

Anxiety, Depression, and Spirituality Among Caregivers of Patients With Alzheimer Disease

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Abstract

Introduction: The nature of the Alzheimer's disease gradually makes patients dependent to persistent care. This may have a large negative effect on the caregivers' quality of life and predisposes them to psychological distress. Spirituality, however, may act as a buffer and enhance their adaptability with stressful conditions. This study aimed to evaluate the association between spirituality and symptoms of anxiety and depression in a sample of caregivers of patients with Alzheimer's disease.

Methods: In this cross-sectional study, 209 outpatients with moderate Alzheimer's disease (using DSM-IV criteria and MMSE test) and their caregivers were selected. Patients' and caregivers' demographic data were recorded. The Spiritual Intelligence Questionnaire and Hospital Anxiety-Depression Scale were completed by caregivers.

Results: Spirituality was negatively correlated with depressive symptoms. Spirituality, however, had a positive but non-significant correlation with anxiety symptoms.

Conclusion: Although symptoms of anxiety and depression are highly prevalent in Alzheimer caregivers, only depressive symptoms are directly linked to spirituality. Spiritually-based approach may be a component of therapeutic interventions, in order to enhance caregivers' adaptability.

Keywords: Alzheimer Disease, Caregivers, Depression, Spirituality

Article History: Received: 16 Jul 2014; Revised: 25 Sep 2014; Accepted: 1 Nov 2014

Cite this article as: Samadi R, Mokhber N, Faridhosseini F, Baghban Haghighi M, Assari S. Anxiety, depression, and spirituality among caregivers of patients with Alzheimer disease. *Int J Travel Med Glob Health.* 2015;3(1):29-35.

1. Introduction

Alzheimer's disease is the most common cause of dementia in elderly, which is becoming more prevalent, as a result of the increase of life expectancy [1]. In addition to cognitive symptoms, that constitute the core part of the disease, coexisting behavioral, mood, anxiety and other symptoms gradually deteriorate the outcomes and make the patients quite dependent to persistent caregiving [2].

Caregivers - who are often family members of patients - are at high risk of psychological distress and physical disorders and even mortality [3]. The amount of stress that is experienced by caregivers and development of psychological disorders are directly related with the duration of care-giving [4], severity of disease among the patients' and caregivers' coping strategies [5]. Severe and long term stress associated with care-giving potentially impose caregivers to subclinical or clinical anxiety and depression [6].

Spirituality-based modalities are within cognitive and behavioral interventions that may help caregivers to better cope with stress, and more effectively handle stress associated with their responsibilities. Spirituality-based modalities have a humanistic approach and help individuals to search and find

a spiritual meaning of life, in order to adapt when facing difficulties. Although religion is one kind of spirituality, spirituality has a more extensive meaning and includes meditation, yoga, arts, etc. In recent decades, the concept of spirituality has illustrated this theme more precisely [7].

Intelligence can be defined as the learning, talent, the whole acquired knowledge and the capability to cope with the environment. Based on a novel theoretical model, the following four layers of intelligence can be defined: physical intelligence (body awareness and skillful use), intellectual intelligence (math and verbal skills), emotional intelligence (management of relationships), and spiritual intelligence (the most sophisticated one which is limited to human kind) [7]. It is an abstract concept implying the employment of spiritual resources in practical situations, as a problem solving behavior [7] and looks for meaning and ultimate goal of life [8]. It seems that the relationship between adjustability and spirituality is mediated by spiritual intelligence [7].

A good deal of research shows that spirituality is related to the individual's health, as well as the onset and progression of the mental distress and physical disorders [9-11]. Multiple studies have demonstrated a significant relationship between the spirituality and different domains of mental health [12,

13]. It has been shown that spirituality predicts self-efficacy [14], happiness [15] and quality of life [16] in various populations. Personality characteristics [12] and childhood spiritual experiences [17] may shape the SI.

In this study, we hypothesized that spirituality may have a protective effect on mental health of caregivers of patients with Alzheimer's disease. It has been suggested that individuals at stress may benefit from spiritual behaviors, as a coping strategy, more than controls [18, 19]. The amount of caregiver burden, on one hand is reversely related to spiritual well-being [18], and on the other hand it is related to the development of depression [20].

In addition, recent studies have mentioned spirituality as an important predictor of quality of nursing care and prevention of burnout in nurses. These studies have shown the impact of spirituality on emotional intelligence and both factors on the quality of nursing care [21, 22].

