

Problem-Solving Therapy in the Elderly

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Opinion statement

We systematically reviewed randomized clinical trials of problem-solving therapy (PST) in older adults. Our results indicate that PST led to greater reduction in depressive symptoms of late-life major depression than supportive therapy (ST) and reminiscence therapy. PST resulted in reductions in depression comparable with those of paroxetine and placebo in patients with minor depression and dysthymia, although paroxetine led to greater reductions than placebo. In home health care, PST was more effective than usual care in reducing symptoms of depression in undiagnosed patients. PST reduced disability more than ST in patients with major depression and executive dysfunction. Preliminary data suggest that a home-delivered adaptation of PST that includes environmental adaptations and caregiver involvement is efficacious in reducing disability in depressed patients with advanced cognitive impairment or early dementia. In patients with macular degeneration, PST led to improvement in vision-related disability comparable to that of ST, but PST led to greater improvement in measures of vision-related quality of life. Among stroke patients, PST participants were less likely to develop a major or minor depressive episode than those receiving placebo treatment, although the results were not sustained in a more conservative statistical analysis. Among patients with macular degeneration, PST participants had significantly lower 2-month incidence rates of major depression than usual care participants and were less likely to suffer persistent depression at 6 months. Finally, among stroke patients, PST participants were less likely to develop apathy than those receiving placebo treatment. PST also has been delivered via phone, Internet, and videophone, and there is evidence of feasibility and acceptability. Further, preliminary data indicate that PST delivered through the Internet resulted in a reduction in depression comparable with that of in-person PST in home-care patients. PST delivered via videophone results in an improvement in hospice caregivers' quality of life and a reduction in anxiety comparable to those of in-person PST. PST-treated patients with cognitive impairment may require additional compensatory strategies, such as written notes, memory devices, environmental adaptations, and caregiver involvement.

Introduction

Late-life depression worsens the outcomes of medical illnesses, promotes disability, increases expense, and complicates care by clouding the clinical picture and undermining treatment adherence, yet responds only modestly to pharmacotherapy [1]. Problem-solving therapy (PST) is a psychotherapy that has been used widely in psychiatry. Meta-analyses have highlighted the use of PST in a variety of conditions, including depressive disorders, conduct disorders, obesity, and substance abuse, across different populations (including children and young and older adults) and settings (including outpatient, home care, and primary care), and with different outcomes (including mental and physical health and quality of life) [2, 3].

PST has two premises: 1) Finding the best possible solution to current everyday problems may reduce the experience of stress and improve peoples' lives, and 2) teaching people problem-solving skills will help them solve future problems. Because older adults experience many stressors in everyday life as a result of medical illnesses, losses, disability, and cognitive impairment, a hands-on approach using discrete and easily taught steps to solve problems is appealing and practical. PST includes the following steps: problem orientation, problem definition, generation of solutions (brain-

storming), evaluations of solutions, selection of the best possible solution, and solution implementation and evaluation [4, 5]. PST adaptations have been created for different groups of older adults (e.g., PST-ED for depressed patients with executive dysfunction and PATH for homebound depressed patients with advanced cognitive impairment) and settings (PST-PC [PST for primary care] and PST-HC [PST for home health care]).

In the past 5 years, an increasing number of articles utilizing PST for older adults has been reported (Table 1). Our systematic review focuses on randomized clinical trials (RCTs) of PST in older adults, because RCTs are the state of the art for evidence-based practice and can provide class I and II levels of evidence. PST treatment studies focus on reducing depression and improving functioning and quality of life, whereas PST prevention studies concentrate on delaying the onset of major or minor depression.

Finally, ongoing clinical trials, not included in the current review, focus on using PST or adaptations of PST to a) reduce depression in low-income, homebound [6], medically ill older adults [7, 8] and opiate abusers [9]; or b) prevent the onset of depressive episodes in high-risk elders [10].

Methods

We searched PubMed (1966–2013), PsycNET (1840–2013), and Cochrane databases, emphasizing studies from the past 5 years. The searches were conducted using the following keywords: "problem solving therapy," "PST," "old*," and "eld*" (the asterisk denotes any combination of the word). In addition, we selected appropriate studies from previously published meta-analyses and reviews. Inclusion criteria of studies were a) an RCT using problem-solving therapy [4, 5], b) published in English, and c) with the average participant 60 years old or older. This review does not include interventions that included PST as only one aspect or step of the treatment (e.g., Improving Mood–Promoting Access to Collaborative Treatment [IMPACT], Program to Encourage Active, Rewarding Lives [PEARL], or other stepped-cared programs), because PST was given in combination with other depression interventions and the relative effect of PST could not be determined. We identified 734 abstracts and potential articles through our searches, 15 of which were original RCTs that met our criteria; of those, 12 were published in the past 5 years (see Table 1 for the characteristics of the 15 RCTs). Two of 15 were prevention studies in patients with macular degeneration and stroke. The following treatment options are based mainly on results from the analyses of primary outcomes.

