

LITERATURE REVIEW

Can Problem Solving Therapy Solve the Problem of Late Life Depression? A Systematic Review of Randomized Trials

Siofra Petra Peeren*

Clinical depression affects approximately a fifth of older adults. It is important to assess the efficacy of psychological interventions in older adults because extant research indicates that treating depression with medication becomes complicated in later life. The current study evaluates the efficacy and long term effects of problem solving therapy (PST) by systematically reviewing randomized trials of PST. A systematic search was undertaken of three computerised databases and six studies met the inclusion criteria. Studies indicated that PST was more effective than control conditions. However, the direct and long term effect of PST on depressive symptoms remains difficult to establish due to methodological issues.

Keywords: late life depression; geriatric depression; problem solving therapy

Clinical depression affects approximately 15% to 20% of older adults (Geerlings, Beckman, Deeg, & Van Tilburg, 2000). Depression is more common in patients who are medically ill (Geerlings et al., 2000), socially isolated (Prince, Harwood, Thomas, & Mann, 1998) or functionally impaired (Geerlings et al., 2000), and these populations may be less able to seek appropriate care for depression due to their circumstances.

Developing psychological interventions is particularly important for an older population for several reasons; first, there is evidence to suggest that old age primary care patients have a preference for psychotherapy over pharmacotherapy (Arean & Miranda, 1996). Modern health provision is driven by the philosophy of patient-centered care, meaning that patients themselves should be allowed to make choices in terms of their care, be fully informed of all options, and treatment should be provided with the patient's perspective in mind (Reynolds, 2009). In light of this, Burroughs et al. (2006) found that older patients understand depression as a consequence of social and contextual issues. Therefore, offering a psychosocial intervention as a treatment option may be perceived as more acceptable and helpful for some patients than offering medication.

Moreover, pharmacological treatment is not always an effective treatment option for older adults. Diagnosis and treatment of depression in the elderly is also often complicated by the presence of coexisting medical conditions so possible drug by drug interactions need to be carefully

considered (Blazer, 2003). The efficacy of antidepressant medications in older populations with depression has also been challenged. Almost half of elderly patients with major depression have impairment in some executive functions which is associated with low adherence to medication (Alexopoulos, Kiesses, Klimstra, Kalayam, & Bruce, 2002). Neuroimaging studies also suggest that the underlying pathophysiology of executive dysfunction in older adulthood predicts resistance to antidepressant agents (Sneed et al., 2010). These points are reflected in the finding that antidepressants bring to remission fewer than 40% of depressed elderly patients (Thase, Entsuah, & Rudolph, 2001). Considering the above scenarios it is clear that alternative approaches to treating late life depression need to be considered.

Besides there being a need to develop alternative interventions for older populations, it is worth noting that depression recognition in older adults by non-psychiatric doctors is low even for older adults who have contact with primary care staff (Cepoiu et al., 2008). Depression symptoms in older adults are being attributed to "normal aging" or are misdiagnosed as dementia (Banerjee, 1993; Hirschfeld et al., 1997). Barriers to care such as these may also be reduced by increasing awareness and understanding of interventions for late life depression.

Problem Solving Therapy: Conceptual Framework

Problem solving therapy (PST) is a psychosocial intervention based on the problem-solving model of stress (D'Zurilla & Nezu, 1999). Within this model depression is seen as being caused and maintained by daily hassles and major life problems in a patient's life and an individual's

* University College Cork (U.C.C.), Ireland
110346489@umail.ucc.ie

problem solving ability mediates the experience of stress. High problem solving ability should decrease the probability of experiencing stress even when faced with major life and everyday stress.

PST is a rational treatment approach for an older population for several reasons. It can be administered in primary care or home-based contexts making it low cost and likely to be an accessible option for older adults. Training staff in PST could also encourage awareness about late life depression and its treatment at primary care level. PST is a relatively short intervention consisting of five to seven steps to be completed (D'Zurilla & Nezu, 1999). Also, it targets common psychosocial conditions that increase the risk for depression in an older population, such as disability and medical illness (Blazer, 2003), but also deals with other issues older people present with, such as relationship or financial difficulties (Choi, Hegel, Marinucci, Sirrianni, & Bruce, 2012). It is also worth noting that these are difficulties which older people themselves often see as contributing to depression as well (Burroughs et al., 2006). PST can be easily adapted to suit specific needs of an older population. For example, Home-delivered problem adaptation therapy (PATH; Kiosses, Arean, Teri, & Alexopoulos, 2010) is specifically tailored for individuals with disabilities because it adapts to the patient's home environment.

