



The Relationship between Caregiver Burden and Spiritual Intelligence in Caregivers of Breast Cancer Patients

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Abstract

Background: Breast cancer patients' caregivers seem to face several challenges and problems that affect their physical and mental health. Spiritual intelligence, as the foundation of individuals' beliefs, plays an essential role in promoting the mental health of caregivers. The aim of this study was to determine the relationship between caregiver burden and spiritual intelligence in caregivers of breast cancer patients.

Methods: This descriptive-correlational study was conducted on 309 breast cancer caregivers at Shahid Ramezanzadeh Radiotherapy Center, Yazd, Iran, based on census method in 2020. Data were collected using three questionnaires: Demographic Information, caregiver burden inventory (CBI) and Spiritual Intelligence Self-Report Inventory (SISRI). Statistical analyses were done using Spearman's rank correlation, Mann-Whitney and Kruskal-Wallis test in SPSS-20.

Results: The mean total score of caregiver burden was 48.12 ± 20.93 . The highest and the lowest mean scores were in the dimension of social pressure (10.33 ± 5.09) and physical pressure (8.14 ± 4.09), respectively. The mean total score of spiritual intelligence in caregivers was (67.32 ± 30.84). The highest mean score was in the transcendent awareness dimension (20.54 ± 18.75) and the lowest was in the personal meaning production dimension (13.07 ± 6.10). There was a significant inverse relationship between the mean total score of spiritual intelligence and caregiver burden ($r = -0.63$, $P < 0.001$).

Conclusion: Caregivers of breast cancer patients who have more spiritual intelligence, experience less burden of care. In fact, higher levels of spiritual intelligence act as a protective factor against the burden of care. Therefore, strengthening spiritual intelligence in oncology and radiotherapy centers is recommended.

Keywords: Breast, Cancer, Caregiver burden, Spiritual intelligence

Citation: Fallah B, Nasiriani K, Adham M, Fallah Faragheh A, Fathi F, Shamsi F, et al. The relationship between caregiver burden and spiritual intelligence in caregivers of breast cancer patients. *Journal of Kerman University of Medical Sciences*. 2023;30(3):146–152. doi:10.34172/jkmu.2023.24

Received: September 1, 2022, **Accepted:** February 12, 2023, **ePublished:** June 26, 2023

Introduction

Breast cancer is the most common type of malignancy and the most important cause of cancer death in women around the world (1,2). However, 70-80% of breast cancer patients can be treated in the early and non-metastatic stages (3). It is also the second leading cause of cancer death in the world, affecting approximately 1.67 million people (4).

Nowadays, the care of people with cancer by non-professionals such as relatives has increased due to the increase of medical cares and more importantly due to its significant effects in reducing patients' anxiety; therefore,

it is likely to have an upward trend in the future (5,6). Despite the fact that caregivers have positive effects such as encouraging patient independence and facilitating their involvement, they may disrupt the patient's reactions or even prevent them from participating in treatment process (7).

In fact, cancer affects not only the patients but also their close relatives such as spouses and parents who play a key role in adequate care. The caregiver's experiences depend on the dimensions and aspects of the disease, such as the type of cancer and the stage of its diagnosis (8).

Sometimes the patient caregiver experiences a feeling



of inability and stress in providing comprehensive care, which is called “caregiver burden”. Caregiver burden is a feeling of inadequacy and ability to care that could threaten the caregiver’s mental and physical health and reduce the quality of patient care (9-11). Surprisingly, the mortality rate in cancer patients who are cared for by people with burden and stress is higher than the patients who are not even cared for. On the other hand, caregivers who endure the burden of care, due to the feeling of inadequacy in care, suffer from stress and anxiety, which endangers the mental health of the caregiver (10).

Therefore, it is necessary to carefully examine the care burden in caregivers and to identify the related factors.

Spirituality is known as one of the factors affecting mental health (12). Spiritual intelligence combines the inner aspects of spirituality and creates an extraordinary capacity in the individual that uses spirituality in a practical way (13,14).