Table 1. Randomized clinical trials of problem solving therapy in older adults

Study	Comparison groups	Population	Subjects, N	PST sessions, N	Therapists	Treatment fidelity	Primary outcome	Summary of results
Rovner et al., 2013 [23]	PST vs. ST	Patients of retina clinics	241	6 in 12 weeks	Bachelor's-level or master's-level graduates of social sciences	30 % of audiotaped sessions; supervision	Targeted vision function	PST was not superior to ST in improving vision function in patients with age-related macular degeneration; PST improved vision-related quality of life. Both PST groups showed acceptance of PST. Tele-PST and in-person PST depression scores were significantly lower at 12 weeks than scores of participants in the TS condition; gains were maintained at 24 weeks. No significant differences in the measures of primary outcome between participants who received PST and those who did not
Choi et al., 2013 [28]	Tele-PST vs. in-person PST vs. TS	Homebound older adults from aging-network agencies	121	6 weekly	Licensed master's-level social workers	2 sessions of 20 % of subjects	Acceptance of PST; depression	No significant differences between the two groups in improvement of quality of life and reduction of anxiety
Chan et al., 2012 [24]	EN +PST vs. EN vs. PST vs. control*	Community-dwelling older adults	117	6 in 3 months	Trained case managers	NR	Frailty (CHS-PCF)	PST participants had significantly greater reduction in depression and disability than ST participants at 12 weeks.
Demiris et al., 2012 [27]	Face-to-Face PST vs. PST via videophone	Family hospice caregivers from urban hospice agencies	126	3 in 20 days	Registered nurses and master's-level social workers	10 % of sessions were reviewed	Caregiver quality of life/anxiety	PST participants had significantly greater reduction in depression and disability than ST participants at 12 weeks.
Alexopoulos et al., 2011 [15]; Areán et al., 2010 [11]	PST vs. ST	Clinician referrals and responders to advertisement	221	12 weekly	Doctoral-level clinical psychologists and licensed social workers	20 % of sessions reviewed; supervision	Depression/disability	Participants in PATH (PST+environmental adaptations+caregiver involvement) had significantly greater reduction in depression and disability than ST participants over
Kiosses et al., 2010 [14]	PATH vs. ST-CI	Responders to advertisement and referrals from collaborative agencies	30	12 weekly	Doctoral-level clinical psychologists and licensed social workers	Supervision	Depression/disability	

Table 1. (Continued)

Study	Comparison groups	Population	Subjects, N	PST sessions, N	Therapists	Treatment fidelity	Primary outcome	Summary of results
Gellis et al., 2010 [18]	PST-HC vs. UC+E	Home-care agency patients	38	6 in 6 weeks	Master's-level social workers	Supervision	Depression/anxiety	12 weeks. Participants in PST-HC had significantly greater reduction in depression, but not anxiety, than UC+E participants.
Lam et al., 2009 [25]	PST-PC vs. group-video PBO	Outpatient clinics	291	3 in 6 weeks	Primary care doctors	Random sample of 1st session of 3 subjects per doctor	Quality of life	Mixed-effects model analysis did not show significant differences in outcome measure between the two groups. Participants receiving PST-PC had significant improvement in role-emotional and mental component summary (SF-36 Health-Related Quality of Life) at the end of treatment. The PBO group showed no such improvement.
Robinson et al., 2008 [21]•; Mikami et al., 2013 [22]†	Escitalopram vs. PBO vs. PST	Stroke patients	176	6 in 1st 12 weeks; 6 booster sessions in following 9 months	Bachelor's and Master's-level therapists	Reviews of audiotaped or videotaped sessions; supervision	Onset of MDD or minor depression	Depression [21]•: Among stroke patients, PST participants were less likely to develop a major or minor depressive episode than the PBO group. This difference became nonsignificant in a more conservative analysis, which assumed that baseline patients who did not continue the study would have developed depression. Apathy [22]†: Escitalopram or PST was significantly more effective in preventing new onset of

