubled patient recruitment rate in the control group can be attributed to the doubled recruitment period.

Registrars suggested that the option to choose an interesting and relevant research topic, the opportunity to learn new skills and a report of the research results would make participation in research projects more attractive.

The recruitment rate in this trial does not differ from the moderate recruitment rates recorded by GPs: Peto et al,<sup>15</sup> for instance, found an average rate of 3.7 patients recruited per GP per annum. Registrars' barriers and wishes are also comparable with those of GPs: moderate patient recruitment because of time pressures, the need for interesting,

**Table 3** Requirements that make research projects attractive for participation during vocational training (2004, 31 respondents)

Requirements of research project		Mean score on 5-point scale*
<b>Most important</b>	The topic should be interesting	4.7
	The topic should be relevant to general practice	4.7
	There should be a report of the research results	4.6
<b>Less important</b>	I should have enough time	4.4
	I should learn something, e.g. a skill	4.2
	The project should be well adapted to the practice	4.0
	There should be feedback on my own performances	4.0
<b>Least important</b>	Participation should contribute to my own career	3.2
	I should have a say in the project	2.8
	There should be a financial reward	2.4

\* 1= very unimportant, 5=very important

practice oriented and relevant projects, personal support, good information, and good feedback about the research results.<sup>3,15-17</sup>

### **Strengths and limitations**

As far as we are aware, this is the first study exploring general practice registrars' actual performance in research. The study explored the attitudes of registrars toward research rather than opinions of GPs or directors of vocational training programmes. Furthermore, it studies registrars' opinions about participation in a trial within their routine practice rather than requiring them to conduct a research project themselves.

The study is limited however, by the modest sample of registrars, all of whom belonged to the same training program and who participated in a single trial alone. However, the findings are similar to those of other studies concerning registrars' appreciation of research experience.<sup>7,11</sup> The study was compromised by the change made in 2004 to select registrars on the basis of their motivation. In 2003, however, we observed variation in the registrars' selection and recruitment of patients, which was related to their individual motivation as expressed during supervision sessions. For this reason we believe the actual effects of the change were limited.

### **Implications for general practice**

Research experience during medical school is associated with postgraduate research involvement.<sup>18</sup> Assuming that this applies to registrars too – and assuming a desire for research to be part of the culture of family medicine – we suggest that researchers and training programmes should offer

research in such a way that registrars will find it an attractive activity in which to participate.

This requires attention to the wishes of registrars and availability of resources,<sup>11</sup> and the development of a culture that motivates registrars to prioritise research rather than a culture that views research as 'unnecessary'.<sup>19</sup>

The way in which the training environment values research is an important factor in how registrars respond to participation. This environment includes both the training program, training practice and the profession at large. Faculty play an important role in this.<sup>7</sup> With their expertise and experience, enthusiastic faculty could successfully integrate research into vocational training.<sup>20</sup> Finally, registrars might be motivated by colleague peers, namely registrars actively involved in research such as those with an academic registrar position.<sup>21</sup>

Creating attractive research programmes should motivate registrars to voluntarily participate in research. Research networks, departments of family medicine, and residency training programmes must collaborate to develop programmes that offer registrars the opportunity to participate in distinct research projects. Whether this increases registrars' participation in research activities is a question for further study.

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# 5 Problem-solving treatment for emotional problems in primary care – a Cochrane review

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### Abbreviations:

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BDI	Beck Depression Inventory
CCDAN-QRS	Cochrane Collaboration Depression, Anxiety and Neurosis Review Group - Quality Rating Scale: range 0-42 points
CIS	Clinical Interview Schedule
EPDS	Edinburgh Postnatal Depression Scale
EQ-5D	Euroqol - 5 Dimensions
GHQ-12	12-item General Health Questionnaire
GHQ-28	28-item General Health Questionnaire
GP	General Practitioner
HADS	Hospital Anxiety & Depression Scale
HDRS	Hamilton Depression Rating Scale
HSCL-D	Hopkins Symptom Checklist Depression Scale Jadad scale: range 0-5 points
PHQ	Patient Health Questionnaire
PSE	Present State Examination
PSI	Problem Solving Inventory
PST	Problem-solving treatment
PSYCHLOPS	Psychological Outcomes Profiles
RCT	Randomised Controlled Trial
SAS	Social Adjustment Scale
SCID	Structured Clinical Interview for DSM-Disorders
SF-36	Short Form-36
SPSI-R	Social Problem Solving Inventory - Revised
SSI	Social Support Inventory
TicP	Trimbos/iMTA questionnaire for Costs associated with Psychiatric Illness
WAYS	Ways of Coping Questionnaire

## **Abstract**

### *Background*

Many patients present to their general practitioner with 'emotional problems'. Emotional problems may include true mental disorders but may also include psychosocial problems or psychological symptoms not severe enough to reach thresholds for a formal diagnosis. Current evidence-based care consists of medication and/or some form of psychological treatment. Evidence for psychological treatment, however, comes largely from studies in the *secondary care* setting, yet there is considerable demand for psychological treatments within *primary care*. Problem-solving treatment (PST) is a brief psychological treatment which has shown effectiveness in primary care patients with depression.

### *Objectives*

To assess the effectiveness of PST versus usual care, medication, or other psychological treatments in adult patients with emotional problems in primary care.

### *Search methods*

We searched The Cochrane Collaboration Depression Anxiety and Neurosis group Controlled Trials Register (CCDAN-CTR), Medline, EMBASE, CINAHL, LILACS, PsycInfo, databases of ongoing trials, and reference lists. Date of search was January 2008.

### *Selection criteria*

Randomised controlled trials comparing PST in a primary care setting with any other intervention for adult patients with emotional problems.

### *Data collection and analysis*

Two reviewers read all abstracts, assessed quality and extracted data independently. The standard mean difference was used to pool continuous data, and odds ratios were used to pool dichotomous data, using a random effects model.

### *Results*

We included twelve trials (2261 participants). Control conditions consisted of usual care (8 studies), antidepressant medication (3 studies), placebo medication (2 studies), or another psychological treatment (5 studies). Four studies were of good quality, five studies of moderate quality and three studies of low quality. Overall, PST was not different from usual care, antidepressants, placebo or other psychological treatments. For patients with major depression, however, two good quality trials showed that PST was more effective than usual care, placebo medication and group psychoeducation. For patients with other emotional problems we found evidence in one moderate quality trial favouring PST above usual care whereas six other trials did not show differences between PST and control treatments. Costs and health care use did not show major differences.

### *Authors' conclusions*

We consider PST more effective than control treatments for major depression in primary care. For emotional problems other than major depression however, there was insufficient evidence to show statistically significant differences between PST and usual care, medication, placebo, or other psychological treatments.

## **Background**

### **Description of the condition**

Mental health disorders and other psychological problems are highly prevalent in primary care. The WHO Collaborative Study on Psychological Problems in General Health Care reported a pooled 21% point prevalence of disorders such as major depression, anxiety disorders, somatoform disorders and substance dependence in consecutive attenders of primary care facilities across 14 countries (Ormel 1994). These disorders are the cause of considerable disability. Moreover, these disorders frequently occur as comorbid conditions in primary care (Wittchen 1999). Additionally, psychological symptoms that do not reach thresholds for formal diagnoses are generally excluded from such prevalence estimates despite their prevalence, the accompanying burden to patients, and the resultant increased use of health services (Gureje 2002). Finally, many patients present psychosocial problems to the general practitioner that are not classified into strictly mental categories but are labelled as: problems with work, problems with parents or children and so on. For the purposes of this study, we refer to all of the above disorders and psychological symptoms or psychosocial problems as 'emotional problems'.

Current evidence-based care for patients with emotional problems consists of medication (mainly antidepressants and/or sedatives) and/or some form of psychological treatment. Antidepressant medication, cognitive behaviour therapy and interpersonal psychotherapy have been proven effective in depressive

disorders; both antidepressants and cognitive-behaviour therapy are effective in panic disorder; cognitive therapy and some antidepressants are effective in generalized anxiety disorder (Kumar 2002; Geddes 2002; Gale 2002). However, the evidence for the use of psychological treatments comes largely from studies in secondary care. Additionally, psychological interventions are often relatively lengthy (12-16 sessions), scarce, and delivered only by specialists with a specific interest in a particular intervention. Despite the lack of evidence and potential barriers to more wide-spread use, there is considerable patient and physician demand for psychological treatments in primary care (Fritzsche 2002; Oopik 2006). Consequently, there is a need to both identify psychological interventions applicable to the treatment of emotional problems in primary care, as well as to assess the potential effectiveness of their use.

### **Description of the intervention**

Problem-solving treatment (PST) is a psychological intervention 'focusing on the here and now' (Mynors-Wallis 2000) and may be a suitable treatment to deal with the broadness of emotional problems seen in primary care. PST teaches patients to use their own skills and resources to improve functioning (Gath 1997). A link is established between emotional symptoms and current everyday problems and it is explained that if patients succeed in solving and gaining control over (part of) their problems, symptoms might improve. The treatment is relatively brief, with the first introductory session usually lasting one hour, and remaining sessions lasting maximum half an hour.

In primary care, PST has a maximum of 6 treatment sessions (Gath 1997) and can be administered by general practitioners, practice nurses, or other primary care workers. PST is thus considered a 'generic treatment' aiming to improve the individual's skills to solve problems encountered in everyday life. It is this generic character that makes PST uniquely applicable to the wide range of problems seen in the primary care setting.

### **Why it is important to do this review**

Three recently published systematic reviews have focused specifically on PST. Bell and D'Zurilla conducted a meta-analysis of controlled outcome studies on the efficacy of PST in reducing depressive symptomatology. PST was found to be as effective as other psychosocial therapies and medication, and more effective than support groups or no treatment (Bell 2009). Similarly, Cuijpers et al in 2007 conducted a meta-analysis of the effectiveness of problem solving therapies for treating depression. Their results showed a mean standardized effect size for PST of 0.83 in the random effects model, with very high heterogeneity (Cuijpers 2007). Because of the high heterogeneity, the authors recommended more research to ascertain the conditions and subjects in which these positive effects may be realized. A third review by Malouff aimed to assess the efficacy of PST across all types of mental or physical health problems (Malouff). This meta-analysis showed that PST is significantly more effective than no treatment ( $d=1.37$ ), treatment as usual ( $d=0.54$ ), and attention placebo ( $d=0.54$ ), but not significantly more

effective than other evidence-based treatments offered as part of a study ( $d=0.22$ ). While not statistically significant, there was a trend in favour of PST over other treatments in this meta-analysis. Ultimately, none of these three reviews specifically focused on studies performed in primary care and all of them recommended further research.

Three additional Cochrane reviews have addressed the treatment of emotional problems in *primary care*. Den Boer et al (Den Boer 2005) focused on the effectiveness of any kind of psychological treatment delivered by 'paraprofessionals' in community, primary and secondary care settings for the treatment of anxiety and depressive disorders. They reported positive outcomes for treatments delivered by paraprofessionals as compared to no treatment. In another review, Bower and colleagues (Bower 2001) aimed to assess the effectiveness and cost effectiveness of counseling interventions for patients with psychological and psychosocial problems considered suitable for counseling in primary care. The review showed a modest effectiveness of counseling in short term outcomes (standardised mean difference  $-0.28$ , 95% CI  $-0.43$  to  $-0.13$ ,  $n = 772$ ). A third review (Huibers 2003) assessed the effectiveness of a variety of psychosocial interventions delivered by general practitioners and concluded that there is little evidence for the use of psychosocial interventions by general practitioners. Of the interventions reviewed, PST for depression seemed the most promising tool for general practitioners, although the reviewers emphasised that stronger evidence is necessary

and effectiveness in routine practice has yet to be demonstrated (Huibers 2003). None of the above three reviews specifically addressed the effectiveness of PST for the broad range of emotional problems seen in primary care.

Responding to the requirement for a stronger evidence-base for PST in primary care, our review focuses on the effectiveness of PST provided by specifically trained general practitioners, nurses or other primary care health workers in patients with the broad range of emotional problems typically seen in the primary care setting.

### **Objectives**

We aim to assess the effectiveness of PST (delivered by general practitioners, practice nurses or other primary care workers) versus any other treatment in adult patients with emotional problems in primary care.

### **Methods**

#### **Criteria for considering studies for this review**

##### ***Types of studies***

We included randomised controlled trials on PST versus any other treatment. Non-randomised studies were excluded as they tend to be biased in unpredictable directions (Kunz 1998). Studies with both PST delivered to individuals and PST delivered in a group format were included. Studies on group treatment were included only if they used cluster randomization in their design.

##### ***Types of participants***

The review was intended to be broad

with respect to the diversity of problems and was not confined to patients with DSM-IV diagnoses such as major depression or anxiety disorder. We also aimed to include patients with 'below threshold disorders', minor depression, dysthymia and psychosocial problems. Therefore, all studies including adult patients with 'emotional problems' treated in a primary care setting were eligible for the review. We defined 'emotional problems' as 1) major depression according to DSM-III-R/DSM-IV or ICD-9/ICD-10 classification, 2) anxiety disorders according to DSM-III-R/DSM-IV or ICD-9/ICD-10 classification, 3) minor depression according to the DSM-IV classification, 4) dysthymia according to the DSM-IV classification, 5) psychological symptoms not reaching thresholds for classification systems, 6) psychosocial problems: problems with work, problems with relations, problems with (the acceptance of) disease, or 7) somatoform symptoms.

##### ***Types of interventions***

This review included studies using individualized or group-based PST as the experimental condition. PST consists of a maximum of 6 sessions with 7 stages (Mynors-Wallis 2005). The stages are: explaining the rationale; clarification of the problems; establishing achievable goals; generating solutions; selecting and implementing preferred solution; and evaluation. There was no restriction concerning the nature of control conditions. To be included in the review the article had to state that the therapists (general practitioner, psychologist, nurse or social worker) were trained in problem solving

techniques. Patients were required to have had at least three treatment sessions.

### **Types of outcome measures**

#### *Primary outcomes*

Given the broad range of problems and diversity of study designs, numerous outcome measures were used. We considered symptom severity (as measured with symptom scales) and recovery rates as primary outcome measures.

#### *Secondary outcomes*

As secondary outcomes we included quality of life measures and cost effectiveness. With respect to cost-effectiveness, we measured days off work and financial costs. Adverse effects such as deterioration of symptom scores, increased use of psychotropic medication, or more days off work were analysed separately.

### **Search methods for identification of studies**

#### **Electronic searches**

In order to identify studies for review, we searched the following databases (search date August 2009 - no language restriction):

1) The Cochrane Collaboration Depression Anxiety and Neurosis group Controlled Trials Register (CCDAN-CTR). This database contains records on trials comparing treatments within the scope of the CCDAN, including mood disorders, anxiety disorders, somatoform disorders, dissociative disorders, and eating disorders. The CCDAN-CTR also includes

clinically significant problems, such as deliberate self-harm and suicide attempt, which are often associated with these disorders. The register is updated quarterly and includes results from searches of CINAHL, EMBASE, LILACS, MEDLINE, NRR, PSYCLIT, PSYCINFO, PSYINDEX and SIGLE.

Additional quarterly screening of conference proceedings as well as hand searching of relevant journals are also conducted by the CCDAN.

We also separately searched 2) MEDLINE, 3) EMBASE, 4) CINAHL, 5) PsycINFO, 6) NRR, 7) Lilacs, and 7) Psynindex.

#### *Search strategy:*

We used the search strategy as modified by CCDAN ([www.iop.kcl.ac.uk/iop/ccdan.index.htm](http://www.iop.kcl.ac.uk/iop/ccdan.index.htm)). The syntaxes for the other databases were modified according to the properties of those databases.

The syntaxes for CCDAN-CTR, MEDLINE, EMBASE, CINAHL and PsycINFO can be found in the Appendices.

#### **Searching other resources**

Additionally searches were conducted by checking reference lists of retrieved publications as well as other reviews on PST. Finally we identified unpublished studies by personal communication with experts in the field and researchers currently performing trials on PST.

### **Data collection and analysis**

#### **Selection of studies**

Abstracts of records retrieved by the electronic searching process were assessed for inclusion in the review independently by two reviewers (LH and



JC) (Edwards 2002). If necessary the full article was read. Disagreements were resolved by discussion, or via mediation by a third reviewer (PL) when necessary

### **Data extraction and management**

Data extraction of selected trials was performed by two reviewers independently on pre-coded electronic forms. Disagreements were resolved by discussion. The following data were extracted:

1. General information: published/unpublished, title, authors, source, country, contact address, language of publication, year of publication, duplicate publication, sponsoring,
2. Trial characteristics: design, duration, randomisation method, allocation concealment, blinding of outcome assessors.
3. Interventions: integrity of PST (patient attended three or more sessions), number of PST sessions, qualification of providers (general practitioner, nurse, social worker), adequacy of provider training (provider received practical skills training in PST), number of providers, type of control intervention
4. Participants: sampling (convenience, random), inclusion and exclusion criteria, number of participants in intervention and control group at baseline, gender, age, baseline characteristics, duration of the emotional problem, definition of the emotional problem, withdrawals/ losses to follow up, subgroups,

5. Outcomes, adverse effects. The primary outcomes were changes in symptom scores as measured with any validated scale and recovery rates. Secondary outcomes were quality of life measures, resolution of psychosocial outcomes such as work related or relational problems and cost effectiveness. Finally, we recorded adverse events such as deterioration of symptom scores and adverse effects of medication.

We attempted to include any necessary missing data by directly contacting investigators.

### **Assessment of risk of bias in included studies**

#### Methodological quality

In order to determine study quality we used the validated 5-item Jadad scale (Jadad 1996) and the 23-item CCDAN Quality Rating Scale as a field-specific quality rating scale (QRS, see Table 1) (Moncrieff 2001). The Jadad scale contains items on randomization method, allocation concealment, blinding and completeness of follow-up. There is empirical evidence that allocation concealment, generation of allocation sequences, blinding and completeness of data is associated with trial results (Juni 2001). The scale has a range from 0 to 5, with higher scores indicating good quality. The QRS includes 23 items on sample size, allocation, use of diagnostic criteria, compliance, attrition and statistical analysis. Each item at the QRS is scored 0, 1 or 2, which gives a total score range of 0 to 46. Methodological quality was scored independently by two reviewers.

Disagreements were resolved by discussion or by consulting a third reviewer when discussion did not result in consensus.

We considered generation of allocation sequences adequate if the resulting sequences are unpredictable.

Unpredictability can be achieved by one of the following methods: computer generated random numbers, table of random numbers, drawing lots or envelopes, coin tossing, shuffling cards or throwing dice. Inadequate methods are: sequences resulting from case record numbers, date of birth, date of admission or alternation (Juni 2001).

We considered concealment of allocation sequences adequate 'if patients and enrolling investigators cannot foresee assignment': central randomisation (performed at a site remote from trial location) or sequentially numbered, sealed, opaque envelopes (Juni 2001). We included trials with inadequate allocation concealment in the meta-analysis, but planned to perform sensitivity analyses to study the influence of inadequate allocation concealment on outcomes.

Blinding of patients and care providers is not possible in studies on psychological treatments. The only possible form of blinding in trials on PST is blinding of outcome assessors, which was recorded.

Patients lost to follow-up after allocation to treatment groups may lead to attrition bias. Adequate handling of attrition bias presupposes analyses according to the intention to treat principle. Correct handling of losses to follow-up requires the application of the last observation carried forward principle (LOCF). Trials with > 20% lost to follow-up were considered inadequate. Trials with > 10%

difference in dropout rate between experimental and control group were considered inadequate as well.

We planned to further examine the influence of quality on the results of the meta-analysis with sensitivity analyses (see Statistical analysis).

### **Measures of treatment effect**

Continuous data were analysed if (i) means and standard deviations were available and (ii) there was no clear evidence of a skewed distribution i.e. if the data were normally distributed according to the original publication. As a measure of treatment effect for continuous data we used weighted mean differences (WMD). If data was skewed, measures were dichotomised according to the median value. Where different instruments or scales were used to measure the same clinical outcome, standardised mean differences (SMD) were calculated and combined across studies.

We used the differences from baseline to endpoint as the actual measure of effect of all continuous variables. The standard deviations of these differences are essential for the data to be included in the meta-analysis. If the standard deviation (SD) of the difference was not reported, we calculated the SD of the difference with the following formula:  $SD_{\text{paireddifference}} = \sqrt{[(SD1)^2 + (SD2)^2 - 2 \times r \times SD1 \times SD2]}$ .  $SD_{\text{paireddifference}}$  = standard deviation of the difference (pre- / post-treatment),  $SD1$  = Standard deviation of the pre-treatment value,  $SD2$  = Standard deviation of the post-treatment value,  $r$  = correlation coefficient between pre/post treatment. We used a conservative correlation coefficient of 0.4. Dichotomous data were analysed by calculation of the relative risk with the

95% confidence interval. If applicable we used NNT with 95% confidence intervals.

For the dichotomous and the continuous outcomes, a random effects model was used to allow for the expected heterogeneity. In pooling the data, we weighted the effect estimates by the inverse of their variance. Thus, the larger the trial the greater the weight the study received in the meta-analysis. We considered pooling not appropriate when the data were too heterogeneous as indicated by the  $I^2$  test and by inspection of the clinical characteristics.

#### **Unit of analysis issues**

There were no unit of analysis issues because all trials randomised participants individually.

#### **Dealing with missing data**

If outcome data had remained missing despite our attempts to obtain complete outcome data from authors, we performed an available-case analysis, based on the numbers of patients for whom outcome data were known.

#### **Assessment of heterogeneity**

Consistency of results was assessed visually and by examining  $I^2$ , a quantity which describes approximately the proportion of variation in point estimates that is due to heterogeneity rather than sampling error (Higgins 2002).

#### **Assessment of reporting biases**

As an indication for publication bias we examined funnel plots of effect size against study precision. (Egger 1997).

#### **Data synthesis**

If possible, and where appropriate, overall effects were calculated, using Cochrane Collaboration software (current version: RevMan 5).

#### **Subgroup analysis and investigation of heterogeneity**

We intended to separately analyse the effects of the intervention in the various emotional problems. We considered the following subgroups particularly relevant: major depression, anxiety disorders, dysthymia, somatoform symptoms and psychological problems not reaching thresholds for classification systems. Also, we intended to separately analyse the effects of the intervention by type of therapists, for instance nurses versus GPs.

#### **Sensitivity analysis**

Sensitivity analyses were conducted to determine the impact of study quality on outcome. The sensitivity of the results for good versus low quality was determined by subgroup analyses to explore the influence of the quality of the studies.

#### **Interpretation of Results**

We based our conclusions about effectiveness on the differences in psychological outcomes and quality of life outcomes. For this purpose we considered primarily the statistically significant results. For further refinement we discussed the clinical importance of the effects. Statistical significance was based on the 95% confidence intervals. Clinical importance was based on the 'minimal clinically important difference' (MCID) which we defined as a change of 15% or more on dimensional scales of

primary outcomes (symptom severity, quality of life) or as rate of recovery for specific syndromes. We therefore regarded numbers of recoveries as clinically relevant when the difference between PST and control group was 15% or more. For continuous outcomes, we looked at the extent of clinical importance by considering the relationship of the MCID with the point estimate and the 95% confidence interval (CI) surrounding it (Man-Son-Hing 2002):

1. definite, when the MCID is smaller than the lower limit of the 95% CI;
2. probable, when the MCID is greater than the lower limit of the 95% CI, but smaller than the point estimate of the efficacy of the intervention;
3. possible, when the MCID is less than the upper limit of the 95% CI, but greater than the point estimate of the efficacy of the intervention;
4. definitely not, when the MCID is greater than the upper limit of the 95% CI.

With regard to SMDs, we considered 0.5 and higher as the value for the MCID.

## **Results**

### **Description of studies**

#### **Results of the search**

The searches of the databases yielded a total of 2403 abstracts: 170 in the CCDAN-controlled trial register, 536 references in MEDLINE, 773 in CINAHL, 621 in EMBASE, 161 in

PsycINFO, 4 in Lilacs, 127 in Psynindex and 11 in the National Research Register. Of these 2304 abstracts, we studied, after removing duplicates, the full-text version of 130 articles for definite judgment on inclusion. We contacted 13 authors for additional information.

#### **Included studies**

Finally, 12 studies met eligibility criteria and were included in the review (Barrett 2000; Catalan 1991; Dowrick 2000; Kendrick 2005; Liu 2007; Lynch 1997; Lynch 2004; Mynors-Wallis 1995; Mynors-Wallis 1997; Mynors-Wallis 2000; Schreuders 2007; Tezel 2006). The studies by Williams and Barrett both belonged to the Treatment Effectiveness Project and were therefore described as one study.

#### **Patients, therapists and control treatments**

The twelve studies included 2261 subjects with 803 in the PST condition and 1458 in the control conditions. Participants were recruited from the community or in general practice during the consultation or in the waiting room. Most patients were between 18 and 65 years old; a minority were elderly people. Two studies included patients with major depression (Mynors-Wallis 1995; Mynors-Wallis 2000); three studies included patients with dysthymia, mild or minor depression (Barrett 2000 ; Lynch 1997; Lynch 2004); six studies included patients with a range of mental health problems, including depressed mood, anxiety, tension, or reaction to life difficulties (Catalan 1991; Dowrick 2000; Kendrick 2005; Liu 2007; Mynors-Wallis 1997; Schreuders 2007); and

one study included only women who were postpartum (Tezel 2006). Most studies used 'care as usual' as the control condition. Other studies used antidepressant medication, placebo medication or other psychological treatments. All control treatments were applied individually except the group psychoeducation in one study (Dowrick 2000). PST was generally applied as an individual treatment consisting of a maximum of 6 sessions with 7 stages. In 2 studies PST was applied by telephone (Lynch 1997; Lynch 2004). PST was mostly delivered by nurses; some studies used research GPs, psychiatrists, or psychologists. In all but two studies (Catalan 1991; Tezel 2006) it was clear that therapists were trained in PST. In three studies the adherence to the treatment protocol was checked by audio/videotaping (Dowrick 2000; Kendrick 2005; Schreuders 2007). In six studies there was supervision in order to optimize treatment quality. The number of sessions in PST and control interventions varied between 2 and 8. Three studies did not report the attendance rates (Lynch 1997; Lynch 2004; Tezel 2006). In the other studies, more than 2/3 of the patients had had 4 or more sessions. The only study with less than 3 sessions, which is considered as the minimum number needed for treatment, was the study by Liu with 2.3 sessions on average. Follow-up varied from 6 to 52 weeks. For the meta-analyses, we categorised four trials with a duration of 6-16 weeks for practical reasons in the 3-month follow-up category (Liu 2007; Lynch 1997; Lynch 2004; Tezel 2006) and one trial of 9-months follow-up in the 12-month follow-up (Schreuders 2007).

### **Excluded studies**

Other studies were excluded from the review (see excluded studies table), mainly because they were not performed in primary care or did not investigate PST. We excluded studies in which PST was part of a (stepped) care programme, e.g. the IMPACT study and the PEARLS study (Unutzer 2001; Ciechanowski 2004) because we could not calculate PST effects separately. The included studies table describes the characteristics of the trials, including the characteristics of participants, the interventions, outcome measures, and methodological quality. We did not find additional references via reference checking.

### **Risk of bias in included studies**

#### **Overall methodological quality**

All data related to quality assessment and outcome was extracted by two review authors, who then reached consensus on final ratings. Two studies scored 1 point on the 5-point Jadad scale, three studies 2 points, and seven studies 3 points (mean 2.4, SD 0.8). All studies scored zero points at the items 'described as double blind' and 'blindness adequately described'. The overall QRS mean score for included studies was 29.8 (SD 7.9), ranging from 17 (Lynch 1997; Tezel 2006) to 38 (Mynors-Wallis 2000), see Table 2 and Table 3. Four trials were of high quality (highest quartile of the QRS), five were of moderate quality and three of low quality. Most trials scored low on blinding of subjects and assessors, sample size, duration of follow-up, and intention-to-treat analysis.

## **Allocation**

### **Randomisation and allocation concealment**

Although all studies described the allocation of participants to groups as 'randomised', Lynch 1997, Lynch 2004 and Tezel did not specify their methods for generating the random sequence. Eight studies adequately concealed allocation of patients and three studies did not describe the method of allocation (Lynch 1997; Lynch 2004; Tezel 2006). Catalan used drawing cards from a random pack to assign participants to groups but it was not clear whether allocation was concealed from the investigators and therefore considered inadequate.

## **Blinding**

### **Blinding of treatment**

All studies scored zero points at 'blinding of subjects' because in psychological treatments it is not possible to keep patients and therapists blinded. Trials investigating PST versus antidepressant medication and placebo medication could keep medication blinded; PST, however, not. Therefore, we scored all trials zero points.

### **Blinding of outcome measurement**

The assessor was blinded in six studies (Barrett 2000; Catalan 1991; Liu 2007; Lynch 1997; Mynors-Wallis 1995; Mynors-Wallis 2000). Blinding was, however, not tested. Lynch 2004 did not report any blinding at all. In five studies this item was not applicable because of self rating outcome measures; these were rated as zero points.

## **Incomplete outcome data**

### **Losses to follow up**

We separated the attrition rate in 'non-compliance of patients with treatment' (non-completers, i.e. those who withdrew before the end of treatment) and 'lost to follow-up from study assessments' (those with incomplete follow-up data, i.e. until the very last follow-up of the regarding study). Non-compliance ranged from 0% to 33% (average 20%). Lost to follow-up numbers ranged from 0% to 45% (mean 27%, median 28%), with Lynch 1997 and Lynch 2004 being exceptionally high with 43% respectively 45%. Tezel did not report data on non-compliance; Barrett and Catalan did not report data on lost to follow-up. Reasons of non-completion were only given in four studies (Barrett 2000; Catalan 1991; Mynors-Wallis 1995; Mynors-Wallis 2000).

