Limited effectiveness of Problem Solving Treatment provided by a specialized nurse for patients with mental health problems in primary care: nine months follow up

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Chapter 4

Abstract

Background
Patients in primary care who experience mental health problems frequently visit their general practitioner (GP), while no adequate treatment is yet available.

Objectives
Effectiveness of problem-solving treatment given by a specialized nurse, for GP patients with mental health problems, nine months after the trial.

Methods
A RCT is conducted for these patients where problem solving treatment and usual GP care were compared.

Results
Time effects were found for the problem-solving group, especially for problem solving skills. No main effects were found. The suggestion of effectiveness in subgroups in the three-month data could not be replicated after nine months. Predictors of improvement were studied, and one predictor was found; being younger then 50 years.

Conclusion
We suggest to restrict problem-solving treatment as performed by a specially trained nurse to patients with the more serious mental health conditions in a stepped care model. We presume that for many patients in this trial, problem-solving treatment may have been offered too early.

Keywords
problem-solving treatment, general practitioner, mental health problems.
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Background

In primary care the estimated prevalence of psychological problems varies, but we can safely state that patients with these kind of problems visit their general practitioner quite frequently (1). Therefore, mental health care is a core activity of primary care (2). The general practitioner (GP) has become the gate-keeper for all medical but also for psychological care, which means a substantially expanded task (3;4). Patients with mental health problems have a considerable social impairment, especially when they suffer from affective disorders (5). The financial costs of these problems are large, for both society and the individual, especially in days lost from work (6). For GPs, to advise patients effectively how to deal with mental health problems better tools are urgently required.

For many of the psychological problems in primary care, no evidence-based treatment was available (7) until 1996. Then, Problem Solving Treatment (PST) was developed and used for the first time in a randomised clinical trial (RCT) (8). Since then many trials and reviews have been performed about the effects of PST, but few were in primary care (1;9-14) and non of them investigated patients with general mental health problems. To further develop the evidence for the effectiveness of problem-solving treatment in primary care, we conducted a RCT where the effects of PST were compared to the usual care of the general practitioner for patients with mental health problems. We conducted three measurements, at baseline, after three months and after nine months. Primary outcome was the Hospital Anxiety and Depression Scale (HADS, (15)). The data after three months showed no clinical or statistical significant main differences between the usual care group and the problem-solving group. We did find time-effects for both groups; they both improved. Further research lead to the suggestion of improvement for specific subgroups, namely, patients with a severe depression or (multiple) psychopathology (a score on the HADS greater or equal to eight, or having one or more diagnoses as measured by the Patient Health Questionnaire (PHQ, (16)). The results after three months are also extensively reported elsewhere (17). Consequently, one hypothesis we derive of the post-hoc analysis from our three months data is that PST
seemed to be more effective for patients with more severe symptoms (17). Therefore, the aim of this study is to investigate if more improvement can be found for patients who received problem-solving treatment. We also expect some (socio demographic an personality) factors to predict improvement of mental health problems, like gender, SES, social support, rumination, taking responsibility and avoidance. In this paper, not only the nine-month results are presented, but also our results about predictors of improvement.

Methods

Design

Data of the trial were collected in the Problem Solving Treatment (PST) project Amsterdam, the Netherlands, between November 2003 and May 2005. We set up a randomised controlled trial (RCT) with two arms: usual care from the GP and PST from a nurse. An independent researcher did random allocation in the two arms. The design and the outcomes after three months are published elsewhere (18;19). This report is about the follow-up data, which are collected nine months after baseline.

Subjects

We recruited 127 representative patients with mental health problems. Patients were pre-screened by use of the General Health Questionnaire (GHQ-12, (20)) and when patients scored 4 or more, and were eligible, we assessed their mental and physical health by written questionnaires at pre-treatment, post-treatment (three-months) and follow-up (nine-months). A flow chart of patients can be found in Figure 1.
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**Figure 1. Flowchart of participants**

Patients received GHQ N=2486

Refused to participate N=353

Assessed for eligibility N=2133

N=622 ≥ 3 consultations GP in past six months + score of ≥ 4 on GHQ

Not willing to participate N=311
Not meeting inclusion criteria N=136

N=175 Eligible and randomised

Allocated to CAU only N=87
- Non-responders pre-test N=14
- Lost to post test N=3
- Post test only N=1

Outcome Completers N=69
Lost to follow-up N=1
Follow-up N=68

Allocated to CAU + PST N=88
- Non-responders pre-test N=24
- Lost to post test N=2
- Post test only N=1

Outcome Completers N=61
Lost to follow-up N=2
Follow-up N=59

**Intervention**

PST is a brief (less than four hours) treatment that focuses on practical skill building. The goal of PST is to stimulate an active attitude towards everyday problems and, hereby, to achieve a reduction in mental health problems.
Patients were offered a four to six PST sessions. An overview of the steps taken in this treatment can be found in figure 2.