Table 1. (Continued)

Study	Comparison groups	Population	Subjects, N	PST sessions, N	Therapists	Treatment fidelity	Primary outcome	Summary of results
Gellis et al., 2007 [17]	PST-HC vs. UC	Home-care agency patients	40	6 in 8 weeks	Master's-level social workers	Supervision	Depression/quality of life	apathy following stroke compared with PBO. Participants in PST-HC had greater reduction in depression and greater improvement in quality of life over the course of 6 mo. PST-treated participants had significantly lower 2-month incidence rates than UC participants. Participants in PST were less likely than UC participants to suffer persistent depression at 6 months, even though most earlier benefits were diminished.
Rovner et al., 2007 [19]; Rovner and Casten, 2008 [20] (prevention study)	PST vs. UC	Patients of retinovitreal clinics	206	6 in 8 weeks	Nurses and master's-level counselor	1/3 of sessions reviewed	Onset of MDD	Participants in PST demonstrated greater improvement in certain coping areas at 8 months (5 months after treatment) compared with UC participants. There were no significant differences between the two groups in depression and psychosocial adjustment. PST group had greater reduction in depression scores at 12 weeks than ST group. PST led to a more rapid
Downe-Wamboldt et al., 2007 [26]	Telephone PST+ UC vs. UC	Patients of academic center cancer clinic	149	Sessions varied over 3 months based on negotiation with patient	Nurse counselor	Examination of nurses' written records	Coping/ depression/ psychosocial adjustment	Participants in PST demonstrated greater improvement in certain coping areas at 8 months (5 months after treatment) compared with UC participants. There were no significant differences between the two groups in depression and psychosocial adjustment. PST group had greater reduction in depression scores at 12 weeks than ST group. PST led to a more rapid
Alexopoulos et al., 2003 [12]	PST vs. ST	Clinician referrals and responders to advertisement	25	12 weekly	Doctoral-level clinical psychologists and licensed social	Review of 1st, 6th, and 12th sessions of half the subjects	Depression/ disability	PST group had greater reduction in depression scores at 12 weeks than ST group. PST led to a more rapid

Table 1. (Continued)

Study	Comparison groups	Population	Subjects, N	PST sessions, N	Therapists	Treatment fidelity	Primary outcome	Summary of results
Williams et al., 2000 [16•]	Paroxetine vs. PBO vs. PST-PC	Referrals from community, veterans affairs, and primary care clinics	415	6 over 11 weeks	workers Doctoral-level psychologists, social workers, and counselors with master's degree	Therapists certified as competent in PST	Depression	improvement in disability at 12 weeks than ST. All groups had significant reduction in depression. The paroxetine group had significantly greater reduction indepression than the PBO group, and PST-PC participants had a reduction comparable with that of participants in the other two groups. Participants in PST had significantly less depression post treatment than participants in RT and those in WLC.
Areán et al., 1993 [13]	Group PST vs. group RT vs. WLC	Community-dwelling older adults	75	12 weekly group sessions	Advanced graduate students in clinical psychology	Supervision	Depression	

CHS-PCF, Cardiovascular Health Study–Phenotypic Classification of Frailty; EN, exercise and nutrition program; MDD, major depressive disorder; NR, not reported; PATH, problem adaptation therapy; PBO, placebo; PST, problem-solving therapy; PST-HC, problem-solving therapy–home care; PST-PC, problem-solving therapy–primary care; RT, reminiscence therapy; ST, supportive therapy; ST-CI, supportive therapy for cognitively impaired older adults; TS, telephone support calls; UC, usual care; UC+E, usual care plus education; WLC, waiting-list condition

* Participants in the control condition were given an educational booklet on frailty, healthy diets, exercise protocols, and self-coping strategies

† The study by Mikami et al. (2013) focused on participants who did not have apathy at baseline

Treatment

Depression

Diagnosed major depression

The results are based on four studies of PST [11• class I study, 12–14]. Two multisite studies [11•, 12, 15] used a PST adaptation for depressed patients with executive dysfunction (PST-ED) and another study used a PST adaptation (PATH) for depressed patients with advanced cognitive impairment including dementia [14]. All studies used depression treatment as a control condition (reminiscence therapy [RT] [13]; supportive therapy [ST] [11• class I study, 12, 14]).

Despite the strong control condition, PST showed significantly greater reduction in depression post treatment. In one study [13], the benefits of group PST vs. group RT were maintained at 24 weeks.