Current Study

The primary aim of this study is to systematically review randomized controlled trials investigating the efficacy of PST for the treatment of late life depression. Our secondary aim is to investigate long terms effects of PST on depressive symptomatology. Randomized trials are the preferred design for studying the effects of interventions because this design is least likely to be biased than other designs about the differential effects of interventions (Higgins, 2008).

Other study designs can give important and useful insights into the efficacy of problem solving therapy, especially when you consider the importance of examining the patient perspective within the framework of patient-centered care. Other systematic reviews could address different study designs such as uncontrolled studies or qualitative research (Cronin, 2011). However, mixing designs within a systematic review can exchange "undesirable uncertainty for unacceptable error" (Higgins, 2008, p. 394). The purpose of this review is to investigate the evidence for PST treatment in directly reducing depressive symptoms, so other designs are outside the scope of this review. Therefore, this study will review only randomized controlled trials investigating the efficacy of problem solving therapy in older adults.

Method

A number of case studies involving randomized controlled trials of PST were identified during the literature search. Although case studies are useful for describing the individual application of PST, they cannot be generalised. Therefore only randomized controlled trials of PST were included in the review.

The search was conducted on the 17th March 2013. The search was limited to studies published after 1st January 2003 in order to obtain the most recent research on problem solving interventions for late life depression. The search was also limited to peer reviewed scholarly journals and articles to which the full text was available. A systematic search was undertaken of the computerised databases PsycINFO, Academic Search Complete and EBSCO Psychology and Behavioural Sciences Collection.

The initial electronic search identified 47 papers with the following search terms: (geriatric OR late life) AND (depress* NOT dementia) AND problem solving therapy. PsycINFO had 22 hits, Academic Search Complete had 19 hits and EBSCO Psychology and Behavioral Sciences had six hits. After the removal of duplicates a total number of 29 papers were identified. Each article was screened using the inclusion/exclusion criteria.

Inclusion criteria were: English language, adaptations of PST, PST delivered in home care, PST delivered in primary care, papers published between 2003 and 2013, peer-reviewed journals, participants with Minor Depression, Major Depressive Disorder or Dysthymia, access to full text, sample of 50 years or older, randomized controlled trials, participants with executive dysfunction, disability or medical illness. Exclusion criteria were: articles not English, grey literature such as reports and non-academic research, book chapters, non-peer-reviewed journals, studies without a control group, papers published before 1st January 2003, case studies and studies including participants with dementia. Studies which included participants with dementia were excluded because problem solving therapy (PST) relies heavily on higher order cognitive functions (D'Zurilla & Nezu, 1999) which can often be severely affected in patients with dementia (Denning & Thomas, 2013). This means that PST for patients with dementia would need to be adapted to the point that it might not be relevant for cognitively intact older adults. Dementia is not a normal part of aging and since this review aims to review randomized trials investigating the efficacy of PST in order to generalise its application to older adults, we considered it appropriate to exclude studies using participants with a diagnosis of dementia.

Of the 29 papers initially identified, 26 were excluded for the following reasons: they were not related to late life depression or problem solving therapy, they had no intervention, they were case studies, no results were available yet, no full text article could be obtained, it was a prevention study which did not use a depressed sample and some participants had dementia. Reference lists of articles were then scanned which identified a further three studies. A total of six studies met the inclusion criteria as summarised in **Table 1**.