## **Effects of interventions**

### **Overview of results**

We calculated effect sizes for 158 comparisons in ten studies. The studies of Lynch 1997 and Lynch 2004 did not provide sufficient data to do so. The statistically significant results concerned comparisons on main outcome (24), cost-effectiveness (9) and patient satisfaction (1). All other comparisons (124) yielded effect sizes that were not statistically significant. Twenty-four comparisons on *main outcomes* showed statistically significant differences in outcome between PST and control treatment. Of these, nine were in favour of the control treatment and fifteen in favour of PST. The majority (13) of the statistically significant differences in favour of PST

resulted from two studies (Mynors-Wallis 1995; Dowrick 2000). In these studies PST was effective compared with placebo medication at 3-month follow-up, compared with usual care at 6- and 12-month follow-up and compared with group psychoeducation at 12-month follow-up. The nine statistically significant differences not in favour of PST resulted from 3 studies: antidepressants were more effective than PST for dysthymic or minor depressed patients, postnatal care was more effective than PST in women at risk for postpartum depression, and at one outcome generic mental health nurse care was more effective than PST for emotional symptoms.

The seven statistically significant effects of PST resulting from cost analyses demonstrated less days off, less consultations, less consultation costs and less medication costs but higher total treatment costs in the PST group (Kendrick 2005; Liu 2007; Mynors-Wallis 1997).

The significant difference resulting from measurement of *patient satisfaction* was in favour of PST as compared with usual care.

We performed 49 meta-analyses on effect sizes of 10 studies. Forty-six meta-analyses did not yield significant differences between PST and control condition. The three meta-analyses that did yield a significant difference favoured PST above usual care in quality of life outcomes at 6-month follow-up and favoured antidepressant medication above PST in psychological and quality of life outcomes at 3-month follow-up. Heterogeneity between studies was large ( $I^2$  varying from 0% to 91%).

## **Detailed description of results**

### **PST versus usual care**

#### **3-month follow-up**

Seven trials compared PST and usual care at 3-month follow-up (694 patients: 65 with minor depression/dysthymia; 629 with emotional symptoms). In individual studies we found statistically significant differences in 1 of 22 comparisons (with 13 different outcome measures in total). This difference was in favour of PST with a magnitude of 3 points on a scale ranging from 0-240 (Catalan 1991).

Trial data of Lynch 1997 and Lynch 2004 of patients with minor depression were not detailed enough to use the meta-analysis. In the first trial, BDI scores after treatment were significantly better in the PST group than in the usual care group. The second trial did not find any statistically significant difference in outcomes between PST and usual care.

We performed 10 meta-analyses: 6 with psychological symptom scores and 4 with quality of life scores. None of these yielded a statistically significant difference between PST and usual care. So, there is no evidence that PST was significantly more effective than usual care at 3-month follow-up.

#### **6-month follow-up**

Four trials compared PST and usual care at 6-month follow-up (602 patients: 317 with major depression; 285 with emotional symptoms). In individual studies we found 6 statistically significant differences in 17 comparisons (with 12 different outcome measures in total). These differences came from two studies and

were all in favour of PST. Catalan found a statistically significant WMD at the PSE of -4.70 (95% CI -8.35 to -1.05, n=47) in favour of PST. Dowrick's study, with mostly major depressed patients, found that PST patients had statistically significant better BDI scores (63-point scale) and SF-36 scores (mental role, social function, and mental health; 100-point scales). More PST patients than usual care patients recovered at the BDI (RR 2.54, 95% CI 1.85 to 3.50, n=270).

We performed 8 meta-analyses.

The meta-analyses of psychological symptom scores did not show statistically significant differences.

The meta-analysis of 3 trials measuring quality of life showed a statistically significant advantage for PST patients (SMD 0.33, 95% CI 0.15 to 0.51, n=497).

So, at 6-month follow-up, quality of life was significantly better for patients who received PST than for those who received usual care. Overall, there was no difference in effect on psychological symptoms.

### **12-month follow-up**

Two trials compared PST and usual care at 12-month follow-up (492 patients: 317 with major depression; 175 with emotional symptoms). In individual studies we found 1 statistically significant difference in 9 comparisons (with 7 different outcome measures in total). Depressed patients had statistically significant better scores at the 100-point SF-36 social function scale after PST than after usual care (WMD 14.01, 95% CI 5.51 to 22.51, n=218).

We performed 3 meta-analyses. SF-36 mental health scores did not differ significantly between groups. Also,

psychological outcomes and quality of life outcomes did not differ significantly between PST and usual care (SMD -0.11, 95% CI -0.36 to 0.14, n=345 respectively 0.15, 95% CI -0.06 to 0.36, n=345).

So, after 12 months, there were no differences between PST and usual care.

### **In conclusion**

At 3-month follow-up there were no statistically significant differences between PST and usual care. At 6-month follow-up, PST patients' quality of life was significantly better than usual care patients' quality of life and patients with major depression had higher chances of recovery after PST than after usual care. At 12-month follow-up, however, we did not find statistically significant overall differences in quality of life nor psychological outcomes.

### **PST versus antidepressant medication**

#### **3-month follow-up**

Three trials compared PST and antidepressant medication at 3-month follow-up (571 patients: 136 with major depression; 435 with minor depression/dysthymia). Medication consisted of an SSRI in two studies and amitriptyline in one study. In individual studies we found 4 statistically significant differences in 26 comparisons (with 8 different outcome measures in total). For 18-59 year-old patients with dysthymia or minor depression symptom resolution in the first 2 weeks was more rapid in the SSRI group than in the PST group but in week 2-11 this difference disappeared. HSCL-D scores improved significantly



more in the SSRI group. For dysthymic patients of 60 years and older HSCL-D scores improved significantly more too in the SSRI group. For minor depressed or dysthymic patients of 60 years and older HDRS scores improved significantly more in the SSRI group than in the PST group. The trial with major depressed patients did not show factors predictive for which patients might benefit from either PST or amitriptyline (Mynors-Wallis 1995). We performed 11 meta-analyses. Two showed significant differences in favour of antidepressant medication: psychological symptom scores (SMD 0.23, 95% CI 0.01 to 0.44 n=461) and the change in SF-36 Mental health score (WMD -2.70, 95% CI -5.20 to -0.19, n=329). Recovery rates did not differ significantly between groups: RR 0.98, 95% CI 0.83 to 1.17, n=564. The other 8 meta-analyses were not significantly different neither. Sensitivity analyses on tricyclic antidepressants and SSRI's did not alter these findings.

### **6-month follow-up**

At 6-month follow-up, one trial compared PST with an SSRI for 286 patients with minor depression or dysthymia and found no statistically significant difference in the numbers of recovered patients at the HDRS (RR 0.90, 95% CI 0.65 to 1.26, n=286).

### **12-month follow-up**

One trial compared PST versus an SSRI for 75 patients with major depression at 12-month follow-up (5 comparisons, 4 outcomes). PST did not lead to statistically significant more recovered cases than medication (RR 1.11, 95% CI 0.76 to 1.63, n=75). Other psychological outcomes were

not significantly different. Quality of life outcomes were not reported. Meta-analyses were not possible.

### **In conclusion**

There is some evidence that antidepressant medication is more effective for dysthymic or minor depressed patients than PST at the short-term. At the long-term there are no differences between PST and antidepressant medication for patients with dysthymia or major or minor depression.

### **PST versus placebo medication**

#### **3-month follow-up**

Two trials reported outcomes at 3-month follow-up (499 patients: 60 with major depression; 439 with minor depression/dysthymia). In individual studies we found 7 statistically significant differences in 21 comparisons (with 7 different outcome measures in total). Major depressed patients in the PST group had better scores at the PSE, SAS, BDI and HDRS and they had higher recovery rates than patients in the placebo group (RR 2.25, 95% CI 1.16 to 4.36, n=60). Dysthymic patients of 60 years and older had better SF-36 Mental health scores after placebo medication than after PST. Also, symptom resolution for patients aged 18-59 was quicker from week 0 to 2 at placebo medication. This difference disappeared from week 2 to 11.

We performed 6 meta-analyses. The proportion of recovered patients nor the psychological symptom scores and quality of life scores differed significantly between treatment groups (RR 1.06, 95% CI 0.77 to 1.46, n=505). Sensitivity analyses on age

nor diagnosis showed statistically significant differences.

### **6-month follow-up**

One trial reported recovery rates at 6-month follow-up (290 patients with dysthymia or minor depression). There were no statistically significant differences between PST and placebo for dysthymia nor minor depression (RR 1.02, 95% CI 0.75 to 1.39, n=290).

### **In conclusion**

Overall, there were no statistically significant differences in outcome between PST and placebo medication. In the study investigating patients with major depression, PST was more effective than placebo medication.

### **PST versus other psychological treatment**

#### **3-month follow-up**

Four trials reported outcomes at 3-month follow-up (436 patients: 98 with minor depression/dysthymia; 338 with emotional symptoms). In 3 trials, we found 2 statistically significant differences in 12 comparisons (with 10 different outcome measures in total). Both differences came from one trial, investigating PST versus postnatal care in women at risk for postpartum depression. The trial showed statistically significant more recoveries and a significant better improvement at the BDI in the postnatal care group than in the PST group (RR 0.49, 95% CI 0.31 to 0.76, n=62; WMD 6.30, 95% CI 2.84 to 9.76, n=62).

We performed 3 meta-analyses. Psychological symptom scores did not show statistically significant differences for emotional symptoms nor overall (overall SMD 0.22, 95% CI

-0.31 to 0.74, n=335). Quality of life outcomes neither differed significantly (SMD 0.12, 95% CI -0.11 to 0.36, n=273).

So, there is no evidence for statistically significant differences between PST and other psychological treatments. In the single study investigating PST in women at risk for postpartum depression, there was evidence that PST gave less improvement than postnatal care. In the other 3 trials, there were no differences in outcomes between PST or any other psychological treatment.

#### **6-month follow-up**

Two trials reported outcomes at 6-month follow-up. One regarded depressed patients (n=236, mainly major depression) and compared PST with group psychoeducation for depression. The other study regarded emotional symptoms (n=169) and compared PST with generic mental health nurse care. In the individual studies we found 1 statistically significant difference in 11 comparisons (with 10 different outcome measures in total): in the study with patients with emotional symptoms, Kendrick found statistically significant more improvement of 4 points on the 57-point CIS for generic mental health nurse care than for patients who received PST (WMD 4.00, 95% CI 0.12 to 7.88, n=133).

We performed 2 meta-analyses. Psychological outcomes did not differ significantly between PST and control groups (SMD 0.04, 95% CI -0.53 to 0.62, n=305). Neither existed statistically significant differences in quality of life scores (SMD 0.11, 95% CI -0.11 to 0.34, n=305).

So, at 6-month follow-up there were

no statistically significant differences between PST and general mental health nurse care or group psychoeducation.

### **12-month follow-up**

One study reported 12-month follow-up and included 236 depressed patients mainly suffering from major depression. It compared PST with group psychoeducation for depression. Three of 5 comparisons (with 4 different outcome measures in total) were significantly in favour of PST: 4 points on the 63-point BDI (WMD -4.15, 95% CI -7.01 to -1.29, n=172); 8 points on the 100-point SF-36 mental health score (WMD 7.69, 95% CI 1.25 to 14.13, n=172) and 14 points on the 100-point SF-36 mental role (WMD 13.61, 95% CI 0.97 to 26.25, n=172). The proportion of recoveries did not differ significantly between the PST group and the psychoeducation group (RR 1.17, 95% CI 0.90 to 1.51, n=172).

So, at 12-month follow-up PST for patients with major depression was more effective than group psychoeducation for depression, mainly in terms of quality of life.

### **In conclusion**

Overall, short-term outcomes after PST do not significantly differ from outcomes after other psychological treatments. PST might be less effective than postnatal care for women at risk for postpartum depression. The single trial with long-term outcomes, for patients with major depression, favours PST above group psychoeducation.

### **Costs and Health care use**

Of the twelve studies in this review, five reported data on costs or health care use. Of these, three trials

(Kendrick 2005; Mynors-Wallis 1997; Schreuders 2007) performed a formal cost analysis in terms of health care use, costs of disability days and costs of treatment, one study (Liu 2007) reported the number of GP consultations at 3-months follow-up and one study (Catalan 1991) briefly described health care use regarding GP consultations, prescription of psychotropic medication and referral to specialist psychiatric treatment. We found 9 statistically significant differences between PST and control treatment in 28 comparisons (with 7 different outcome measures in total). We performed 5 meta-analyses.

### **Disability days**

In the three trials reporting numbers of disability days and costs there was 1 statistically significant difference. Mynors-Wallis found a statistically significant lower number of 12 disability days at 6-month follow-up in the PST group than in the usual care group (WMD -11.88, 95% CI -20.99 to -2.77, n=70). The meta-analysis on total number of days off did not differ significantly between PST and usual care.

### **Health care use and costs**

Four trials compared numbers of GP-consultations during PST and during usual care. Kendrick found significantly less GP-consultations and hence lower consultation costs in PST than usual care patients. Mynors-Wallis found significantly lower medication costs for PST than for usual care patients. Mynors-Wallis and Kendrick, however, found higher total costs for PST than for usual care. Costs of hospital admissions did not differ significantly. The four meta-analyses did not show

significant differences.

Two trials compared numbers of GP-consultations during PST and during other psychological treatments. Both found significantly lower consultations rates, and hence costs, in the PST than the control treatment group. However, including the numbers of treatment sessions - additional to the GP-consultations - total costs between PST and other psychological treatment did not differ. Costs of medication and hospital admissions were not significantly different between groups either.

### **In conclusion**

There are no clinically or socially relevant differences between PST and control treatments with regard to the numbers and costs of disability days, nor total health care use and costs.

### **Satisfaction outcomes**

Four trials reported outcomes on patient satisfaction about treatment (Catalan 1991; Kendrick 2005; Mynors-Wallis 1997; Mynors-Wallis 2000). The 3 trials comparing PST with usual care all reported that patients experienced PST as more helpful (Kendrick 2005; Mynors-Wallis 1997), or that patients perceived PST as more positive (Catalan 1991) or that patients were more likely to recommend PST to a friend (Kendrick 2005; Mynors-Wallis 1997). In the trial comparing PST with antidepressant medication, PST did not result in higher patient satisfaction nor in a quicker or greater resolution of the patient's perception of the severity of their problems. Neither did PST result in a quicker or greater sense of mastery and self-control as rated by patients (Mynors-Wallis 2000).

### **In conclusion**

Patients were more satisfied after PST than after usual care or after antidepressant medication. Satisfaction levels of patients who received generic mental health nurse care were comparable with those of PST patients.

### **Clinical importance of the outcome effects**

For the continuous psychological outcomes and quality of life outcomes, we also looked at the clinical importance besides the statistical significance according to the method of Man-Stein. We found 21 statistically significant differences in 111 comparisons. Of the 21 statistically significant differences 13 were in favour of PST: 1 was definitely clinically important, 11 were probably important and one was possibly important. Definitely clinically important was the SF-36 social function score compared to usual care at 6-month follow-up (Dowrick 2000). With regard to the numbers of recoveries, we found 3 statistically significant differences in 21 comparisons. Two were clinically relevant in favour of PST compared to usual care at 6-month follow-up (Dowrick 2000) and compared to placebo medication at 3-month follow-up (Mynors-Wallis 1995). The third was relevant in favour of postpartum nurse care (Tezel 2006). Of the 90 non-statistically significant differences 51 were in favour of PST: 5 were probably important and 46 were possibly important. Twenty differences were definitely not clinically important.

### **Heterogeneity**

Heterogeneity was high. Firstly,

there were several types of patients included, varying from women at risk for postpartum depression to patients with anxiety, sleeping problems, psychosocial problems, dysthymia, minor or major depression. Secondly, types of comparison group varied from usual care to antidepressants, placebo, and various other psychological treatments. Thirdly, the length of follow-up varied from 6 weeks to 52 weeks with different follow-up moments between baseline and endpoint and many different outcome measures. Finally, the types of therapists varied from nurses to GPs, psychiatrists, psychologists and students.  $I^2$  ranged from 0% to 91%. Because of this high heterogeneity we described studies individually too.

### **Subgroup analyses**

We intended to conduct subgroup analyses of the effects of the intervention on the various emotional problems, however, all subgroup data were derived from post-hoc analyses, and we therefore chose not to carry out these analyses. Data limitations also prevented us from performing subgroup analyses by type of therapists. According to the 'eye-ball test' we did not discover relevant differences in outcome between PST by nurses (7 studies), GPs (2 studies), psychiatrists (2 studies), psychologists (1 study), and (medical/psychology) students (1 study).

### **Sensitivity analyses**

We performed sensitivity analyses on the following items: study quality, allocation concealment and integrity of treatment. With regard to the first we repeated our analyses but omitted the three low quality studies (Lynch

1997; Lynch 2004; Tezel 2006). These studies scored worst at losses to follow-up. With regard to allocation concealment we repeated our analyses without these three studies and the study of Catalan because the adequacy of allocation concealment in these four studies was not clear. With regard to integrity of treatment, we repeated the analyses without Liu's study because the average delivered number of sessions in this study was less than 3. None of the sensitivity analyses altered our conclusions.

### **Publication bias**

We had too few studies to create reliable funnel plots for examining publication bias.

## **Discussion**

### **Summary of main results**

In our review we included 12 studies with 2261 patients. Two studies did not provide sufficient data to calculate differences between treatment groups. Three studies showed statistically significant differences favouring PST, three showed significant differences favouring control treatment and six did not show significant differences between PST and control treatments. For patients with major depression we found positive effects favouring PST over placebo medication (Mynors-Wallis 1995). For patients with emotional symptoms PST was favourable over usual care or group psychoeducation (Catalan 1991; Dowrick 2000). In Dowrick's study, 71% of participants with emotional symptoms had major depression. The positive evidence came from two trials of high quality (Dowrick 2000; Mynors-Wallis 1995) and one trial of moderate quality (Catalan

1991). PST affected quality of life more than psychological outcomes, which is consistent with the premise that PST affects quality of life improvements through addressing daily problems.

The type of therapist does not seem to determine the outcome in these trials as Dowrick had nurses and Catalan and Mynors-Wallis had GPs or a psychiatrist as PST therapists. Two trials favoured control treatment, one of high quality (Barrett 2000) and one of low quality (Tezel 2006): we found positive effects favouring (placebo) medication above PST in dysthymic or minor depressed patients (Barrett 2000); and for women at risk for postpartum depression postnatal care was favourable above PST (Tezel 2006). One high quality trial showed only one significant favourable effect for mental health nurse care above PST for patients with emotional symptoms (Kendrick 2005). Overall, we found few statistically significant differences between PST and usual care, (placebo) medication or other psychological treatments for patients with emotional symptoms. However, when looking at the clinical relevance of the non-significant differences, we cannot rule out the existence of positive effects in favour of PST.

### **Overall completeness and applicability of evidence**

Although we included only twelve studies (2261 participants in total), a broad range of patients were represented, varying from emotional symptoms, to at risk for post partum depression, to minor and major depression. We included trials using several types of control interventions varying from usual care, (placebo) medication and other psychological treatments. Also, all studies used valid

and reliable outcome measures that are relevant for primary care. Ultimately, we consider the external validity of the evidence to be good.

### **Quality of the evidence**

The mean score on the Jadad scale was 2.4 (range 1-3) and on the QRS 29.8 (range 17-38). According to the QRS, four studies were of high quality, five of moderate quality and three of low quality. There was no clear relation between quality and outcome because both low and good quality trials pointed both in positive and neutral directions for PST, which was confirmed by our sensitivity analyses on high/moderate versus low quality. The evidence in our review had some limitations. Firstly, most sample sizes were small. This led to many wide confidence intervals in the differences between outcomes which made interpretation of clinical relevance often inconclusive because many significant and non-significant differences in outcomes were 'possibly' or 'probably' clinically important. Secondly, there was only one study with 'time and attention' as control condition (Mynors-Wallis 1995). The lack of 'time and attention' control groups in the other studies might have caused an overestimation of the effect of PST. From the five studies with a psychological treatment as control group (Dowrick 2000; Kendrick 2005; Liu 2007; Lynch 2004; Tezel 2006), in which time and we presume attention was provided too, only Dowrick showed relevant differences in favour of PST. We, therefore, cannot exclude the possibility that structural time and attention is more important than the specific type of intervention provided. Thirdly, there was no blinding of participants in the trials but this is

inherent to studies of psychological treatments. If applicable, however, outcome assessors were blinded. Fourthly, there was not any study in which the patient's own GP applied PST. As a good doctor-patient relationship contributes to the effectiveness of treatments in non-specific ways, this lack of patient-doctor relationship might have given an underestimation of the effect of PST and this might explain the good outcome of usual care. Fifthly, in three studies the same therapists delivered both PST and a control intervention (Mynors-Wallis 2000; Lynch 2004; Tezel 2006) which might have led to contamination i.e. the application of PST principles in the control intervention, leading to an underestimation of the treatment effect of PST. Sixthly, six studies had a very short follow-up, ranging from 6 to 16 weeks. In medication studies, e.g. Barrett 2000, an 11-week follow-up is too short to make sure you have reached the optimal effect, even more as in some cases the dose was raised in week 6-8 to the final dosage. For PST we would suggest a follow-up of at least 6 months as optimal effect is likely seen between 3 and 6 months after baseline. Finally, eight studies had more than 20% of patients lost to follow-up. This, however, is common in trials with psychological interventions (Huibers 2003).

#### **Potential biases in the review process**

We feel confident we were able to capture the existing body of evidence regarding PST in primary care for several reasons. Compared with the reviews of Cuijpers and Malouff we did not miss any relevant study and our review differed primarily only in so much as we included studies with

adults in primary care. Further, no additional studies were identified via reference checking after electronic searches suggesting our search strategy was sufficiently broad. Lastly, as one of our authors (LMW) is a pioneer in the field of PST and a leading authority regarding the application of PST to primary care, he is likely to be familiar with available literature on the subject.

There were, however, potential biases to the review process. Unfortunately we were unable to obtain additional data from two authors in spite of our request (Lynch 1997; Lynch 2004; Tezel 2006). These were, however, low quality trials and the results therefore likely less relevant. Similarly, we were unable to carry out comprehensive meta-analyses because studies were very heterogeneous in terms of types of participants, types of control treatments, outcome measures, and moments of follow-up. We therefore assigned more weight to the findings of individual studies rather than the limited number of meta-analyses we were able to carry out.

#### **Agreements and disagreements with other studies or reviews**

To our knowledge three other systematic reviews on PST have been performed (Cuijpers 2007; Malouff 2007; Bell 2009). Bell included 21 studies (1264 participants) looking at the efficacy of PST in decreasing depressive symptomatology. They showed PST to be equally effective as other psychosocial therapies and medication treatments, and significantly more effective than no treatment and support control groups. Cuijpers included 13 studies (1133 participants) investigating PST in

depression and found favourable results for PST in most studies. Contrary to our findings, they found that PST had smaller effects in major depression. This may be due to the fact that they included minor depression studies with positive effects that we did not include in our review because they did not take place in primary care. Heterogeneity in their study was very high. The authors therefore concluded that PST has varying effects on depression but that more research is needed to determine whether PST has larger or smaller effects.

Malouff included 31 studies (2895 participants) investigating PST in mental and physical health problems. The review showed that PST was significantly more effective than placebo treatment and treatment as usual, but not significantly more effective than other bona fide treatments such as antidepressant medication or other psychological therapies. These findings correspond with our own results.

### **Authors' conclusions**

#### **Implications for practice**

We suggest that care providers involved in the treatment of patients with emotional problems in primary care consider PST, along with other therapies of proven effectiveness (cognitive behaviour therapy, interpersonal therapy, antidepressant medication), for the treatment of major depression. It is preferable to be able to offer the patient several equally effective alternatives, because different patients prefer different treatments. Some patients prefer antidepressant medication, notwithstanding recent debate about

their effectiveness (Kirsch 2008) or adverse effects (Williams 2000). Most patients seem to prefer non-pharmacological treatments (Fritzsche 2002) however. Ultimately, the treatment choice should be the result of a shared decision process in which the patient's preference is considered after being appropriately informed by the primary care provider. If PST is the treatment of choice, it can be delivered by any appropriately trained therapist as we did not find relevant differences between types of therapists. We encourage interested general practitioners to learn PST as it is one of the briefest psychological treatments available and therefore fits well into the setting of daily practice. Further, a good patient-doctor relationship, as fostered by PST delivered by the patient's own physician, is likely to positively influence the treatment effect of PST (Kaptchuk 2008; Van Os 2005). For emotional problems other than major depression, only one moderate quality trial favoured PST above usual care (Catalan 1991). In six other trials we did not find evidence for statistically significant differences between PST and usual care, placebo, medication or other psychological treatments. Unfortunately, not knowing the exact content of 'usual care' in most trials, it is difficult to determine what specific or non-specific elements were effective. An alternative explanation is that other emotional problems may have relatively favourable outcomes with symptoms simply improving over time. This seems plausible as patients in this review did indeed improve after placebo and 'usual care'. Similarly, the same reasoning may explain why we found significant differences only for *major* depressed patients and not other milder forms



of depression or mood disorders. However, based on the results of clinical importance we could not exclude positive effects of PST above control treatments

### **Implications for research**

The effectiveness of PST in patients with emotional problems should be studied further considering both the high prevalence and associated disability burden (Wittchen 1999; Lecrubier 2001) as well as our finding that clinical relevant outcomes are probable and possible. Future researchers should endeavour to provide larger and more homogeneous samples. In addition, as our findings showed improvement of quality of life in PST-treated patients, we recommend further research in homogenous groups stratified by disability levels in order to quantify outcomes and facilitate subgroup analysis. Future studies should also include a control group in which an equal amount of 'time and attention' is provided to participants in an effort to provide a more comparative control for PST. Researchers should also consider studying the effects of PST as delivered by the patient's own GP in order to better assess

the effects of the patient-doctor relationship. Study outcomes should include costs, including both disability days and health care use, particularly for patients with major depression, as this information is currently lacking. Similarly, as long-term outcomes are limited in the current body of evidence on PST in primary care, and given that the optimal effect of PST is likely seen between 3 and 6 months after baseline, we recommend follow-up moments at 3, 6 and 12 months. Lastly, any future comparison with other treatments of proven effectiveness should be designed as equivalence trials (Hermens 2003).

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## Characteristics of studies

### Characteristics of included studies

#### **Barrett 2000**

<b>Methods</b>	Treatment Effectiveness Project. USA: Multicentre RCT to compare 3 conditions. Blocked and stratified randomisation (by site and diagnosis). Recruitment by referrals from GPs. Assessments on 3 occasions: baseline, 6 and 11 weeks.
<b>Participants</b>	656 Patients (aged >18) with dysthymia or minor depression (HDRS>9, 3 of 9 DSM-III-R symptoms of major depression >4 weeks) recruited from GPs in 4 cities. Mean age: 61; males: 53%
<b>Interventions</b>	T1 (n=218): Problem-solving treatment. T2 (n=217): Paroxetine (initiated at 10 mg/day and increased at week 2 to the target dose of 20 mg/day. At week 4 or 6, the dose could be increased to 30 mg/day and at week 6 or 8 to 40 mg/day for patients who showed partial or no improvement) and general support. C (n=221): Placebo (titrated as paroxetine) and general support. T1: 6 sessions over 11 weeks, first session 1 hour, subsequent visits 30 minutes each. Antidepressant medication use was prohibited; T2 and C: 6 sessions over 11 weeks, 10-15 minutes each. T1, T2, C: individual treatment. Therapists: PST-providers: 7 PhD psychologists and 5 masters prepared therapists. Medication therapists: psychiatrists (fellows), PC-physicians (residents), or general internists. Therapists received training in PST. Supervision of therapists during treatment unknown.
<b>Outcomes</b>	11-week follow-up: HDRS, HSCL-D, SF-36. In the 18-59 year-old group: Paroxetine and to a lesser degree PST improved remission of dysthymia more than the use of placebo plus nonspecific clinical management. For minor depression, the 3 interventions were equally effective. In the 60 years and older group: PST did not show significantly greater improvement but did show more rapid late-course resolution of symptoms than placebo plus clinical management. PST led to functional improvement for fewer patients than paroxetine.
<b>Notes</b>	Less females than males. Antidepressant prescription forbidden in PST group. PST fidelity check: no. Non-compliance (<4 sessions): T1: 18%; T2: 22%; C: 15%; overall 18%. Lost to follow-up: not reported. Compliance/attendance: 82% attended at least 4 treatment sessions and 79% completed all scheduled treatment sessions (T1: 84% completed all 6 sessions; T2 and C: 94% achieved target dose). T2, C: at each visit, patients self-reported medication adherence. ITT/PP analysis: ITT and PP. Quality Rating: Jadad scale = 3; CCDAN-QRS = 37.
<b>Allocation concealment?</b>	Adequate

## Catalan 1991

<b>Methods</b>	USA: Singlecentre RCT to compare 2 conditions. Recruitment by referrals from GPs. Assessments on 4 occasions: baseline, 4, 11 and 28 weeks.
<b>Participants</b>	113 Patients (aged 18-65) with recent onset complaints (anxiety, tension, depressed mood, irritability, sleep disturbance, or somatic symptoms) recruited from 26 GPs in 16 practices. During the next 4 weeks the GPs were free to give any treatment of their choice. At the end of week 4 patients were assessed at interview; those suitable were randomly allocated to PST or control treatment for the next 6 weeks. At week 4, 66 (58%) were low risk and 47 (42%) high risk. All high risk pts entered the trial. Mean age: 33.5; males: 32%
<b>Interventions</b>	T1 (n=21): Problem-solving treatment. C (n=26): Usual GP care (any treatment of the GP's choice, whether psychological, social, pharmacological or no treatment.) T1: 4 sessions over 6 weeks; T2: not specified. T1, T2: individual treatment. Therapists: 1 research psychiatrist. Therapists received PST training; PST supervision not reported.
<b>Outcomes</b>	28-week follow-up: PSE, GHQ-28, checklist of helpful components.  The PST group showed significant greater reductions in symptoms, both at the end of treatment and at follow-up.
<b>Notes</b>	Small sample size, only one psychiatrist delivering intervention. PST fidelity check: no. Non-compliance: T1: 0%; C: 0%; overall: 0%. Lost to follow-up: not reported. Attendance: median number of PST sessions 4. ITT/PP analysis: unclear. Quality Rating: Jadad scale = 3; CCDAN-QRS = 29.
<b>Allocation concealment?</b>	Unclear

## Dowrick 2000

<b>Methods</b>	Outcomes of Depression International Network. Europe (Ireland, UK, Norway, Finland, Spain): Multicentre RCT to compare 3 conditions. Recruitment in community. Assessments on 3 occasions: baseline, 6 and 12 months.
<b>Participants</b>	425 Patients (aged 18-65) with a depressive episode (according to ICD-10, dysthymia or adjustment disorder; depressive disorders according to DSM-IV, dysthymia adjustment disorder, bereavement, or other depressive disorders): 52% single major depressive disorders; 19% recurrent major depressive disorders; 16% dysthymia; 4% adjustment disorders; 9% others. Age: 5% 18-25 year-old, 46% 26-45 year-old, 50% 46-65 year-old; males: 35%
<b>Interventions</b>	T1 (n=128): Problem-solving treatment. T2 (n=108): Group psychoeducation for depression (promoting relaxation, positive thinking, pleasant activities and social skills). C (n=189): no intervention from the research team. T1: 6 30-60 minute sessions over 3 months; T2: 8 2,5 hour sessions; C: usual care of GP. T1, C: individual treatment; T2: group treatment. Therapists: Mental health facilitators with qualifications in psychology, nursing, or allied health professionals (unknown number). Therapists were trained and received supervision during treatment.

