A brief problem-solving indicated-prevention intervention for prevention of depression in nonprofessional caregivers

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Abstract

Background: Despite depression being a common problem among nonprofessional caregivers, no studies of prevention of depression targeting this population exist in the literature. The studies of indicated prevention of depression aim of this study was to assess the efficacy of a problem-solving intervention in preventing clinical depression in a sample of female caregivers. **Method:** A controlled randomized trial was conducted among 173 participants (mean age 53.9 years), 89 of whom were randomized to the intervention group and 84 (controls) to usual care. The intervention comprised five weekly 90-minute group sessions. **Results:** At post-treatment, depression symptoms in the intervention group had remitted significantly more than in the control group, with a large effect size ($d = 1.54$). The proportion of participants showing clinically significant improvement was significantly larger in the intervention group (80.9% vs. 11.9% among controls), and fewer intervention-group participants had progressed to clinical depression during the study period (4.5% vs. 13.1% among controls). The intervention group also exhibited a significantly greater reduction in emotional distress and caregiver burden than the control group. **Conclusions:** These findings attest to the short-term efficacy of the intervention.

Keywords: depression, nonprofessional caregiver, indicated prevention, therapy, problem solving.

Resumen

Una intervención breve de solución de problemas para la prevención indicada de la depresión en cuidadoras. **Antecedentes:** a pesar que la depresión es un problema frecuente en los cuidadores no profesionales, en la literatura no hay estudios de prevención indicada de la depresión en esta población. Se evaluó la eficacia de una intervención de solución de problemas para prevenir la depresión clínica en una muestra de cuidadoras. **Método:** se realizó un ensayo controlado aleatorizado entre 173 participantes (edad promedio 53,9 años), 89 de las cuales fueron asignadas al azar al grupo de intervención y 84 (controles) a atención habitual. La intervención constó de cinco sesiones aplicadas semanalmente en formato grupal de una duración de 90 minutos cada una. **Resultados:** en el postratamiento, los síntomas depresivos en el grupo de intervención disminuyeron significativamente más que en el grupo control, con un tamaño del efecto *d* grande de 1,54. La proporción de participantes con mejoría clínicamente significativa fue significativamente mayor en el grupo de intervención (80,9% frente a 11,9% entre los controles); y menos participantes del grupo de intervención progresaron a una depresión clínica durante el período del estudio (4,5% frente a 13,1% entre los controles). El grupo de intervención también tuvo una reducción significativamente mayor en malestar emocional y sobrecarga del cuidador que el grupo control. **Conclusiones:** estos hallazgos demuestran la eficacia de la intervención a corto plazo.

Palabras clave: depresión, cuidador no profesional, prevención indicada, terapia, solución de problemas.

Depression is a highly prevalent mental disorder and it represents a big personal, social and economic burden. The impact of depression has led to a growing interest in prevention, particularly *indicated-prevention* interventions. These interventions act at a pre-clinical level, targeting individuals with emerging depression symptoms, who have not yet developed clinical episodes. Sub-clinical depression symptoms constitute one of the main predictors of depressive disorders (Cuijpers & Smit, 2004). An intervention which acts to reduce high levels of depression symptoms is therefore likely to be a good candidate for the prevention of depressive episodes.

Previous randomised controlled studies have demonstrated that indicated-prevention programs can reduce depression symptoms in the short and/or long term in different adult populations (Allart-van Dam, Hosman, Hoogduin, & Schaap, 2003, 2007; González, Fernández, Pérez, & Amigo, 2006; Konnert, Dobson, & Stelmach, 2009; Van't Veer-Tazelaar et al., 2009, 2011; Willemse, Smit, Cuijpers, & Tiemens, 2004), as well as depression incidence (Van't Veer-Tazelaar et al., 2009, 2011; Willemse et al., 2004).

None of the existing research has studied indicated prevention in nonprofessional caregivers, even though a large number of psychological intervention studies targeting this population exist in the literature (Gallagher-Thompson & Coon, 2007; Pinquart & Sörensen, 2006; Sörensen, Pinquart, & Duberstein, 2002). These caregivers assume the responsibility of providing care for

individuals in a situation of dependency in a nonprofessional, unpaid manner, based on familiar or affective ties. However, the task of providing care for a dependent relative carries mental health risks, particularly affective problems (Crespo & López, 2007; Vázquez & Otero, 2009). Previous findings indicate that between 28% and 66% of caregivers present significant clinical levels of depression symptoms, and between 18% and 53% fulfil diagnostic criteria for a depressive disorder (Gallagher-Thompson, Rose, Rivera, Lovett, & Thompson, 1989; Papastavrou, Kalokerinou, Papacostas, Tsangari, & Sourtzi, 2007; Redinbaugh, MacCallum, & Kiecolt-Glaser, 1995; Shulz, O'Brien, Bookwala, & Fleissner, 1995). In addition, depression among caregivers can be particularly problematic since it can compromise their ability to effectively deliver care (Gallagher-Thompson et al., 1989; Williamson & Shaffer, 2001), affecting the quality of care delivered (Williamson & Shaffer, 2001).