Results

Choi et al. (2012) investigated whether passive cognitive coping styles mediated PST treatment outcome in low-income homebound older adults. Their sample had a high level of disability and, on average, participants suffered from more than three chronic medical conditions. Both

Study	Age	Definition of Depression	Conditions	<i>n</i>	Measurements
Choi et al., 2012	≥ 50	≥ 15 HAM-D	1. Tele-PST	43	Pre
			2. PST	42	3 month follow-up
			3. AC	36	6 month follow-up
Arean et al., 2010	≥ 60	MDD (SCID) and ≥ 20 HAM-D	1. PST	110	Pre
			2. ST	111	3, 6, 9, 12 weeks
Gellis & Bruce, 2010	≥ 65	SCID and ≥ 22 CESD	1. PST-HC	38	Pre and post
			2. TAU + ED		
Gellis et al., 2008	≥ 65	≥ 16 CESD and MinD	1. PST-HC	34	Pre and post
Gellis et al., 2007	≥ 65	(≥11 HRSD) >20 CESD	2. TAU + ED	35	3 month follow-up
			1. PST-HC	40	6 month follow-up
			2. Usual care		Pre and post 3 month follow-up 6 month follow-up
Ciechanowski et al., 2004	≥ 60	MinD or DYSTH (SCID)	1. PST	72	Pre
			2. Usual care	66	6 month follow-up 12 month follow-up

Note. PST = Problem solving therapy; Tele-PST = PST delivered via Skype video call; AC = Attention Control through weekly telephone support calls; ST = Supportive therapy; MinD = Minor Depression; DYSTH = Dysthymia; MDD = Major Depressive Disorder; SCID = Structured Clinical Interview for DSM-IV; HAM-D = Hamilton Depression Rating Scale; TAU = Treatment as usual; ED = Depression education; CESD = Centre for Epidemiological Scale of Depression; PST-HC = PST delivered in home care setting; GDS-15 = 15-item Geriatric Depression Scale; HSCL-20 = 20-item modified subscale of the Hopkins Symptom Checklist.

Table 1: Overview of Included Studies.

tele-PST and in-person PST were delivered by the same therapists who were master's level social workers trained in PST by the second author. Therapists underwent fidelity monitoring by the second author who reviewed audio recordings of two sessions for 20% of participants. The sample included participants who were younger than might be implied by late life depression (50 or older). The study was still included however because older participants comprised a majority of the sample and due to the scarcity of controlled trials using PST as an intervention in the last ten years.

Mixed-effects regression analysis was conducted to test the moderating effect of passive coping on the relationship between PST and depressive symptoms at follow-ups. There was a significant main effect of group (PST vs. telephone support call) on reducing depressive symptoms regardless of coping style. However, group by time interaction was nonsignificant at the 6-month follow up indicating that the positive effect of PST compared to the telephone support calls diminished over time.

In the control condition participants received weekly 30 minute telephone support calls over the course of the 6 weeks from two research associates (compared to the 60 minute PST sessions delivered by therapists in the intervention groups). Support calls provided empathy to the participants, so the significant effect of PST as compared to telephone support calls indicates that this short intervention actively reduced depressive symptoms more so than having contact with an empathic and supportive person once a week.

Those who were taking antidepressants for longer than two months but still showed significant depressive

symptoms were included in the study. However, changes in antidepressant medication treatment were not recorded nor were the percentages of those taking antidepressants per intervention group. This makes it difficult to confidently attribute the effects of the intervention to psychotherapy alone. Due to the small sample size ($n = 121$) the findings of this exploratory study should be interpreted with caution.

Another recent study by Arean et al. (2010) investigated the efficacy of PST in older patients with major depression and executive dysfunction. Therapists included four doctoral-level clinical psychologists and four licensed social workers with more than five years of experience post licensure but no previous experience of PST or supportive therapy (ST). All therapists administered both therapies. Fidelity monitoring was conducted using adherence and assessment scales relevant to each therapy.

Statistical analyses indicated greater improvement in HAM-D scores in the PST group compared to the ST group although both groups were associated with a reduction in HAM-D scores. Moreover, by the end of the 12 week trial more than half of the PST patients met criteria for treatment response and 45% met criteria for remission. Note that this level of remission is similar to the remission rates found in antidepressant treatment (Thase et al., 2001). No follow-up measures were taken after the 12 week trial so long-term effects cannot be determined but data was obtained at several points in time during the intervention allowing progress during the trial period to be tracked.