As there had been only few – if any - investigations assessing the spirituality among caregivers, this study was planned to assess the association between spirituality, depression and anxiety among caregivers of patients with the Alzheimer's disease. Given the fact that spirituality is a modifiable factor that can be improved by specific interventions, if spirituality is correlated with depression and anxiety, it can be targeted by programs supporting the caregivers, in order to promote mental health and familial burden of the illness to the society.

2. Methods

2.1. Design and Setting

In this correlational study, after the approval of the research planned by the research committee of Mashhad university of medical sciences, and then a pilot study of 30 individuals, 209 individuals from caregivers of patients with Alzheimer's disease referring to the outpatient Neuropsychiatry clinic of the Avicenna hospital of Mashhad, northeast of Iran, during 2011-2012, were selected using the purposive sampling method.

The inclusion criteria were caregiving of patients with moderate Alzheimer's disease at home. Primarily, patients with Alzheimer's disease were diagnosed by a psycho-geriatricist using a semi-structured interview based on DSM-IV criteria. Then, the MMSE test was used to indicate the patients with moderate Alzheimer's disease (MMSE=10-20). Exclusion criteria were history of any major physical or mental disorder in caregivers or their family. After explaining the plan and privacy of the questionnaires for candidates, they signed an informed consent and participated voluntarily. Afterwards, the demographic characteristics of patients and caregivers were recorded. Finally, Hospital Anxiety-Depression Scale (HADS) and Sohrabi's Spiritual Intelligence Questionnaire were fulfilled by caregivers, under the supervision of psychiatry residents.

2.2. MMSE (Minimal Mental Status Examination)

It is a therapist administrated test for screening and indicating the severity of dementia. It assesses various domains involved in dementia (11 items). The maximum score is 30 and

the cut off score for dementia is 24. The scores ranging from 20-24, 10-20 and less than 10 are indicated mild, moderate and severe dementia respectively. Cronbach's alpha for Iranian version has been 0.78 [23].

2.3 Symptoms of Anxiety and Depression

The Hospital Anxiety-Depression scale is extensively validated in the general population, was first introduced by Snaith and Zigmond in 1982 [24, 25]. It consists of 7 questions for assessing depression and 7 questions for assessing anxiety, so data gathering by HADs is fast. The maximum score in each subscale is 21 and the scores of 0-7, 8-10 and 11-21 indicate non-symptomatic situation, mild depression or anxiety and clinical depression or anxiety respectively. This test is capable to differentiate between physical and mental symptoms. The total score of the test (maximum=42) is a reflection of emotional status [25]. Cronbach's alpha of the Iranian version of depression and anxiety sub-scale have been 0.70 and 0.85 respectively [24].

2.3. Spirituality

As spirituality is quite affected by culture, an Iranian questionnaire made by Sohrabi was used to assess spiritual intelligence. It consists of 97 questions and evaluates 8 dimensions of spirituality (Diagram 1). The total score ranges from 97 to 388, without any certain cutoff. Higher scores indicate higher SI. Cronbach's alpha has been 0.98 [26], higher than other tests for spiritual intelligence [27].

2.4. Data Analysis

Data were analyzed by SPSS software version 13 using Spearman, Pearson, ANOVA, and Posthoc analysis (Tukey test). P less than 0.05 was considered statistically significant.

3. Results

Overall, 209 Alzheimer caregivers were included in this study, which composed of 135 women and 74 men, with a mean age of 43.7 ± 12.0 years. Most participants were married (93.3%), had completed high school (55%) and reported medium economic status (79.9%), and based on self-assessments. Among the caregiver demographics, only economic status had relationship with spirituality ($F=4.745$, $P=0.010$). Tukey's test showed that only the difference between poor and moderate economic statuses is significant ($P=0.008$); the poor group had more spirituality than the moderate group (table 1).

Mean scores of SI, depression, anxiety and total HADS score were 247.0 ± 29.2 , 7.1 ± 2.2 , 6.8 ± 2.3 and 13.9 ± 3.2 respectively. Mean scores of eight dimensions of spirituality are presented in table 2. The prevalence of depression and anxiety was 45.4% (36.4% mild and 9% clinical depression) and 47.3% (45% mild and 2.3% clinical depression). The prevalence of coexisted depression and anxiety was 23%.

There was not any significant association between gender and symptoms of depression, anxiety, total HADS score, and spirituality dimensions (table 2).

Spearman correlation test suggested that among caregivers, severity of depression symptoms was reversely

correlated with spirituality ($r=-0.436$, $P<0.001$), however, the correlation between anxiety symptoms and spirituality was not significant ($r=0.061$, $P=0.384$).

Also, Pearson correlation indicated that spirituality reversely correlated with total HADS scores ($r=-0.262$, $P<0.001$) (table 3).