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| Standard procedure | <ul style="list-style-type: none"> • PST-ED [11• class I study, 12]: 12 sessions in 12 weeks delivered by doctoral-level clinical psychologists and licensed social workers. • Home-delivered PATH (problem adaptation therapy) [14]: 12 sessions in 12 weeks delivered by doctoral-level clinical psychologists and licensed social workers. • PST [13]: 12 weekly group sessions delivered by advanced graduate students in clinical psychology. |
| Special points | <ul style="list-style-type: none"> • <i>Depressed older adults with executive dysfunction</i>: Participants in PST-ED had a significantly greater reduction in depression than participants in ST over 12 weeks in two multisite studies. Cohen's d ranged from 1.08 [12] to 0.48 [11• class I study]. However, Cohen's d for the 2003 study by Alexopoulos et al. [12] must be interpreted with caution because of the small sample size. • <i>Depressed older adults with advanced cognitive impairment</i>: Participants in home-delivered PATH had a significantly greater reduction in depression than participants in home-delivered ST. Cohen's d was 0.77, but it also must be interpreted with caution considering the small sample size (N=30) [14]. • Participants in group PST show a greater reduction in depression at 3 months (post treatment) than participants in group RT and those in the wait-list control condition. Estimated Cohen's d between PST vs. RT was 1.08. |

Minor depression, dysthymia, or depression symptoms

The results are based on three studies of PST-PC [16• class I study] in minor depression or dysthymia and PST-HC [17, 18] in depression in home-care patients. Compared with usual care, PST had a greater reduction in depression in home-care patients; however, compared with paroxetine or placebo, PST had a reduction in depression similar to that of paroxetine and placebo in patients with dysthymia and minor depression.

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| Standard procedure | <ul style="list-style-type: none"> • PST-PC: Six sessions in 11 weeks delivered by doctoral-level psychologists, social workers, and counselors with master's degrees. • PST-HC: Six sessions in 6 [18] or 8 weeks [17] delivered by master's-level |
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- social workers.
- Special points**
- PST-PC participants had a reduction in depression comparable to that of participants in the placebo or paroxetine group among patients with dysthymia or minor depression.
 - Among home-care patients with subthreshold depression and cardiovascular disease, participants in PST-HC had a significantly greater reduction in depression than usual-care participants.
 - Among home-care patients with significant depressive symptoms, participants in PST-HC had a greater reduction in depression and greater improvement in quality of life over the course of 6 months than usual-care participants.

Prevention of depression and apathy

The results are based on two studies of prevention in patients with macular degeneration ([19•] and [20] used the same sample) and stroke patients ([21•] and [22] used data from the same clinical trial). In one study, the outcome was prevention of a major depressive episode [19• class I study, 20], whereas in the other, the outcome was prevention of a major or minor episode of depression [21• class I study] or prevention of onset of apathy [22].

Stroke patients participating in PST were less likely to develop a major or minor depressive episode than those in the placebo group. This difference became nonsignificant in a more conservative analysis, which assumed that baseline patients who did not continue the study would have developed depression. Among patients with macular degeneration, PST participants had significantly lower 2-month incidence rates of major depression than usual-care participants and were less likely to suffer persistent depression at 6 months. In a recent analysis of the study sample of Robinson et al. [21•] of the subjects who did not exhibit apathy at baseline, escitalopram or PST was significantly more effective in preventing new onset of apathy following stroke compared with placebo [22].

- Standard procedure**
- Patients with macular degeneration [19• class I study, 20]: six sessions in 8 weeks delivered by nurses and master's-level counselors.
 - Stroke patients [21• class I study, 22]: six sessions in the first 12 weeks and six reinforcement sessions in the following 9 months.
- Special points**
- Stroke study [21• class I study]: placebo participants were 2.2 times more likely than PST participants and 4.5 times more likely than escitalopram participants to develop depression.
 - Stroke study [22] (outcome: onset of apathy): placebo participants were 3.47 times more likely than escitalopram patients and 1.84 times more likely than PST patients to develop apathy.

Functioning, frailty, and quality of life

Disability

The results are based on three studies of PST [12, 14, 15]. Two multisite studies [12, 15] used PST-ED; the other study used PATH for depressed patients with advanced cognitive impairment including dementia [14]. All studies used depression treatment as a control condition (ST) [12, 14, 15]. PST participants had significantly greater reduction in disability at

12 weeks than ST participants in all three studies. In one study [15], the benefits of PST vs. ST were sustained between 12 and 36 weeks.