Supportive therapy (ST) was as efficacious as PST during the first 6 weeks of the trial. The authors argue that this may be because the common therapeutic characteristics

between ST and PST (such as empathy and having a safe environment to discuss concerns) have similar effects until problem solving skills are learned approximately five sessions in. However, considering that all the interventions included in this review except one had between six and seven PST sessions this finding has implications for the other studies in this review, and for the results they present. All participants had a high level of education which means that the results are only generalizable to a highly educated population. Choi et al. (2012) found similar responsiveness to PST in a sample with lower socioeconomic status.

None of the participants in the study were taking antidepressants or undergoing any other kind of psychotherapy during the trial. It is therefore possible to attribute the effects to the PST that participants received. Furthermore, having a control group that received supportive therapy showed that PST was more efficacious than another therapy, which is a more applicable finding than PST being more efficacious than no treatment. Although the sample in this study had only mild executive dysfunction there was no control group without executive dysfunction so it is still not clear as to how executive dysfunction may impact on the efficacy of PST. Finally, effects were small despite this study having the largest sample size in the review.

Gellis and Bruce (2010) tested the outcomes of a PST intervention for elderly health home care patients with heart disease and mild to moderate depression. Thirty-eight cognitively intact older homebound patients with cardiovascular disease aged 65 and older participated, being randomly assigned to either PST ($n=19$) or usual care plus education ($n=19$). Patients were compensated for participation. All patients meeting study criteria were referred to their primary care physician for antidepressant medication assessment. At the end of the six weeks there were no significant differences between the two groups with respect to the proportion of participants receiving antidepressants overall.

PST was adapted to increase its feasibility for homebound depressed patients. PST was provided by clinical social workers in the patient's home in six weekly 1-hour sessions conducted over a six-week period. The social worker was directed to ensure that the treatment be tailored to the specific daily living stressors of each individual patient. Educational brochures on depression and heart disease were used to augment the intervention. The PST therapists received two weeks of training based on the PST treatment manual for depression, weekly discussion and monitoring for fidelity to the model and ongoing clinical supervision. The authors did not go into further detail about fidelity monitoring besides stating that it was done.

Outcome measures were analysed at baseline and post-test using random effects regression models in order to test for the effects of condition, time and condition by time interaction. The PST group reported significantly larger decrease in depressive symptoms (moving from moderate to mild levels) over time than the usual care plus education control on both depression scales used.

The usual care plus education group did not demonstrate significant within group changes in depression.

Results of this pilot randomized controlled trial indicate that problem-solving therapy adapted for home care patients had significant positive effects on older home health care patients with cardiovascular disease. It is important to note however that although there was a statistically significant reduction in depression symptomology, many participants in the PST condition still reported some depressive symptoms, although they were in the 'mild' category. However there are several limitations to this study. This was a small randomized trial and the study only examined immediate outcomes so any long-term effects cannot be established.

Gellis et al. (2008) tested the outcomes of a PST intervention for medically ill home care patients with minor depression. The control condition was treatment as usual (TAU) augmented with depression education. TAU also included visits from health staff for up to 60 days as well as 6 weekly telephone calls to monitor the participants due to ethical considerations. Therapy was administered by a PhD-level clinical social worker who completed treatment integrity forms which were used in clinical supervision to monitor treatment fidelity. Having the same therapists administer therapy for all participants reduced therapist bias in results. Fifty-five percent of participants had more than three medical conditions and had approximately 11 years of education.

A series of 2 x 2 repeated measures MANOVAs showed significant improvement in depressive symptoms for patients receiving PST but patients in the TAU condition did not experience any significant changes on any measure from baseline to post treatment. Further analyses indicated that the positive effects of PST were maintained at three and six months post intervention. There were no significant differences between outcomes at three and six months for PST participants indicating that depressive symptoms did not begin to rise again after the intervention. PST participants still reported significantly lower depression symptomology at these follow up measurements compared to TAU participants.

TAU condition participants may have begun antidepressant medication after entry into the study because they were referred for medication assessment with their primary care physician as a result of a positive depression screen. However, no participants in either condition were receiving psychotherapy or antidepressant medication at the baseline measure. TAU may not have been an appropriate control group as patients may respond positively to the therapeutic elements of PST such as empathy which were absent in the TAU condition. Worryingly, rates of depression treatment in the TAU condition were low considering that patients' primary care physicians and nurses were notified of the positive depression screen. The data is consistent with studies highlighting the under treatment of depression in older adults (Blazer, 2003). Because this study was conducted in a home care setting the data do not allow for generalizability to all older adult populations. The study had a small sample and

diagnostic interviews at baseline assessment (e.g. SCID) were not conducted.