Other existing data illustrate how the task of looking after a dependent relative is assumed mainly by women – in Spain 83.6% of caregivers are women (Institute of Social Services and the Elderly [IMSERSO its Spanish Acronym], 2005). Additionally, scientific evidence demonstrates that women present a higher prevalence of depression than men, after puberty (Kuehner, 2003). Women are therefore at higher risk of developing depression than men.

The aim of this study was to assess the efficacy of a brief intervention for the indicated prevention of depression in caregiver women with high levels of depression symptoms. After the intervention, significant differences in symptoms of depression are expected to be seen with regard to a usual-care control group. A remission in the incidence of clinical depression and other variables, such as emotional distress and caregiver burden, as well as clinical improvement, are also expected after the intervention.

Method

Participants

Participants were nonprofessional female caregivers (as defined by responsible official bodies) scoring 16 or higher on the Spanish version of the Center for Epidemiologic Studies Depression Scale (Vázquez, Blanco, & López, 2007), and with no history of major depression. Subjects were excluded from the study when: they had received psychological or psycho-pharmacological treatment in the last two months, which could interfere with the intervention; they presented other disorders which could confuse results; they presented psychological or medical conditions which required immediate intervention or that would prevent carrying out the study; they were taking part in another study; the cared-for relative was suffering a serious or terminal condition; or a change in a dependent's institutionalization or residence was imminent.

The study was designed to detect a difference of 20% in depression incidence rates (according to DSM-IV-TR criteria) between experimental and control conditions. It was calculated that 69 participants per group would be needed for a bilateral contrast, assuming an $\alpha = .05$ and a power $(1 - \beta)$ of .80. Nevertheless, the initial sample size was corrected, anticipating an approximate 18% loss of subjects, increasing to approximately 84 participants in each group. Four-hundred-and-one caregivers were screened for the study, from whom 176 (43.9%) met the eligibility criteria, and from these, three (1.7%) declined to take part in the study, citing difficulties reconciling their work schedule, lack of interest

in the intervention, and health problems. The sample was finally composed of 173 participants with a mean age of 53.9 years (S*D*= 9.2) who were randomly assigned by an independent statistician to the problem-solving intervention group (*n*= 89) or the usual-care control group (*n*= 84). Domestic work was the main occupation for 73.4% of the caregivers; 50.9% were caring for their father or mother, and care was delivered for a mean of 9.5 years. Among the dependents, 73.4% were women, with a mean age of 78.6 years. Table 1 shows socio-demographic, care and clinical characteristics of the sample for both groups.

Three caregivers withdrew from the intervention due to lack of time, not having anybody to take care of the dependent in their absence, and the researchers' inability to locate the caregiver. One of the participants from the control group could not attend post-treatment assessment because she had no one to leave the dependent relative with. The trial was approved by a bioethics committee. All the subjects taking part in the study gave their informed written consent, and participation was totally voluntary, with no economic or other kind of incentives.

Instruments

Trained interviewers, independent from the research personnel and blind to the conditions assigned to each participant, were responsible for delivering pre- and post-treatment assessment. Depression symptoms were evaluated using the Spanish version of the Center for Epidemiologic Studies Depression Scale (CES-D; Vázquez et al., 2007), with an internal consistency of .89 (Cronbach's alpha). Diagnoses on Axis I, DSM-IV (including diagnosis of major depressive events) were carried out using the Spanish clinical version of the Structured Clinical Interview for Axis I Disorders of the DSM-IV (SCID-CV; First, Spitzer, Gibbon, & Williams, 1999); which has a high test-retest reliability for psychiatric patients (kappa index= 0.61). Emotional distress was evaluated using the Spanish version of the General Health Questionnaire (GHQ-28; Lobo, Pérez-Echeverría, & Artal, 1986), with .97 Cronbach's alpha (Godoy-Izquierdo, Godoy, López-Torrecillas, & Sánchez-Barrera, 2002). Caregiver burden was assessed by means of the Caregiver Burden Interview (CBI; Zarit, Reever, & Bach-Peterson, 1980); translated to Spanish following published guidelines (Guillemin, Bombardier, & Beaton, 1993), which include the translation/retro-translation method, with a satisfactory internal consistency (Cronbach's $\alpha = .82$).