<b>Outcomes</b>	12-month follow-up: BDI, SF-36. Compared with the control treatment, PST and group psychoeducation participants were less likely to remain cases of depression and more likely to report improved subjective mental and social functioning. Participants assigned to PST were less likely to report depressive symptoms.
<b>Notes</b>	Concurrent antidepressant use was not an exclusion criterion. PST fidelity check: yes. Non-compliance: T1: 37%; T2: 56%; C: 0%; overall 29%. Lost to follow-up: T1: 30%; T2: 23%; C: 32%; overall 39%. Attendance: completed treatment T1: 63%; T2: 44%. ITT/PP analysis: ITT. Quality Rating: Jadad scale = 2; CCDAN-QRS = 34.
<b>Allocation concealment?</b>	Adequate

## **Kendrick 2005**

<b>Methods</b>	UK: Singlecentre RCT to compare 3 conditions. Stratified randomisation (by referring GP). Recruitment by referrals from GPs. Assessments on 3 occasions: baseline, 8 and 26 weeks.
<b>Participants</b>	247 Patients (aged 18-65) with a new episode of anxiety, depression or reaction to life difficulties (duration of symptoms 4 weeks to 6 months; GHQ-12 score 3 or more): around 42% mixed anxiety and depressive disorder, around 34% a diagnosis of moderate/severe depressive episode, 19% primarily anxiety disorder. Referred by 98 GPs in 62 practices. Mean age: 35; males: 30%
<b>Interventions</b>	T1 (n=90): Care from nurses trained in problem-solving treatment. T2 (n=79): Generic mental health nurse care (Nurses were asked to use whatever treatments they thought appropriate for the patient's problems). C (n=78): Usual GP care (GPs were asked not to refer patients for psychological treatments during the first 8 weeks). T1&T2: first session 1 hour, sessions 2-6 30-45 minutes each. T1, T2, C: individual treatment. Therapists: 53 community mental health nurses (29 T2; 24 T1). Therapists were trained and received supervision during treatment. All patients remained free to consult their GPs throughout the study, and to be prescribed psychotropic drug treatments as the GP thought fit.
<b>Outcomes</b>	26-week follow-up: CIS, GHQ-12, HADS, SAS, EQ-5D, Patient satisfaction. No significant differences between groups in effectiveness at either point. Satisfaction was significantly higher in both nurse-related groups, so were costs.
<b>Notes</b>	PST fidelity check: yes. Non-compliance (less than 4 sessions): T1: 38%; T2: 27%; C: 0%; overall: 22%. Lost to follow-up: T1: 20%; T2: 19%; C: 31%; overall 23%. Attendance: T1: 62% received 4 or more sessions; T2: 73% received 4 or more sessions. ITT/PP analysis: ITT analysis. Quality Rating: Jadad scale = 3; CCDAN-QRS = 37.
<b>Allocation concealment?</b>	Adequate

## Liu 2007

<b>Methods</b>	Taiwan: Singlecentre RCT to compare 3 conditions. Blocked randomisation. Recruitment by referrals from nonpsychiatric physicians. Assessments on 2 occasions: baseline and 16 weeks.
<b>Participants</b>	254 Patients (aged 18-70) with common mental disorders (CIS-R score 12 or more): major depressive disorder (53.1%), mixed anxiety and depressive disorder (26.8%; defined as a mixture of anxiety, depression, and various somatic symptoms with the sum of scores for each CIS-R section 12 or more, but not meeting criteria for other specific anxiety or depressive disorder), and anxiety disorders (20.1%). Recruited in general medical clinics in a general hospital (19 family physicians, 12 internists). Mean age: 43.7; males: 19%
<b>Interventions</b>	T1 (n=84): Problem-solving treatment plus usual care. T2 (n=85): Psychiatric consultation plus usual care. C (n=85): Usual care. T1: up to six sessions over 16 weeks, duration of sessions not reported; T2: consultation of a psychiatrist with follow-up visits to the psychiatrist at his/her discretion; C: patients continued seeing their treating physician as usual, and they were permitted to see mental health professionals. T1, T2, C: individual treatment. Therapists T1: 4 psychologists, 2 psychiatric social workers, psychiatric nurse. Therapists were trained; PST supervision not reported. Therapists T2: 6 psychiatrists. All patients remained free to consult their usual physicians throughout the study, and these physicians could prescribe psychotropic drugs.
<b>Outcomes</b>	16-week follow-up: CIS-R, HDRS, SF-36. No statistically significant differences between at 16 weeks on any of the measures.
<b>Notes</b>	Low mean number of PST sessions (2.27) PST fidelity check: unknown. Non-compliance (all dropt out before start of treatment): T1: 41%; T2: 19%; C: 20%, overall: 27%. Lost to follow-up: T1: 25%; T2: 9%; C: 22%; overall 19%. Attendance: on average 2.3 sessions. ITT/PP analysis: ITT. Quality Rating: Jadad scale = 2; CCDAN-QRS = 34.
<b>Allocation concealment?</b>	Adequate

## Lynch 1997

<b>Methods</b>	USA: Singlecentre RCT to compare 2 conditions. Stratified randomisation (by sex). Recruitment in waiting room of general practice. Assessments on 2 occasions: baseline and 7 weeks.
<b>Participants</b>	29 Patients (aged 18 or older) with a subthreshold or minor depression (as screened by the MOS-Depression Screening Inventory) recruited in the waiting room of a family practice. Mean age: 48; males: 14%
<b>Interventions</b>	T1 (n=15): Telephone-based problem-solving treatment C (n=14): Usual GP care T1: 6 sessions, administered by telephone, once a week, 20 minutes. T1, C: individual treatment. Therapists: 2 student therapists (one a second-year medical student, one graduate nursing student). Therapists were trained and received supervision by psychiatrist.
<b>Outcomes</b>	7-week follow-up: HDRS, BDI, Duke Health Profile, PSI. The PST group had significantly lower post-intervention scores on the HDRS compared with their pre-intervention scores; scores did not differ significantly over time in the control group.

<b>Notes</b>	Small sample, brief follow-up, comparison group treatment not described. PST fidelity check: no. Non-compliance: T1: 27%; C: 0%; overall 14%. Lost to follow-up (complete data): T1: 53%; C: 36%; overall: 45%. Lost to follow-up, just HDRS: T1: 27%; C: 7%; overall: 17%. Attendance: not reported. ITT/PP analysis: unclear. Quality Rating: Jadad scale = 2; CCDAN-QRS = 17.
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<b>Allocation concealment?</b>	Unclear
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## Lynch 2004

<b>Methods</b>	USA: Singlecentre RCT to compare 3 conditions. Stratified randomisation (by Hamilton scores (11-17, 18-26) and antidepressant use (use, nonuse). Recruitment in waiting room of general practice. Assessments on 2 occasions: baseline and 6 weeks.
<b>Participants</b>	54 Patients (aged 18 or older) with minor or moderate depression (HDRS score 11-26), recruited in the waiting room of 3 family medicine practices. Mean age: 38.5; males: 17%
<b>Interventions</b>	T1 (n=18): Telephone-based problem-solving treatment T2 (n=18): Stress-management intervention (as attention-control group; identifying sources of stress in one's life, discussing importance of diet and exercise in coping with stress.) C (n=18): Usual GP care (whatever the PC-physician deemed appropriate) T1, T2: 6 sessions, administered by telephone, once a week, 20 minutes. T1, T2, C: individual treatment. Therapists: nurses (unknown number). Therapists were trained and received supervision by psychiatrist.
<b>Outcomes</b>	6-week follow-up: HDRS, BDI, Duke Health Profile. No significant differences in the amount of decrease between groups on any scores.
<b>Notes</b>	Small sample, high dropout rate. The same therapists for both psychological treatments. PST was not clearly described. PST fidelity check: no. Non-compliance: T1: 50% (all dropt out before start of treatment); T2: 50% (all dropt out before start of treatment); C: 0%; overall 33%. Lost to follow-up: T1: 50%; T2: 50%; C: 28%; overall: 43%. Attendance: not reported. ITT/PP analysis: unclear. Quality Rating: Jadad scale = 1; CCDAN-QRS = 20.
<b>Allocation concealment?</b>	Unclear

## Mynors-Wallis 1995

<b>Methods</b>	UK: Singlecentre RCT to compare 3 conditions. Stratified randomisation (by severity of depression). Recruitment by referrals from GPs. Assessments on 3 occasions: baseline, 6 and 12 weeks.
<b>Participants</b>	91 Patients (aged 18-65) with major depression (low mood, 4 key depression symptoms, > 2 weeks, HDRS 13 or more): mean HDRS-scores in all groups around 18-19 = major depression. Referred by 26 GPs in 15 local practices. Mean age: 37.1; males: 23%
<b>Interventions</b>	T1 (n=30): Problem-solving treatment T2 (n=31): Amitriptyline (50 mg was prescribed for two nights, followed by an increase of 25 mg every third night until 150 mg was being taken) C (n=30): Placebo (same dosage scheme as T2) T1, T2, C: 6 sessions over 3 months (weeks 1, 2, 3, 5, 7, and 11). One additional therapy session could be offered at the therapist's discretion; first session about 60 minutes, session 2-6 about 70 minutes. T2, C: Amitriptyline and placebo were prescribed as if amitriptyline was being given, and both patient and therapist were blind to the contents of capsules. Specific psychological interventions were avoided, but non-specific interventions such as listening, encouraging, and sympathising were included. T1, T2, C: individual treatment. Therapists: 3 therapists (a psychiatrist experienced in PST and 2 GPs who had received training in PST and in a standardised method of drug administration). Therapists received training; supervision during treatment not reported.
<b>Outcomes</b>	12-week follow-up: HDRS, BDI, PSE, SAS. PST was significantly superior to placebo at both six weeks and 12 weeks on all outcome measures. No significant difference between PST and amitriptyline.
<b>Notes</b>	PST fidelity check: no. Non-compliance: T1: 3% (less than 4 sessions); T2: 13%; C: 13%; overall 10%. Lost to follow-up: not reported per group; overall 29%. Attendance: 4 sessions 90% (T1: 97%; T2: 87%; C: 87%), 6 sessions 71.4% (T1: 93%; T2: 81%; C: 40%). ITT/PP analysis: PP, only data of patients with 4 or more sessions were analysed. Quality Rating: Jadad scale = 3; CCDAN-QRS = 35.
<b>Allocation concealment?</b>	Adequate

## Mynors-Wallis 1997

<b>Methods</b>	UK: Singlecentre RCT to compare 2 conditions. Recruitment by referrals from GPs. Assessments on 3 occasions: baseline, 8 and 26 weeks.
<b>Participants</b>	70 Patients (aged 18-65), of 4 primary health care centres, with emotional disorders of at least a month's duration, identified by their GP. Complaints: anxiety, tension, depressed mood, irritability and sleep disturbance, somatic symptoms not apparently due to a physical disorder. The GP reassessed the patients 4 weeks after the initial consultation and only referred those with persistent symptoms: mild depression (17%); moderate depression (40%); severe depression (9%); generalised anxiety disorder (3%); mixed anxiety depression (11%); no psychiatric diagnosis (20%). Patients did not have to meet additional severity criteria. Mean age: 38; males: 23%
<b>Interventions</b>	T1 (n=40): Problem-solving treatment C (n=30): Usual GP care T1: 4 or 5 sessions over 8 weeks, unknown duration. T1, C: individual treatment. Therapists: 6 nurses (4 practice nurses, 1 district nurse, 1 health visitor). After treatment (week 8-26) all patients received usual GP care. Therapists received training and video-taped supervision during treatment.

<b>Outcomes</b>	26-week follow-up: CIS, GHQ-28, SAS, Self-report measure of patient satisfaction, number of disability days, number of days off work. No significant differences at clinical outcomes between groups at either follow-up assessment. The cost analysis showed that PST was more costly in terms of direct healthcare costs but there were significantly less disability days in the PST group.
<b>Notes</b>	No demographic characteristics per group. PST fidelity check: no. Non-compliance: T1: 28%; C: 0%; overall: 16%. Lost to follow-up: T1: 45%; C: 13%; overall: 31%. Attendance: T1: 73% 4 or more sessions. ITT/PP analysis: ITT. Quality Rating: Jadad scale = 3; CCDAN-QRS = 26.
<b>Allocation concealment?</b>	Adequate

## **Mynors-Wallis 2000**

<b>Methods</b>	UK: Singlecentre RCT to compare 4 conditions. Stratified randomisation (by severity and chronicity of depression). Recruitment by referrals from GPs. Assessments on 4 occasions: baseline, 6, 12 and 52 weeks.
<b>Participants</b>	151 Patients (aged 18-65) with major depression (HDRS 13 or more, symptoms > 4 weeks): mean HDRS-scores in all groups around 19-20 = major depression. Referred by 24 GPs. Mean age: 35; males: 23%
<b>Interventions</b>	T1 (n=39): Problem-solving treatment by GP T2 (n=41): Problem-solving treatment by nurse T3 (n=36): SSRI by GP (20 mg paroxetine or 100 mg fluvoxamine once daily. Aim was to encourage patients' compliance with medication in a supportive and encouraging framework but with avoidance of specific psychological interventions). T4 (n=35): SSRI by GP and Problem-solving treatment by nurse T1, T2: 6 sessions over 12 weeks; first 1 hour, session 2-6 30 minutes; T3: 6 sessions over 12 weeks; T4: 6 PST sessions and 6 drug sessions over 12 weeks. In all groups one extra treatment session could be offered if the therapist thought it clinically necessary. T1-T4: individual treatment. Therapists: 3 research GPs and 2 research practice nurses for all 4 groups. Therapists received training and supervision during treatment.
<b>Outcomes</b>	52-week follow-up: HDRS, BDI, CIS, SAS, credibility of treatment. All four groups improved during treatment. There were no significant differences between the four treatment groups at 6, 12, or 52 weeks.
<b>Notes</b>	In our review we only used data of T1 (PST by GP) and T3 (SSRI by GP). The same research GPs delivered both PST and drug sessions. PST fidelity check: no. Non-compliance: T1: 36%; T2: 22%; T3: 17%; T4: 17%; overall 23%. Lost to follow-up: T1: 36%; T2: 32%; T3: 17%; T4: 14%; overall: 25%. Attendance: completed treatment T1: 82%; T2: 61%; T3: 83%; T4: 83%. ITT/PP analysis: ITT. Quality Rating: Jadad scale = 3; CCDAN-QRS = 38.
<b>Allocation concealment?</b>	Adequate



## Schreuders 2007

<b>Methods</b>	The Netherlands: Singlecentre RCT to compare 2 conditions. Blocked randomisation with random permuted blocks of 4. Recruitment in waiting room of general practice. Assessments on 3 occasions: baseline, 3 and 9 months.
<b>Participants</b>	175 Patients (aged 18 or older) with mental health problems (GHQ-12 score 4 or more, 3 or more GP consultations in past six months): the 3 most frequently occurring diagnoses were major depressive disorder, panic disorder, and somatic disorder which was not further specified. Recruited in waiting rooms of 12 general practices. Mean age: 52.8; males: 29%
<b>Interventions</b>	T1 (n=88): Problem-solving treatment by nurse C (n=87): Usual GP care T1: up to 6 sessions over 3 months; first 1 hour, session 2-6 30 minutes. T1-C: individual treatment. Therapists: 12 nurses with experience in mental health care. Therapists received training and supervision during treatment.
<b>Outcomes</b>	9-months follow-up: HADS, PHQ, SPSI-R, SF-36, PSYCHLOPS, EQ-5D, costs and health care utilization. No significant differences between groups.
<b>Notes</b>	PST fidelity check: yes. Non-compliance: T1: 31%; C: 21%; overall 26%. Lost to follow-up: T1: 33%; C: 22%; overall: 27%. Attendance: T1: on average 4 sessions. ITT/PP analysis: ITT and PP. Quality Rating: Jadad scale = 3; CCDAN-QRS = 33.
<b>Allocation concealment?</b>	Adequate

## Tezel 2006

<b>Methods</b>	Turkey: Single centre RCT to compare 2 conditions. Random assignment, matched regarding mean scores on the BDI, parity and education level. Recruitment through screening (EPDS) in 10 primary health care units (BDI 10 or more). Assessments on 2 occasions: baseline and 6 weeks.
<b>Participants</b>	62 Women (postpartum one week) with a risk of postpartum depression (EPDS > 11) but without exhibiting major depression symptoms (as resulted from BDI and SCID). Mean age: 25; males: 0%
<b>Interventions</b>	T1 (n=32): Problem-solving training T2 (n=30): Care Group Intervention (Postnatal care was tailored flexibly to individual needs, using activities from the Nursing Interventions Classification). T1: one visit weekly for 6 weeks, 30-50 minutes. T1, T2: individual treatment. Therapist: one nurse researcher for both interventions. The therapist was trained in PST according to the principles of D'Zurilla. Supervision of therapist unknown.
<b>Outcomes</b>	6-week follow-up: BDI. T2 was effective women for with depressive symptoms and PST was also effective. Utilizing the BDI, it was found out that the nursing care was more effective than education alone.
<b>Notes</b>	No placebo group; very small groups, short follow-up. The same researcher delivered both interventions and interviewed all patients. PST fidelity check: no. Non-compliance: not reported. Lost to follow-up: T1: 0%; T2: 0%; overall: 0%. Attendance: not reported. ITT/PP analysis: ITT. Quality Rating: Jadad scale = 1; CCDAN-QRS = 17.
<b>Allocation concealment?</b>	Unclear

## Characteristics of excluded studies

### Reason for exclusion

<b>Alexopoulos 2003</b>	not performed in primary care
<b>Allen 2002</b>	not performed in primary care (hospital & oncology clinics)
<b>Arean 1999</b>	not performed in primary care (senior centres)
<b>Atha 1992</b>	no PST investigated
<b>Audrain 1999</b>	not performed in primary care, no PST investigated
<b>Avuso-Mateos 2007</b>	Predictors of compliance with psychological interventions
<b>Bail 2002</b>	no PST investigated (memory training, reasoning training, speed-of-processing-training)
<b>Bambling 2006</b>	PST in control group too (supervised vs unsupervised PST)
<b>Barrett 1999</b>	No RCT (description of Barrett 2001 that is included)
<b>Bennun 1985</b>	No RCT (description of 2 psychological approaches)
<b>Berglund 1997</b>	No PST investigated
<b>Blumberg-Lapidus 2001</b>	No PST as experimental condition investigated
<b>Brouwers 2007</b>	No PST
<b>Buwaldta 2006</b>	Not solely performed in primary care
<b>Ciechanowski 2004</b>	PEARLS Study: stepped care model without randomisation at the start
<b>Collins 1997</b>	No RCT, no PST investigated, no emotional symptoms investigated
<b>Del Pino 2004</b>	No PST investigated
<b>Den Boer 2007</b>	No PST, not performed in primary care
<b>Doorenbos 2006</b>	No PST investigated
<b>Elliott 2008</b>	Not solely performed in primary care
<b>Elliott 2009</b>	No PST investigated (a combined treatment)
<b>Elliott 2009-b</b>	Not performed in primary care
<b>Fitzpatrick 2005</b>	No PST investigated (one session only)
<b>Friedl 1998</b>	No RCT
<b>Gallo 2000</b>	No RCT (Editorial)
<b>Gellis 2007</b>	Patients not recruited in primary care
<b>Gellis 2008</b>	Patients not recruited in primary care
<b>Gensichen 2006</b>	No RCT
<b>Glasaow 2005</b>	No RCT
<b>Grant 1999</b>	No PST investigated
<b>Grant 2002</b>	Not performed in primary care
<b>Hussain 1981</b>	Not performed in primary care (nursing home)
<b>IJff 2007</b>	Not solely PST investigated (a combined treatment)
<b>IMPACT study 2001</b>	Stepped care model without randomisation at the start
<b>Inerney 2004</b>	Not performed in primary care
<b>Jacobson 1984</b>	No PST investigated
<b>Jacobson 1985</b>	No PST investigated
<b>Jannoun 1980</b>	No PST investigated (a combined treatment)
<b>Kelly 2007</b>	Prediction of engagement with psychological treatment
<b>Kenneav 2005</b>	No RCT
<b>Kina 1995</b>	No RCT
<b>Lapidus 2001</b>	No PST investigated
<b>McDonagh 2005</b>	No PST investigated (present-centered therapy)
<b>Mitchell 2009</b>	Not performed in primary care
<b>Mvnrns-Wallis 2001</b>	No RCT
<b>Nezu 1986</b>	Not performed in primary care
<b>Nezu 2003</b>	Not performed in primary care
<b>Pathways Study 2003</b>	Stepped care programme without randomisation at the start
<b>Patsiakos 1985</b>	Not performed in primary care
<b>Payne 1997</b>	No PST investigated (a counseling model)
<b>Parsteinsson 2003</b>	No RCT
<b>Rivera 2003</b>	No RCT
<b>Roberts 1995</b>	Not performed in primary care
<b>Robinson 2008</b>	Prevention rather than treatment of emotional symptoms
<b>Rovner 2007</b>	Not performed in primary care (outpatient clinic)
<b>Rovner 2008</b>	Prevention rather than treatment of emotional symptoms
<b>Rudd Rajah 1996</b>	Not performed in primary care, no PST investigated (combined treatment with PST as 1 of 3 components)
<b>Sahler 2002</b>	Not performed in primary care
<b>Sahler 2005</b>	Not performed in primary care (hospital sites)
<b>Salkovskis 1990</b>	Not performed in primary care, no PST investigated
<b>Schwartz 1998</b>	Not performed in primary care, no PST investigated (one session only)
<b>Sherwood 2005</b>	Not performed in primary care
<b>Shiplev 1973</b>	No RCT, no PST investigated
<b>Slimmer 2003</b>	No RCT
<b>Sliop 1978</b>	Not performed in primary care
<b>Tarrier 1993</b>	No emotional symptoms investigated
<b>Teri 1997</b>	No PST investigated
<b>Toseland 1989</b>	No PST investigated (combined treatment)
<b>Vallee 2000</b>	No RCT
<b>Van den Hout 1998</b>	No RCT
<b>Van der Klink 2003</b>	No PST investigated (stress inoculation training)
<b>Van Straten 2008</b>	No PST investigated (combined treatment)
<b>Van Vliet 2006</b>	No RCT
<b>Warmerdam 2008</b>	No PST investigated (combined treatment)
<b>Wood 1997</b>	Not performed in primary care (palliative care setting)

## Characteristics of studies awaiting classification

### ***Oxman 2008***

<b>Methods</b>	USA: RCT to compare 2 conditions Assessments on 4 occasions: baseline, 4, 9 and 35 weeks
<b>Participants</b>	141 Patients with minor depression
<b>Interventions</b>	T1 (n=72): PST T2 (n=69): usual care T1, T2: individual treatment
<b>Outcomes</b>	35-week follow-up: HRDS, MADRS, HSCL-d-20, Brief COPE, SF-36. PST patients improved more quickly than usual care patients did. Patients with an avoidant coping style showed greater improvement with PST than with usual care.
<b>Notes</b>	The data as currently presented in the paper are not appropriate for usage in meta-analyses. We asked the authors for more detailed outcome data.

## Characteristics of ongoing studies

### Hewitt 2004

<b>Study name</b>	Problem-solving treatment for Primary Care Depression
<b>Methods</b>	RCT
<b>Participants</b>	300 adults (aged 18 or older). Inclusion criteria: primary care patient; HDRS Score $\geq 10$ and minor depression at time of entry and after 4 weeks of observation. Exclusion criteria: psychosis, Obsessive Compulsive Disorder (OCD), or Post Traumatic Stress Disorder (PTSD); active substance abuse; receiving treatment for depression.
<b>Interventions</b>	In the first phase, participants are observed for 4 weeks to identify those most in need of depression-specific treatment. Participants are then exposed to the PST. After 4 weeks, patients who do not respond adequately to the treatment are randomly assigned to either continued PST or to usual care for 9 weeks. Participants are followed for 6 months after the study.
<b>Outcomes</b>	Not reported
<b>Starting date</b>	December 2002
<b>Contact information</b>	Not reported (see: <a href="http://clinicaltrials.gov/ct/show/NCT00055328">http://clinicaltrials.gov/ct/show/NCT00055328</a> )
<b>Notes</b>	

### Walsh 2004

<b>Study name</b>	PST in Geriatric Depression With Executive Dysfunction
<b>Methods</b>	
<b>Participants</b>	240 elderly people (aged 60 or older). Inclusion criteria: nonpsychotic, unipolar major depression; cognitive impairment; English speaking. Exclusion criteria: high suicide risk; dementia; acute or severe medical illness; current psychotherapy.
<b>Interventions</b>	Problem-solving therapy versus brief supportive therapy. Patients are randomly assigned to receive 12 sessions (1 session/week for 12 weeks) of either PST or BST.
<b>Outcomes</b>	Following treatment, patients are followed for 6 months to determine functional and clinical outcomes. Depression scales, disability scales, and scales that measure problem solving skills are used to assess patients.
<b>Starting date</b>	September 2002
<b>Contact information</b>	Jennifer Walsh: 914-997-5914
<b>Notes</b>	

## CCDAN Quality Rating Scale

1. Objectives	0 = objectives unclear 1 = objectives clear but main outcome not a priori 2 = objectives clear and main outcome a priori	12. Description of sample demographics	0 = little/no info (only age/sex) 1 = basic details (marital status/ethnicity) 2 = full description (socio-economic status/clinical history)
2. Sample size	0 = < 50 per Group 1 = 51-100 per Group 2 = > 100 per Group	13. Blinding of assessor	0 = not done 1 = done but no test of blind 2 = done and integrity of blind tested
3. Duration of trial and follow-up	0 = < 3 months 1 = > 3 months and < 6 months 2 = > 6 months	14. Compliance /attendance for therapy	0 = not assessed 1 = assessed for some experimental treatments 2 = assessed for all experimental treatments
4. Power	0 = not reported 1 = mentioned without details 2 = details of calculation provided	15. Details on side effects	0 = inadequate details 1 = recorded by group but details inadequate 2 = full side effect profiles by group
5. Method of allocation	0 = unrandomised and likely to be biased 1 = partial or quasi-randomised with bias possible 2 = randomised allocation	16. Record of number/reasons for withdrawal by group	0 = no information on withdrawals by group 1 = withdrawals by group without reason 2 = withdrawals and reason by group
6. Concealment	0 = not done or not reported 1 = partial concealment reported 2 = done adequately	17. Outcome measures/use of validated instruments	0 = outcomes not described clearly 1 = some outcomes not clearly described 2 = outcomes described and valid/reliable
7. Description of treatment	0 = main treatments not clearly described 1 = inadequate details of main or adjunctive treatments 2 = full details of main or adjunctive treatments	18. Group comparability and adjustment in analysis	0 = no information on comparability 1 = some information with adjustment 2 = sufficient information with adjustment
8. Blinding of subjects	0 = not done 1 = done, but no test of blind 2 = done and integrity of blind tested	19. Inclusion of withdrawals in analysis (ITT)	0 = not included or reported 1 = withdrawals included by estimation of outcome 2 = withdrawals followed up and included in analysis
9. Source of subjects, representativeness of sample	0 = source of subjects not described 1 = source of subjects but unrepresentative 2 = source of subjects plus representative sample	20. Results presented with data for re-analysis	0 = inadequate presentation 1 = adequate 2 = comprehensive
10. Diagnostic/inclusion criteria	0 = none 1 = diagnostic criteria or clear inclusion criteria 2 = diagnostic criteria and specification of severity	21. Appropriate statistical analysis	0 = inappropriate 1 = mainly appropriate 2 = appropriate and comprehensive
11. Record of exclusion criteria, exclusions, refusals	0 = criteria and number not reported 1 = criteria or number not reported 2 = criteria and number reported	22. Conclusions justified	0 = no 1 = partially 2 = yes
		23. Declaration of interests	0 = No 2 = Yes

## Quality Rating Scores per study

	Barrett 2001	Catalan 1991	Dowrick 2000	Kendrick 2006	Liu 2007	Lynch 1997	Lynch 2004	Mynors- Wallis 1995	Mynors- Wallis 1997	Mynors- Wallis 2000	Screuders 2007	Tezel 2006
Objectives and specification of main outcomes a priori	2	2	2	2	2	2	2	2	1	2	2	1
Sample size (number per group)	2	0	2	1	1	0	0	0	0	0	1	0
Planned duration of trial including follow up	0	2	2	2	1	0	0	1	2	2	2	0
Power calculation	2	0	2	2	0	0	2	2	0	2	2	0
Method of allocation/randomization	2	2	2	2	2	1	1	2	2	2	2	1
Concealment of allocation	2	0	2	2	2	0	0	2	2	2	2	0
Clear description of treatment (including doses of drugs) & adjunctive treatment	2	1	1	2	1	0	1	2	1	2	1	1
Blinding of subjects	0	0	0	0	0	0	0	0	0	0	0	0
Source of subjects described and representative sample recruitment	1	1	1	1	1	1	1	1	1	1	1	1
Use of diagnostic criteria (or clear specification of inclusion criteria)	2	2	1	2	2	1	2	2	2	2	2	1
Record of exclusion criteria and number of exclusions and refusals reported	2	0	2	2	2	1	2	2	0	2	2	0
Description of sample demographics	2	0	1	2	2	1	1	2	1	2	1	2
Blinding of assessor	1	1	0	0	1	1	0	1	0	1	0	0
Assessment of compliance with experimental treatments (including attendance for therapy)	2	2	1	2	2	0	0	2	2	2	2	0
Details on side-effects	1	0	0	0	0	0	0	0	0	0	0	0
Record of number and reasons for withdrawal by group (i.e. completing treatment or not)	2	2	1	1	1	1	1	2	1	2	1	0
Outcome measures described clearly or use of validated instruments	2	2	2	2	2	2	2	2	2	2	2	2
Information on comparability and adjustment for differences in analysis	2	2	2	2	2	2	1	2	1	2	2	2
Inclusion of withdrawals in analysis (ITT or endpoint)	1	2	2	2	2	0	0	2	1	2	0	2
Presentation of results with inclusion of data for re-analysis of main outcomes (eg SDs)	1	2	2	2	2	0	1	2	2	2	2	2
Appropriate statistical analysis (including correction for multiple tests where applicable)	2	2	2	2	2	2	1	2	2	2	2	1
Conclusions justified	2	2	2	2	2	0	0	2	1	2	2	1
Declaration of interests (eg source of funding)	2	2	2	2	2	2	2	0	2	2	2	0
Total CCDAN-QRS score (max 46)	37	29	34	37	34	17	20	35	26	38	33	17

