Journal of Aging Studies 34 (2015) 146–154

Contents lists available at ScienceDirect

Journal of Aging Studies

journal homepage: www.elsevier.com/locate/jaging

# Cost-effectiveness of life-review for older adults with moderate depressive symptomatology: A pragmatic randomized controlled trial☆

Jojanneke Korte [a,*,1], M. Cristina Majo [b,1], Ernst T. Bohlmeijer [a], Gerben J. Westerhof [a], Filip Smit [b,c]

[a] University of Twente, Faculty of Behavioral Sciences, P.O. Box 217, 7500 AE Enschede, The Netherlands
[b] Trimbos Institute (Netherlands Institute of Mental Health and Addiction), Centre of Prevention and Early Intervention, P.O. Box 725, 3500 AS Utrecht, The Netherlands
[c] EMGO+ Institute for Health and Health Care Research, VU University Medical Centre, Department of Epidemiology and Biostatistics, Van der Boechorststraat 1, 1081 BT Amsterdam, The Netherlands

ARTICLE INFO

*Article history:*
Received 13 October 2014
Accepted 21 February 2015
Available online 20 May 2015

*Keywords:*
Life-review
Economic evaluation
Prevention
Early intervention
Depression

ABSTRACT

*Purpose:* Life-review has been established as an evidence-based treatment of depression in later life. This study investigates the cost-effectiveness of life-review compared to care-as-usual.
*Methods:* An economic evaluation alongside a randomized controlled trial was carried out, comparing life-review ($n = 100$) to care-as-usual ($n = 102$). Individuals of 55 years and over, with moderate depressive symptomatology, were included. Treatment response was defined as a statistically reliable reduction of depressive symptoms on the Center for Epidemiologic Studies Depression scale. Total per-participant costs encompassed intervention costs, costs of receiving other treatments, participants' out-of-pocket expenses, and costs stemming from production losses, and were expressed in (2009) euros (€).
*Results:* At 6-month follow-up, treatment response was 54.0% and 27.5% in the life-review and usual-care conditions, respectively. The difference in effectiveness was statistically significant at $p = .001$ (2-tailed). In the respective conditions the costs were €5550 and €3162, with the higher costs in the intervention arm of the trial. The incremental cost-effectiveness was €8675 (US$10,227) per improved participant.
*Conclusion:* The findings suggest that offering life-review rather than care-as-usual almost doubles the likelihood of a favorable outcome. However, the better clinical outcomes are achieved at greater costs. The conclusion that life-review offers good value for money is sensitive to the willingness to pay for a favorable treatment response. It is recommended that life-review is delivered by a single therapist and in larger groups as this may improve the cost-effectiveness of this intervention.



## Introduction

Clinical depression in later life is highly prevalent (Copeland et al., 1999; Djernes, 2006; McDougall et al., 2007), characterized by poor prognosis (Beekman et al., 2002; Cole, Bellavance, & Masour, 1999; Licht-Strunk, van der Windt, van Marwijk, de Haan, & Beekman, 2007), and associated with substantial societal costs (Smit et al., 2006). The most important risk factor for developing clinical depression is subthreshold depression (Cuijpers, de Graaf, & van Dorsselaer, 2004; Smit, Ederveen, Cuijpers, Deeg, & Beekman, 2006). Therefore, early interventions directed at older adults with depressive symptomatology are of the utmost importance. Meta-analytic evidence indicates that early interventions for older adults with depressive symptoms

☆ Trial registration: Netherlands Trial Register TC = 1860.

* Corresponding author.
*E-mail addresses:* j.korte@utwente.nl (J. Korte), cmajo@trimbos.nl (M. Cristina Majo), e.t.bohlmeijer@utwente.nl (E.T. Bohlmeijer), g.j.westerhof@utwente.nl (G.J. Westerhof), fsmit@trimbos.nl (F. Smit).

[1] These authors contributed equally to this work.

http://dx.doi.org/10.1016/j.jaging.2015.02.008
0890-4065/

are promising in preventing depression (Cuijpers, van Straten, Smit, Mihalopoulos, & Beekman, 2008). Economic costs associated with subthreshold depression are just a little less than those of major depression (Cuijpers et al., 2007). Hence, preventing depression in later life is also important from an economic point of view.