Interventions

Problem solving. A brief group intervention, based on the depression problem-solving model of Nezu, Nezu, and Perri (1989), was carried out in five sessions as a pilot study (Vázquez, Otero, López, Blanco, & Torres, 2010). In the first session, the concept of depression and the problem-solving model were explained, and the idea of positive orientation towards a problem was introduced. In the second session, problem definition, the setting of goals and generation of alternative solutions were discussed. In the third session, decision-taking and chosen solution-planning processes were explained. The fourth session was dedicated to repeating all learned problem-solving steps. And, in the fifth session, all the learned concepts were reviewed and relapse prevention was addressed. The intervention was performed in centres near caregivers' homes in five weekly sessions of approximately an

hour and thirty minutes each, attended by approximately five participants. It was delivered by three psychotherapists, each with two to five years psychotherapy experience, who in turn had received 40 hours specific training by two clinicians with more than 17 years experience. Sessions were recorded and observed by one of the expert clinicians, while the other expert supervised therapists weekly. There were no significant differences between therapists in intervention results.

Usual care. In the usual-care control group, no intervention was carried out, nor was any material handed out to the participants, and participants had unrestricted access to standard social and health care services for treatment of depression symptoms.

Data analysis

Statistical analysis was carried out using SPSS, version 18.0, statistical package. Sample homogeneity in categorical variables' basal values for both conditions was analysed using a chi-square test (or Fischer's exact test with expected values under five), while the Student's t test for two independent samples was used for continuous variables. Analyses were performed according to the intention-to-treat principle in all cases, except for the burden variable.

Changes between groups in post-treatment scores for depression symptoms, emotional distress, and caregiver burden were analysed with covariance tests (ANCOVAs) introducing pre-treatment scores as covariables. Independence of observations, dependent variable normal distribution, variance homogeneity, lineal relations between covariables and the dependent variable, and homogeneity of regression slopes were verified. This approach is recommended as a robust and reliable statistical strategy for the analysis of randomised trial results (Vickers, 2005). Pre- and post-treatment intra-group changes were analysed with a paired-data t test. Cohen's d was the measure of effect size, considering effect sizes of d= 0.2-0.5 as small, d= 0.5-0.8 as moderate, and $d \geq 0.8$ as large (Cohen, 1988).

A clinically significant change was defined as showing significant improvement on the CES-D, defined as having a score <16 on this scale. Comparison of this improvement between the problem-solving and control groups was carried out with a chi-square test, and when the test was significant (p<.05), the two groups were compared using a logistic regression. The comparison of depression incidence (new depression cases) in the problem-solving and control groups was also performed via a chi-square test. Relative risk reduction (RRR) and the number needed to treat (NNT) were also calculated, using formulas by Guyatt, Sackett, and Cook (1994).

Results

No statistically significant differences were found between the problem-solving and control groups in their respective sociodemographic, care and clinical variables, as shown in Table 1. The dropout rate was 3.4% (n= 3) in the problem-solving group and 1.2% (n= 1) in the control group, with no significant differences between them (p= .62).

Depression symptoms

Post-treatment symptoms in both groups (see Table 2) were compared after recording pre-treatment depression symptoms, and

significant post-treatment depressive symptoms differences were found between the groups $F(1, 170)$= 136. 49, p<.001, η^2_p= .44. The Cohen's d value for this comparison showed a big effect size (1.54). A significant reduction was also observed between pre- and post-treatment symptoms in the problem-solving group, t (88)= 17.34, p<.001, d= 1.84, CI 95% [1.50-2.18], and the control group, t(83)= 2.11, p= .04, d= 0.23, CI 95% [0.13, 0.45]; the pre- to post-treatment reduction in symptoms in the problem-solving group amounted to 14 points, while the control was only 1.7.

