



Moderating role of positive aspects of caregiving in the relationship between depression in persons with Alzheimer's disease and caregiver burden



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ABSTRACT

Improving caregivers' positive perception of their role may be important in reducing their subjective burden when caring for Alzheimer's disease (AD) patients with depression. The purpose of present study was to explore the moderating role of the positive aspects of caregiving (PAC) on the subjective burden on family caregivers when managing depressive behaviors. We conducted a cross-sectional study including 200 pairs of patients with mild AD and their caregivers from three communities and two hospitals in Taiyuan, China in October 2014. The latent variable interaction model based on a two stage least squares (2SLS) regression was fitted. A significant moderating effect of the PAC was found on the relationship between depression in patients with AD and the caregiver burden they cause. Caregivers dealing with patients with low levels of depression but with high levels of the PAC had significantly lower levels of caregiver burden compared to those caregivers with the low levels of PAC. Continuously detecting the patient's mental state combined with caregivers having an optimistic attitude towards life may improve the quality of life for both patients and caregivers.

1. Introduction

Informal caregivers, particularly family members, play an important role in caring for Alzheimer's disease (AD) patients who live at home and economic cost in AD is a large part of societal spending (Rapp et al., 2012; Wimo et al., 2013). A national investigation of 1500 caregiving households revealed that dementia caregivers more often give up hobbies or vacations and spend less time with other family members than other types of caregivers (Ciechanowski et al., 2004). The caregiver's circumstance is similar to that of a rotating shift worker who is often on an inconsistent schedule and must remain vigilant both during the day and night. This excessive responsibility can result in chronic fatigue, decreased quality of care, and increased subjective caregiver burden, which can lead to mental health disorders, such as anxiety and depression, in caregivers.

The most common psychological and behavioral symptoms of dementia (BPSD) are memory-related problems, disruptive behaviors, and depression (Roth et al., 2003). Of all the BPSD, depression is common, with a prevalence of up to 40%, and may occur at any stage of dementia (Chi et al., 2015). About one-third of dementia sufferers experience depressive symptoms (Lyketsos et al., 1999). In fact, late-onset

depression might be the first early sign of AD (Jorm, 2000). Although its relationship with dementia remains to be fully explicated, depression is widely acknowledged to result in more rapid cognitive decline, higher mortality rate in patients, greater likelihood of disruptive behavior, decreasing quality of life, and increased burdens on caregivers (Bracco et al., 1994; Lyketsos et al., 1999; Ritchie et al., 1998; Spalletta et al., 2012). However, there are very few medications that are effective in the treatment of depression in patients with AD (Khundakar and Thomas, 2015).

Stress and coping process models have regularly been used to assess caregiver performance, disclosing individual diversity in the capability to cope with the stressors that caregivers meet and to predict emotional and physical reactions based on these factors. Pearlin et al. (1990) stress process model concentrated on contextual variables with respect to primary and secondary stressors, highlighting the difference between causes of stress that are indirectly related to the caregiving role (e.g., financial strain) and stressors that are directly related (e.g., care recipient problem behaviors). After additional research with caregivers of patients with AIDS, Folkman (1997) modified the initial stress and coping model, positive psychological assessment particularly in dealing with the beneficial effects of maintaining the coping process was

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incorporated. Negative emotional reactions might weaken the coping feedback if stressed caregivers do not experience positive feelings. Thus, interventions aimed at extending positive reappraisal of caregiving outcomes might strengthen and contribute to sustained emotional coping.

The positive aspects of caregiving (PAC) have been defined in different ways, but they are generally interpreted as the satisfaction and rewards stemming from the caregiving relationship (Tarlow et al., 2004). Rewarding appraisals of caregiving and contentment with caregiving may ameliorate caregiving burden and raise emotional outcomes (Kinney and Stephens, 1989). Compared with individuals who did not endorse PAC, patients with higher PAC had less burden, depression, and better subjective health. Cohen and Luchins (1990) concluded that the capacity to recognize the PAC in the relationship may act as a buffer to mitigate negative consequences.

Hilgeman et al. (2007) pointed out that the PAC may moderate individuals' effective use of interventions. They tested the moderating effects of the PAC on treatment outcomes over 12 months and their results support the hypothesis that PAC moderate daily care burden and depression Walker et al. (2016). found that the PAC moderates the relationship between burden and depression in caregivers. However, researches investigating the moderating role of the PAC on the relationship between depression in patients and the associated caregiver responses are lacking.