Spiritual intelligence is one of the several types of intelligence that can be developed independently. Spiritual intelligence is defined as a set of spiritual capabilities and abilities, capacities and resources that increases mental health as well as adaptability (15). People who have enhanced their spiritual intelligence, acquire the necessary skills and abilities to adapt to existing conditions. In addition, they will be able to control their emotions well and solve their problems. It seems that spiritual intelligence can affect the mastery and adaptation of caregivers to the existing conditions as well as increasing their clinical competence (16). Given that the number of home caregivers, especially in low-income countries, is increasing and on the other hand, breast cancer is more common in women and the age of onset has decreased, so this study was designed to determine the relationship between caregiver burden and spiritual intelligence in caregivers of women with breast cancer.

Material and Methods

This study was a descriptive-correlational investigation. According to a previous study and using the correlation estimation formula, considering the 95% confidence level and $r=0.48$, 309 participants were selected from family caregivers of patients with breast cancer who referred to Shahid Ramezanzadeh Radiotherapy Center, Yazd, Iran in 2020. Sampling was done through census method from the latest date back, so the samples were caregivers of patients who had been recorded at the center from 2017 to 2020. Inclusion criteria consisted of being first-degree relatives (parents, siblings, daughter, son), responsible for the direct care of patients with stage 2 or higher, willingness to participate in the research, age of 18-75 years, reading and writing ability, access to social media, awareness of the patient’s condition and a history of at least three months of patient care, no treatment for psychiatric disorders and lack of experience of stressful

events in the last 6 months.

Due to the COVID-19 pandemic, data collection was performed online using social networks. Caregivers’ contact information was obtained through telephone contact with patients. The purpose of the study and how to complete the questionnaire were explained to caregivers. If they were satisfied to participate in the study and had the inclusion criteria, a questionnaire link was sent to them.

Data collection tools in this study were two standard questionnaires: caregiver burden inventory (CBI) and Spiritual Intelligence Self-Report Inventory (SISRI). Demographic questionnaire included age, sex, educational level, marital status, type of cancer, duration of day care, type of patient treatment, economic status, employment status, amount of sleep and working hours per day.

CBI was developed by Novak and Guest in 1989 and comprises 24 closed questions divided into five dimensions: time-dependence (5 questions), developmental (5 questions), physical (4 questions), social (5 questions) and emotional (5 questions) burden. The questionnaire is scored as a 5-point Likert scales ranging from “1 = strongly disagree” to “5 = Strongly agree” (17).

Valer et al confirmed the reliability of this questionnaire by Cronbach’s alpha coefficient of 0.93 (18). The validity and reliability of the Persian version of this questionnaire were confirmed by Shafiezhadeh et al in 2019 (19).

SISRI was designed and developed by King in 2008 (20). This questionnaire consists of 24 items and 4 subscales of critical existential thinking (7 questions), personal meaning production (5 questions), transcendental awareness (7 questions) and conscious state expansion (5 questions). Scoring based on 5-point Likert scales ranging from “0 = Completely False” to “4 = Completely True”. The scoring method for the question 6 is inverse. The scores obtained from this questionnaire are in the range of 0-96 and the higher scores show the higher level of spiritual intelligence.

In King’s study, the alpha coefficients for the subscales including critical existential thinking, personal meaning production, transcendental awareness and conscious state expansion were 0.88, 0.87, 0.89 and 0.94, respectively. In addition the validity of this scale has been compared with several valid questionnaires including transpersonal self-interpretation scale, mysticism scale and internal and external religiosity scale and their correlation coefficients have been obtained as 0.67, 0.63 and, 0.78, respectively (21). The validity ($r=0.66$) and reliability (Cronbach’s alpha coefficient of 0.88) of this questionnaire in the Iranian population have also been confirmed (22). Before starting the study, the purpose of doing so was explained to the participants and they participated in the study with informed consent. Data were analyzed using SPSS 20. The results of Kolmogorov–Smirnov test showed that the

data did not follow the normal distribution, so Spearman and Mann-Whitney and Kruskal-Wallis correlation coefficient tests were used.