Significant clinical improvement

Post-treatment analysis revealed a significantly higher percentage of caregivers who experienced a clinically significant

	Total		Problem solving		Control group		t / χ²	p
Variables	N= 173	%	n= 89	%	n= 84	%		
Age								
M	53.9		53.6		54.3		0.52	.61
SD	9.2		10.1		8.2			
Marital status								
No partner	40	23.1	24	27.0	16	19.0	1.52	.22
With partner	133	76.9	65	73.0	68	81.0		
Social class								
Low/Middle-low	98	56.6	50	56.2	48	57.1	0.02	.90
Middle/Middle-high	75	43.4	39	43.8	36	42.9		
Education								
Literate	43	24.9	24	27.0	19	22.6	4.04	.13
Primary	101	58.4	46	51.7	55	65.5		
Secondary/University	29	16.7	19	21.3	10	11.9		
Main occupation								
Domestic work	127	73.4	63	70.8	64	76.2	0.65	.42
Others	46	26.6	26	29.2	20	23.8		
Relative cared for								
Spouse/partner	13	7.5	6	6.7	7	8.3	5.49	.14
Son/daughter	15	8.7	12	13.5	3	3.6		
Father/mother	88	50.9	44	49.5	44	52.4		
Other relatives	57	32.9	27	30.3	30	35.7		
Age of person cared for								
M	78.6		76.8		80.5		1.28	.20
SD	19.1		20.3		17.5			
Gender of person cared for								
Man	46	26.6	26	29.2	20	23.8	0.65	.42
Woman	127	73.4	63	70.8	64	76.2		
Hours a day of care								
M	17.2		17.2		17.3		0.30	.77
SD	2.9		3.5		2.2			
Time of care (years)								
M	9.5		8.6		10.3		1.56	.12
SD	7.0		7.0		7.0			
Depression symptoms								
M	23.8		24.7		22.9		1.64	.10
SD	7.2		7.6		6.6			
Emotional distress								
M	6.7		7.1		6.3		0.97	.33
SD	5.4		5.7		4.9			
Burden								
M	29.0		30.2		27.7		1.30	.20
SD	12.8		11.9		13.6			

Table 1
Sociodemographic, care and clinical characteristics

change in their depression symptoms (CES-D <16 score) in the problem-solving group (80.9%) compared with the control (11.9%), $\chi^2(1, N= 173)= 82.51$, $p<.001$. The odds of not being at risk of depression in the problem-solving group was 31.34 times higher than in the control group (CI 95% 13.45, 73.02).

Depression incidence

Depression incidence observed during the period of the study was significantly lower in the problem-solving group than in the control, $\chi^2(1, N= 173)= 4.04$, $p= .04$; four caregivers (4.5%) from the problem-solving group developed a depressive episode, as opposed to 11 participants (13.1%) from the control group.

In the problem-solving condition, a 65.7% reduction in relative risk (RRR) of developing depression was observed compared to control, and the obtained number needed to treat (NNT) was 12.

Emotional distress and caregiver burden

Comparison of post-treatment emotional distress between problem-solving and control groups (see Table 2), after controlling for the pre-treatment score of this variable, showed a significantly higher remission of emotional distress in the problem-solving group compared to control, $F(1, 170)= 18.14$, $p<.001$, $\eta^2_p= .10$. Effect size estimated by Cohen's d was moderate (0.56). In addition, a 4.4-point significant reduction in emotional distress was found between pre- and post- treatment in the problem-solving group, $t(88)= 6.61$, $p<.001$, $d= 0.70$, CI 95% [0.47, 0.93], while the slight intra-group reduction observed in the control group was not significant.

Comparing caregiver burden (see Table 2) in both conditions at post-treatment, after controlling for pre-treatment burden score, the problem-solving group showed a significantly greater reduction in post-treatment burden than control, $F(1, 158)= 13.79$, $p<.001$, $\eta^2_p= .08$; with a small effect size (0.37 Cohen's d). A significant 6.3-point reduction in burden was also observed between pre- and post-treatment in the problem-solving group, $t(85)= 4.84$, $p<.001$, $d= 0.51$, CI 95% [0.29, 0.73], while a slight, nonsignificant increase between these two measures was found in the control group.

Discussion

This study assessed the short-term effectiveness of a brief psychological intervention for the indicated prevention of depression in a sample of women caregivers with subclinical depression. At post-treatment, the problem-solving intervention group presented a significantly higher reduction in depression symptoms than control. This finding is in agreement with results arrived at in the post-treatment analysis of other depression indicated-prevention studies in adults (e.g., Allart-van Dam et al., 2003; González et al., 2006; Konnert et al., 2009). The effect size was large ($d= 1.54$); only one other study has obtained a similarly large post-treatment effect (Allar-van Dam et al., 2003), although its Cohen d was smaller (.80). The present study demonstrated that the preventive intervention acted also as a protective factor against progression to clinical depression; 80.9% of participants experienced a clinically significant improvement (reduced their symptoms to scores under 16 in the CES-D scale). This is a very relevant result since a high presence of subclinical symptoms has been consistently reported in the literature as the main risk factor for the appearance of a major depressive episode (Cuijpers & Smit, 2004).