Table 1. Demographic characteristics of Alzheimer patients and caregivers

Variable	Patients		Caregivers		Association with Spiritual Intelligence	
	Frequency	Percentage	Frequency	Percentage		
Age	20-29	0	0	36	17.2	$r=0.115$ $P=0.099^a$
	30-39	0	0	49	23.4	
	40-49	0	0	40	19.1	
	50-59	0	0	70	33.5	
	60-69	58	27.8	14	6.7	
	70-79	135	64.6	36	0	
	80-89	16	7.7	49	0	
Gender	Female	131	62.7	135	64.6	$t=0.271$
	Male	78	37.3	74	35.4	$P=0.787^b$
Education	Illiterate	45	21.5	13	6.2	$F=0.735$ $P=0.532^c$
	Primary	65	31.3	38	18.2	
	Secondary	79	37.8	115	55.0	
Economic status	Tertiary	20	9.6	43	20.6	$F=4.745$ $P=0.010^c$
	Poor	27	12.9	27	12.9	
	Moderate	167	79.9	167	79.9	
Marital status	Rich	15	7.2	15	7.2	$F=0.931$ $P=0.396^c$
	Single	2	1.0	10	4.8	
	Married	176	84.2	195	93.3	
	Divorced /Widow	31	14.8	4	1.9	

^aSpearman test

^bIndependent t test

^cANOVA test

P=P-value

Table 2. Mean scores of spirituality, anxiety, and depression in female and male caregivers of patients with Alzheimer's disease

Item	Gender	Mean	SD	
Depression	Female	7.1	2.2	$Z=-0.292$
	Male	7.1	2.3	$P=0.770^a$
Anxiety	Female	6.7	2.4	$Z=-0.994$
	Male	7.0	2.2	$P=0.320^a$
Total HADS	Female	13.9	3.4	$t=-0.509$
	Male	14.1	2.8	$P=0.611^b$
Total spirituality	Female	247.4	29.8	$t=0.271$
	Male	246.3	28.2	$P=0.787^b$
Patience	Female	25.6	5.4	$t=1.007$
	Male	24.8	5.9	$P=0.315^b$
Spiritual believes and behaviors	Female	33.6	9.3	$t=1.933$
	Male	31.1	8.7	$P=0.055^b$
Meaning and goal of life	Female	33.1	6.9	$t=0.139$
	Male	32.9	7.1	$P=0.847^b$
Thralldom	Female	27.3	5.4	$t=-1.310$
	Male	28.3	5.0	$P=0.192^b$
Internal calm	Female	26.9	5.6	$t=0.421$
	Male	26.5	5.3	$P=0.647^b$
Spiritual experiences	Female	26.9	6.3	$t=0.036$
	Male	26.8	6.7	$P=0.971^b$
Self-cognition	Female	42.2	15.2	$t=-0.703$
	Male	43.7	13.8	$P=0.483^b$
Forgiveness	Female	28.2	8.6	$t=-0.401$
	Male	28.7	8.2	$P=0.689^b$