## References to studies

### Included studies

#### **Barrett 2000**

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## Data and analyses

### 1 PST versus Usual Care at 3-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Change in GHQ-28 score	2	110	Mean Difference (IV, Random, 95% CI)	-1.20 [-4.23, 1.83]
1.2 Change in HADS depression score	2	252	Mean Difference (IV, Random, 95% CI)	-0.53 [-1.66, 0.59]
1.3 Change in HADS anxiety score	2	252	Mean Difference (IV, Random, 95% CI)	0.40 [-0.66, 1.45]
1.4 Change in HADS total score	1	130	Mean Difference (IV, Random, 95% CI)	-0.70 [-3.37, 1.97]
1.5 Change in CIS score	3	314	Mean Difference (IV, Random, 95% CI)	0.14 [-2.25, 2.53]
1.6 Change in SAS score	2	185	Mean Difference (IV, Random, 95% CI)	-0.05 [-0.22, 0.12]
1.7 Change in HDRS score	1	129	Mean Difference (IV, Random, 95% CI)	0.50 [-1.44, 2.44]
1.8 Change in PSE score	1	47	Mean Difference (IV, Random, 95% CI)	-3.00 [-5.64, -0.36]
1.9 Change in GHQ-12 score	1	122	Mean Difference (IV, Random, 95% CI)	-0.70 [-2.10, 0.70]
1.10 Change in SPSI score	1	130	Mean Difference (IV, Random, 95% CI)	3.45 [-1.15, 8.05]
1.11 Change in SF-36 Mental Health score	2	259	Mean Difference (IV, Random, 95% CI)	0.49 [-3.22, 4.21]
1.12 Change in SF-36 Physical Health score	2	259	Mean Difference (IV, Random, 95% CI)	0.30 [-3.44, 4.05]
1.13 Change in Euroqol-5D score	2	185	Mean Difference (IV, Random, 95% CI)	0.07 [-0.01, 0.14]
1.14 All depression scales, changes	5	491	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.28, 0.09]
1.15 All quality of life scales, changes	4	444	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.09, 0.32]

### 2 PST versus Usual Care at 6-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
2.1 Change in GHQ-28 score	2	105	Mean Difference (IV, Random, 95% CI)	-0.47 [-5.66, 4.72]
2.2 Change in SAS score	2	180	Mean Difference (IV, Random, 95% CI)	0.05 [-0.09, 0.18]
2.3 Change in CIS score	2	180	Mean Difference (IV, Random, 95% CI)	0.97 [-2.36, 4.31]
2.4 Change in HADS depression score	1	122	Mean Difference (IV, Random, 95% CI)	-0.73 [-2.38, 0.92]
2.5 Change in HADS anxiety score	1	122	Mean Difference (IV, Random, 95% CI)	1.59 [0.00, 3.18]
2.6 Change in BDI score	1	218	Mean Difference (IV, Random, 95% CI)	-3.09 [-5.78, -0.40]
2.7 Recoveries at BDI	1	270	Risk Ratio (M-H, Random, 95% CI)	2.54 [1.85, 3.50]
2.8 Change in GHQ-12 score	1	122	Mean Difference (IV, Random, 95% CI)	-0.50 [-1.77, 0.77]
2.9 Change in PSE score	1	47	Mean Difference (IV, Random, 95% CI)	-4.70 [-8.35, -1.05]
2.10 Change in SF-36 Mental Health score	1	218	Mean Difference (IV, Random, 95% CI)	8.91 [2.82, 15.00]
2.11 Change in SF-36 Mental Role score	1	218	Mean Difference (IV, Random, 95% CI)	11.89 [-0.02, 23.80]
2.12 Change in SF-36 Social Function score	1	218	Mean Difference (IV, Random, 95% CI)	17.47 [8.85, 26.09]
2.13 Change in Euroqol-5D score	2	180	Mean Difference (IV, Random, 95% CI)	0.06 [-0.02, 0.13]
2.14 All depression scales, changes	4	445	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.52, 0.13]
2.14.1 Emotional symptoms	3	227	Std. Mean Difference (IV, Random, 95% CI)	-0.15 [-0.63, 0.33]
2.14.2 Depressive disorders	1	218	Std. Mean Difference (IV, Random, 95% CI)	-0.31 [-0.58, -0.04]
2.15 All quality of life scales, changes	3	497	Std. Mean Difference (IV, Random, 95% CI)	0.33 [0.15, 0.51]
2.15.1 Emotional symptoms	2	180	Std. Mean Difference (IV, Random, 95% CI)	0.22 [-0.08, 0.52]
2.15.2 Depressive disorders	1	317	Std. Mean Difference (IV, Random, 95% CI)	0.39 [0.16, 0.62]



### 3 PST versus Usual Care at 12-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
3.1 Change in HADS total score	1	127	Mean Difference (IV, Random, 95% CI)	0.38 [-2.45, 3.21]
3.2 Change in BDI score	1	218	Mean Difference (IV, Random, 95% CI)	-2.05 [-4.61, 0.51]
3.3 Recoveries at BDI	1	171	Risk Ratio (M-H, Random, 95% CI)	1.01 [0.80, 1.29]
3.4 Change in SPSI score	1	127	Mean Difference (IV, Random, 95% CI)	4.51 [-0.63, 9.65]
3.5 Change in SF-36 Mental Health score	2	345	Mean Difference (IV, Random, 95% CI)	2.07 [-1.92, 6.07]
3.6 Change in SF-36 Physical Health score	1	127	Mean Difference (IV, Random, 95% CI)	-2.43 [-6.70, 1.84]
3.7 Change in SF-36 Mental Role score	1	218	Mean Difference (IV, Random, 95% CI)	6.60 [-4.83, 18.03]
3.8 Change in SF-36 Social Function score	1	218	Mean Difference (IV, Random, 95% CI)	14.01 [5.51, 22.51]
3.9 All depression scales, changes	2	345	Std. Mean Difference (IV, Random, 95% CI)	-0.11 [-0.36, 0.14]
3.9.1 Emotional symptoms	1	127	Std. Mean Difference (IV, Random, 95% CI)	0.05 [-0.30, 0.40]
3.9.2 Depressive disorders	1	218	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.49, 0.06]
3.10 All quality of life scales, changes	2	345	Std. Mean Difference (IV, Random, 95% CI)	0.15 [-0.06, 0.36]
3.10.1 Emotional symptoms	1	127	Std. Mean Difference (IV, Random, 95% CI)	0.05 [-0.30, 0.40]
3.10.2 Depressive disorders	1	218	Std. Mean Difference (IV, Random, 95% CI)	0.21 [-0.06, 0.48]

### 4 PST versus Medication at 3-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
4.1 Change in HDRS score	3	465	Mean Difference (IV, Random, 95% CI)	0.93 [-0.21, 2.07]
4.1.1 Minor Depression & Dysthymia, 18-59 year-old	1	126	Mean Difference (IV, Random, 95% CI)	0.30 [-1.28, 1.88]
4.1.2 Minor depression & Dysthymia, 60-years and older	1	215	Mean Difference (IV, Random, 95% CI)	1.70 [0.32, 3.08]
4.1.3 Major depression	2	124	Mean Difference (IV, Random, 95% CI)	0.36 [-2.87, 3.60]
4.2 Recovered cases (HDRS<8)	3	564	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.83, 1.17]
4.2.1 Major depression	2	129	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.69, 1.32]
4.2.2 Dysthymia, 18-59 year-old	1	85	Risk Ratio (M-H, Random, 95% CI)	0.92 [0.54, 1.57]
4.2.3 Minor Depression, 18-59 year-old	1	75	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.60, 1.57]
4.2.4 Dysthymia, 60-year and older	1	141	Risk Ratio (M-H, Random, 95% CI)	1.17 [0.80, 1.72]
4.2.5 Minor Depression, 60-year and older	1	134	Risk Ratio (M-H, Random, 95% CI)	0.91 [0.58, 1.43]
4.3 Change in BDI score	2	124	Mean Difference (IV, Random, 95% CI)	-0.75 [-5.26, 3.76]
4.4 HSCL-D symptom resolution, 18-59 year-old	1	320	Mean Difference (IV, Random, 95% CI)	0.05 [-0.34, 0.43]
4.4.1 week 0-2	1	160	Mean Difference (IV, Random, 95% CI)	0.24 [0.07, 0.41]
4.4.2 week 2-11	1	160	Mean Difference (IV, Random, 95% CI)	-0.15 [-0.33, 0.03]
4.5 Change in HSCL-D score	1	330	Mean Difference (IV, Random, 95% CI)	0.16 [-0.01, 0.33]
4.5.1 Minor Depression & Dysthymia, 18-59 year-old	1	123	Mean Difference (IV, Random, 95% CI)	0.25 [0.05, 0.45]
4.5.2 Dysthymia, 60-year and older	1	109	Mean Difference (IV, Random, 95% CI)	0.25 [0.01, 0.49]
4.5.3 Minor Depression, 60-year and older	1	98	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.23, 0.21]
4.6 Change in HSCL-D score	1	156	Mean Difference (IV, Random, 95% CI)	-0.10 [-0.32, 0.12]
4.6.1 Minor depression [Frank]	1	156	Mean Difference (IV, Random, 95% CI)	-0.10 [-0.32, 0.12]
4.7 Change in PSE score	1	56	Mean Difference (IV, Random, 95% CI)	0.30 [-4.08, 4.68]
4.8 Change in SAS score	2	124	Mean Difference (IV, Random, 95% CI)	-0.03 [-0.46, 0.41]

4.9 Change in CIS score	1	68	Mean Difference (IV, Random, 95% CI)	2.30 [-3.01, 7.61]
4.10 Change in SF-36 Mental Health score	1	329	Mean Difference (IV, Random, 95% CI)	-2.70 [-5.20, -0.19]
4.10.1 Minor Depression & Dysthymia, 18-59 year-old	1	124	Mean Difference (IV, Random, 95% CI)	-3.90 [-8.18, 0.38]
4.10.2 Dysthymia, 60 years and older	1	111	Mean Difference (IV, Random, 95% CI)	-3.40 [-7.49, 0.69]
4.10.3 Minor Depression, 60 years and older	1	94	Mean Difference (IV, Random, 95% CI)	-0.30 [-5.02, 4.42]
4.11 Change in SF-36 Physical Health score	1	124	Mean Difference (IV, Random, 95% CI)	-2.80 [-5.64, 0.04]
4.11.1 Minor Depression & Dysthymia, 18-59 year-old	1	124	Mean Difference (IV, Random, 95% CI)	-2.80 [-5.64, 0.04]
4.12 All depression scales, changes	3	461	Std. Mean Difference (IV, Random, 95% CI)	0.21 [-0.02, 0.44]
4.12.1 Major depression	2	131	Std. Mean Difference (IV, Random, 95% CI)	0.06 [-0.39, 0.51]
4.12.2 Minor Depression & Dysthymia, 18-59 year-old	1	123	Std. Mean Difference (IV, Random, 95% CI)	0.44 [0.08, 0.80]
4.12.3 Dysthymia, 60-year and older	1	109	Std. Mean Difference (IV, Random, 95% CI)	0.39 [0.01, 0.77]
4.12.4 Minor Depression, 60-year and older	1	98	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.41, 0.38]

## 5 PST versus Medication at 6-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
5.1 Recovered cases (HDRS<7) at 6 month follow-up [Oxman: Treatment completers only]	1	286	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.65, 1.26]
5.1.1 Minor depression, 18 years and older	1	132	Risk Ratio (M-H, Random, 95% CI)	0.77 [0.57, 1.02]
5.1.2 Dysthymia, 18 years and older	1	154	Risk Ratio (M-H, Random, 95% CI)	1.07 [0.80, 1.44]

## 6 PST versus Medication at 12-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
6.1 Change in BDI score	1	55	Mean Difference (IV, Random, 95% CI)	-0.80 [-8.06, 6.46]
6.2 Change in HDRS score	1	55	Mean Difference (IV, Random, 95% CI)	-1.70 [-5.66, 2.26]
6.3 Recovered cases (HDRS<8)	1	75	Risk Ratio (M-H, Random, 95% CI)	1.11 [0.76, 1.63]
6.4 Change in CIS score	1	55	Mean Difference (IV, Random, 95% CI)	-3.60 [-9.92, 2.72]
6.5 Change in SAS score	1	55	Mean Difference (IV, Random, 95% CI)	-0.20 [-0.54, 0.14]

## 7 PST versus Placebo at 3-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
7.1 Change in HDRS score	2	418	Mean Difference (IV, Random, 95% CI)	-1.89 [-4.16, 0.38]
7.1.1 Minor Depression & Dysthymia, 18-59 year-old	1	133	Mean Difference (IV, Random, 95% CI)	-1.30 [-3.02, 0.42]
7.1.2 Minor Depression & Dysthymia, 60-years and older	1	230	Mean Difference (IV, Random, 95% CI)	-0.35 [-1.70, 1.00]
7.1.3 Major Depression	1	55	Mean Difference (IV, Random, 95% CI)	-5.70 [-9.21, -2.19]
7.2 Recovered cases (HDRS<8)	2	505	Risk Ratio (M-H, Random, 95% CI)	1.06 [0.77, 1.46]
7.2.1 Major depression	1	60	Risk Ratio (M-H, Random, 95% CI)	2.25 [1.16, 4.36]
7.2.2 Dysthymia, 18-59 year-old	1	85	Risk Ratio (M-H, Random, 95% CI)	0.87 [0.52, 1.46]
7.2.3 Minor Depression, 18-59 year-old	1	76	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.56, 1.43]
7.2.4 Dysthymia, 60-year and older	1	142	Risk Ratio (M-H, Random, 95% CI)	1.23 [0.83, 1.83]
7.2.5 Minor Depression, 60-year and older	1	142	Risk Ratio (M-H, Random, 95% CI)	0.77 [0.50, 1.19]
7.3 Change in BDI score	1	55	Mean Difference (IV, Random, 95% CI)	-8.40 [-14.44, -2.36]
7.4 Change in HSCL-D score	1	351	Mean Difference (IV, Random, 95% CI)	0.00 [-0.12, 0.13]

7.4.1 Minor Depression & Dysthymia, 18-59 year-old	1	131	Mean Difference (IV, Random, 95% CI)	0.11 [-0.11, 0.33]
7.4.2 Minor depression, 60-years and older	1	103	Mean Difference (IV, Random, 95% CI)	-0.10 [-0.31, 0.11]
7.4.3 Dysthymia, 60-years and older	1	117	Mean Difference (IV, Random, 95% CI)	0.00 [-0.22, 0.22]
7.5 Change in HSCL-D score	1	168	Mean Difference (IV, Random, 95% CI)	-0.10 [-0.32, 0.12]
7.5.1 Minor depression [Frank]	1	168	Mean Difference (IV, Random, 95% CI)	-0.10 [-0.32, 0.12]
7.6 HSCL-D symptom resolution, 18-59 year-old	1	322	Mean Difference (IV, Random, 95% CI)	0.03 [-0.30, 0.37]
7.6.1 week 0-2	1	161	Mean Difference (IV, Random, 95% CI)	0.20 [0.03, 0.37]
7.6.2 week 2-11	1	161	Mean Difference (IV, Random, 95% CI)	-0.14 [-0.33, 0.05]
7.7 Change in PSE score	1	55	Mean Difference (IV, Random, 95% CI)	-6.10 [-10.47, -1.73]
7.8 Change in SAS score	1	55	Mean Difference (IV, Random, 95% CI)	-0.52 [-0.87, -0.17]
7.9 Change in SF-36 Mental Health score	1	350	Mean Difference (IV, Random, 95% CI)	1.80 [-2.08, 5.68]
7.9.1 Minor Depression & Dysthymia, 18-59 year-old	1	131	Mean Difference (IV, Random, 95% CI)	-1.60 [-5.48, 2.28]
7.9.2 Dysthymia, 60 years and older	1	118	Mean Difference (IV, Random, 95% CI)	4.88 [1.91, 7.85]
7.9.3 Minor Depression, 60 years and older	1	101	Mean Difference (IV, Random, 95% CI)	1.63 [-2.45, 5.71]
7.10 Change in SF-36 Physical Health score	1	131	Mean Difference (IV, Random, 95% CI)	-2.00 [-4.64, 0.64]
7.10.1 Minor Depression & Dysthymia, 18-59 year-old	1	131	Mean Difference (IV, Random, 95% CI)	-2.00 [-4.64, 0.64]
7.11 All depression scales, changes	2	406	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.53, 0.20]
7.11.1 Major Depression	1	55	Std. Mean Difference (IV, Random, 95% CI)	-0.85 [-1.40, -0.29]
7.11.2 Minor Depression & Dysthymia, 18-59 year-old	1	131	Std. Mean Difference (IV, Random, 95% CI)	0.17 [-0.17, 0.51]
7.11.3 Minor depression, 60-years and older	1	103	Std. Mean Difference (IV, Random, 95% CI)	-0.18 [-0.57, 0.21]
7.11.4 Dysthymia, 60-years and older	1	117	Std. Mean Difference (IV, Random, 95% CI)	0.00 [-0.36, 0.36]

## 8 PST versus Placebo at 6-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
8.1 Recovered cases (HDRS<7) at 6 months [Oxman: Treatment completers only]	1	290	Risk Ratio (M-H, Random, 95% CI)	1.02 [0.75, 1.39]
8.1.1 Minor Depression	1	136	Risk Ratio (M-H, Random, 95% CI)	0.88 [0.65, 1.19]
8.1.2 Dysthymia	1	154	Risk Ratio (M-H, Random, 95% CI)	1.20 [0.87, 1.64]

## 9 PST versus Other Psychological Treatment at 3-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
9.1 Change in HDRS score	1	140	Mean Difference (IV, Random, 95% CI)	-0.30 [-2.16, 1.56]
9.2 Change in HADS depression score	1	133	Mean Difference (IV, Random, 95% CI)	-0.01 [-1.54, 1.52]
9.3 Change in HADS anxiety score	1	133	Mean Difference (IV, Random, 95% CI)	-0.31 [-1.74, 1.12]
9.4 Change in BDI score	1	62	Mean Difference (IV, Random, 95% CI)	6.30 [2.84, 9.76]
9.5 Recovered cases on BDI	1	62	Risk Ratio (M-H, Random, 95% CI)	0.49 [0.31, 0.76]
9.6 Change in SAS score	1	133	Mean Difference (IV, Random, 95% CI)	0.00 [-0.14, 0.14]
9.7 Change in CIS score	2	273	Mean Difference (IV, Random, 95% CI)	-0.83 [-3.22, 1.57]
9.8 Change in GHQ-12 score	1	133	Mean Difference (IV, Random, 95% CI)	-0.48 [-1.83, 0.87]
9.9 Change in SF-36 Mental Health score	1	140	Mean Difference (IV, Random, 95% CI)	1.40 [-5.87, 8.67]
9.10 Change in SF-36 Physical Health score	1	140	Mean Difference (IV, Random, 95% CI)	3.30 [-4.12, 10.72]
9.11 Change in Euroqol-5D score	1	133	Mean Difference (IV, Random, 95% CI)	0.05 [-0.04, 0.14]

9.12 All depression scales, changes	3	335	Std. Mean Difference (IV, Random, 95% CI)	0.22 [-0.31, 0.74]
9.12.1 Emotional symptoms	2	273	Std. Mean Difference (IV, Random, 95% CI)	-0.06 [-0.30, 0.17]
9.12.2 Minor Depression	1	62	Std. Mean Difference (IV, Random, 95% CI)	0.89 [0.37, 1.42]
9.13 All quality of life scales, changes	2	273	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.11, 0.36]
9.13.1 Emotional symptoms	2	273	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.11, 0.36]

## 10 PST versus Other Psychological Treatment at 6-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
10.1 Change in HADS depression score	1	133	Mean Difference (IV, Random, 95% CI)	0.31 [-1.15, 1.77]
10.2 Change in HADS anxiety score	1	133	Mean Difference (IV, Random, 95% CI)	0.38 [-1.10, 1.86]
10.3 Change in BDI score	1	172	Mean Difference (IV, Random, 95% CI)	-2.48 [-5.50, 0.54]
10.4 Recoveries at BDI	1	178	Risk Ratio (M-H, Random, 95% CI)	1.08 [0.83, 1.39]
10.5 Change in SAS score	1	133	Mean Difference (IV, Random, 95% CI)	0.11 [-0.04, 0.26]
10.6 Change in CIS score	1	133	Mean Difference (IV, Random, 95% CI)	4.00 [0.12, 7.88]
10.7 Change in GHQ-12 score	1	133	Mean Difference (IV, Random, 95% CI)	0.45 [-0.62, 1.52]
10.8 Change in SF-36 Mental Health score	1	172	Mean Difference (IV, Random, 95% CI)	2.55 [-3.92, 9.02]
10.9 Change in SF-36 Mental Role score	1	172	Mean Difference (IV, Random, 95% CI)	3.52 [-9.53, 16.57]
10.10 Change in SF-36 Social Function score	1	172	Mean Difference (IV, Random, 95% CI)	3.22 [-6.03, 12.47]
10.11 Change in Euroqol-5D score	1	133	Mean Difference (IV, Random, 95% CI)	0.03 [-0.06, 0.12]
10.12 All depression scales, changes	2	305	Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.53, 0.62]
10.12.1 Emotional symptoms	1	133	Std. Mean Difference (IV, Random, 95% CI)	0.35 [0.00, 0.69]
10.12.2 Depressive disorders	1	172	Std. Mean Difference (IV, Random, 95% CI)	-0.25 [-0.55, 0.05]
10.13 All quality of life scales, changes	2	305	Std. Mean Difference (IV, Random, 95% CI)	0.11 [-0.11, 0.34]
10.13.1 Emotional symptoms	1	133	Std. Mean Difference (IV, Random, 95% CI)	0.11 [-0.23, 0.45]
10.13.2 Depressive disorders	1	172	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.18, 0.42]

## 11 PST versus Other Psychological Treatment at 12-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
11.1 Change in BDI score	1	172	Mean Difference (IV, Random, 95% CI)	-4.15 [-7.01, -1.29]
11.2 Recoveries at BDI	1	172	Risk Ratio (M-H, Random, 95% CI)	1.17 [0.90, 1.51]
11.3 Change in SF-36 Mental Health score	1	172	Mean Difference (IV, Random, 95% CI)	7.69 [1.25, 14.13]
11.4 Change in SF-36 Mental Role score	1	172	Mean Difference (IV, Random, 95% CI)	13.61 [0.97, 26.25]
11.5 Change in SF-36 Social Function score	1	172	Mean Difference (IV, Random, 95% CI)	6.67 [-2.48, 15.82]

## 12 Patient Satisfaction at 6-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
12.1 PST versus Usual Care	1	114	Mean Difference (IV, Random, 95% CI)	6.00 [3.43, 8.57]
12.2 PST versus Nurse Care	1	125	Mean Difference (IV, Random, 95% CI)	0.40 [-1.66, 2.46]

### 13 Days off work & Costs, PST versus Usual Care

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
13.1 Total number of days off work, 6-month follow-up (Emotional symptoms)	2	192	Mean Difference (IV, Random, 95% CI)	-4.32 [-19.00, 10.36]
13.2 Total number of days off work, 9-month follow-up (Emotional symptoms)	1	121	Mean Difference (IV, Random, 95% CI)	-9.50 [-30.38, 11.38]
13.3 Total costs of days off work, 6-month follow-up (Emotional symptoms)	1	122	Mean Difference (IV, Random, 95% CI)	2093.00 [-1815.51, 6001.51]
13.4 Total costs of days off work, 9-month follow-up (Emotional symptoms)	1	121	Mean Difference (IV, Random, 95% CI)	-1683.00 [-4021.08, 655.08]

### 14 Days off work & Costs, PST versus Other Psychological Treatment, at 6-month follow-up

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
14.1 Total number of days off work past 6 months (Emotional symptoms)	1	113	Mean Difference (IV, Random, 95% CI)	3.60 [-5.85, 13.05]
14.2 Total costs of days off work past 6 months (Emotional symptoms)	1	113	Mean Difference (IV, Random, 95% CI)	2186.00 [-1893.12, 6265.12]

### 15 Health care use & Costs, PST versus Usual Care

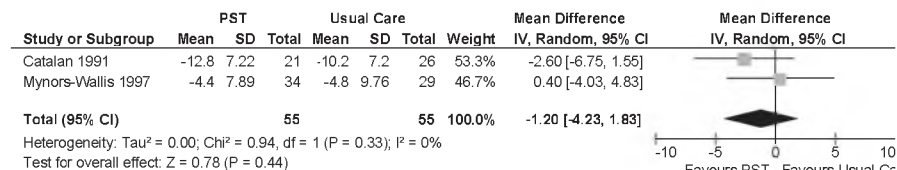
Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
15.1 Total number of GP consultations, 3-month follow-up (Emotional symptoms)	1	129	Mean Difference (IV, Random, 95% CI)	-0.57 [-1.14, 0.00]
15.2 Total number of GP consultations, 6-month follow-up (Emotional symptoms)	2	192	Mean Difference (IV, Random, 95% CI)	-1.08 [-2.57, 0.42]
15.3 Total number of GP consultations, 9-month follow-up (Emotional symptoms)	1	121	Mean Difference (IV, Random, 95% CI)	-0.70 [-2.09, 0.69]
15.4 Total costs of GP consultations, 6-month follow-up (Emotional symptoms)	2	192	Mean Difference (IV, Random, 95% CI)	-18.47 [-51.49, 14.55]
15.5 Total costs of GP consultations, 9-month follow-up (Emotional symptoms)	1	121	Mean Difference (IV, Random, 95% CI)	-14.00 [-42.40, 14.40]
15.6 Total Medications costs, 6-month follow-up (Emotional symptoms)	2	192	Std. Mean Difference (IV, Random, 95% CI)	-0.30 [-0.82, 0.21]
15.7 Total Medications costs, 9-month follow-up (Emotional symptoms)	1	121	Std. Mean Difference (IV, Random, 95% CI)	0.06 [-0.29, 0.42]
15.8 Total costs, 6-month follow-up (Emotional symptoms)	2	192	Mean Difference (IV, Random, 95% CI)	168.61 [-94.62, 431.83]
15.9 Total costs, 9-month follow-up (Emotional symptoms)	1	121	Mean Difference (IV, Random, 95% CI)	-2905.00 [-5940.71, 130.71]
15.10 Costs of hospital admissions, 6-month follow-up (Emotional symptoms)	1	122	Mean Difference (IV, Random, 95% CI)	0.00 [-60.27, 60.27]
15.11 Costs of hospital admissions, 9-month follow-up (Emotional symptoms)	1	121	Mean Difference (IV, Random, 95% CI)	-450.00 [-1130.46, 230.46]

### 16 Health care use & Costs, PST versus Other Psychological Treatment

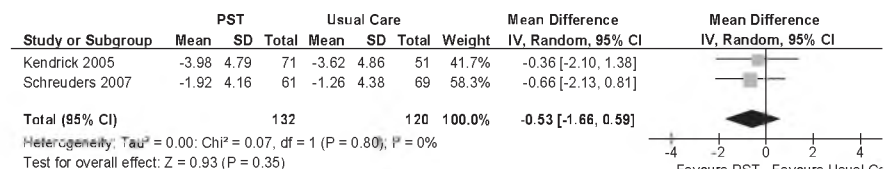
Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
16.1 Total number of GP consultations, 3-month follow-up (Emotional symptoms)	1	140	Mean Difference (IV, Random, 95% CI)	-0.70 [-1.25, -0.15]
16.2 Total number of GP consultations, 6-month follow-up (Emotional symptoms)	1	113	Mean Difference (IV, Random, 95% CI)	-1.22 [-2.21, -0.23]
16.3 Total costs of GP consultations, 6-month follow-up (Emotional symptoms)	1	113	Mean Difference (IV, Random, 95% CI)	-25.00 [-45.59, -4.41]
16.4 Total medications costs, 6-month follow-up (Emotional symptoms)	1	113	Mean Difference (IV, Random, 95% CI)	4.00 [-20.22, 28.22]
16.5 Total costs, 6-month follow-up (Emotional symptoms)	1	113	Mean Difference (IV, Random, 95% CI)	32.00 [-132.94, 196.94]
16.6 Costs of hospital admissions, 6-month follow-up (Emotional symptoms)	1	113	Mean Difference (IV, Random, 95% CI)	13.00 [-35.09, 61.09]

## 1. PST versus Usual Care at 3-month follow-up

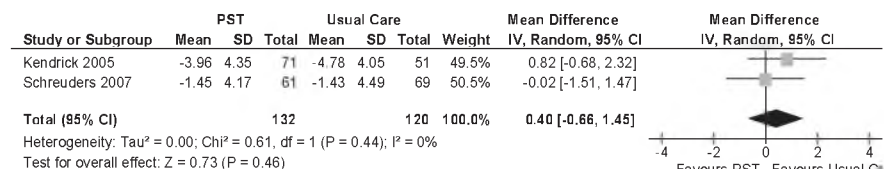
Analysis 1.1. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 1 Change in GHQ-28 score