Standard procedure

- PST-ED [12, 15]: 12 sessions in 12 weeks delivered by doctoral-level clinical psychologists and licensed social workers.
- Home-delivered PATH (problem adaptation therapy) [14]: 12 sessions in 12 weeks delivered by a doctoral-level clinical psychologist and licensed social worker.

Special points

Exploratory analyses revealed that disability mediated the effects of depression at the end of treatment (12 weeks).

Targeted vision function

The results are based on only one study of patients with age-related macular degeneration [23]. PST participants did not have greater improvement in vision function than ST participants in the primary outcome measure at 3 months (end of treatment) or 6 months but had greater improvement in the secondary outcome of vision-related quality of life [23].

Standard procedure

- Six sessions in 12 weeks delivered by therapists with a bachelor's or master's degree.

Special points

- PST targeting functional problems of vision loss and reducing the difficulty of vision-dependent tasks did not show significant improvement over ST at 3 and 6 months after baseline [23].
- PST showed greater improvement in the secondary outcome of vision-related quality of life compared with ST.

Frailty

The results are based on only one study of frail community older adults [24]. Participants receiving PST did not have significant improvement in any of the frailty measures: weight loss, exhaustion, low activity level, slowness, and weakness.

Standard procedure

- Six sessions in 3 months delivered by trained case managers.

Quality of life

The results are based on one study [25] focusing on a group of outpatients who screened positive for psychological problems by the Chinese version of the Hospital Anxiety and Depression Scale. PST-PC participants had improvement in health-related quality of life comparable with that of placebo participants who watched health education videos.

Standard procedure

- PST-PC: three sessions in 6 weeks delivered by primary care doctors.

Special points

Although participants in PST-PC had significant improvement in the role-emotional and mental components of the SF-36 Health-Related Quality of Life assessment at week 6, whereas the placebo group did not, a mixed-effects analysis accounting for potential covariates and baseline measures did not show any difference between the two groups in any outcome.

Alternative deliveries

- Older adults who are homebound or live in rural areas may need alternative ways to deliver PST, such as phone, videophone, or Internet.

- Special considerations are required for patients with hearing and vision problems as well as patients with cognitive impairment.

Tele-PST

The results are based on three studies of PST delivered through telephone [26], videophone [27], or Skype [28]. The subjects for each study were cancer patients [26], hospice caregivers [27], and home-care patients with depression [28].

Standard procedure

- Telephone: varied number of sessions (based on negotiation with the patient) in 3 months delivered by nurse counselors.
- Videophone: three sessions in 20 days.
- Skype : six weekly sessions.

Special Points

- Delivering PST through phone, videophone, and Internet is feasible and acceptable to vulnerable older adults.
- PST counseling delivered over the phone to cancer patients showed greater improvement in certain coping areas than usual care, but there were no significant differences in reduction of depression or improvement in psychosocial adjustment.
- Videophone-delivered PST showed improvement in caregiver quality of life and reduction in anxiety compared with in-person PST.
- PST delivered through Skype demonstrated results comparable with those of in-person PST in homebound older adults, and both PST conditions showed a greater reduction in depression compared with a condition of support calls [28]. Among patients in the sample, 67 % had major depressive disorder, 29 % had minor depression, and 4 % had dysthymia.

Considerations

Length of treatment

- Ten of 15 studies had between 6 and 12 PST sessions in 12 weeks.
- The two prevention studies had six sessions in 8 or 12 weeks, and one of them [21•, 22] had six additional sessions in the following 9 months.

Therapists and treatment fidelity

- Therapists included those with a bachelor's or master's degree in social science, master's-level social workers, nurse counselors, advanced graduate students in clinical psychology, and doctoral-level clinical psychologists.
- Reviews of recorded sessions and notes were performed in 9 of 15 studies.

Race, education, and socioeconomic status

- The majority of participants in most studies were older Caucasian adults with at least 12 years of education. Two studies were con-

ducted in Hong Kong [25] and in Taiwan [24]. Future research needs to focus on racially diverse participants, as well as those with limited education and low socioeconomic status.

Cognitive impairment and dementia

- Older adults with cognitive impairment may need compensatory strategies, including written session notes, memory devices, environmental adaptations, and caregiver participation, to help them with their cognitive deficits.

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Compliance with Ethics Guidelines

Conflict of Interest

Dimitris N. Kiosses declares that he has no conflict of interest.

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Human and Animal Rights and Informed Consent

This article does not contain any studies with human or animal subjects performed by any of the authors.

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