^aMann-Whitney test

^bIndependent t test

P=P-value

SD=Standard Deviation

HADS=Hospital Anxiety-Depression Scale

SI=spiritual intelligence

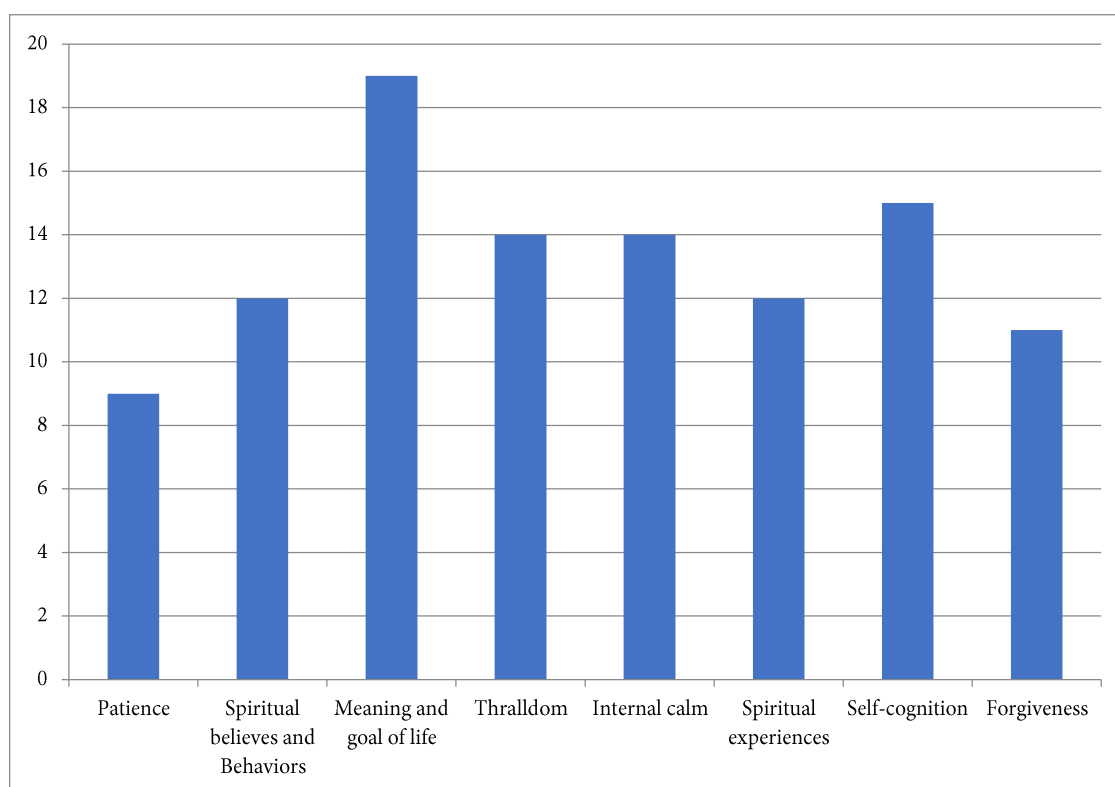
Table 3. Correlation between anxiety, depression, and spirituality dimensions among caregivers of Alzheimer patients

		Depression	Anxiety	Total HADS
Total SI	r	-0.436	0.061	-0.262
	P	<0.001 ^a	0.384 ^a	<0.001 ^b
Patience	r	-0.073	-0.073	-0.104
	P	0.295 ^a	0.295 ^a	0.132 ^b
Spiritual believes and behaviors	r	-0.056	0.216	0.119
	P	<0.420 ^a	0.002 ^a	0.086 ^b
Meaning and goal of life	r	-0.071	-0.003	-0.052
	P	0.307 ^a	0.961 ^a	0.451 ^b
Thralldom	r	-0.104	0.079	-0.015
	P	0.135 ^a	0.254 ^a	0.831 ^b
Internal calm	r	0.124	-0.724	-0.443
	P	<0.001 ^a	<0.001 ^a	<0.001 ^b
Spiritual experiences	r	-0.149	0.090	-0.038
	P	0.032 ^a	0.194 ^a	0.582 ^b
Self-cognition	r	-0.274	0.123	-0.103
	P	<0.001 ^a	0.076 ^a	0.138 ^b
Forgiveness	r	-0.789	0.169	-0.431
	P	0.001 ^a	0.014 ^a	<0.001 ^b

^aSpearman correlation test^bPearson correlation test

HADS=Hospital Anxiety-Depression Scale

P=P-value

**Diagram 1.** Eight dimensions of spirituality in Alzheimer caregivers

3. Discussion

Unfortunately various treatment modalities for Alzheimer's disease do not control the patients' symptoms sufficiently, thus experts have shown an increasing interest in focusing on the caregivers burden. Present study showed high symptoms of depression and anxiety among caregivers (45% and 47% respectively). Regarding depression, it was consistent with most of the prior research. Mausbach showed that 40% of caregivers of patients with Alzheimer's disease (compared with only 5% of non-caregivers) had depression [6]. Also, Gallagher stated that 46% of caregivers who were seeking

help have depression, whereas it was only 18% in non-help-seekers [28]. However, Mahoney showed that only 10.1% of caregivers are suffering from depression and anxiety (24%) is more common [29].

Prior research introduces caregiver's age, gender, physical abilities, personality characteristics, health status, employment status, available supporting services and severity of symptoms in patients, as predisposing or protecting factors against depression. Gender, health, living with patient, and relationship with patient predisposed caregivers toward anxiety [29]. In the present study, gender was not associated with

caregivers' high depressive or anxiety symptoms.

Based on our findings, spirituality was linked to mental health. Spurlock showed that the amount of stress that is experienced by caregivers is reversely related to their spiritual well-being [18]. Other studies have also emphasized the role of the spirituality in predicting nurses caring behaviors and preventing their burnout [21, 22].

In the present study, 23% had coexisting high levels of depression and anxiety. Therefore, if a caregiver has one of these high symptoms, with almost 50% probability, it can be predicted that she/he has the other symptoms too. The rate of coexistence of anxiety and depressive disorders has been reported between 30-65% in various populations [30] and approximately 60% in Iran [31].