Results

In this study, out of 334 participants, 309 people filled out the questionnaires completely. The mean age of the subjects was 38.28 ± 10.24 years, the most caregivers were patients' children (48.9%). The mean caregiver's sleep duration was 6.5 ± 1.31 hours and the mean duration of patient care was 280.2 ± 343.123 days. Demographic characteristics have been presented in Table 1.

The results showed that the mean total score of

Table 1. Demographic characteristics of the subjects

Variable	Sub-group	No.	%
Age	≤30	71	23.0
	31- 40	118	38.2
	41-50	80	25.9
	≥51	40	12.9
Sex	Male	118	38.2
	Female	191	61.8
Marital status	Single	77	24.9
	Married	232	75.1
Educational level	Under Diploma	26	8.4
	Diploma	118	38.2
	High education	165	53.4
Duration of care (day)	≤90	148	48.31
	91-180	78	25.72
	181-270	59	19.24
	≥271	24	6.73
Economic situation	Low income	243	78.7
	Medium income	48	15.5
	high income	18	5.8
Sleep duration (hour)	< 6	67	21.7
	6-8	228	73.8
	≥9	14	4.5
Working hours	≤7	98	31.4
	8-14	173	56.82
	≥15	38	11.94
Type of patient treatment	Chemotherapy	156	50.5
	Radiotherapy	76	24.6
	Surgery	19	6.1
	Chem and/or RT and/or surgery	58	18.8
Employment status	Unemployed	71	23.0
	Employee	80	25.9
	Worker	17	5.5
	Self-employed	86	27.8
	Part-time work	55	17.8
Caregiver-patient relationship	Spouse	91	29.4
	Child	151	48.9
	sister or brother	47	15.2
	father or mother	20	6.5
Total		309	100

spiritual intelligence in caregivers was 67.32 ± 30.84 . The highest and the lowest mean scores were in transcendent awareness 20.54 ± 18.75 and personal meaning production 13.07 ± 6.10 dimensions, respectively. Also, the mean score of total caregiver burden was 48.12 ± 20.93 . The highest and the lowest mean scores of caregiver burden were in social pressure (10.33 ± 5.009) and physical pressure (8.14 ± 4.09) dimensions, respectively (Table 2).

There was significant relationship between caregiver burden and some variables such as educational level ($P < 0.001$), economic status ($P = 0.006$), sleep duration ($P < 0.001$), employment status ($P < 0.001$), working hours ($P < 0.01$) and, type of treatment ($P = 0.005$). Also, spiritual intelligence was significantly different in terms of educational level ($P < 0.001$), economic status ($P < 0.01$), sleep duration ($P < 0.001$), employment status ($P < 0.01$), working hours ($P < 0.01$) and, type of treatment ($P = 0.03$) (Table 3).

As it is seen in Table 4, there was a significant negative correlation between the mean total score of spiritual intelligence and the mean total score of caregiver burden ($r = - 0.63$, $P < 0.001$). Also, the total score of spiritual intelligence had a significant negative correlation with all dimensions of caregiver burden ($P < 0.05$).

Based on the regression analysis, caregiver burden was significantly associated with spiritual intelligence ($R^2: 0.034$; $P < 0.001$). In other words, 34% of the variance of caregiver burden can be explained by spiritual intelligence. In addition according to the beta coefficient, if the spiritual intelligence score changes by one point, the

Table 2. Mean score of Caregiver Burden and Spiritual Intelligence domains among participants (n = 309)

Variables	Mean ± SD	Standard score%
Caregiver burden	Time-dependent burden	9.69 ± 2.72 4.67
	Psychophysical burden	10 ± 3.41 3.39
	Physical Burden	8.14 ± 4.09 4.09
	Social burden	10.33 ± 5.01 5.01
	Emotional burden	9.95 ± 5.00 5.00
	Total	48.12 ± 20.93 20.93
Spiritual intelligence	Critical Existential Thinking	19.65 ± 6.87 6.87
	Personal Meaning Production	13.07 ± 6.10 6.10
	Transcendental Awareness	20.54 ± 18.75 18.75
	Conscious state expansion	14.16 ± 5.76 5.76
	Total	67.32 ± 30.84 30.84