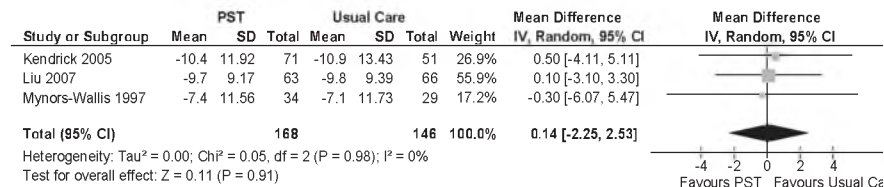
Analysis 1.2. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 2 Change in HADS depression score



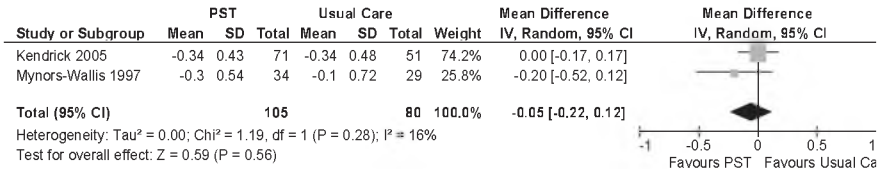
Analysis 1.3. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 3 Change in HADS anxiety score



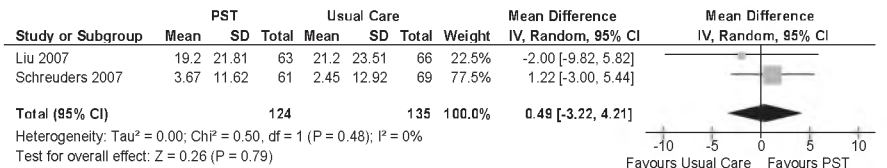
Analysis 1.5. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 5 Change in CIS score



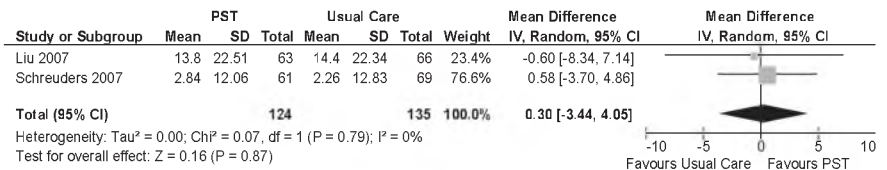
Analysis 1.6. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 6 Change in SAS score



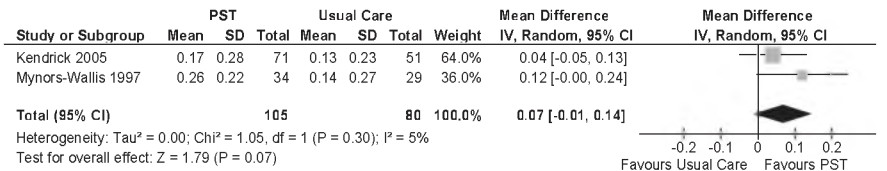
Analysis 1.11. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 11 Change in SF-36 Mental Health score



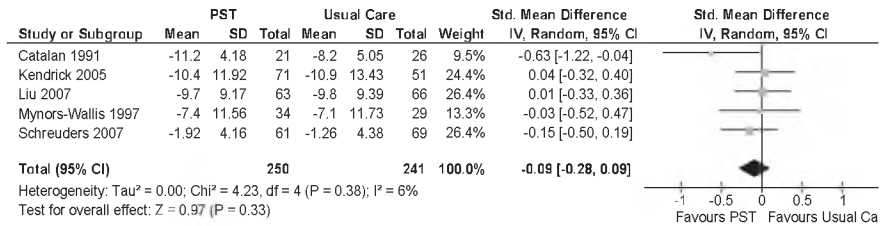
Analysis 1.12. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 12 Change in SF-36 Physical Health score



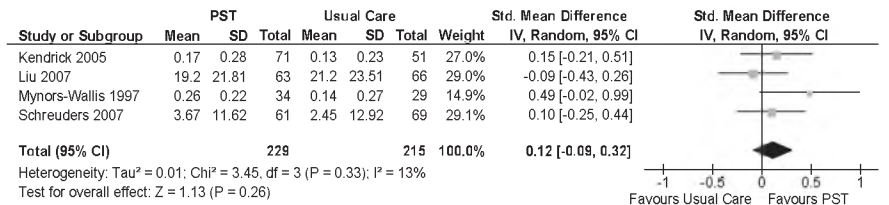
Analysis 1.13. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 13 Change in Euroqol-5D score



Analysis 1.14. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 14 All depression scales, changes

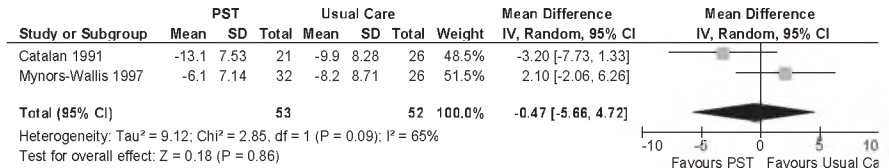


Analysis 1.15. Comparison 1 PST versus Usual Care at 3-month follow-up, Outcome 15 All quality of life scales, changes

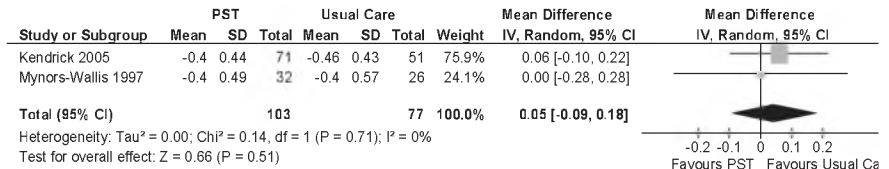


2 PST versus Usual Care at 6-month follow-up

Analysis 2.1. Comparison 2 PST versus Usual Care at 6-month follow-up, Outcome 1 Change in GHQ-28 score

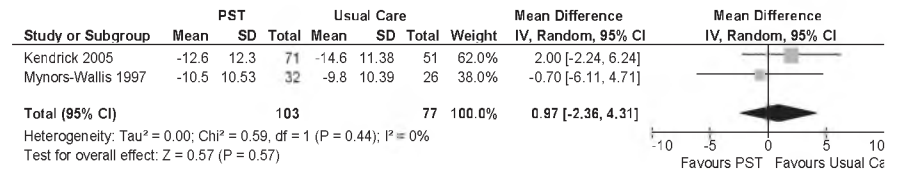


Analysis 2.2. Comparison 2 PST versus Usual Care at 6-month follow-up, Outcome 2 Change in SAS score

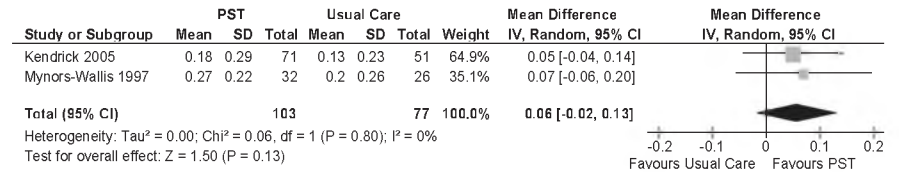




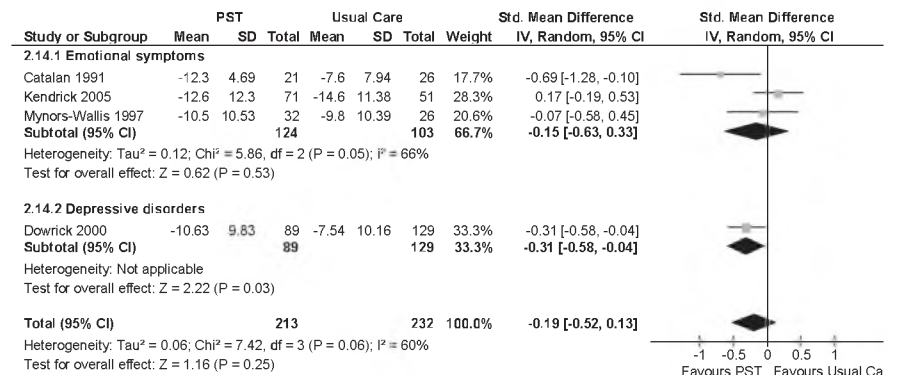
Analysis 2.3. Comparison 2 PST versus Usual Care at 6-month follow-up,  
Outcome 3 Change in CIS score



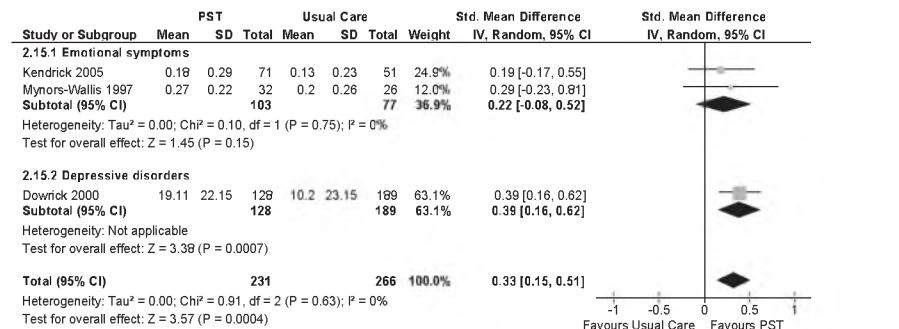
Analysis 2.13. Comparison 2 PST versus Usual Care at 6-month follow-up,  
Outcome 13 Change in Euroqol-5D score



Analysis 2.14. Comparison 2 PST versus Usual Care at 6-month follow-up,  
Outcome 14 All depression scales, changes

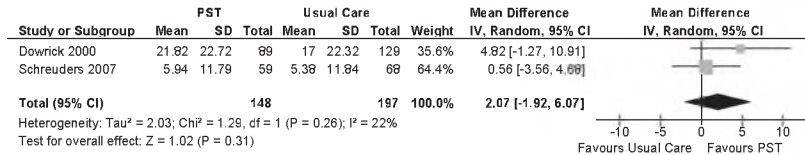


Analysis 2.15. Comparison 2 PST versus Usual Care at 6-month follow-up,  
Outcome 15 All quality of life scales, changes

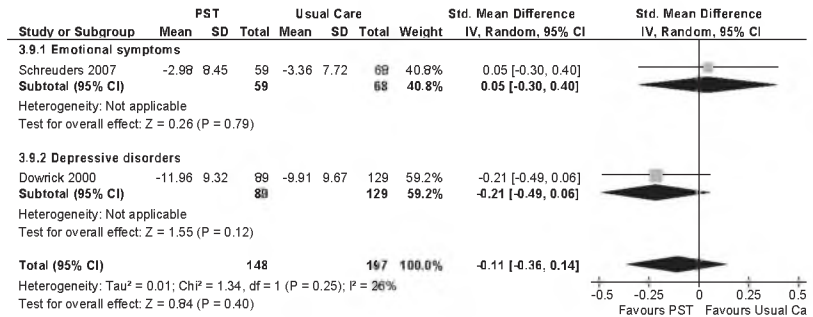


### 3 PST versus Usual Care at 12-month follow-up

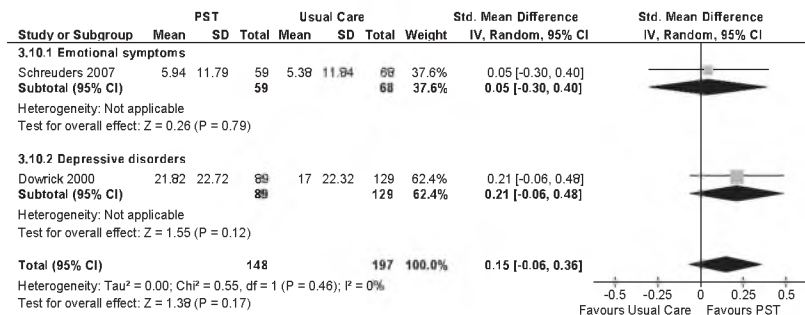
Analysis 3.5. Comparison 3 PST versus Usual Care at 12-month follow-up, Outcome 5 Change in SF-36 Mental Health score



Analysis 3.9. Comparison 3 PST versus Usual Care at 12-month follow-up, Outcome 9 All depression scales, changes

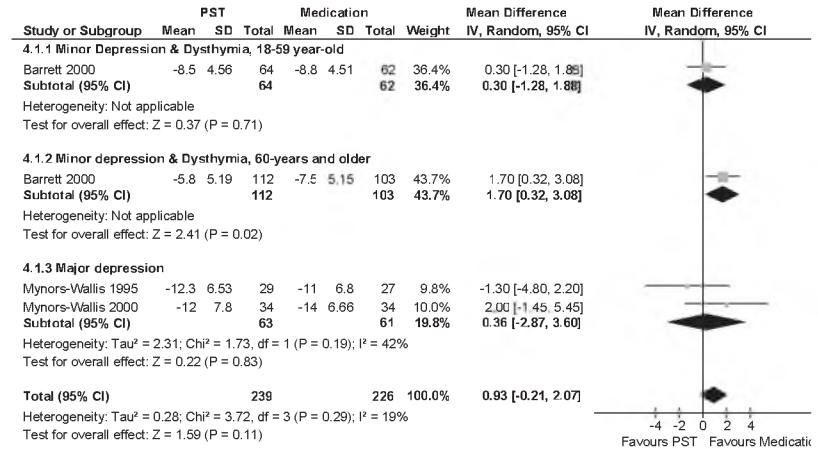


Analysis 3.10. Comparison 3 PST versus Usual Care at 12-month follow-up, Outcome 10 All quality of life scales, changes

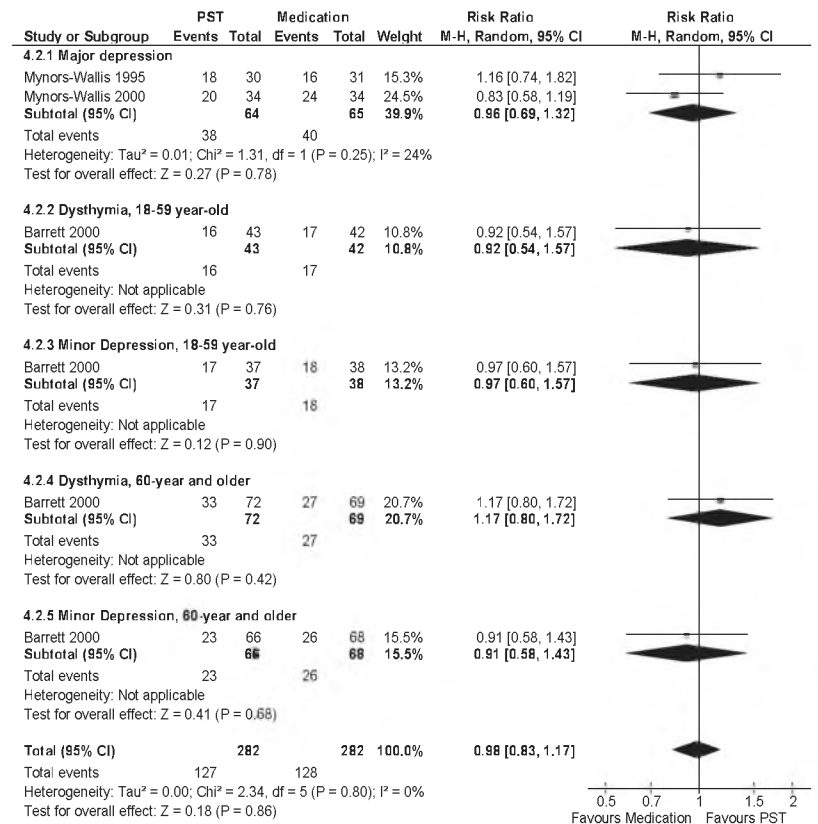


## 4 PST versus Medication at 3-month follow-up

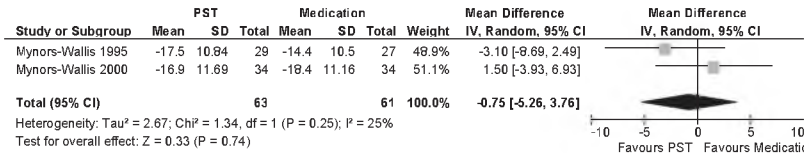
Analysis 4.1. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 1 Change in HDRS score



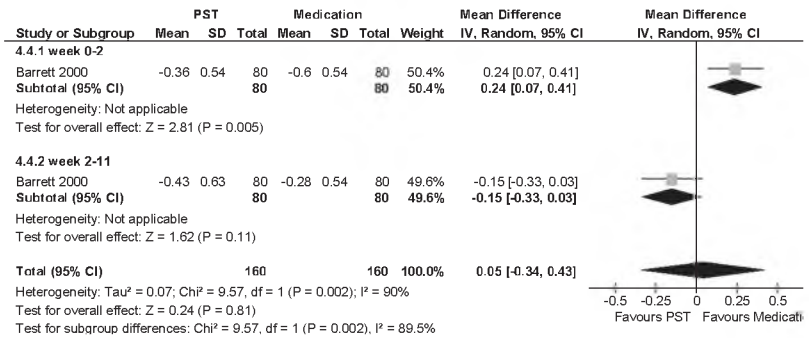
Analysis 4.2. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 2 Recovered cases (HDRS<8)



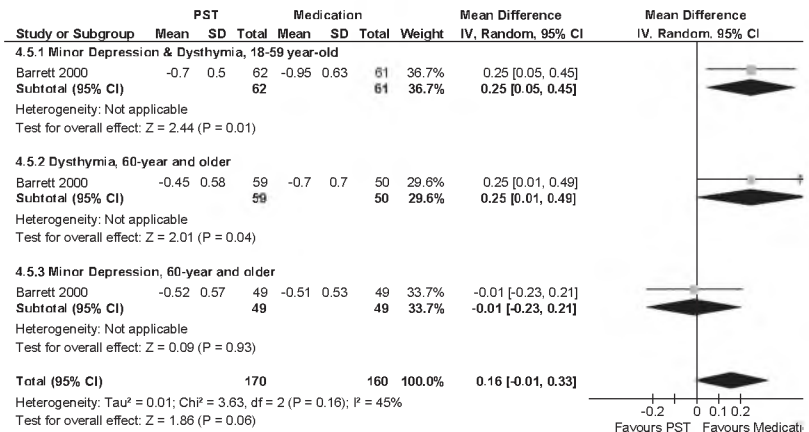
Analysis 4.3. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 3 Change in BDI score



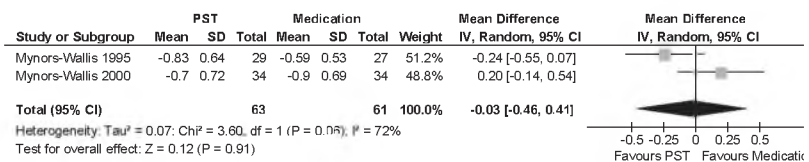
Analysis 4.4. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 4 HSCL-D symptom resolution, 18-59 year-old



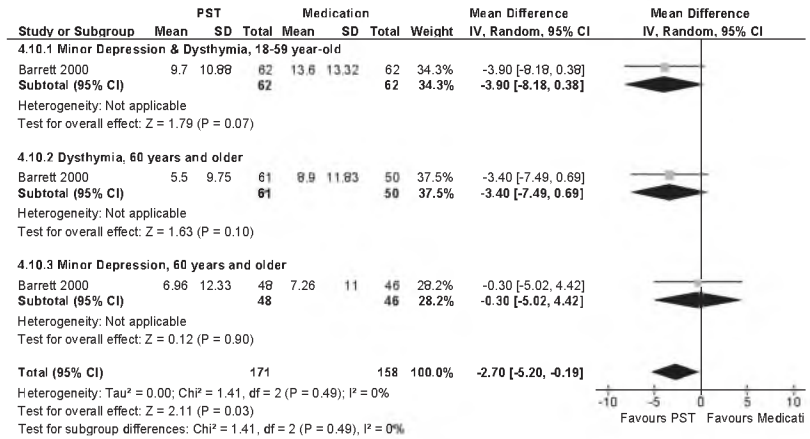
Analysis 4.5. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 5 Change in HSCL-D score



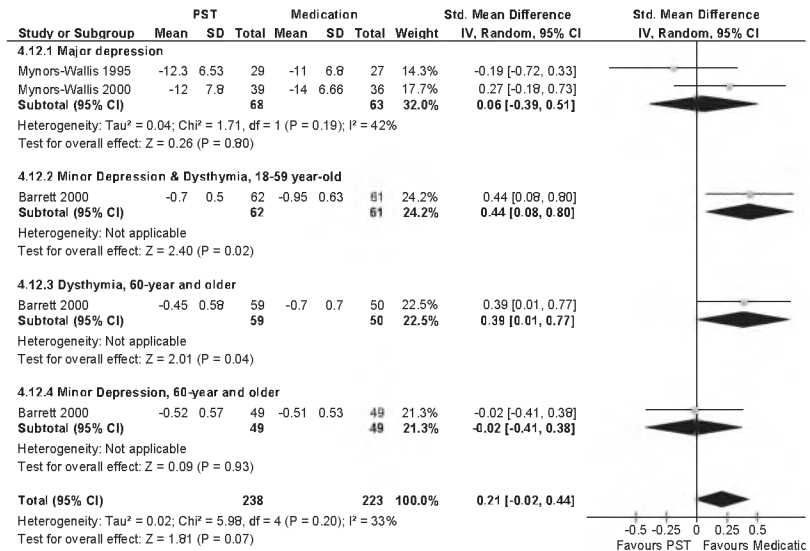
Analysis 4.8. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 8 Change in SAS score



Analysis 4.10. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 10 Change in SF-36 Mental Health score

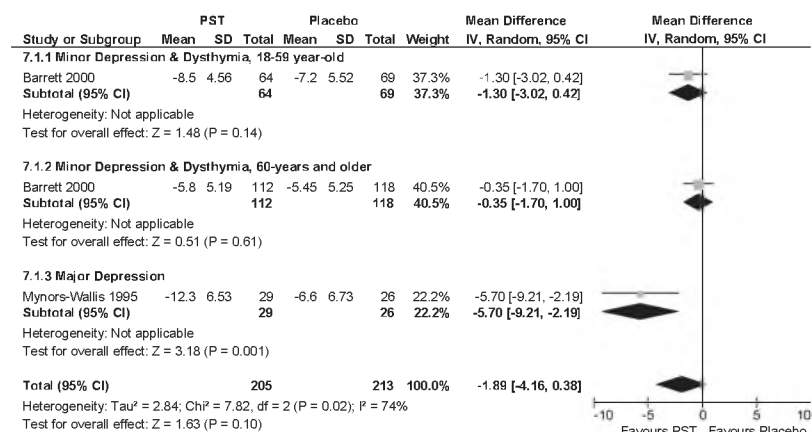


Analysis 4.12. Comparison 4 PST versus Medication at 3-month follow-up, Outcome 12 All depression scales, changes

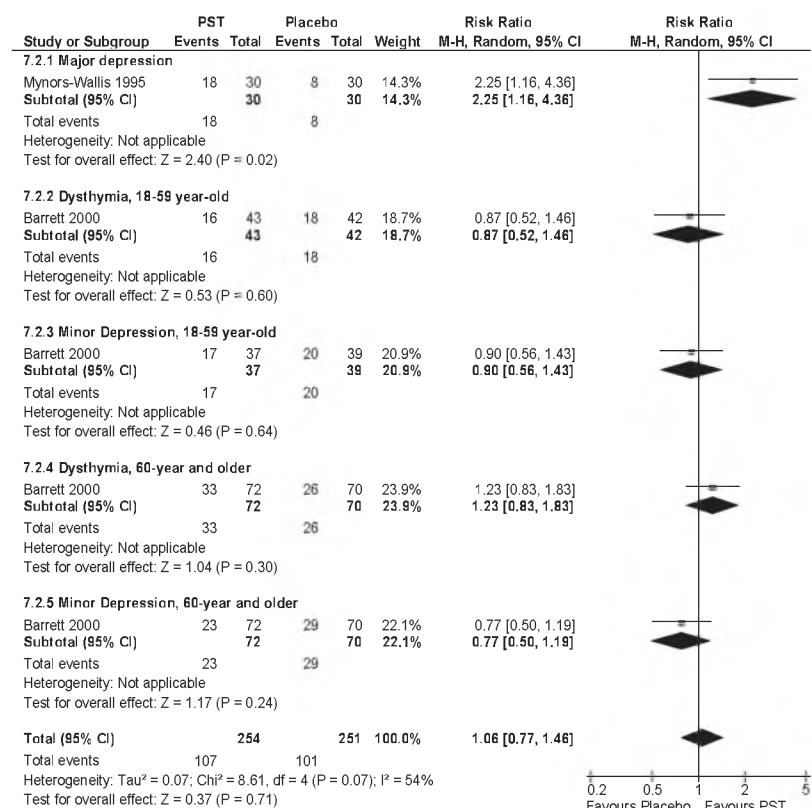


## 7 PST versus Placebo at 3-month follow-up

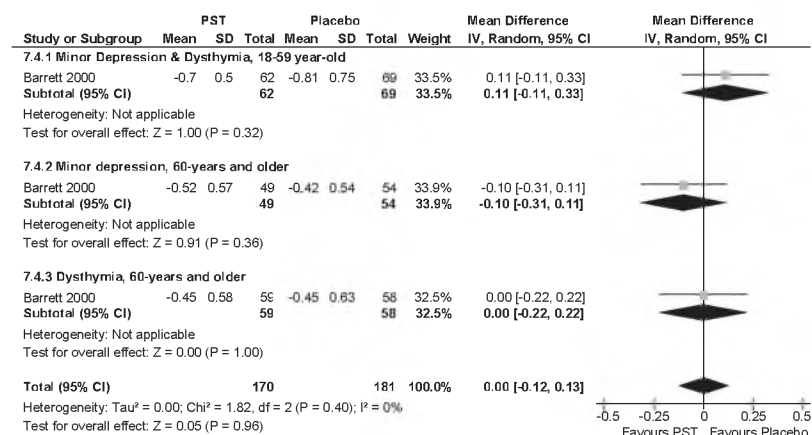
Analysis 7.1. Comparison 7 PST versus Placebo at 3-month follow-up, Outcome 1  
Change in HDRS score



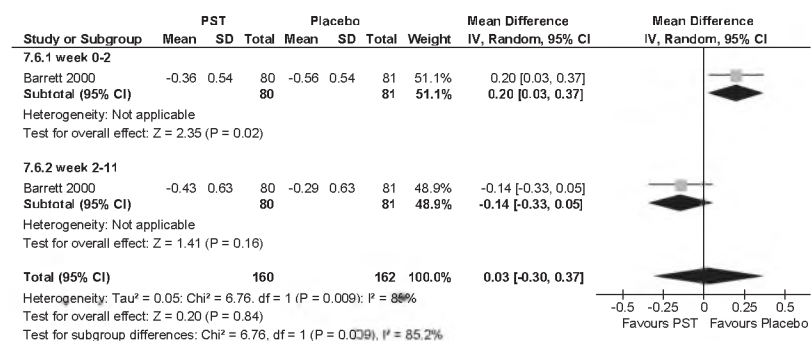
Analysis 7.2. Comparison 7 PST versus Placebo at 3-month follow-up, Outcome 2  
Recovered cases (HDRS<8)



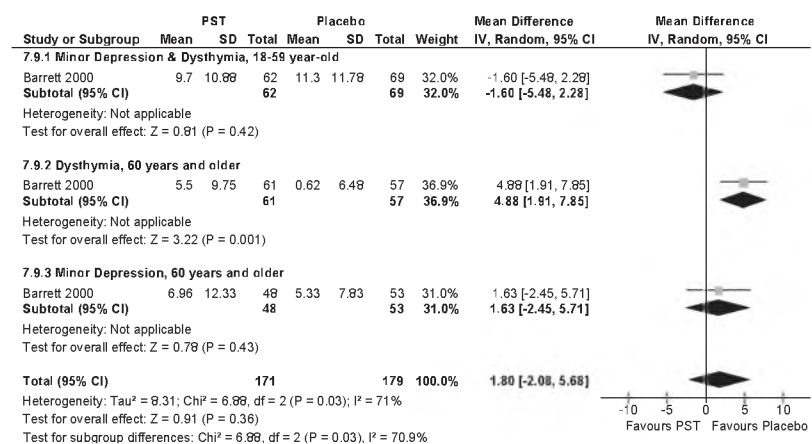
## Analysis 7.4. Comparison 7 PST versus Placebo at 3-month follow-up, Outcome 4 Change in HSCL-D score



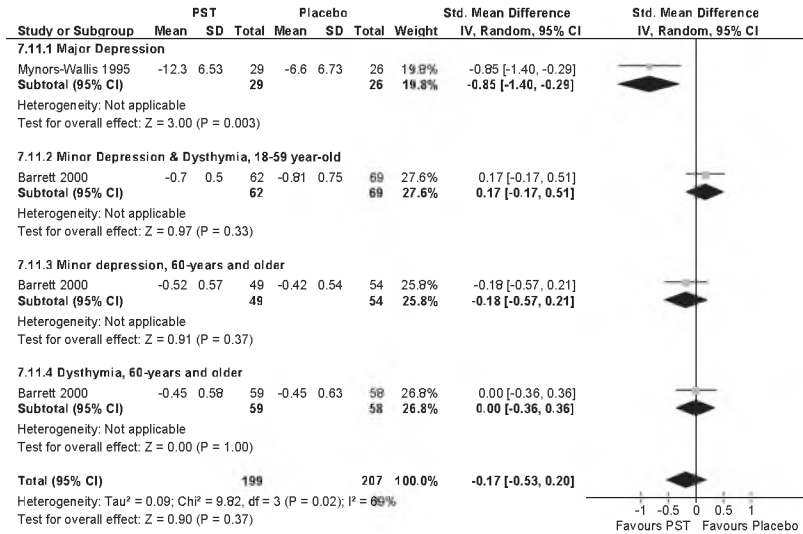
## Analysis 7.6. Comparison 7 PST versus Placebo at 3-month follow-up, Outcome 6 HSCL-D symptom resolution, 18-59 year-old