There is substantial meta-analytic evidence that life-review interventions are an effective treatment for depression in later life (Bohlmeijer, Kramer, Smit, Onrust, & van Marwijk, 2009, Bohlmeijer, Smit, & Cuijpers, 2003; Pinquart, Duberstein, & Lyness, 2007; Pinquart & Forstmeier, 2012). Life-review involves a structured evaluation of one's own life, aimed at integrating negative experiences, resolving conflicts, and giving a positive meaning to life (Westerhof, Bohlmeijer, & Webster, 2010). Recent studies further corroborate the effectiveness of life-review as an early intervention for depression in ecologically valid contexts (Korte, Bohlmeijer, Cappeliez, Smit, & Westerhof, 2012; Pot et al., 2010; Westerhof et al., 2010). We now investigate the cost-effectiveness of life-review compared to care-as-usual. To our knowledge, this is the first economic evaluation of a preventive life-review intervention in late-life depression.

## Materials and methods

### *Study design*

The cost-effectiveness analysis was conducted as an a priori component alongside a pragmatic randomized controlled trial, comparing clinical outcomes and economic costs between two groups of participants aged 55 years and over with subclinical, mild, and moderate depressive symptomatology. The experimental group ($n = 100$) received a life-review intervention to reduce depressive symptoms. The control group ($n = 102$) received care-as-usual while being wait-listed for life-review six months after baseline. All participants completed measures at baseline (t0) and follow-up (t1; six months after baseline, three months after the end of intervention). This study was approved by the METiGG, a medical ethics committee for research in mental health care settings in The Netherlands. In addition, this study has been registered in the Netherlands Trial Register, the primary Dutch register for clinical trials (TC = 1860). The trial has been described in detail elsewhere (Korte, Bohlmeijer, & Smit, 2009).

### *Participants*

Participants were recruited in collaboration with Dutch mental health services through advertisements in newspapers and information booklets, plus a radio interview and commercials. Applicants were referred to a dedicated website, where they could find information about the study. Thereafter, applicants were assessed for eligibility and were required to sign an informed consent form. In total, fourteen Dutch mental health care services, in both urban and rural areas, participated in this study. They were responsible for the intake procedure, in which inclusion and exclusion criteria were examined. To be included in the trial, participants had to present with a score of ten or higher on the Center for Epidemiologic Studies Depression (CES-D) scale (Radloff, 1977). Applicants were excluded if diagnosed with a current severe major depressive episode (MDE; eight or nine out of nine symptoms in total) or with a moderate to high suicide risk, as measured with the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). Applicants were excluded if they had a score of 9 or lower on the CES-D (Radloff, 1977), had started taking antidepressant medication or benzodiazepines within the previous 2 months, were currently receiving any psychological treatment, or if the health care professionals found other serious psychopathology, in which case they were referred for psychological treatment. A total of 274 people initially agreed to participate, of whom 225 (82.1%) met the inclusion criteria. Of these, 23 (10.2%) withdrew their consent prior to randomization (see Fig. 1).

### *Power analysis*

A power calculation indicated that a minimum of 80 participants were required in each condition at follow-up to demonstrate an effect size of at least 0.35 (Cohen's d) in a one-tailed test at $\alpha = 0.05$ and a power of $(1 - \beta) = 0.80$. The power calculation was conducted in Stata 7.0 (StataCorp LD, USA). Anticipating a dropout rate of 20% between baseline and the end of the study, 100 participants were sought for each condition at baseline. This requirement was met, with 100 participants in the life-review therapy condition and 102 in the care-as-usual condition.

### *Randomization*

Participants were randomly assigned either to life-review therapy or to care-as-usual by means of a centrally conducted randomization process executed by an independent statistician. The randomization was stratified by gender and presence of current major depressive episode, using a computer-generated sequence of numbers.

### *Intervention and control group*

The life-review intervention, "The Stories We Live By," adapted from a pilot study (Bohlmeijer et al., 2009), was conducted in groups of four to six participants and consisted of eight weekly sessions of 2 h. The intervention has three core elements. First, the integration of difficult life-events from the past; second, the development of meaningful and agentic life stories that help the participants to better cope with present life-events and to set new goals; third, the retrieval of specific positive memories that can serve as building blocks for the new life stories. The first five intervention sessions were focused on various life themes: origin, youth, work and care, love and conflicts, and loss and difficult times. Before each session, participants had to answer questions about those life themes. For each theme, the participants had to describe one difficult life-event they were still struggling with. They then had to answer questions to help them develop alternative stories that would help to integrate this life-event. During the intervention sessions, participants had the opportunity to exchange and discuss their experiences with one another. In the final three sessions, attention was given to some overarching themes that focused on creating an overview and on the near future. The intervention was guided by one clinical psychologist and one co-therapist (prevention worker) experienced in working with