In the present study, spiritual intelligence reversely correlated with total the HADS score and depression subscale. Consistent with our results, prior studies have shown that spirituality has a significant direct relationship with mental health [13, 15, 17], self-efficacy [14] and quality of life [16]. Also, spirituality and spiritual well-being have been reversely related with depression in the general population [32], elderly [33] and heart failure [34] and with anxiety and depression in patients with cancer [35]. However, anxiety in the present study did not have a significant correlation with spirituality. It is probable that spirituality acts as a coping instrument in chronic unfavorable situations (causing depression) [36, 37]. However, for declaring the definite comment more investigations are required.

Dysfunctional coping strategies and coexisting depression are among factors predicting the anxiety in caregivers [38] and they may have affected the relationship between spirituality and anxiety in the present study too. Patient's irritability and impaired relationship between patient and caregiver affect each other. It has been said that patient-caregiver relationship can predict, the higher rate of anxiety and depression in caregiver [29] and this may affect the relationship between anxiety and spiritual intelligence in our study too. On the other hand, personal characteristics, such as anxious trait, play a role in the development of anxiety and depression [39]. Utilizing high spirituality, a person may compensate these traits to some extent, but he/she is not often able to eliminate their outcomes completely, to reduce the risk of depressive and anxiety disorders [40]. However, a good deal of research is required to illustrate this theme thoroughly.

Regarding the factors affecting spirituality, consistent with prior results in students, this study showed that gender [15] and age [13] do not affect SI. Nevertheless, an investigation in nurses has shown that spirituality is affected by age and related childhood experiences [17]. This is more expected, because aging often accompanies with gaining more experiences, for instance spiritual experiences. Therefore, it seems that this theme requires more investigations. Generally, it seems that personality characteristics [12] have a more critical role to determine SI, than age.

In the present study, among the demographic characteristics, only economic status had a significant relationship with SI. Caregivers with poor and moderate economic statuses had the highest and lowest spirituality respectively, and only the difference between this pair was significant. Consistent with our results, Yiengprugsawan [41] showed that individuals with poor socioeconomic status, who pay more attention to religious and spiritual beliefs, have more social interactions and are more supported by family members. On the other hand, caregiving of patients with Alzheimer's disease, wastes a lot of cost, time, and job opportunities and perhaps expose the caregivers towards poverty. So, poverty may be an effect, not a cause. Also, the self-report of economic status may be affected by an individual's mental distress and spiritual status [42] and is not the absolute fact.

Spirituality has been suggested as an additive remedy for depression and anxiety [43]. So, spiritual exercises, such as yoga [44], prayer [43], and cognitive-behavioral plus spiritual counseling (CBSC) [45], have been able to increase mood and mindfulness and are suggested for prevention and treatment of depression and anxiety in caregivers of patients with Alzheimer's disease, as well. They make a lot of family members to take care of patients at home, instead of hospice.

4. Conclusion

Psychological distress - such as depression and anxiety symptoms- are prevalent in Alzheimer caregivers. It is not known how country level welfare-support systems contribute to this problem. Since spirituality may be associated with symptoms of depression in caregivers, interventions based on spirituality may be effective to promote mental health and quality of life of caregivers [46, 47].

Nevertheless, more extensive descriptive and intervention studies are required, before adding the spiritual counseling to routine helping programs for caregivers.

Limitations and Suggestions

Lack of studies focused on the theme of spirituality in caregivers of patients with Alzheimer's disease, shortage of studies about spirituality in caregivers, inconsistent results of these few investigations, made comparisons difficult. Therefore, more extended studies, including control group are recommended to be followed by this study. As the present study was cross-sectional, it was not possible to detect cause and effect relationships. Thus, longitudinal studies are suggested. This was one of the first times that the relationship between spirituality with symptoms of depression and anxiety was evaluated among Alzheimer caregivers, and to some extent highlights the need for subsequent research.

Acknowledgements

We thank the Vice Chancellor of Mashhad University of Medical Sciences and staff of outpatient clinic of the Avicenna Hospital.

Authors' Contribution

Roya Samadi: design – drafting and revising the manuscript.
 *Naghmeh Mokhber: data acquisition - study design, contribution to the manuscript
 Farhad Faridhosseini: contribution to the manuscript draft and revision.
 Mehri Baghban Haghighi: data analysis, manuscript draft.
 Shervin Assari: contribution to the manuscript draft and revision

Funding/Support

This research was performed as a residency thesis after the approval by the research committee of the university. This research received a grant from the Vice Chancellor of Research of the Mashhad University of Medical Sciences.

Financial Disclosure

The authors have no conflict of interests to disclose.

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