Considering that patients' depression, caregivers' positive feelings, and subjective burden are not directly observed variables, a latent variable interaction model based on a two stage least squares (2SLS) was used in this study. The model is considered appropriate for testing the moderating effects of indirect measurable variables as it can provide unbiased estimates through controlling endogeneity (Im et al., 2008). Compared with other methods for measuring moderating effects (e.g., subgroup analysis, product term indicant analysis (Kenny and Judd, 1984), and regression with product term (Aiken and West, 1994)), 2SLS is more suitable for testing data originating from non-normal distributions, which tend to inflate the test statistic, and suitable when the sample size is not small and the reliability of indicators is high (Moulder and Algina, 2002).

The purpose of the present study was to explore the moderating effect of the PAC on the subjective burden in family caregivers for managing depressive behaviors in AD patients.

2. Material and methods

2.1. Study design

We conducted a cross-sectional study of patients with AD and their caregivers from three communities and two hospitals in Taiyuan, China in October 2014. Patients were included if they were diagnosed with mild AD according to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (American Psychiatric Association, 2013) criteria. Primary caregivers were those identified by the patient as such, and, satisfying the most, and at least three, of the following standards established by Perlick et al. (2005): (1) a partner, parent, or other family member; (2) keeps continual contact with the patient; (3) provides the patient with a significant financial support; (4) is present during the patient's consultations and treatments and understands the severity of the disease (supervises diet at home, accompanies the patient to doctors' appointments, participates in consultations and therapy, and the like); and (5) is the person treatment staff contact in the case of an emergency.

The local ethics committee of Shanxi Medical University approved the study. Before interviewing each participant, written informed consent, including communication of the objectives and data confidentiality, was obtained from all participants. This survey consisted of face-to-face interviews and was conducted by professional survey interviewers who collected data using relevant study instruments. Quality

control procedures involved inspecting the accuracy of responses recorded by interviewers or patients.

2.2. Measures

Caregivers were required to provide basic demographic data including age, gender, level of education, number of family members, whether he or she lived with the patient, working conditions, and number of contact hours per week with the patient. In addition, three scales including the Caregiver Burden Inventory (CBI), Zung Self-Rating Anxiety Scale (SAS), and Zung Self-Rating Depression Scale (SDS) were also completed by caregivers to assess their subjective burden in relation to caregiving (George and Gwyther, 1986; Kim et al., 2007). The positive role appraisals were assessed by the PAC. We used Chinese versions of these instruments, which have been demonstrated to have appropriate concurrent validity, content validity, and adequate internal consistency reliability (Chou et al., 2002; Lee et al., 1994; Wang, 1984; Zhang, 2007).

The CBI, a 24-item multi-dimensional instrument, measures the impact of burden on caregivers with five subscales, that is, five items for evaluating the objective time dependence burden, four for social burden, five for developmental burden, four for physical burden and six for emotional burden (Chou et al., 2002). Responses were provided on a five-point Likert scale ranging from 0 (not at all disruptive) to 4 (very disruptive). We used the total scores and highest scores to indicate higher burden.

Depressive/anxiety symptom severity was assessed using the SDS and SAS, with 20 items related to the frequency of various symptoms (Hunter and Murphy, 2014; Olatunji et al., 2006). To control the response sets, some items are keyed in the negative direction and others in the positive direction. The 20 item scores were summed to give the total score. Higher scores indicated a higher level of depression/anxiety.

Assessing the PAC involved two components of a nine-item measure: the Self-Affirmation and Outlook on Life questionnaire. This assesses the caregiver's positive role appraisals in the context of the caregiving experience, such as feeling appreciated, feeling useful and finding meaning (Tarlow et al., 2004). Scores for each item were evaluated using a five-point Likert scale (agree/disagree) ranging from 9 to 45, with higher scores indicating more positive caregiving appraisals.

Participants who met our criteria for AD showed a decline in function, impairments in memory and at least one other area of cognitive function, and impaired Activities of Daily Living. They were diagnosed using the criteria recommended by the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (Mckhann et al., 1984). This was assessed using a comprehensive diagnostic evaluation that included medical history, neuropsychological testing, and clinical examination. They were asked to provide socio-demographic information including age, gender, marital status, and educational level. The Geriatric Depression Scale (GDS) was used to assess patients' depressive symptoms (Chan, 1996). This is a 30-item questionnaire with three subscales for mood, memory, and behavior. Each item can be answered with 'yes' or 'no'. Scores of 0–9 indicate normal, 10–19 indicate mild depression and 20–30 indicates severe depression (Yesavage et al., 1982).

2.3. Statistical analysis

Descriptive statistics of scales and socio-demographic variables were calculated using frequencies and percentages for categorical variables, and means and standard deviations (SD) for quantitative data. Cronbach's alpha coefficient was used to assess the internal consistency of the scales used and alpha coefficients equal to or greater than 0.60 were considered to be satisfactory.

The moderating role of PAC on the subjective burden on family

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