Gellis, McGinty, Horowitz, Bruce and Misener (2007) tested the outcomes of a home-care based PST intervention for older adults identified with severe depressive symptoms in an acute home care setting. Forty participants, over 65 and receiving acute home care for medical conditions, participated in the trial and provided baseline, post-treatment, three-month and six-month follow-up data. Patients receiving psychotherapy or drug treatment for depression at the time of baseline assessment were excluded and participants were screened for cognitive decline. However, participants in both conditions received a referral for antidepressant medication assessment to their primary care physician. To ensure patient safety, each usual care participant was contacted by telephone during the first two weeks to assess the need for crisis management or referral outside protocol although no direct counselling was provided during these calls. Interviewers were blind to treatment assignment at follow-up assessments.

Treatment was provided in the patient's home in six 1-hour sessions conducted over an 8 week period by two clinical social workers supervised by the first author. Interventionists were instructed to ensure treatment be made relevant to the specific life circumstances of each individual patient. Educational brochures on depression and improving quality of life were used in the PST sessions. A majority of participant completed the weekly homework (93%). No measure of treatment fidelity was used, although interventionists received two weeks of PST training, weekly supervision, and case consultation.

A series of 2 (treatment condition) x 2 (baseline versus post-treatment) multi-variate analyses of variance (MANOVAs) were conducted on the depression and quality of life scales to determine the differential effects of change over time from baseline to post-treatment. Home care patients in the PST condition reported significantly lower depressive symptoms as compared with the usual care group. Patients in the usual care condition did not experience any significant changes on any measure from baseline to post-treatment. The PST group improved on the Beck Depression Index scores with no advantage for the usual care group reflecting a large effect size ($d = 2.7$). A significant reduction in depressive symptomology for the PST group was maintained three and six months after treatment ended.

Despite its small sample size, lack of follow-up measures and lack of fidelity monitoring, a strength of this study is that the authors recorded other factors important to the real life application of PST such as how it was perceived by other primary care staff involved in the patient's care and the patients themselves. For example, the authors reported that the most common reasons reported for nonparticipation were that the patient did not believe they were depressed or that they did not want to participate due to the stigma of being engaged in psychotherapy; both of which are serious concerns in relation to making treatment available for a population who may not respond well to antidepressant treatment (Sneed et

al., 2010). Specific information regarding which patients started antidepressant medication after baseline assessment was not reported but the authors do state that 14 participants over both groups received new antidepressant medications.

Finally, Ciechanowski et al. (2004) investigated the efficacy of PST in home-based care with patients with Minor Depression or Dysthymia and with a high level of medical illness. The PST intervention was modified as to provide greater social and physical activation. Sessions lasted 50 minutes and were provided by master's level social workers employed by the community. Every fifth full study tape was sent to the PST trainer for adherence coding and feedback to monitor therapist fidelity and adherence.

A significant group by time interaction indicated significant group differences in depressive symptoms at six and 12 months. Moreover, the odds of a 50% depression treatment response or of complete remission were significantly higher for the PST group at six and 12 months. The intervention resulted in significantly lower severity and greater remission of depression compared with usual care at six and 12 months. Thirty per cent of patients in the intervention group and 12% in the usual care group experienced remission.

Despite randomization to condition there was a greater proportion of participants with dysthymia in the intervention group at baseline although this was controlled for in analyses. Participants were asked about antidepressant treatment and 36% of patients reported taking antidepressants at baseline. Seven participants in PST and four in usual care began antidepressant treatment during the trial and five in each group stopped antidepressant treatment during the study. There was no net increase in antidepressant use between the groups. However, the effects of antidepressants were not controlled for in the study.