Regarding depression incidence, during the period of the study it was found that only 4.5% of participants in the problem-solving intervention group progressed to a clinical episode, compared to 13.1% in the control. Intervention reduced the incidence of depression episodes in 65.7% compared to control, which translates into the prevention of one depression case for every 12 caregivers treated. These results are more conclusive than those found by Cuijpers, van Straten, Smit, Mihalopoulos, and Beekman (2008) in their meta-analysis on depression prevention, where preventive interventions were found to reduce depression incidence by 22% compared with usual-care control groups, and the number of patients needed to treat was 22. Although it must be taken into account that the meta-analysis covered a period of 13 months and also included studies in which universal and selective preventive interventions were used.

Other areas of participants' lives were also assessed (emotional distress and caregiver burden) in an attempt to generalise results for depression prevention, as proposed by Muñoz, Le, Clarke,

Table 2

Results from result measurements for the problem solving (n= 89) and control (n= 84) groups: mean, standard deviation, difference between means and effect size

Measurement	Pre		Post		Pre-post	Effect size	
	M	SD	M	SD	Difference between means (CI 95%)	Intra-group (CI 95%)	PS vs. CG (CI 95%)
CES-D							
PS	24.7	7.6	10.7	6.4	13.99 [12.39, 15.59]	1.84 [1.50, 2.18]	
CG	22.9	6.6	21.2	7.2	1.75 [0.10, 3.40]	0.23 [0.13, 0.45]	1.54 [1.20, 1.88]
GHQ-28							
PS	7.1	5.7	2.7	3.8	4.39 [3.07, 5.71]	0.70 [0.47, 0.93]	
CG	6.3	4.9	5.4	5.7	0.92 [-0.24, 2.07]	0.17 [-0.04, 0.39]	0.56 [0.25, 0.86]
CBI							
PS	30.2	11.9	23.9	10.5	6.32 [3.43, 8.20]	0.51 [0.29, 0.73]	
CG	27.7	13.6	27.9	10.9	-0.23 [-2.61, 2.16]	0.02 [-0.20, 0.25]	0.37 [0.07, 0.67]

Note: Pre= Pre-treatment; Post= Post-treatment; PS= Problem Solving Group; CG= Control Group; CES-D= Center for Epidemiologic Studies Depression Scale; GHQ-28= General Health Questionnaire; CBI= Caregiver Burden Interview; CI= Confidence Interval

& Jaycox (2002). At post-treatment analysis, the problem-solving group showed significantly lower emotional distress and burden levels than control, with a small and moderate effect size, respectively. Emotional distress and burden reductions are important results since these are problems frequently observed among caregivers (Crespo & López, 2007).

This study has important implications for research and clinical practice. In the current study, intervention effects were achieved in only five sessions, while most depression indicated-prevention programs for adults involve 10 or more sessions (e.g., Allart-van Dam et al., 2003; Konnert et al., 2009), proving that we are dealing with a more efficient program. What is more, study results were obtained on a sample of subjects presenting multiple risk factors (high levels of depression symptoms, female, nonprofessional caregiver). In other studies, only subjects with elevated levels of depression symptoms were included (e.g., Allart-van Dam et al., 2003; González et al., 2006; Willemse et al., 2004). Also, the fact that this intervention was successful in an applied setting (with caregivers) suggests the effectiveness of the intervention (Marchand, Stice, Rohde, & Becker, 2011).

Nevertheless, some limitations must be considered in this study. The main limitation is the lack of follow-up, which prevents us from extracting any conclusions regarding long-term preventive effects. Future research should aim to clarify this issue, although medium- and long-term effects have already been described in former depression indicated-prevention programs for adults (e.g., Van't Veer-Tazelaar et al., 2009, 2011). Secondly, the study sample was composed only of women, so the possibility of the intervention having differential gender effects remains unexplored. The active components of the intervention are also unknown. In future research studies it would be important to evaluate problem-solving processes and to determine if they act as change mediators. The contribution of each component to the program's overall efficacy should be assessed.

Despite these limitations, this is the first randomised controlled trial providing evidence of short-term effectiveness of a brief depression indicated-prevention intervention targeted at nonprofessional caregivers, in which a reduction in depression symptoms and depression incidence, as well as generalisation of the effects to other variables, was found.

Acknowledgements

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