## Analysis 7.9. Comparison 7 PST versus Placebo at 3-month follow-up, Outcome 9 Change in SF-36 Mental Health score

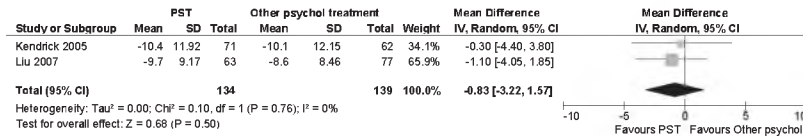


Analysis 7.11. Comparison 7 PST versus Placebo at 3-month follow-up, Outcome 11 All depression scales, changes

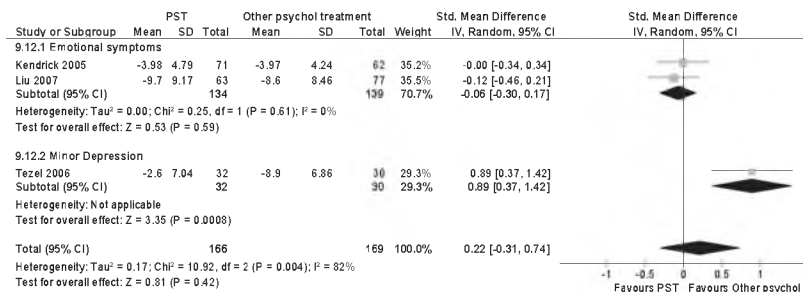


9 PST versus Other Psychological Treatment at 3-month follow-up

Analysis 9.7. Comparison 9 PST versus Other Psychological Treatment at 3-month follow-up, Outcome 7 Change in CIS score

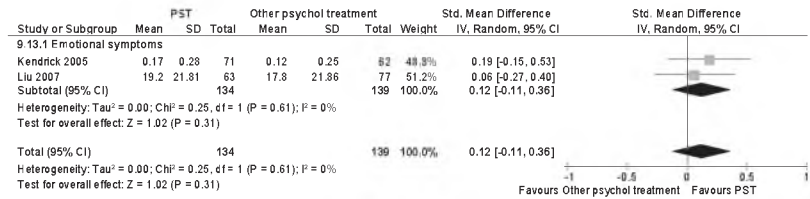


Analysis 9.12. Comparison 9 PST versus Other Psychological Treatment at 3-month follow-up, Outcome 12 All depression scales, changes



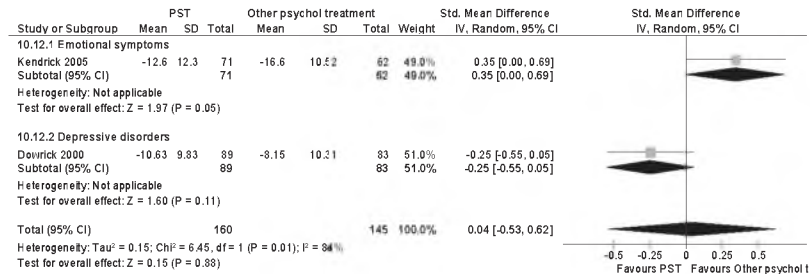


Analysis 9.13. Comparison 9 PST versus Other Psychological Treatment at 3-month follow-up, Outcome 13 All quality of life scales, changes

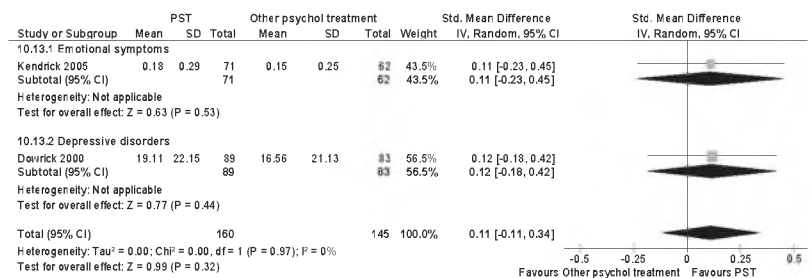


**10 PST versus Other Psychological Treatment at 6-month follow-up**

Analysis 10.12. Comparison 10 PST versus Other Psychological Treatment at 6-month follow-up, Outcome 12 All depression scales, changes

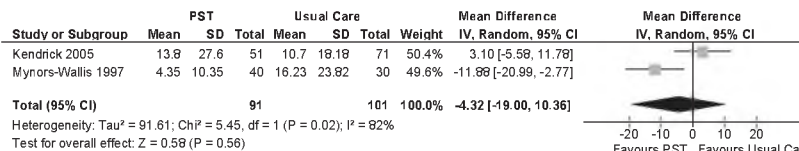


Analysis 10.13. Comparison 10 PST versus Other Psychological Treatment at 6-month follow-up, Outcome 13 All quality of life scales, changes



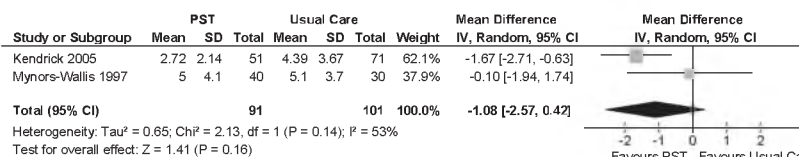
### 13 Days off work & Costs, PST versus Usual Care

Analysis 13.1. Comparison 13 Days off work & Costs, PST versus Usual Care, Outcome 1 Total number of days off work, 6-month follow-up (Emotional symptoms)

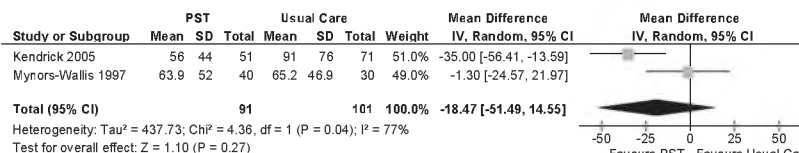


### 15 Health care use & Costs, PST versus Usual Care

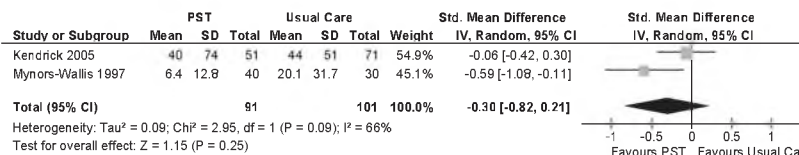
Analysis 15.2. Comparison 15 Health care use & Costs, PST versus Usual Care, Outcome 2 Total number of GP consultations, 6-month follow-up (Emotional symptoms)



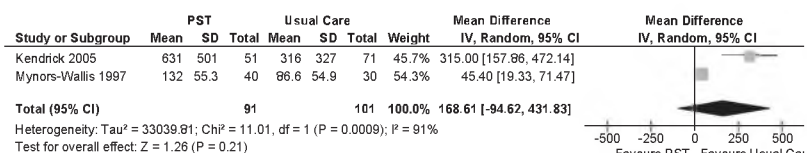
Analysis 15.4. Comparison 15 Health care use & Costs, PST versus Usual Care, Outcome 4 Total costs of GP consultations, 6-month follow-up (Emotional symptoms)



Analysis 15.6. Comparison 15 Health care use & Costs, PST versus Usual Care, Outcome 6 Total Medications costs, 6-month follow-up (Emotional symptoms)



Analysis 15.8. Comparison 15 Health care use & Costs, PST versus Usual Care, Outcome 8 Total costs, 6-month follow-up (Emotional symptoms)



## Appendices

### 1 CCDAN-CTR search strategy

August 2009:

- 1."Cochrane Depression, Anxiety and Neurosis Group".gc.
2. problem solving.mp. [mp=title, original title, abstract, mesh headings, heading words, keyword]
3. problem solving therapy.mp. [mp=title, original title, abstract, mesh headings, heading words, keyword]
4. problem solving treatment.mp. [mp=title, original title, abstract, mesh headings, heading words, keyword]
5. pst\$.mp. [mp=title, original title, abstract, mesh headings, heading words, keyword]
6. 2 or 3 or 4 or 5
7. 1 and 6

### 2 MEDLINE search strategy

1950-August 2009:

1. randomised controlled trial.pt.
2. controlled clinical trial.pt.
3. randomised controlled trials/
4. random allocation/
5. Double-Blind Method/
6. single blind method/
7. clinical trial.pt.
8. clinical trials/
9. (clin\$ adj25 trial\$).ti,ab.
10. ((singl\$ or doubl\$ or trebl\$ or tripl\$) adj25 (blind\$ or mask\$)).ti,ab.
11. placebos/
12. placebo\$.ti.
13. placebo\$.ab.
14. random\$.ti.
15. random\$.ab.

16. research design/
17. comparative study/
18. evaluation studies/
19. follow up studies/
20. prospective studies/
21. control\$.ti.
22. control\$.ab.
23. prospectiv\$.ti.
24. prospectiv\$.ab.
25. volunteer\$.ti.
26. volunteer\$.ab.
27. 1 or 2 or 3 or 4 or 5 or 5 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26
28. (animals not human).sh.
29. 27 not 28
30. problem solving.mp. and treatment outcome/
31. problem solving therapy.mp.  
[mp=title, original title, abstract, name of substance, mesh subject heading]
32. problem solving treatment.mp.  
[mp=title, original title, abstract, name of substance, mesh subject heading]
33. pst\$.mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
34. 30 or 31 or 32 or 33
35. exp "behaviour and behaviour mechanisms"/ or exp "psychological phenomena and processes"/ or exp "mental disorders/ or exp "behavioural disciplines and activities"/
36. 35 and 34 and 29
8. Multicenter Study/
9. Placebo/
10. placebo\$.ti.
11. placebo\$.ab.
12. random\$.ti.
13. random\$.ab.
14. Methodology/
15. Evidence Based Medicine/
16. Comparative Study/
17. exp "evaluation and follow up"/
18. Follow Up/
19. Prospective Study/
20. control\$.ti.
21. control\$.ab.
22. prospectiv\$.ti.
23. prospectiv\$.ab.
24. volunteer\$.ti.
25. volunteer\$.ab.
26. ((singl\$ or doubl\$ or trebl\$ or tripl\$) adj (blind\$ or mask\$ or dummy)).ti,ab.
27. (clinic\$ adj (trial\$ or study or studies\$)).ti,ab.
28. 1 or 2 or 3 or 4 or 5 or 5 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27
29. human.de.
30. nonhuman.de.
31. 29 and 30
32. 30 not 31
33. 28 not 32
34. (problem solving.mp.) and (treatment outcome/)
35. problem solving therapy.mp.  
[mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
36. problem solving treatment.mp.  
[mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
37. pst\$.mp. [mp=title, abstract, subject headings, drug trade name, original title, device manufacturer, drug manufacturer name]
38. 34 or 35 or 36 or 37

### 3 EMBASE search strategy

1980-August 2009:

1. Randomised Controlled Trial/
2. Clinical Trial/
3. Randomization/
4. Double Blind Procedure/
5. Single Blind Procedure/
6. Major Clinical Study/
7. Controlled Study/

39. (exp mental function/) or (exp "psychological and psychosocial phenomena"/) or (exp mental disease/) or (exp "psychological and psychiatric procedures, techniques and concepts"/)  
40. 39 and 38 and 33

#### 4 CINAHL search strategy

1982-August 2009:

1. (MH "Random Assignment")
2. (MH "Double-Blind Studies")
3. (MH "Single-Blind Studies")
4. PT clinical trial
5. (MH "Clinical Trials+")
6. TI clin\* W25 trial\*
7. AB clin\* W25 trial\*
8. (singl\* or doubl\* or tripl\* or trebl\*)  
AND (blind\* or mask\* or dummy\*)
9. (MH "Placebos")
10. TI placebo\*
11. AB placebo\*
12. TI random\*
13. AB random\*
14. (MH "Comparative Studies")
15. (MH "Evaluation Research+")
16. (MH "Prospective Studies+")
17. TI control\*
18. AB control\*
19. TI prospectiv\*
20. AB prospectiv\*
21. TI volunteer\*
22. AB volunteer\*
23. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8  
or 9 or 10 or 11 or 12 or 13 or 14 or  
15 or 16 or 17 or 18 or 19 or 20 or 21  
or 22
24. pst\*
25. (MH "Problem Solving+")
26. problem solving therapy
27. problem solving treatment
28. 24 or 25 or 26 or 27
29. (MH "Mental Disorders+")
30. (MH "Behavior and Behavior  
Mechanisms+")
31. (MH "Psychological Processes and

Principles+")

32. 29 or 30 or 31

33. 32 and 28 and 23

#### 5 PsycINFO search strategy

1806-August 2009:

problem AND solving (Limiters:  
Population Group: Human;  
Methodology: Treatment Outcome/  
Randomised Clinical Trial)



# 6 Effectiveness of problem-solving treatment by general practice registrars for patients with emotional symptoms: a controlled trial

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## **Abstract**

### *Introduction*

In general practice many patients present with emotional symptoms. Both patients and physicians desire effective non-pharmacological treatments.

To study the effectiveness of problem-solving treatment (PST) delivered by trained general practice (GP) registrars for patients with emotional symptoms.

### *Methods*

In a controlled clinical trial we compared the effectiveness of PST versus usual care for patients with emotional symptoms. Dutch GP registrars provided PST or usual care, according to their own preference. Patients were included if they (a) had presented for three or more consultations with emotional symptoms in the past 6 months; and (b) scored four or more on the 12-item General Health Questionnaire. Outcomes at 3 and 9 month follow-up were standard measures of depression, anxiety and quality of life.

### *Results*

Thirty-eight GP registrars provided PST and included 98 patients; 43 provided usual care and included 104 patients. PST patients improved significantly more than usual care patients: at 9-month follow-up recovery rates for somatoform disorder and anxiety were higher in the PST group (OR 6.50,  $p=0.01$  respectively OR 11.25,  $p=0.03$ ). PST patients had improved significantly more on the domains social functioning, role limitation due to emotional problems and general health perception.

### *Discussion*

Patients with emotional symptoms improved significantly more after PST delivered by motivated GP registrars than after usual care by GP registrars. Further research, with randomization of interested registrars or interested GPs, is needed.

## Introduction

In general practice many patients have emotional symptoms and/or psychosocial problems.<sup>1,2</sup> Most patients are treated adequately, but in a minority of cases a pattern of recurrent or chronic symptoms develops with a negative impact on quality of life<sup>3</sup> and frequent consultations.<sup>4</sup> This makes diagnosis and treatment of emotional symptoms an important task in general practice. General practitioners (GPs) often prescribe medication, usually benzodiazepines or antidepressants<sup>2</sup> but medication is not always appropriate. It has important side effects,<sup>5,6</sup> patient adherence is low<sup>7</sup> and the effectiveness of antidepressants is being disputed.<sup>8</sup> Alternative approaches have to be considered. This looks attractive as most patients prefer non-pharmacological treatments.<sup>9</sup> Counseling is nearly always part of the treatment in general practice<sup>10</sup> and has the potential to strengthen patients' self-management. However, its content often varies and evidence for its long-term effectiveness is weak.<sup>11</sup> Problem-solving treatment (PST) might be an attractive option because of its

structured approach with a focus on patient-empowerment.<sup>12</sup> PST is a brief psychological intervention suitable for primary care, focusing on how to deal with everyday problems. PST is effective in anxiety and depression, especially in major depression,<sup>12-14</sup> and there are indications that it is effective for unexplained physical symptoms<sup>15</sup> and in palliative care.<sup>16</sup> A recent Cochrane review recommended further research on the effectiveness of PST in patients with emotional symptoms, irrespective of whether these fulfil the criteria for DSM-IV disorders.<sup>17</sup> Concurrently, GPs and GP registrars have expressed the need for an effective psychological treatment they can deliver themselves to manage patients with emotional symptoms.<sup>18-20</sup> Training GP registrars in PST could meet GPs' need in an early career stage. A pilot study with 11 GP registrars showed that registrars can be trained successfully in PST but the authors recommended further investigation with a larger sample of registrars and evaluation of patient outcomes.<sup>21</sup> We aimed to study the effectiveness of PST delivered by trained GP registrars

## Figure 1 Problem-solving treatment (PST)

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A brief psychological treatment with 7 stages:

1. Explanation and rationale
2. Clarification and definition of the problems
3. Establishing achievable goals
4. Generating solutions
5. Selecting preferred solution
6. Implementing solution
7. Evaluation of progress

for patients with recurrent or chronic emotional symptoms.

## **Methods**

### *Design*

We compared, in a pragmatic controlled clinical trial, the effectiveness of PST versus usual care for patients with emotional symptoms. PST and usual care were applied by GP registrars. This design promotes external validity, which means that it increases the applicability of a trial's results to situations other than the trial situation.<sup>22</sup>

### *Setting*

The study took place in a Dutch three-year GP residency programme. From 2003 to 2005 the residency programme scheduled the participation of all third-year registrars (81) in this study as part of the core programme. Registrars participated in two groups, PST and 'usual care'. Initially, we assigned registrars randomly to PST or usual care. We had to change this selection as registrars who were uncomfortable with PST did not include any patients. We allowed the next year group (2004-2005) to choose the strategy they were most comfortable with: PST (including training) or usual care. Ethical approval was obtained according to local protocols.

### *Recruitment and selection criteria*

We asked registrars to recruit adult patients who presented emotional symptoms, during their regular clinical work in their training practice (September 2003 to April 2006). We asked each registrar to recruit 4-6 patients because, from a logistical perspective, this was regarded as the

maximum feasible number within one year of residency. We defined emotional symptoms as sub threshold as well as formal disorders of depressed mood, anxiety or stress, and psychosocial problems. Patients were included in the study, if they (a) had presented emotional symptoms during three or more consultations in the past 6 months; and (b) had a score of four or more on the 12-item General Health Questionnaire (GHQ-12).<sup>23</sup> Exclusion criteria were (a) severe physical disease; (b) severe mental morbidity (organic psychiatric disorder, substance misuse, active suicidal ideas); (c) current or recent (past year) psychiatric or psychological treatment or cognitive behavioural therapy; (d) insufficient mastery of Dutch language. Registrars received support of a research assistant in the selection of suitable patients. All participating patients signed informed consent.

### *Treatment and training*

PST is a brief psychological treatment, derived from cognitive behavioural therapy, teaching patients how to use their own skills to cope with everyday life problems in a systematic way. It is assumed that symptoms reduce if control over problems is (re)gained.<sup>12</sup> PST comprises seven stages (Figure 1). The treatment consists of four to six consultations over a period of approximately 8-12 weeks with a duration of no more than 30 minutes, except for the first session which may last 60 minutes.

The registrars were trained by experienced PST trainers in a two-day course, followed by supervised treatment and feedback meetings. Trainers assessed the quality of PST through registrars' PST work sheets.

Details about the feasibility of this training programme during residency were published before.<sup>24</sup>

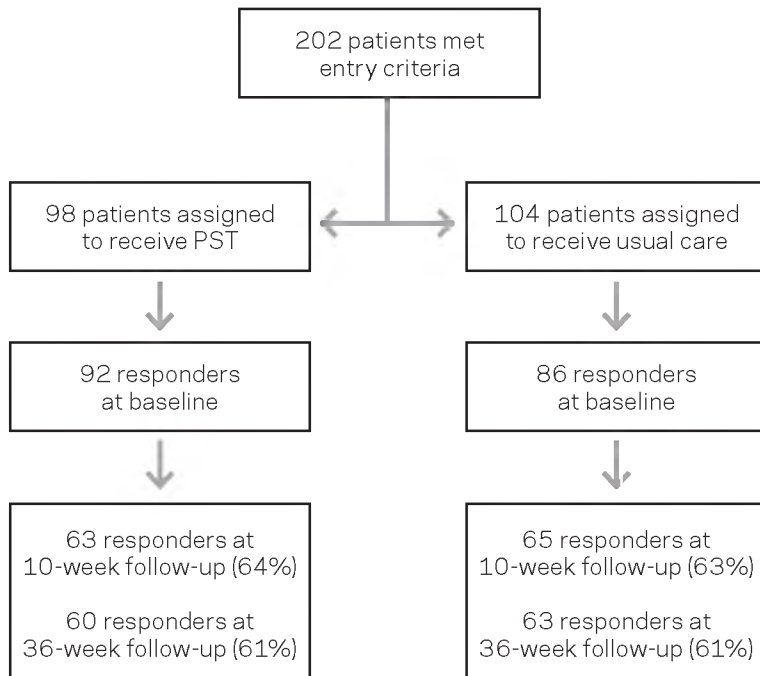
The exact nature of 'usual care' was retrieved from patient records after the trial. Both treatment groups were allowed to prescribe medication.

#### *Follow-up and outcomes*

Primary outcomes were the proportion of patients who remitted, the reduction of symptoms, and improvement of quality of life. We used the Primary Health Questionnaire (PHQ) assessing the presence of five DSM-IV disorders,<sup>25</sup> the Hospital Anxiety

and Depression Scale (HADS)<sup>26</sup>, the 36-item MOS short form (SF-36)<sup>27</sup> and the 5-dimension Euroqol measuring quality of life (EQ-5D)<sup>28</sup>, and the social problem-solving (skills) inventory-revised measuring problem-solving skills (SPSI-R)<sup>29</sup>. Secondary outcomes were: patient satisfaction (a self developed questionnaire based on the Consultation Satisfaction Questionnaire<sup>30</sup> with 9 items measuring satisfaction with the doctor and 7 items measuring satisfaction with the treatment); number of disability days (TiC-P)<sup>31</sup>; and health care utilization. Health care utilization data were

**Figure 2** Flow chart PST-trial



collected from the patients' records: data on referrals and medication, and numbers of contacts with the GP. Higher scale scores indicated better patient outcome, except for the PHQ and HADS with lower scores indicating better scores. Participants received self-completing questionnaires at baseline (T0), after treatment (at 3 months, T1) and at 9-month follow-up (T2). Record data of the six-month period before treatment were compared to data of the six-month period after treatment.

#### Sample size

We aimed to detect a clinically relevant difference of 30% between interventions with the primary outcome measure PHQ. To provide a power of 80% at a two-sided 5% level of significance, we needed 42 patients with full data in each group.

#### Analysis of effectiveness

We conducted statistical analyses using SPSS 16.0, according to the intention-to-treat principle.

We analysed all cases with data at baseline and data at T1 and/or T2.

Subsequently, we repeated the analysis

**Table 1** Baseline characteristics

<b>Patient characteristics</b>	<b>PST</b> (n=98)	<b>Usual care</b> (n=104)	<b>p-value</b>
Mean age , years (SD)	40.3 (13.3)	46.0 (16.3)	<b>0.01</b>
Female, No. (%)	79/98 (81%)	63/104 (61%)	<b>&lt;0.001</b>
Married or living with partner, No. (%)	62/92 (67%)	51/79 (65%)	0.98
Ethnicity, white, No. (%)	83/91 (91%)	95/98 (97%)	0.09
Paid employment, No. (%)	61/92 (66%)	51/86 (59%)	0.33
<b>Clinical characteristics</b>	(n=92)	(n=86)	
GHQ-12, mean (SD)	9.30 (2.37)	7.58 (2.56)	<b>&lt;0.001</b>
PHQ somatoform disorder, No. (%)	37 (40%)	31 (36%)	0.57
PHQ major depressive syndrome, No. (%)	37 (40%)	25 (29%)	0.12
PHQ other anxiety syndrome, No. (%)	32 (35%)	18 (21%)	<b>0.04</b>
HADS depression score, mean (SD)	9.26 (4.25)	8.09 (4.60)	<b>0.05</b>
HADS anxiety score, mean (SD)	10.41 (3.28)	9.14 (4.81)	0.08
SF-36 social functioning, mean (SD)	47.64 (19.20)	51.49 (23.85)	0.29
SF-36 mental health, mean (SD)	43.51 (13.56)	49.18 (20.28)	0.05
SF-36 role limitation due to emotional problems, mean (SD)	24.20 (30.05)	46.48 (41.59)	<b>&lt;0.001</b>
SF-36 general health perception, mean (SD)	55.12 (19.45)	55.68 (19.94)	0.87
EQ-5D score, mean (SD)	0.69 (0.16)	0.71 (0.19)	0.60
SPSI-R total score, mean (SD)	9.07 (2.64)	9.91 (2.72)	<b>0.04</b>

with missing data being imputed by the last observations carried forward (LOCF) principle. We compared differences within the treatment groups with McNemar tests and paired t-tests to assess changes over time. In order to investigate the effect of the intervention, we used univariate general linear models and binary logistic regression using gender, age and baseline values as covariates to correct for baseline differences between treatment groups. We separately analysed the effect of treatment at T1 and T2. The effect of the intervention was the difference

in outcome between the PST group and the usual care group (level of significance  $p < 0.05$ ).

## Results

### Recruitment & follow-up

Thirty-eight registrars (28 women) provided PST and 43 (29 women) provided usual care. They included 202 patients: 98 in the PST group and 104 in the usual care group (Figure 2). Patients in the PST group were significantly younger and more often female, had at baseline significantly higher symptom severity and

**Table 2** Numbers of cases at Patient Health Questionnaire (PHQ) at 3-month follow-up (T1) and 9-month follow-up (T2) and binary logistic regression for differences in effects between PST and Usual care at T1 and T2 compared to baseline (with gender, age and baseline values as covariates).

Outcome	No of Cases (%)		Odds Ratio (95% CI) for achievement of remission
	PST	Usual Care	
PHQ somatoform disorder			
T0	37/92 (40.2%)	31/86 (36.0%)	ref
T1	6/63 (9.5%)	20/65 (30.8%)	<b>6.52 (1.94 to 21.91)*</b>
T2	4/60 (6.7%)	16/63 (25.4%)	<b>6.50 (1.74 to 24.31)*</b>
PHQ major depressive syndrome			
T0	37/92 (40.2%)	25/86 (29.1%)	ref
T1	8/63 (12.7%)	11/65 (16.9%)	1.90 (0.61 to 5.92)*
T2	5/60 (8.3%)	4/63 (6.3%)	0.62 (0.14 to 2.76)*
PHQ other anxiety syndrome			
T0	32/92 (34.8%)	18/86 (20.9%)	ref
T1	6/63 (9.5%)	8/65 (12.3%)	2.02 (0.56 to 7.31)*
T2	1/60 (1.7%)	7/63 (11.1%)	<b>11.25 (1.21 to 104.26)*</b>

PST = problem-solving treatment; CI = confidence interval; ref = reference group; \* adjusted for gender, age and baseline values

significantly worse SPSI-scores than patients in the control group (Table 1). Overall, 128 (63%) participants returned follow-up questionnaires at T1 and 123 (61%) at T2. Patients lost to follow-up did not differ significantly from those who completed the study with regard to age, gender, PST or usual care, or baseline values. Recorded reasons for loss to follow-up were: no more interest/time (n=7), psychosocial problems (n=6), aggravation of psychological symptoms (n=5), physical complaints (n=4), being moved (n=2), language (n=1). Medical records were retrieved for 96 PST patients and 99 control group patients (1 patient died and 6 patients moved).

#### *Clinical outcome and quality of life*

Both treatment groups improved significantly over time. Tables 2 and 3 show the results at T1 and T2 compared to T0. From the PHQ we analysed the three most prevalent disorders: major depression (n=62), somatoform disorder (n=68), and other anxiety syndrome (n=50) (Table 1). The PST group showed significantly better recovery rates for somatoform disorder at T1 and T2 and for anxiety at T2, but not for major depression (Table 2). The HADS depression score improved significantly more in the PST group than in the usual care group at T1; the HADS anxiety score did so at T1 and T2. In the PST group general health perception improved significantly more at T1 and T2. In table 3 we present the three SF-36 domains most relevant to a mental health oriented intervention: social function and mental role limitation improved significantly more in the PST group at T2; mental health improved in both groups but did not differ significantly between groups at

T1 nor T2. The EQ-5D scale improved more in the PST group at T1. Regarding problem-solving skills, the SPSI-R total scores did not show significant differences in change between groups. When analyzing only those PST patients who attended 4 or more sessions – the number recommended for effectiveness – the differences were more pronounced and the HADS depression score differed significantly in favour of PST at T2 too ( $p=0.020$ ). There were no significant differences between patients recruited during the first year and the second year when the randomization was released. After imputing missing data by LOCF both quality of life and psychological symptom scores differed significantly in favour of PST.

#### *Health care utilization & disability days*

The numbers of patients being referred or using psychotropic medication during treatment did not differ significantly between groups. The changes in consultation rate and numbers of patients being referred or using psychotropic medication in the six months before versus the six months after treatment were not significantly different from usual care but all in favour of PST.

Absence of work did not differ significantly (TiC-P). PST patients experienced significantly less difficulties during unpaid activities than usual care patients (T1 B-coefficient -0.90,  $p<0.001$ ; T2 B-coefficient -0.46,  $p=0.04$ ).

#### *Patient satisfaction*

No significant differences in patient satisfaction were found. At T1, PST patients scored 25.7 (SD 5.0) and usual care patients 24.8 (SD 5.8)

on the 45-point 'satisfaction with physician' scale and 20.5 (SD 4.3) and 19.4 (SD 4.6) respectively on the 35-point 'satisfaction with treatment' scale.

#### *Treatment received*

Patients in the intervention group received on average 4.3 PST sessions (range 1-7), including the consultation of study inclusion accompanied by the intake of PST. Fifty-three patients completed treatment ( $\geq 4$  sessions) with on average 5.3 sessions (range 4-7). The mean number of consultations in addition to PST sessions during the 3-month treatment period was 0.7 (range 0-5). Based on work sheets of PST sessions the PST supervisor reported good quality performance of PST.

In the usual care group, the average number of consultations – for any reason – during the 3-month treatment period was 3.3 (range 1-12). Most registrars used counseling in most consultations, but content and duration were not described in the records.