**Figure 2. Problem Solving Treatment**

Problem Solving Treatment contains of seven stages:

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

Characteristics:

- → 4-6 sessions
- → first session max. 60 min. next sessions max 30 min
- → strategy for coping with present and future problems
- → role of therapist decreasing patient taking over control

**Outcomes**

Primary outcome measure was the well-validated self-report Hospital Anxiety and Depression Scale (HADS). Higher scores indicate higher levels of depression and anxiety. Other outcome measures were the Patient Health Questionnaire (PHQ, (21)), Social Problem Solving Inventory (SPSI-R, (22)) and the Social Functioning-36 (SF-36(23)). The results were analysed by using paired t-tests between pre-treatment and follow-up for completers analysis. The next step was analysing by covariance (ANCOVA) or binary logistic regression for non-parametric data.

**Predictors of improvement**

An improvement of 4 points or more on the primary outcome HADS between the baseline and follow-up was considered a relevant criterion for clinically relevant improvement (15; 24-26). Firstly, we examined associations by using Pearson’s correlations. We used (univariate) general linear models to investigate
the effect on the outcome, an finally the predictors were used in a (linear and logistic) multivariate regression, forward stepwise. Potential predictors were socio-demographic variables (education, income and age); mental health problems (PHQ); personal characteristics such as the level of problem-solving skills (SPSI-R), or other relevant psychological characteristics like the Ways of Coping Questionnaire (WCQ) and the Rumination Response Scale (RRS).

**Results intervention**

There were 127 patients who completed the follow-up when the HADS was used as a criterion. Patients with follow-up had a lower mean age (52.57; SD 14.7), and were more likely to be female (N=89, 70.1 %), compared to those with no follow-up (N=3) who had a mean age of (66, SD 9.2) and who were all female.

**Outcome**

**Main effects**

No statistical significant differences were found between the problem solving treatment group and usual care group after nine months, when corrected for baseline measurements. There were no interactions found between the measurements and the groups. There was no effect modification found between outcome and groups. Results can be found in Table 1.

**Table 1.** Follow-up data (nine months) of main effects.

<table>
<thead>
<tr>
<th></th>
<th>UC M(SD)</th>
<th>PST M(SD)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total score HADS pre</td>
<td>16.43(7.0)</td>
<td>15.03(7.0)</td>
<td>F(1,125)= 0.00</td>
<td>.93</td>
</tr>
<tr>
<td>Total score HADS follow-up</td>
<td>13.07(7.1)</td>
<td>12.05(8.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total score SPSI pre</td>
<td>90.37(13.9)</td>
<td>85.68(12.8)</td>
<td>F(1,108)= 2.19</td>
<td>.14</td>
</tr>
<tr>
<td>Total score SPSI follow-up</td>
<td>91.37(12.4)</td>
<td>91.19(14.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF-36 mental pre</td>
<td>37.91(11.1)</td>
<td>38.26(10.4)</td>
<td>F(1.125)= 0.19</td>
<td>.66</td>
</tr>
<tr>
<td>SF-36 mental follow-up</td>
<td>43.29(10.5)</td>
<td>44.2(11.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF-36 psychical pre</td>
<td>41.18(11.5)</td>
<td>46.32(10.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF-36 psychical follow-up</td>
<td>44.71(12.0)</td>
<td>47.43(10.6)</td>
<td>F(1.125)= 0.40</td>
<td>.52</td>
</tr>
</tbody>
</table>
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Time-effects

Although the results did not reach statistical significance, we did observe time effects for the HADS, which means both groups, improved for anxiety and depression. The SF-36 mental component showed both groups improved on this component during the nine months of the trial, again there were no significant differences between the groups. But, there were some differences in outcome measurement between the groups; the usual care group showed a time effect for the psychical component of the SF-36 were the PST group didn’t. The group with patients who received PST scored a significantly different improvement in problem solving skills compared to usual care; problem solving treatment upgrades the patients’ problem solving skills. Usual care helps to improve physical health.

Table 2. Follow-up data (nine months) of time-effects.