Discussion

The primary aim of the present study was to systematically review randomized controlled trials to establish the efficacy of PST for the treatment of late life depression. Studies found a superior effect of PST on depression symptomology than control conditions. However, only one study used another form of therapy as a control condition (Arean et al., 2010). Therefore, only one study showed that PST was actually more efficacious than another form of therapy (supportive therapy); the rest of the studies merely showed that PST was more effective than no treatment.

Moreover, Arean et al. (2010) was the only study who controlled for any antidepressant effect. Choi et al. (2012) and Ciechanowski et al. (2004) included participants on antidepressants while Gellis et al. (2008) recommended treatment in the control condition to primary care physicians but did not ask participants whether they began treatment with antidepressants or not. Because most studies compared PST to a no treatment condition and did not monitor the use of antidepressants in either group the direct effect of PST on depressive symptoms is difficult to establish. However the study by Arean et al. (2010) showed promising results and does indicate that,

in the absence of antidepressant treatment, PST is more effective than ST.

Our secondary aim was to determine whether there is a long-term effect of PST. Five out of the six studies included in this review obtained follow up data. Choi et al. (2012) found that depressive symptoms in both the intervention and the control group converged at six months follow up. However, Gellis et al. (2008) found that positive effects of PST were maintained three and six months post intervention; depression scores remained the same three months and six months after the intervention as they were post-intervention. Moreover, Ciechanowski et al. (2004) found significantly lower depression scores in PST participants at 12 month post intervention. Further longitudinal studies will clarify the mixed evidence base for the long term effects of PST.

When applying the results of these studies it is worth noting that recruitment was usually through advertisements and participation was always voluntary so there was an initial interest in those who applied to begin with. This is highlighted by Gellis and Bruce (2010) who reported that a majority of their participants (63%) said that they preferred talking to someone than receiving antidepressant medication (37%). As Arean et al. (2010) also pointed out, despite the fact that 21% of those who met the selection criteria failed to enter the study because of poor adherence or limited interest, 91% of the participants who started treatment remained in treatment. Such figures indicate that findings from these studies may be generalized mainly to those with sufficient interest to be engaged in therapy.

On a positive note this indicates that health care utilisation can be maximised when patients are able to choose the treatment method they prefer. A framework of patient-centered care (Reynolds, 2009) empowers patients to make choices about their health care. This review indicates PST is an effective treatment; Arean et al. (2010) found remission rates similar to remission rates found in antidepressant treatment (Thase et al., 2001). Therefore, because PST is also cost-effective and accessible it could be offered as a real alternative or complimentary treatment to medication for older depressed patients who wish to receive it.

Ample evidence supports the efficacy of PST although how the effects compare to other therapies and medical interventions is unclear. Evidence concerning long term effects is mixed and needs to be clarified in future studies. In future studies the efficacy of PST should also be tested in relation to other forms of psychotherapy and medication to identify how PST compares to other methods of treatment, since only one study in this review did this. More longitudinal data is also needed to establish any long term effects of PST. Finally, only one study properly controlled for the effects of medication. The potentially synergistic relationship between PST and antidepressant medication needs to be investigated.

Public and self-stigma can be major barriers to psychological treatment in older populations (Conner et al., 2010) but problem solving therapy has advantages over other

therapies. The name alone does not sound like a psychological therapy. It also does not need to be administered by a psychologist. The major advantage PST has over other therapies is that members of multidisciplinary community health care teams which are already involved in a patient's care can be trained in its use making it cost-effective and accessible. For example, Gellis and Bruce (2010) used clinical social workers, but other potential staff which can be trained include primary care physicians and community or mental health nurses. All of these characteristics make PST a socially acceptable treatment option as well as being low-cost, effective and accessible for older adults.

PST is a "real world" interdisciplinary collaborative depression care model that can be integrated into community care. Offering PST to patients fits within the multidisciplinary team and patient-centered approach promoted in health care. However, the research investigating this promising therapy is scant; this is reflected in the small number of studies which could be included in this review. Depression is rampant among older patients who often experience barriers to care such as disability, illness and isolation, and it is not being recognised by health professionals (Cepoiu et al., 2008). Considering our aging population (Stewart, MacIntyre, Capewell & McMurray, 2003) and limited health resources, practical, low-cost and effective therapies such as PST are not only useful but desperately needed to attend to the mental health needs of a growing and under-represented group.

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