#### **Discussion**

Both PST and usual care patients with chronic or recurrent emotional symptoms improved significantly over time. However, patients who were treated by GP registrars providing PST, had significant better outcomes than patients who were treated by registrars providing usual care. PST patients reported significantly fewer symptoms of depression and anxiety, and a significantly higher general health perception than usual care patients did, both short- and long-term. PST patients had a significantly higher chance of recovery from somatoform disorder short-term. Long-term this was also the case for anxiety. Long-term they

reported significantly better scores of social function and role limitation due to emotional problems, corresponding with a relevantly better subjective function in daily life. This fits in with earlier research that found significantly better improvements of quality of life after PST than after usual care.<sup>14</sup>

The PHQ did not show significant differences in recoveries of major depressive disorder but significant differences in favour of PST were found on the HADS concerning the severity of anxiety and depressive symptoms. Thus, PST did not diminish the number of cases of depression but reduced symptom severity. Strikingly, SPSI scores did not differ significantly between groups. This could be due to the fact that actual problem-solving performance is not necessarily a function of cognitive- behavioural skills in generating solutions.<sup>32</sup>

#### *Strengths and limitations of the study*

Notwithstanding these positive findings, this study has limitations. Firstly, the lack of randomization of registrars providing PST. The registrars who were initially randomised to PST and were uncomfortable with it, did not recruit patients not allowing any comparison. We realize that changing the selection of registrars by offering the choice between PST and usual care may have resulted in potentially overestimating the impact of PST, because PST registrars were probably more motivated to deliver mental health care than their usual care colleagues. However, there were no differences in outcome between patients of registrars randomly allocated to PST and patients of registrars who made a choice for it. Also, registrars in the usual care group were not necessarily unmotivated for



**Table 3. Mean scores on main outcome scales at 3-month follow-up (T1) and 9-month follow-up (T2) and ANCOVA for differences in effects over time between PST and Usual care (with gender, age and baseline values as covariates).**

Outcome#		Mean score (SD)		Mean difference (95% CI) between PST and Usual care
		PST*	Usual care*	B-coefficient
<b>Hospital Anxiety and Depression Scale</b>				
Depression score				
	T0	9.26 (4.25)	8.09 (4.60)	ref
	T1	4.97 (4.12)	6.73 (4.40)	<b>-1.88 (-3.11 to -0.64)-</b>
	T2	4.55 (4.45)	5.47 (3.65)	-1.23 (-2.49 to 0.02)-
Anxiety score				
	T0	10.41 (3.28)	9.14 (4.81)	ref
	T1	6.98 (3.94)	8.33 (4.80)	<b>-2.17 (-3.44 to -0.90)-</b>
	T2	6.65 (3.25)	7.05 (4.93)	<b>-1.33 (-2.50 to -0.15)-</b>
<b>SF-36</b>				
Social functioning				
	T0	47.64 (19.20)	51.49 (23.85)	ref
	T1	65.97 (23.42)	57.33 (25.73)	5.81 (-3.73 to 15.36)-
	T2	73.23 (18.30)	62.80 (23.45)	<b>9.83 (1.27 to 18.39)-</b>
Mental health				
	T0	43.51 (13.56)	49.18 (20.28)	ref
	T1	64.25 (18.16)	61.36 (21.37)	3.69 (-3.13 to 10.51)-
	T2	68.00 (17.06)	66.26 (18.64)	4.49 (-2.13 to 11.12)-
Role limitation due to emotional problems				
	T0	24.20 (30.05)	46.48 (41.59)	ref
	T1	63.89 (42.85)	56.67 (44.80)	9.58 (-8.44 to 27.60)-
	T2	80.30 (36.17)	70.29 (42.30)	<b>17.18 (0.69 to 33.67)-</b>
General health perception				
	T0	55.12 (19.45)	55.68 (19.94)	ref
	T1	64.69 (22.99)	57.94 (19.98)	<b>8.00 (1.81 to 14.20)-</b>
	T2	70.39 (19.48)	61.48 (20.27)	<b>10.48 (3.66 to 17.30)-</b>
<b>EuroQol-5D</b>				
	T0	0.69 (0.16)	0.71 (0.19)	ref
	T1	0.81 (0.17)	0.71 (0.16)	<b>0.09 (0.03 to 0.14)-</b>
	T2	0.82 (0.18)	0.79 (0.14)	0.02 (-0.03 to 0.07)-
<b>Social Problem Solving Inventory - revised</b>				
	T0	9.07 (2.64)	9.91 (2.72)	ref
	T1	9.98 (2.68)	10.57 (2.49)	-0.49 (-1.20 to 0.21)-
	T2	10.13 (2.58)	10.86 (2.52)	-0.13 (-0.87 to 0.60)-

PST = problem-solving treatment; SD = standard deviation; CI = confidence interval; #HADS=21-point scales; SF-36=100-point scales; EQ-5D=1-point scale; SPSI-R=20-point scale; \*PST group: at T0 n=92; at T1 n=63; at T2 n=60. Usual care group: at T0 n=86; at T1 n=65; at T2 n=63.; ~Adjusted for gender, age and baseline values

mental health care: they mentioned 'time investment' most often as a reason for not participating in PST training (78% of registrars). They received in their programme training of the prevailing Dutch College guidelines of depression and anxiety.<sup>33,34</sup> Furthermore, patient satisfaction with their GP registrar treatment was not significantly different between treatment groups.

The second limitation was the selection of patients, with registrars in the intervention group selecting patients mainly themselves. Registrars in the usual care group partly did so, but to reach the numbers planned in advance, had to be assisted by a research assistant. PST registrars enrolled patients they thought would benefit from PST. Although this reflected daily practice in the sense that GPs offer only treatments to patients when they expect a positive effect on their health status, it resulted in a biased selection of patients: all patients met the eligibility criteria of 'emotional symptoms,' a consultation rate of three or more, and a GHQ-12 score of four or more but PST patients were more often female, younger and had more severe psychological symptoms. Patients in the PST group might have been more suitable, and more motivated for treatment whereas patients selected for the usual care group were not specifically motivated. This limitation also might have overestimated treatment effects of PST. Although we corrected for the baseline differences in our analyses and still found significant advantages of PST above

UC, this limitation – together with the lack of randomization of registrars – compromises the internal validity. It therefore remains unclear whether the effects were the results of a. specific PST techniques, b. motivated registrars, c. more open attitudes of PST patients towards treatment, or d. a treatment like PST as a vehicle for registrars to incorporate non-specific skills – such as empathy, warmth and the doctor-patient relationship – better into their consultations with patients with emotional problems. The last option might be realistic, because a recent focus group study showed that registrars expressed that they implemented many new skills during PST.<sup>35</sup> For instance, they mentioned to appreciate the patient-centered and patient-empowering character, including the activation of patients to implement their own solutions in daily life. Patient-empowering skills are increasingly valued as important within primary care, especially in mental health care.<sup>36</sup> Therefore, we think that a treatment like PST might be a practical vehicle for registrars to incorporate non-specific treatment skills more manifestly in their patient contacts.

A strength of our study is that, to our knowledge, this was the first study with PST being provided by physicians of the patients' own general practice. All other PST studies involved PST therapists who were unknown to the patient whereas usual care was delivered by the patient's own GP. This probably overestimated usual care effects in earlier studies because the

doctor-patient relationship influences patient outcome importantly.<sup>37</sup> Another strength is that this study was one of the very few studies with GP registrars providing a specific psychological treatment for emotional symptoms, including measurement of patient outcomes. An earlier American pilot study only measured feasibility and recommended measurement of patient outcomes.<sup>21</sup> Recent Chinese research with registrars providing PST voluntarily did not show significant benefit of PST over placebo group intervention. These registrars, however, only provided 3 sessions of PST.<sup>38</sup> Unfortunately, the difficulties we encountered in this study suggest that involving registrars in a *randomised* trial was not optimal, because their motivation was essential in providing a psychological treatment.

#### *Recommendations for further research*

We recommend a trial with randomization of registrars who are interested to provide PST. In this trial, measurement of motivation must be part of the design. Furthermore, we suggest investigating the effectiveness of PST when provided by the patient's own GP, because effects build upon the more longstanding relation with the patient.

#### **Conclusion**

Patients with emotional symptoms improved significantly more after PST delivered by motivated GP registrars than after usual care by GP registrars. Further research, with randomization of interested registrars or interested GPs, is needed.

#### **Acknowledgments**

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# 7 General discussion

The aim of this thesis was to investigate the feasibility of Problem-solving treatment (PST) during general practice (GP) residency and the effectiveness of PST, when provided by GP registrars, for patients with emotional symptoms in primary care. In this final chapter, the results of the foregoing chapters will be discussed in relation to each other and the literature. Also, some methodological issues will be considered. And finally, suggestions for further research and for general practice will be made, followed by a main conclusion. Throughout this thesis we referred to the same category of patients with the terms *emotional symptoms*, *emotional problems* and *mental health problems*.

Regarding the feasibility of PST during residency, we found that PST training is feasible. Our observational and questionnaire study showed that training in PST during residency is feasible because GP registrars participated in the two-day training programme and subsequent supervision, and their evaluation of the training was positive. Furthermore, they provided PST as taught in the protocol and patients were willing to receive PST of the registrars (Chapter 2). Besides being feasible, PST training was also helpful during residency, as was shown in the focus group study (Chapter 3). Registrars thought that PST training provided them with a practical tool in the management of emotional problems. In daily practice, however, they would prefer implementing elements rather than the entire treatment, because they thought the entire treatment costs too much time and is not their task. An important barrier in

the experiences of the registrars was their obligatory participation in this study. This prompted our interest in the views of registrars about participation in research in general. A questionnaire survey on this topic showed that registrars are interested in participating in research, especially when they can learn a new skill, but participation should not be compulsory, and registrars prefer to choose their own research subjects (Chapter 4).

Regarding the effectiveness of PST for patients with emotional problems in primary care, the Cochrane review indicated that PST was more effective than control treatments for major depression in primary care (Chapter 5). In major depression, PST patients had a statistically significant and clinically important better SF-36 social function score and a higher recovery rate at the BDI (2.54, 95% CI 1.85 to 3.50) than usual care patients at 6-month follow-up. Also, PST patients had statistically significant and clinically important higher recovery rates at the HDRS than patients in the placebo medication group at 3-month follow-up (RR 2.25, 95% CI 1.16 to 4.36). For emotional problems other than major depression, however, there was insufficient evidence to show statistically significant differences between PST and usual care, (placebo) medication, or other psychological treatments. Further research of PST for these problems was recommended. The controlled clinical trial described in this thesis provided indications that PST by motivated registrars might be more favourable for patients with emotional symptoms than usual care by registrars (Chapter 6). At 9-month



follow-up PHQ recovery rates for somatoform disorder and anxiety were higher in the PST group (OR 6.50,  $p=0.01$  respectively OR 11.25,  $p=0.03$ ). Depressive symptoms did not improve significantly differently between treatment groups. PST patients had improved significantly more on the 100-point SF-36 domains social functioning, role limitation due to emotional problems and general health perception (B-coefficient of the mean difference respectively 9.83,  $p=0.03$ ; 17.18,  $p=0.04$ ; 10.48,  $p<0.001$ ). However, due to a considerably compromised validity of the trial, it remains unclear whether the effect in this trial can be attributed to the intervention. This will be described and discussed below.

In the performance of the studies described in this thesis we faced several themes and problems. We categorised these into four main themes: A. Strengths and weaknesses; B. Specific and non-specific effects; C. General considerations of research of psychological interventions; D. Realization of training during GP residency.

#### **A. Strengths and weaknesses**

There were a number of strengths in the studies described in this thesis.

- Overall, it is an important strength that we used mixed methods by performing both quantitative and qualitative studies. Using a mixed methods design gives the broadest view possible,<sup>1</sup> in this case on the feasibility of PST training during GP residency and the use of PST in daily practice. On the one side we quantitatively analysed data on participation in

the training, recruited patients and time investment. And on the other side we qualitatively analysed registrars' views on PST during residency. In this way we came to both objective and subjective findings which informed us about the facts, barriers and enablers of PST during residency and PST in everyday practice. For instance, we found that registrars appreciated specific elements of PST but that they thought the entire treatment cost too much time. Furthermore, qualitative research has the advantage of generating unexpected insights. We, for instance, got to know registrars' views on their role in mental health care management.

- The performance of a systematic review and meta-analysis by means of a Cochrane review is also a strong point in this thesis. Cochrane reviews are generally regarded as the strongest level of evidence. Although more reviews on PST have been performed,<sup>2,4</sup> these did not specifically focus on PST in primary care. In our review, we included all kinds of emotional problems rather than only depression and we focused on primary care studies.
- Also, performing a controlled trial with a large number of registrars ( $n=81$ ) who provided either PST or usual care is a strength. A trial with this number of registrars had not been done before in PST research nor in studies of other psychological treatments.
- Furthermore, the trial described in this thesis was unique because it was the first with physicians of the patients' own practice providing PST. Therapists in all other PST studies so far were unfamiliar to the patient, in

- the sense that PST was headed over to a provider outside of the practice.
- Another strength of the trial was the highly pragmatic character which reflected daily practice. For instance, we included the broad range and/or mixture of emotional symptoms which characterises general practice as GPs often see mixed symptoms rather than specific, full blown DSM-IV disorders.<sup>5</sup> Most mental health research, however, is undertaken on people experiencing a 'pure' form of a psychiatric disorder, for instance major depression. Varieties or co-morbid symptoms are often deliberately excluded from studies, diminishing the external validity, especially in general practice.<sup>6</sup>

This, however, also brings us to some methodological limitations of the trial.

- The first limitation was the release of randomisation of registrars. We started our effectiveness study as a randomised controlled trial with the registrars being randomised in groups. However, as described in Chapter 6, registrars who did not feel comfortable with or motivated for PST, did not recruit patients. We therefore had to change the design in order to allow any comparison between PST and usual care. This led to selection of registrars participating in the PST group. Probably, these registrars are more motivated to deliver mental health care than their non-PST colleagues who provided care as usual. This higher motivation intensifies non-specific elements of the treatment. Therefore, this might have caused an overestimation of the effects of PST and an underestimation of

the effects of usual care. The use of a formal instrument to measure the level of motivation of registrars towards mental health care or their attitudes towards psychosocial issues would have helped us to reveal the significance of this difference. Unfortunately, however, we did not measure motivation.

- A second methodological limitation in the trial was the selection of patients. The registrars selected patients who all met the inclusion criteria of: 1. being diagnosed with emotional symptoms; 2. a score of 4 or more at the 12-item General Health Questionnaire; 3. having had 3 or more consultations in the past half year. Next to that, registrars considered patients to be appropriate for the type of treatment they offered, which reflects daily practice: doctors offer treatments with the highest chance of success for the individual patient. This is important as patient and physician choice determine outcome importantly.<sup>7</sup> From this pragmatic perspective, the external validity of the trial was therefore high. However, there were differences in the selection of patients between intervention and control group. Registrars in the intervention group selected patients themselves; registrars in the usual care group partly did so, but to reach the numbers planned in advance, had to be assisted by a research assistant. This has resulted in a biased selection of patients with the supposed result that patients who were selected in the intervention group were more suitable and motivated for the treatment whereas patients selected

for the usual care group were not specifically motivated. This limitation also results in more influence of non-specific elements in the treatment and, in this study, favours the intervention group.

We conclude that the selection bias of both registrars and patients compromised the validity of the trial considerably enhancing the non-specific elements of the treatment, thus causing an overestimation of the intervention as compared with usual care. Therefore, we cannot be sure whether the positive trial findings were the result of a. specific PST techniques, b. non-specific effects because PST registrars were probably more motivated, c. more open attitudes of PST patients towards active treatment, or d. a treatment like PST as a valuable vehicle for registrars to incorporate non-specific skills better into their consultations with patients with emotional problems. The last option might be realistic, because the focus group study showed that registrars thought that they implemented many new skills during PST. Registrars mentioned to appreciate the concretising and structuring character, the patient-centered and patient empowering character, including the activation of patients to think of and implement their own solutions in daily life, with patients being responsible for their own solutions. Patient empowering skills are increasingly valued as important within primary care, especially in mental health care.<sup>8</sup> Therefore, we think that a treatment like PST might be a practical vehicle for registrars to incorporate non-specific treatment skills more manifestly in

their patient contacts.

## **B. Specific and non-specific effects**

There are several factors influencing patient outcome in psychological treatments. Lambert and Barely gave a clear overview of these factors: extratherapeutic factors such as spontaneous remission and social support; expectancy effects such as the placebo effect; specific therapy techniques; and non-specific factors such as empathy, warmth, and the therapeutic alliance.<sup>9</sup> They state, based on data from a large number of studies, that the specific therapy techniques account for only 15% to treatment outcome, whereas the non-specific factors within the doctor-patient relationship account for 30%, the expectancy effects for 15% and the extratherapeutic change for 40%. With regard to the positive findings in our review that PST is more effective than control treatments in patients with major depression, it is not clear whether these favourable effects are based on specific PST ingredients and/or on non-specific ingredients - with PST as the vehicle - because these non-specific ingredients have not been described or studied in detail in any trial included in the review. The fact that the review did not show effectiveness of PST for emotional problems might have been related to an overestimation of the control treatments in the review, mostly usual care. Usual care was always provided by patients' own GPs, whereas PST was provided by therapists unfamiliar to patients. So, usual care patients had the advantage of longer-standing relationships with their GPs, which usually is related to better patient

outcome. In this light, it is conceivable that GPs applying PST to their own patients would have better results. Furthermore, it was not described whether GPs who delivered usual care might have applied some psychological skills too. It has been shown that therapists in general tend to use several skills interchangeably.<sup>10</sup> To rule out differences in relationships – and other non-specific ingredients – between treatment groups, we need further research with equally optimised conditions: a trial comparing the effectiveness of PST to the effectiveness of control treatments, with all treatments being provided by the patient's own GP.

### **C. General considerations of research of psychological interventions**

RCTs in psychotherapy research have been critiqued already for a long time, since RCTs in this field have some important limitations.<sup>7,11</sup> These limitations concern aspects of internal and external validity. Concerning internal validity, RCTs assessing the value of psychotherapy are inherently less valid than RCTs assessing the value of medication, because of the impossibility to adequately blind RCTs in psychotherapy.

Concerning external validity, there are even more limitations. Firstly, in general an RCT assesses efficacy – whether the treatment works in a controlled environment – not whether it works in the real world (effectiveness). For instance, RCTs use randomization of patients rather than a naturalistic treatment selection. RCTs use homogeneous patient populations – due to strict diagnostic inclusion criteria – with an artificial treatment

adherence, rather than 'real' patients who do not adhere always optimally. Also, proper comparison groups are sometimes lacking as waiting list controls might be disappointed and therefore do worse than intervention subjects.

Secondly, RCTs are mostly based on the biomedical model rather than on the contextual model. The *biomedical model* interprets the treatment as a mixture of specific ingredients that are critical to the outcome of therapy. It is more important whether the ingredient is received by the patient than who delivers the ingredient. Therefore, in RCTs treatments are manualised and controlled highly, which is at the cost of deviating from usual practice.<sup>11</sup>

This has been critiqued widely,<sup>12</sup> since many opponents comment the specific treatment effects and rather believe in generic effects such as hope and comfort provided by psychotherapy.

The *contextual model* considers non-specific factors essential in treatment outcome. This model regards the person of the therapist as critical because the model recognises that there will be variability in the manner in which treatments are delivered, meaning that the skills of therapists and their belief in treatment will vary.<sup>13</sup> The therapist's motivation, attitude and belief are related to the therapist's communication<sup>14</sup> and to patient outcome: the greater the therapist's belief in treatment's efficacy, the better the outcome.<sup>15</sup>

Furthermore, non-specific factors such as the doctor's empathy, warmth and the doctor-patient relationship, including the therapeutic alliance (i.e. the collaborative and affective bond between the patient and the therapist and their ability to agree

on treatment goals and tasks) are importantly related to patient outcome.<sup>9,16</sup> Kaptchuk et al. for instance showed that non-specific effects of placebo acupuncture in irritable bowel syndrome produced significant outcomes, with the doctor-patient relationship as the strongest component.<sup>17</sup> This highlights the importance of the development and maintenance of the therapeutic relationship as this is a primary curative component of treatment and provides the context in which specific techniques exert their influence.<sup>9</sup> And also, it stresses the importance of measuring this important factor in outcomes research. We would therefore advocate to measure some of these important non-specific treatment factors in RCTs, because these are usually not tested in traditional RCTs of psychological treatments.

#### **D. Realization of training during GP residency**

We performed the studies presented in this thesis within a local residency programme for two main reasons. Firstly, we intended to provide young doctors with a tool for the management of emotional problems already in an early stage of their career. Secondly, we expected GP registrars to be an appropriate group of doctors for the study, because we could insert the training and study in the existing training situation. The registrars, however, were not as accessible as we had expected them to be. Instead, we met a lot of resistance in the course of our research. We took the opportunity to learn from this situation and adjusted the design of the trial in order to complete it.

This also gave us the opportunity to learn more about the exact residency training situation and the combination of this with implementation of research and PST training. We identified three main themes within the setting of our research project: 1. Research during residency; 2. Registrars' attitude towards PST training; 3. Registrars' perspective on mental health management.

##### *1. Research during residency*

We performed this study in the registrars' third - and last - year of residency. This usually is a very busy year with many topics and intensive tasks to be finished by the registrars. Because participation in the study was obligatory and perceived as 'extra' ballast, many registrars had difficulty to find a positive motivation in an already full year to participate. The resistance towards participation they showed instead, did not only count for the PST group but also for many of the registrars in the usual care group. When we adjusted the design of the study and registrars received the choice of delivering either PST or usual care, the majority was neutral or positive about participation. Especially those registrars who chose for providing PST were satisfied, because they were trained and supervised in a treatment they felt a need or interest for. This was underpinned by the results of the questionnaire study about participation in research in general: registrars mentioned to be interested in research participation but they emphasised that they like to choose the research topic themselves. This suggests that a residency research programme that offers several

options would be attractive. We think that researchers and residency programmes should cooperate in such a way that they can offer a research programme that will be attractive for registrars. But this study may illustrate that this cooperation is not easily realised, even in a setting where the residency programme is an integral part of a university department with an established research programme. To bridge the worlds of education and research, it is important that the teachers are involved in research as well as the researchers to be involved in training. Enthusiastic faculty are necessary to serve as a role model and to integrate research into residency training.<sup>18-20</sup> This might create helpful conditions for registrars to participate without reservations in research during their residency.<sup>21</sup> A more positive attitude towards research would fit in with the enthusiasm that most registrars show towards the evidence-based guidelines of the Dutch College of General Practitioners.<sup>22</sup> Finally, registrars might be motivated by colleague peers who are actively involved in research. From this perspective it is highly encouraging that the group of registrars in the Netherlands who combine their residency training with research training is growing.<sup>23</sup>

## 2. *Registrars' attitude towards PST training*

We thought that the registrars would be open for PST training. The training, however, did not only teach new knowledge but also requested a change of behaviour of professionals as they had to implement new communication skills. It can be discussed how changeable the clinical behaviour of these

professionals still is, especially since young Dutch doctors have been receiving intense communication skills training at medical school for some time now.<sup>24</sup> New skills training should connect to these higher levels of communications skills at the start and it should meet registrars' needs. But when do registrars or GPs perceive the need to learn a psychological treatment like PST? This might be after their residency, when they have been practising for some time and are getting to know both their patients and the workload of mental health problems better.<sup>25</sup> On the other side, in the focus group study with registrars who obligatorily participated, we saw a difference between *individual* registrars: some had a particular need or interest to learn a treatment like PST, others hadn't. We therefore recommended to implement generic problem solving skills in an early stage of the GP residency programme, and to offer more specific skills in a later stage to those who opt for this.

Another interesting focus group finding with regard to using practical skills was that many registrars implemented PST in a way they felt at ease with. From an educational perspective this is encouraging: we offered all registrars the same training, but each individual registrar familiarises him/herself in another – *his/her own* – way with it. From a research perspective, however, this loss of uniformity might be disappointing because, as outlined before, psychotherapy research generally aims to provide treatments in a protocolised way.<sup>10</sup>

### 3. *Registrars' perspective on mental health care*

From the focus group study it appeared that registrars thought it is their task to diagnose mental health problems adequately, to offer patients a listening ear and to offer the patient some treatment. Offering a specific full psychological treatment, however, was not regarded by them as their task, not even when it concerned a brief treatment such as PST, which in our study took on average 1.7 consultations per patient more than usual care did. In the light of the desire of patients to receive non-pharmacological treatment from their own GP it is an important question what makes registrars somewhat defensive against this. Could this be related to their level of experience: are they still mainly biomedically oriented? Does it request more life and practice experience to discover the workload of mental health in primary care and the accompanying challenge of managing this adequately? In contrast, a Canadian study showed that most GPs are very interested in the detection and treatment of mental health problems.<sup>26</sup> The attitude of the registrars could also be in line with Hall's question whether a majority of GP registrars tailor their practice to a narrower spectrum of care rather than the wide spectrum of total, personal, context-bound and continuous health care.<sup>27</sup> Hall calls for discussion whether or not GP registrars hold firm to the definition of a GP as described in many national guidelines.

#### **Recommendations for clinical practice**

As described above, we found that PST was favourable for major

depressed patients, and that there is no evidence that PST is better as compared with usual care for emotional problems. However, thus far, no studies have focussed on PST within the context of the GP-patient relation. This is an important deficiency of the evidence base, as this would in all probability strengthen the 'a-specific' treatment effects. PST might be a vehicle to incorporate these non-specific factors more prominently into patient contacts. Possibly PST training provides doctors with a structure and optimism for treatment of mental health problems. We encourage the registrars who participated in the PST training, and meanwhile graduated as a GP, to continue using their skills - whether specific or not - for their patients with emotional problems.

Based on our findings with motivated registrars and despite currently lacking evidence of effectiveness, we invite interested GPs to take part in a PST training. It can meet their need for a practical tool in the non-pharmacological treatment of emotional problems and we expect it to have positive effects for their patients, especially since they already have longer lasting relationships with their patients. In the Netherlands, a two-day PST training for GPs has been organized since 2007 by the Dutch College of General Practitioners. An important logistical reason for registrars' limited motivation to perform a psychological treatment could be the current lack of financial reimbursements for providing psychological treatments combined with its time investment. In order to facilitate the graduated registrars and other GPs to provide a treatment like

PST, there should be a compensation for their time investment. The Health Care Insurance Board has given a positive advice to health insurances to offer a financial remuneration for GPs to provide PST, but unfortunately this advice has not been followed up yet. Another way of coping with the time investment of treatments like PST is to schedule the consulting hours differently, for instance by arranging dedicated sessions or by creating a brief session of 5-minute consultations for simple somatic reasons to compensate for the longer psychological treatment sessions. Some GPs might, like the registrars, implement only elements of PST rather than the entire treatment, so that sessions have a maximum of 20 minutes each, which does fit into normal consulting hours. Although this sounds attractive and an official protocol for Brief Problem Solving (BPS) exists,<sup>28</sup> evidence for effectiveness of BPS is currently lacking. The use of mental health nurses working in the practice could be helpful. Dutch research of PST provided by nurses did not show additional effects above usual GP care for patients with emotional symptoms,<sup>29</sup> whereas British research suggests that for major depressed patients the effectiveness of PST by nurses is as good as the effectiveness of PST by research GPs.<sup>30</sup> Combining this knowledge with the findings of our review, we could advocate it when GPs ask mental health nurses to provide PST for patients with major depression. Other studies investigated PST as part of a stepped-care programme and showed effectiveness.<sup>31,32</sup> In the Cochrane

review we did not conclude anything about these programmes, as these studies were not included. Stepped-care programmes take different patient needs into account, depending on the characteristics of their mental health problems and their personal and social circumstance. An advantage of these programmes is their self-correcting character, meaning that another technique is tried if one technique is not working (sufficiently). This follows daily practice in a realistic way. However, most stepped-care programmes are protocolised whereas doctors in some cases would prefer to start with another option than the programme protocol prescribes.

#### **Further research for patients with emotional symptoms**

Both patients and GPs desire effective psychological treatments by the GPs themselves. We, therefore, need evidence on the effectiveness of PST by the patient's own GP. PST has not yet been investigated when provided by the patient's own GP. Also, as outlined above, the review did not provide us with definitive answers about the exact mechanism of effectiveness of PST as we do not know the non-specific factors in detail. Furthermore, there was an inter treatment group imbalance in the doctor-patient relationships with usual care being delivered by patients' own GPs. To rule out differences in relationships – and other non-specific ingredients – between treatment groups, we need an RCT in which all treatment groups have the advantage of their own GP delivering the treatment. We therefore recommend a trial with PST by the patient's own GP compared to a control group with



time and attention, and a control group delivering usual care both also by the patient's own GP. We suggest to recruit GPs who are interested to provide PST and then randomise them into one of the three groups, with the non-PST GPs being offered PST training after the trial.

Inclusion rather than exclusion of non-specific treatment factors is essential in order to know more about specific versus non-specific factors. We therefore recommend baseline measurement of a. the GP-patient relationship, including the GP-patient alliance; b. the GP's general beliefs in psychosocial aspects of patient care; c. the GP's allegiance (i.e. the GP's belief in the treatment's efficacy) in PST or control treatment; and d. personality characteristics and personal and social circumstances of patients recruited by the doctors. Many instruments exist for measuring the doctor-patient relationship and the doctor-patient alliance.<sup>16</sup> The Physician Belief Scale can measure GPs' beliefs in psychosocial aspects<sup>33</sup> as could the Depression Attitude Questionnaire in depression research.<sup>34</sup> Allegiance can easily be rated for instance on a 5-point scale.<sup>15</sup> By measuring these non-specific factors, we might also be able to reveal some components that produce the power of usual care. Quality of life, including daily functioning of patients, should be one of the main treatment outcomes, rather than focusing only on specific symptom reduction. Also, it can be useful to evaluate the symptoms that patients themselves regard as most hindering. Follow-up should be at least one year in order to know more about the long-term effects. The need for more research is underpinned by the

latest NICE-guideline on depression not recommending PST because of its limited evidence,<sup>35</sup> and a Dutch mental health summary describing it as 'promising'.<sup>36</sup>

The review concluded that PST was not more effective than control treatments for emotional problems. In order to know whether PST is as effective as control treatments, equivalence trials are needed.<sup>37</sup> If PST turns out to be as effective, it could be an attractive alternative for patients and doctors when for instance medication is not an option.

A recent trial in Hong Kong used an adapted, 3-session form of PST but did not show favourable effects of PST above placebo treatment for depressed patients of 60 years and older. However, this was not Brief Problem Solving (BPS) which fits into normal consultations rather than being applied in distinct sessions. The developers of BPS have described it as a promising tool in the treatment of depression and anxiety.<sup>28</sup> However, we do not yet know exactly whether it works through its specific treatment techniques or – as a vehicle – through optimisation of non-specific elements within consultations, and if so, which non-specific elements these specifically are. If these questions are being answered and it turns out to be effective, BPS might suit GPs better than PST in their time-constricted schedules.