<table>
<thead>
<tr>
<th></th>
<th>Pre treatment M(SD)</th>
<th>Follow-up M(SD)</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total score HADS PST</td>
<td>15.03(7.0)</td>
<td>12.05(8.3)</td>
<td>-3.33</td>
<td>.00</td>
</tr>
<tr>
<td>Total score HADS UC</td>
<td>16.43(7.0)</td>
<td>13.07(7.1)</td>
<td>-4.44</td>
<td>.00</td>
</tr>
<tr>
<td>Total score SPSI PST</td>
<td>85.68(12.8)</td>
<td>91.19(14.4)</td>
<td>3.23</td>
<td>.00</td>
</tr>
<tr>
<td>Total score SPSI UC</td>
<td>90.37(13.9)</td>
<td>91.37(12.4)</td>
<td>.769</td>
<td>.44</td>
</tr>
<tr>
<td>SF-36 mental PST</td>
<td>38.26(10.4)</td>
<td>44.2(11.1)</td>
<td>-4.49</td>
<td>.00</td>
</tr>
<tr>
<td>SF-36 mental UC</td>
<td>37.91(11.1)</td>
<td>43.29(10.5)</td>
<td>-3.51</td>
<td>.00</td>
</tr>
<tr>
<td>SF-36 psychical PST</td>
<td>46.32(10.7)</td>
<td>47.43(10.6)</td>
<td>-1.04</td>
<td>.30</td>
</tr>
<tr>
<td>SF-36 psychical UC</td>
<td>41.18(11.5)</td>
<td>44.71(12.0)</td>
<td>-2.70</td>
<td>.00</td>
</tr>
</tbody>
</table>

Post-hoc analysis

The three-month results suggested that PST might be more effective for those with more symptoms. After nine months we did not resemble this (OR 0.68, CI 95% 0.32-1.47, p= 0.32). Moreover, when depressed patients scored eight or more after filling in the HADS, de data after three months showed a potential improvement for the patients who received problem solving treatment. Again, we could not resemble this after nine months (OR 1.09, CI 95% 0.48-2.45, p= 0.84).
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Results predictors of improvement

We found one statistical significant correlation between the predictor age and improvement on the primary outcome, the HADS ($r = -0.21$, $p=0.02$). The (univariate) general linear model showed ($OR= 0.57$, $CI \ 95\% \ 0.35–0.92$, $p=0.02$). All predictors were used in a multiple logistic regression model (forward stepwise), and we found the same statistically significant predictor; being younger then 50 ($OR \ 0.97$, $CI \ 95\% \ 0.94–0.99$, $p=0.04$). Because of the low correlation coefficients it is obviously there are no significant outcomes of the analysis, therefore we show the variables included with their correlations in Table 3.

Table 3. Results predictors of improvement.

<table>
<thead>
<tr>
<th></th>
<th>Pearson's correlation</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.21</td>
<td>0.02</td>
</tr>
<tr>
<td>Sex</td>
<td>0.05</td>
<td>0.54</td>
</tr>
<tr>
<td>Marital status</td>
<td>-0.01</td>
<td>0.98</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-0.05</td>
<td>0.64</td>
</tr>
<tr>
<td>Income</td>
<td>.056</td>
<td>0.53</td>
</tr>
<tr>
<td>Somatic disorder</td>
<td>0.12</td>
<td>0.19</td>
</tr>
<tr>
<td>Major depression</td>
<td>-0.06</td>
<td>0.53</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>-0.02</td>
<td>0.85</td>
</tr>
<tr>
<td>Problem solving skills</td>
<td>-0.06</td>
<td>0.55</td>
</tr>
<tr>
<td>Rumination</td>
<td>0.02</td>
<td>0.86</td>
</tr>
<tr>
<td>Coping – planfull problem solving</td>
<td>0.18</td>
<td>0.07</td>
</tr>
<tr>
<td>Coping- seeking social support</td>
<td>-0.08</td>
<td>0.44</td>
</tr>
<tr>
<td>Coping- wishful thinking</td>
<td>0.04</td>
<td>0.07</td>
</tr>
<tr>
<td>Coping- accepting responsibility</td>
<td>0.07</td>
<td>0.43</td>
</tr>
<tr>
<td>Coping- escape-avoidance</td>
<td>0.16</td>
<td>0.08</td>
</tr>
<tr>
<td>Coping- positive reappraisal</td>
<td>0.07</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Discussion

Although PST by nurses has proven itself in several primary care trials (8; 14; 27-30), we could not replicate this effect. We could also not find predictors for response. There are some possible explanations for this phenomenon. First: as we intentionally included this relativity healthy group, improvement because of a benign natural course could not be excluded. Second: perhaps the intervention was not strong enough for patients who could benefit?
Third: more trials in primary care give these kinds of results, maybe we should conclude that an expectant policy by the GP frequently is sufficient as there was little difference between a specialized intervention effect and the usual care.

In a recent Cochrane review about counselling in primary care, significantly lower psychological symptoms were scored after counselling when compared to usual care from the GP (31). This leaves us wondering if the lack of effectiveness is due to the quality of care in several countries?

Fourth: we could be too early with this specialised intervention. A recent study of Kendrick (10) where trained nurses also carried out PST, showed the same effects. They suggest using PST only in a stepped care model, and taken the natural course of psychological problems into account, we agree with this concept.
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References