### **Recommendations for residency programmes**

We recommend residency programmes to provide their registrars with psychological skills training, for instance PST training, because it fulfils their need for a practical tool

in the management of patients with emotional problems. As outlined in Chapter 3 we recommend to teach the general skills in the beginning of the residency programme, whereas the more specific problem solving skills can be taught in a later stage when registrars perceive a greater need for these skills. Since 2008 we have been training our registrars in this way. Evaluations have been positive. Emphasizing the importance and helpfulness of many generic skills taught in the training – rather than training them a specific psychological treatment – might have reduced their resistance against the training. It is important to motivate registrars positively to use their problem solving skills, because when delivered in a motivated way these skills have positive effects on patient outcome. Registrars could possibly become more motivated through discussions with their role models – faculty and teaching GPs – about mental health care and providing psychological interventions. Residency programmes should facilitate reflective thinking and debate on mental health management in general as it concerns so many patients within primary care. As Gask set out, we need to challenge the potentially negative attitudes that doctors develop towards treating mental health problems, perhaps as a result of exposure to ‘medical’ models of mental illness in early training that do not fit with their later experiences.<sup>38</sup> Furthermore, residency programmes should emphasise the importance of relationship and other common factors much more as these enhance patient outcome far more than the focus on specific techniques.<sup>9</sup> In fact, this should yet happen in medical school,

as for many GPs their practice is considerably influenced by the training they received as medical students.<sup>38</sup> In the current teaching, there is attention for thoughts and feelings of patients and how these should be addressed in the consultation. But there is scarce attention for non-specific factors that relate to the doctor. Students and registrars should be stimulated to be aware of and to experiment more with non-specific factors such as warmth, empathy, comfort, hope, relationship, alliance, et cetera rather than focus on collecting all biomedical information of the patient. Registrars could for instance watch consultation videos of each other or of their teaching GP and label the non-specific aspects that might contribute to the quality of the doctor-patient relationship and to treatment outcome.

We also recommend residency programmes to offer registrars attractive research programmes as some registrars are very resistant to the idea of research,<sup>39</sup> and many registrars felt frustrated and resentful at being forced to participate in research.<sup>40</sup> This was underpinned by the results from the focus group study in this thesis. Registrars thought that participation in research is interesting, but they should be offered choice, time and resources. An American residency programme recently introduced a new system requiring that each registrar accumulates ‘scholarly activity points’. This point system allowed registrars to pursue their own interests rather than being told what type of scholarly activity to participate in. It has transformed the atmosphere within the residency into a ‘culture of inquiry’.<sup>40</sup> Research networks,

research departments and residency training programmes must collaborate to realise to most optimal programme. Next to that it is important to have energetic and motivated faculty involved in research to act as role models, to discuss research in front of, and with, registrars regularly, and to generate an atmosphere conducive to research.<sup>39,41</sup> The goal is to increase registrars' interest in and likelihood of conducting or participating in research. This is important because research in primary care is essential since evidence to underpin this care cannot be based on hospital-based research alone.<sup>42</sup>

#### **Further research in residency**

We recommend to study whether the current, adapted PST training programme during residency meets the needs of registrars adequately, which specific and non-specific skills they actually pick up, and how they keep using these skills in daily practice. Regarding the needs of registrars a questionnaire survey or another focus group study could be performed. Video recordings could reveal registrars' use of specific and non-specific treatment skills in everyday practice. This is essential as the development and maintenance of the GP-patient relationship provides the context in which specific techniques exert their influence.

We recommend residency programmes to offer an attractive research programme in order to increase research appreciation and interest. It needs further research whether offering such an attractive research programme leads to more actively involved GPs in research after their residency training.

Prospective studies with educational outcomes will need to be done to conclude the best methods of teaching GP registrar research knowledge, attitudes, and skills.

#### **Conclusion**

Training in problem-solving treatment (PST) during GP residency was feasible. Registrars thought that PST training was interesting and helpful, but they thought that implementing a full psychological treatment is not their task and costs too much time in daily practice. They especially appreciated specific elements of the treatment. All said they would use these elements in daily practice.

In a Cochrane review we found that PST was more favourable than control treatments for patients with a major depression but not for patients with emotional problems other than major depression. In a pragmatic controlled trial we found indications that PST by motivated registrars might have positive effects on primary care patients with emotional problems. However, due to limited internal validity, we are not sure whether these positive effects are the result of specific or non-specific treatment factors. We assume that non-specific factors probably are most promising in the treatment of emotional problems. PST could be a vehicle to incorporate these non-specific factors more prominently into patient contacts. We encourage the – meanwhile graduated – registrars who participated in the PST training to continue using their skills for their patients with emotional problems. We recommend residency programmes to teach the non-specific factors more explicitly, for instance through PST training. We furthermore

suggest residency programmes to offer registrars attractive research programmes, in order to increase registrars' interest in research

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# Summary

This thesis focused on problem-solving treatment (PST), a brief psychological treatment for patients with mental health problems in primary care. The general objectives were to investigate 1. the feasibility of PST training during general practice (GP) residency, and 2. the effectiveness of PST for patients with emotional symptoms in primary care.

## **Chapter 1. General introduction**

In this chapter the rationale, aims and outline of this thesis are explained. Mental health problems are common, with one in four adults suffering from symptoms of depression, anxiety, sleeping problems, irritability, stress, or psychosocial problems. Quality of life is influenced negatively and many patients visit their general practitioner (GP) frequently. Therefore, mental health problems account for a substantial proportion of the GP's workload.

Both patients and physicians desire effective non-pharmacological treatments, especially because medication is not always the best option in the treatment of mental health problems. GP registrars often express the need for more expertise of psychological treatment skills for patients with mental health problems. Problem-solving treatment (PST) could be an attractive option. PST is a brief psychological treatment teaching patients how to use their own skills to cope with problems. PST has been shown to be effective for patients with

depression, but the effectiveness for the broader range of mental health problems – typical for primary care – had not been investigated before. Training in PST was introduced in a Dutch GP residency programme to meet the registrars' need. We aimed to assess 1. the feasibility of PST training during GP residency, and 2. the effectiveness of PST for patients with emotional symptoms in primary care. In this thesis we referred to the same category of patients with the terms *emotional symptoms*, *emotional problems* and *mental health problems*.

## **Part I. Feasibility of problem-solving treatment during general practice residency**

### **Chapter 2. Feasibility of training in problem-solving treatment for general practice registrars**

In this chapter the feasibility of PST training during residency is described. For this purpose we used data from an observational study of 20 GP registrars who received a two-day PST training and subsequent supervision in the treatment of patients with mental health problems. The registrars evaluated the training positively. All registrars subsequently used PST, treated 52 patients, and received supervision. Registrars appreciated PST for its structure and the active role of patients during treatment. The conclusion was that training GP registrars in PST is feasible.

### **Chapter 3. Problem-solving treatment in general practice residency: a focus group study of registrars' views**

In this chapter the results of a qualitative focus group study are presented. We aimed to explore GP registrars' views on PST training during residency and on the actual use of PST in general practice. We interviewed 18 Dutch registrars – divided over 4 groups – who had been trained in PST during residency. Registrars expressed that PST training during residency was feasible, interesting and helpful, but they found that it took too much time in everyday practice and that it was not a GP's task. All registrars, however, said they would use specific elements in a variety of consultations, for instance concretising problems, brainstorming about practical solutions, and activating patients. We recommended residency programmes to offer training in PST or another psychological treatment with comparable elements.

### **Chapter 4. General practice registrars and research - Attitudes toward participation**

Primary care research is important and early exposure of GPs to research is recommended to increase family medicine research capacity. The participation of GP registrars in the study described in this thesis enabled us to determine their actual participation and to explore their views on participation in research in general. This chapter presents the results of an observational study of 67 registrars'

participation, and a questionnaire survey of their opinions of research and participation in research in daily practice. The registrars recruited 208 patients. They were interested in participating in research, especially when they can learn a new skill. Obligatory participation, lack of time and difficulties with patient recruitment were important barriers to participation. Registrars reported that participation should not be compulsory, and they preferred to choose their own research subjects. Assuming a desire for research to be part of the culture of family medicine, we suggested that researchers and residency programmes offer research in such a way that registrars will find it attractive to participate in it.

### ***Part II. Effectiveness of problem-solving treatment for patients with emotional symptoms in primary care***

### **Chapter 5. Problem-solving treatment for emotional problems in primary care - a Cochrane review**

Many patients with emotional problems prefer psychological treatments delivered within the primary care setting. Evidence for psychological treatments, however, comes largely from studies in secondary care settings where patients are referred to a specialist. PST has been shown to be effective in patients with depression but its effectiveness has not been proven for the broader range of emotional problems seen

in primary care. Chapter 5 contains the results of a systematic review according to the principles of the Cochrane Collaboration. This review aimed to assess the effectiveness of PST versus usual care, medication or other psychological treatments in adult patients with emotional problems in primary care. We included 12 studies with 2261 participants. Four studies were of good quality, five studies of moderate quality and three studies of low quality. Three studies were in favour of PST, three were in favour of control treatment and six did not show significant differences between PST and control treatments.

Overall, PST was not different from usual care, antidepressants, placebo medication or other psychological treatments. For patients with major depression, however, two good quality studies showed that PST was more effective than usual care, placebo medication and group psychoeducation: PST patients had a significantly important better SF-36 social function score and a higher recovery rate at the BDI (2.54, 95% CI 1.85 to 3.50) than usual care patients at 6-month follow-up. Also, PST patients had significantly higher recovery rates at the HDRS than patients in the placebo medication group at 3-month follow-up (RR 2.25, 95% CI 1.16 to 4.36). For emotional problems other than major depression, however, there was insufficient evidence to show

significant differences between PST and usual care, (placebo) medication, or other psychological treatments. We therefore recommended further research of PST for these problems. Costs and health care use did not show major differences between PST and control treatments. Patients were more satisfied after PST or generic care from a mental health nurse than after usual GP care or after antidepressant medication.

### **Chapter 6. Effectiveness of problem-solving treatment by general practice registrars for patients with emotional symptoms**

This chapter describes the results of a pragmatic controlled trial. We aimed to study the effectiveness of PST delivered by trained GP registrars for patients with mental health problems. We compared the effectiveness of PST versus usual care for patients with mental health problems. GP registrars provided PST or usual care, according to their own preference. Patients were included if they (a) had presented for three or more visits with emotional symptoms in the past 6 months; and (b) scored four or more on the 12-item General Health Questionnaire. Outcomes at 3 and 9 month follow-up were standard measures of depression, anxiety and quality of life. Thirty-eight GP registrars provided PST and included 98 patients; 43 provided usual care and included 104 patients. PST



patients improved significantly more than usual care patients: at 9-month follow-up PHQ recovery rates for somatoform disorder and anxiety were higher in the PST group (OR 6.50,  $p=0.01$  respectively OR 11.25,  $p=0.03$ ). Depressive symptoms did not improve significantly different between treatment groups. PST patients had improved significantly more on the 100-point SF-36 domains social functioning, role limitation due to emotional problems and general health perception (B-coefficient of the mean difference respectively 9.83,  $p=0.03$ ; 17.18,  $p=0.04$ ; 10.48,  $p<0.001$ ). Although these results provided indications that PST by motivated registrars might be more favourable for patients with mental health problems than usual care by registrars, it remained – due to a compromised validity of the trial – unclear whether the effect in this trial could be attributed to the intervention.

## **Chapter 7. General discussion**

The final chapter considers the results described in this thesis together with some methodological issues, and ends with suggestions for further research and general practice.

Due to limited internal validity of the trial described in this thesis, it was not sure whether the positive trial effects were the result of specific or non-specific treatment factors within the doctor-patient relationship. Non-specific factors account for a greater

part to psychological treatment outcome than specific factors, but are scarcely studied in trials. We assumed that non-specific factors probably were most promising in the treatment of emotional problems. PST could be a vehicle to incorporate these non-specific factors more prominently into patient contacts. We therefore encourage the registrars who participated in the PST training, and meanwhile graduated as a GP, to continue using their skills – whether specific or not.

The most important recommendations for further research were: a. An RCT with equally optimised doctor-patient relationships – and other non-specific factors – in all treatment groups, comparing the effectiveness of PST to the effectiveness of control treatments, with all treatments being delivered by the patient's own GP; b. Measurement of non-specific treatment factors in trials of psychological treatments.

The most important recommendations for residency programmes were: a. An attractive research programme in order to increase registrars' interest in research; b. Implementation of training in PST or a psychological treatment with comparable elements; c. More explicit teaching of non-specific treatment factors.

# Samenvatting

Dit proefschrift beschrijft een onderzoek naar problem-solving treatment (PST). PST is een korte psychologische behandeling voor patiënten met psychische klachten in de huisartsenpraktijk. Doel was om te onderzoeken of: 1. PST training haalbaar is tijdens de huisartsopleiding; 2. PST effectief is voor patiënten met psychische klachten in de huisartsenpraktijk. Deze Nederlandse samenvatting is bestemd voor lezers die niet over een medische achtergrond beschikken. Lezers die graag meer details lezen, verwijs ik naar de voorgaande hoofdstukken.

## **Hoofdstuk 1. Algemene inleiding**

In dit hoofdstuk worden de achtergrond, doelen en opbouw van dit proefschrift toegelicht. Psychische klachten komen veel voor. Ongeveer een op de vier volwassenen heeft last van symptomen van depressie, angst, slaapproblemen, stress, prikkelbaarheid, of psychosociale problemen. De kwaliteit van leven wordt hierdoor vaak negatief beïnvloed en veel patiënten met deze problematiek bezoeken hun huisarts frequent. Daarmee zorgen psychische klachten voor een substantieel deel van de werklust van de huisarts. Zowel patiënten als artsen wensen effectieve niet-medicamenteuze behandelingen, vooral omdat medicatie niet altijd de beste optie is in de behandeling van psychische klachten. Artsen in opleiding tot huisarts geven vaak aan dat zij behoefte hebben aan meer deskundigheid op het gebied van psychologische behandelvaardigheden voor patiënten met psychische klachten. Problem-solving treatment (PST)

zou hiervoor een aantrekkelijke optie kunnen zijn. PST is een korte psychologische behandeling die patiënten leert hoe ze hun eigen vaardigheden kunnen gebruiken om met problemen om te gaan. PST is effectief gebleken voor patiënten met een depressie, maar de effectiviteit voor de bredere range aan psychische klachten – die juist zo typisch voor de huisartsenpraktijk is – was nog niet eerder onderzocht. Om tegemoet te komen aan de behoefte van artsen in opleiding tot huisarts introduceerden we, de onderzoekers van dit project, PST training in de Nijmeegse huisartsopleiding. We wilden het volgende beoordelen: 1. De haalbaarheid van PST training tijdens de huisartsopleiding; en 2. De effectiviteit van PST voor patiënten met psychische klachten in de huisartsenpraktijk.

## ***Deel I. Haalbaarheid van problem-solving treatment tijdens de huisartsopleiding***

### **Hoofdstuk 2. Haalbaarheid van PST training voor artsen in opleiding tot huisarts**

Dit hoofdstuk beschrijft de haalbaarheid van PST training tijdens de huisartsopleiding. We observeerden 20 artsen in opleiding tot huisarts die deelnamen aan een tweedaagse PST training en aansluitend supervisie kregen op hun behandeling van patiënten met psychische klachten. De artsen beoordeelden de training positief. Alle artsen in opleiding tot huisarts pasten PST vervolgens toe, ze behandelden 52 patiënten, en ontvingen hierop supervisie. Ze waardeerden PST van-

wege de structuur en de actieve rol van patiënten tijdens de behandeling. De conclusie was dat PST training in de huisartsopleiding haalbaar is.

### **Hoofdstuk 3. PST tijdens de huisartsopleiding: een focusgroepstudie van de opvattingen van artsen in opleiding tot huisarts**

In dit hoofdstuk worden de resultaten van een focusgroepstudie gepresenteerd. Doel was om te onderzoeken wat de meningen van artsen in opleiding tot huisarts waren over PST training tijdens de huisartsopleiding en wat hun meningen waren over het gebruik van PST in de huisartsenpraktijk. We interviewden 18 Nederlandse artsen in opleiding tot huisarts - verdeeld over 4 groepen - die getraind waren in PST tijdens hun huisartsopleiding. De artsen in opleiding gaven aan dat PST training tijdens de huisartsopleiding haalbaar, interessant en nuttig was, maar ze vonden dat het teveel tijd kostte in de dagelijkse praktijkvoering en dat het toepassen van een psychologische behandeling niet de taak van een huisarts is. Ze zeiden echter allen dat ze specifieke elementen uit de behandeling zouden toepassen in een variëteit aan consulten. Ze noemden als waardevolle elementen met name het concretiseren van problemen, het brainstormen over praktische oplossingen, en het activeren van patiënten. We adviseerden huisartsopleidingen om training in PST, of een andere psychologische behandeling met vergelijkbare elementen, aan te bieden aan hun artsen in opleiding.

### **Hoofdstuk 4. Artsen in opleiding tot huisarts en onderzoek - Opvattingen over deelname aan onderzoek**

Huisartsgeneeskundig wetenschappelijk onderzoek is belangrijk en vroege blootstelling van huisartsen aan onderzoek is aanbevolen zodat de onderzoekscapaciteit toeneemt. De in dit proefschrift beschreven deelname van artsen in opleiding tot huisarts aan onderzoek gaf ons de mogelijkheid om hun daadwerkelijke onderzoeksdeelname vast te stellen en om hun opvattingen in kaart te brengen over deelname aan onderzoek in het algemeen. Dit hoofdstuk beschrijft enerzijds de resultaten van een observationele studie van de deelname van 67 artsen in opleiding tot huisarts, en anderzijds de resultaten van een vragenlijststudie naar hun opvattingen over onderzoek en over deelname aan onderzoek in de dagelijkse praktijk. De 67 artsen in opleiding sloten in totaal 208 patiënten in het onderzoek in. Ze gaven aan geïnteresseerd te zijn in deelname aan onderzoek, vooral wanneer ze een nieuwe vaardigheid kunnen leren. Verplichte deelname, tijdgebrek en moeilijkheden met patiëntenwerving waren volgens hen belangrijke barrières in deelname. Artsen in opleiding tot huisarts gaven aan dat onderzoeksdeelname niet verplicht zou moeten zijn, en ze gaven er de voorkeur aan om hun eigen onderzoeksonderwerp te kiezen. Er van uitgaande dat onderzoek een wenselijk deel uitmaakt van de huisartsgeneeskunde, suggereerden we dat onderzoekers en huisartsopleidingen onderzoek zodanig aanbieden dat artsen in opleiding tot huisarts het aantrekkelijk

vinden om eraan deel te nemen.

## **Deel II. Effectiviteit van problem-solving treatment voor patiënten met psychische klachten in de huisartsenpraktijk**

### **Hoofdstuk 5. Problem-solving treatment voor psychische klachten in de eerste lijn – een Cochrane review**

Veel patiënten met psychische klachten geven de voorkeur aan psychologische behandeling binnen de huisartsenpraktijk. Onderzoek naar psychologische behandelingen vond tot op heden echter vooral plaats in de tweede lijn, zoals de psychiatrie, waar patiënten verwezen worden naar een specialist. In eerder onderzoek bleek PST effectief bij patiënten met depressie maar het is nog onduidelijk in hoeverre PST ook effectief is voor de bredere range aan psychische klachten die juist zoveel gezien wordt in de huisartsenpraktijk. Hoofdstuk 5 omvat de resultaten van een systematisch literatuuroverzicht volgens de principes van de *Cochrane Collaboration*, een internationaal netwerk dat helpt om op basis van gestructureerde literatuuroverzichten besluiten te nemen omtrent gezondheidsvraagstukken. Dit literatuuroverzicht had als doel om de effectiviteit te beoordelen van PST ten opzichte van gebruikelijke zorg, medicatie of andere psychologische behandelingen bij volwassen patiënten met psychische klachten in de huisartsenpraktijk. In ons overzicht namen we 12 studies op met in totaal 2261 deelnemende patiënten. Vier studies waren van goede kwaliteit, vijf studies van gemiddelde kwaliteit en drie studies van lage kwaliteit. De uitkomsten van drie studies waren ten gunste van PST, drie ten gunste van de controlebehandeling en zes studies lieten geen significante

verschillen zien tussen PST en andere behandelingen.

Overall waren de effecten van PST niet anders dan die van gebruikelijke zorg, antidepressiva, placebo medicatie, of andere psychologische behandelingen. Voor patiënten met een ernstige depressie echter, toonden twee studies van goede kwaliteit aan dat PST effectiever was dan gebruikelijke zorg, placebo medicatie of groepseducatie. Echter, voor andere psychische klachten dan een ernstige depressie vonden we onvoldoende bewijs dat PST andere effecten heeft dan gebruikelijke zorg, (placebo) medicatie, of andere psychologische behandelingen. Daarom adviseerden we verder onderzoek van PST voor deze klachten. We vonden geen noemenswaardige verschillen tussen PST en andere behandelingen voor wat betreft kosten en gezondheidszorgconsumptie. Wel was duidelijk dat patiënten meer tevreden waren na PST of na zorg van een GGz-verpleegkundige dan na gebruikelijke zorg door de huisarts of na gebruik van antidepressiva.

### **Hoofdstuk 6. Effectiviteit van problem-solving treatment door artsen in opleiding tot huisarts voor patiënten met psychische klachten**

Dit hoofdstuk beschrijft de resultaten van een patiëntenonderzoek. We beoogden de effectiviteit te bestuderen van PST, gegeven door getrainde artsen in opleiding tot huisarts, aan patiënten met psychische klachten. We vergeleken de effectiviteit van PST met die van gebruikelijke zorg voor patiënten met psychische klachten in de huisartsenpraktijk. Artsen in opleiding tot huisarts leverden gedurende het gehele onderzoek ofwel PST ofwel gebruikelijke zorg, afhankelijk van hun eigen voorkeur. Patiënten werden in het onderzoek ingesloten als zij (a)

driemaal of vaker met psychische klachten bij de huisarts waren geweest in het afgelopen half jaar; en (b) een score van vier of hoger hadden op de 12-item General Health Questionnaire (een zelfrapportagelijst voor het meten van psychische klachten). Na 3 en 9 maanden vulden de deelnemende patiënten vragenlijsten in met vragen over depressie, angst en kwaliteit van leven. Achtendertig artsen in opleiding tot huisarts leverden PST en sloten 98 patiënten in het onderzoek in; 43 artsen in opleiding tot huisarts leverden gebruikelijke zorg en sloten 104 patiënten in. PST-patiënten verbeterden significant meer dan controlepatiënten die gebruikelijke zorg ontvingen: PST-patiënten rapporteerden significant minder symptomen van depressie en angst en een betere kwaliteit van leven dan controlepatiënten, zowel na 3 als na 9 maanden. Hoewel deze resultaten er op wijzen dat PST door artsen in opleiding tot huisarts waarschijnlijk beter is voor patiënten met psychische klachten dan gebruikelijke zorg door artsen in opleiding tot huisarts, blijft het – ten gevolge van een beperkte validiteit van het onderzoek – onduidelijk of het positieve effect in dit onderzoek toegeschreven kan worden aan PST.

### **Hoofdstuk 7. Algemene discussie**

Het laatste hoofdstuk plaatst de resultaten van dit proefschrift in een perspectief en bespreekt enkele methodologische kwesties. Tenslotte geeft het suggesties voor verder onderzoek en voor de huisartsenpraktijk en huisartsopleiding. Doordat de interne validiteit van het patiëntenonderzoek beschreven in dit proefschrift beperkt is, is het niet geheel duidelijk of de positieve effecten het resultaat zijn van specifieke of non-specifieke behandelfactoren binnen de arts-patiëntrelatie. Non-

specifieke factoren (zoals empathie, warmte, hoop geven) dragen voor een groter deel bij aan het effect van een psychologische behandeling dan de specifieke factoren. Maar deze non-specifieke factoren worden nauwelijks bestudeerd in wetenschappelijk onderzoek. Wij veronderstellen dat non-specifieke factoren waarschijnlijk het meest belovend waren in de behandeling van psychische klachten. PST zou een vehikel kunnen zijn om deze non-specifieke factoren meer prominent te incorporeren in patiëntcontacten. Daarom moedigen wij artsen in opleidingen tot huisarts, die deelnamen aan de PST training en inmiddels gecertificeerd huisarts zijn, aan om hun vaardigheden te blijven gebruiken – al dan niet specifiek. De belangrijkste aanbevelingen voor verder onderzoek waren:

- a. Een gerandomiseerd onderzoek waarbij de arts-patiëntrelaties – en andere non-specifieke factoren – in alle behandelgroepen even optimaal zijn. Dit onderzoek vergelijkt dan de effectiviteit van PST met de effectiviteit van andere behandelingen, waarbij alle behandelingen worden gegeven door de *eigen* huisarts van de patiënt;
- b. Het meten van non-specifieke behandelfactoren in onderzoeken van psychologische behandelingen.

De belangrijkste aanbevelingen voor huisartsopleidingen waren:

- a. Een aantrekkelijk onderzoeksprogramma om de interesse voor onderzoek bij artsen in opleiding tot huisarts te vergroten;
- b. Implementatie van training in PST of een psychologische behandeling met vergelijkbare elementen;
- c. Expliciet onderwijs van non-specifieke behandelfactoren.



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# Curriculum Vitae

## **Curriculum Vitae in het Nederlands**

Op 4 september 1977 word ik in Oldenzaal geboren als dochter van Harry Franke en Ria Franke-Hams. Ik groei op met mijn twee broers, Lude en Gert. Op mijn 9<sup>e</sup> verhuizen we naar Budel en op mijn 15<sup>e</sup> naar Epe. Ik ga naar het Bisschoppelijk College in Weert en behaal in 1995 mijn gymnasiumdiploma aan het Christelijk Lyceum in Apeldoorn. Vervolgens studeer ik geneeskunde aan de Radboud Universiteit Nijmegen (voorheen 'Katholieke Universiteit Nijmegen'). In 1999 doe ik een wetenschappelijke stage bij Professor Anthony Avery aan de University of Nottingham (Groot-Brittannië), alwaar mijn enthousiasme voor wetenschappelijk onderzoek en het huisartsenvak groeit. Na mijn doctoraal diploma geneeskunde studeer ik in 1999-2000 een aanvullend jaar Ethiek aan de faculteit Wijsbegeerte te Nijmegen met een studiebeurs van de Stichting Thomas More (voorheen 'Radboudstichting'). Daarna volgen mijn co-schappen welke ik afsluit met een co-schap van 3 maanden in een praktijk op het platteland in El Salvador, Midden-Amerika. Na deze ervaring weet ik zeker dat ik huisarts wil worden. In

2002 behaal ik mijn artsexamen. Na een korte overbruggingsperiode bij Bloedbank Sanquin te Nijmegen, start ik in 2003 met mijn promotieonderzoek naar problem-solving treatment (PST) waarvan de resultaten in dit proefschrift zijn beschreven. Daarnaast werk ik in 2003 als arts-assistent in de ouderenpsychiatrie bij de GGZ Nijmegen. In 2004 begin ik met de huisartsopleiding te Nijmegen, welke ik combineer met mijn onderzoek in een zogenaamd AIOTHO-traject (arts in opleiding tot huisarts en onderzoeker). In 2008 rond ik mijn huisartsopleiding af. Vanaf 2004 geef ik PST-trainingen aan diverse hulpverleners in den lande alsmede in de Nijmeegse huisartsopleiding. Momenteel werk ik parttime als huisarts in de regio Utrecht. Daarnaast werk ik binnen het UMC St Radboud te Nijmegen mee aan een onderzoeksproject over ADHD (Afdeling Kinder- en Jeugdpsychiatrie) en onderwijs ik consult- en communicatievaardigheden aan medisch studenten te Nijmegen. Tevens ben ik lid van de werkgroep herziening NHG-standaard angststoornissen. Ik ben getrouwd met Rutger Hassink. Samen genieten wij van onze zonen Jaap (10 juli 2008) en Huub (12 juli 2010).

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## **Curriculum Vitae in English**

I was born on September 4<sup>th</sup> 1977 in Oldenzaal (the Netherlands) as the daughter of Harry Franke and Ria Franke-Hams. I grew up with my two brothers, Lude and Gert. When I was 9 we moved to Budel and at the age of 15 to Epe. I went to the Bischoppelijk College in Weert and completed my high school (gymnasium) in 1995 at the Christian Lyceum in Apeldoorn. I then studied medicine at the Radboud University Nijmegen (previously 'Catholic University of Nijmegen'). In 1999 I conducted a research elective at the University of Nottingham (UK), supervised by Professor Anthony Avery. During this period, my enthusiasm for scientific research and general practice increased. With a grant from the Thomas More Foundation (previously 'Radboudstichting') in 1999-2000, I studied Ethics at the Faculty of Philosophy in Nijmegen for a year. Hereafter I started my internships with a final 3-month internship at a rural health centre in El Salvador, Central America. I obtained my medical degree in 2002. After a brief period working at the Sanquin Blood Bank Nijmegen, I started my PhD project on problem-

olving treatment (PST) in 2003. The results of this project are described in this thesis. In addition, in 2003 I also worked as a psychiatry resident for the elderly at the GGz Nijmegen. In 2004 I started with the general practice (GP) residency training at the Radboud University Nijmegen Medical Centre, being part of a combined residency and research training programme (the 'AIOTHO-programme'). In 2008 I finished my GP training. Since 2004 I have provided PST training to various health professionals in the country, including the Nijmegen GP residency training programme. At the moment I am working part-time as a general practitioner in Utrecht and surroundings. In addition, I am working in the Radboud University Nijmegen Medical Centre on a research project on ADHD (Department of Psychiatry) and I am a GP-teacher in consultation and communication skills for medical students. Also, I am a member of the working party on the revision of the national general practice guideline of anxiety disorders.

I am married to Rutger Hassink.

Together we enjoy our sons Jaap (July 10<sup>th</sup> 2008) and Huub (July 12<sup>th</sup> 2010).

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# Colophon

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