Table 3. Mean score of caregiver burden and spiritual intelligence according to demographic characteristics

Variable		Caregiver Burden (Mean ± SD)	P value	Spiritual Intelligence (Mean ± SD)	P value
Educational level	Under Diploma	47.30 (17.54)		75.68 (66.16)	
	Diploma	39.35 (20.98)	<0.001	75.77 (26.11)	<0.001
	High education	54.52 (19.12)		60.01 (23.19)	
Economic situation	<3 million	45.65 ± 20.88		73.05 ± 36.26	
	3-5 million	48.06 ± 19.84	0.006	62.91 ± 25.46	<0.01
	5-10 million	49.85 ± 23.41		66.47 ± 26.83	
	>10 million	62.27 ± 15.66		53.33 ± 15.17	
Sleep duration	<6	19.82 ± 21.26		85.94 ± 44.5	
	6-8	20.11 ± 20.12	<0.001	62.56 ± 23.77	<0.001
	≥9	22.57 ± 19.41		55.42 ± 21.39	
Working hours	≤7	46.32 ± 21.8		71.22 ± 33.71	
	8-14	50.07 ± 20.43	<0.01	60.68 ± 4.48	<0.01
	≥15	61.37 ± 13.31		72.5 ± 30.36	
Type of patient treatment	Chemotherapy	44.35 ± 21.27	0.005	71.13 ± 26.68	0.03
	Radiotherapy	53.32 ± 21.52		61.11 ± 22.30	
	Surgery	56.42 ± 18.07		58.36 ± 21.38	
	Chem and/ or RT and /or surgery	48.72 ± 18.09		68.20 ± 47.77	
Employment status	Unemployed	41.19 ± 19.06		73.77 ± 25.20	
	Employee	57.21 ± 19.31		58.52 ± 21.69	
	Worker	48.58 ± 12.58	<0.001	58.82 ± 23.73	0.01
	Self-employed	43.00 ± 21.52		70.19 ± 28.68	
	Retired	47.50 ± 20.24		79.50 ± 76.26	
	Others	50.25 ± 22.58		66.94 ± 25.32	

Table 4. Correlation of caregiver burden and spiritual intelligence dimensions

Variables	Critical existential thinking	Personal meaning production	Transcendental awareness	Conscious state expansion	Total
Time-dependent burden	r = -0.59 P = 0.001	r = -0.61 P = 0.002	r = -0.61 P = 0.001	r = -0.59 P = 0.002	r = -0.55 P = 0.002
Psychophysical burden	r = -0.54 P = 0.001	r = -0.56 P = 0.004	r = -0.58 P = 0.001	r = -0.55 P = 0.003	r = -0.50 P = 0.003
Physical burden	r = -0.58 P = 0.002	r = -0.62 P = 0.004	r = -0.62 P = 0.002	r = -0.62 P = 0.004	r = -0.56 P = 0.002
Social burden	r = -0.58 P = 0.002	r = -0.61 P = 0.003	r = -0.61 P = 0.002	r = -0.59 P = 0.001	r = -0.55 P = 0.003
Emotional burden	r = -0.56 P = 0.003	r = -0.59 P = 0.004	r = -0.62 P = 0.002	r = -0.59 P = 0.002	r = -0.54 P = 0.004
Total	r = -0.64 P = 0.004	r = -0.71 P = 0.001	r = -0.28 P = 0.003	r = -0.64 P = 0.001	r = -0.63 P = 0.002

burden of care changes by 0.34 points (Table 5).

Discussion

The aim of this study was to determine the relationship between caregiver burden and spiritual intelligence in caregivers of women with breast cancer. Participants experienced a moderate level of caregiver burden. It seems that people who are caring for cancer patients are somewhat under the pressure of care.

Li et al also assessed the pressure of cancer caregivers

as moderate, which is consistent with the results of the present study but Palacio et al and Heckel et al reported less stress on caregivers of cancer patients (23-25). It seems that the perceived pressure of caregivers depends on several factors, including the support received from health and welfare systems in the community and the personality traits of caregivers. Furthermore, the pressure on caregivers varies according to the mood and lifestyle of different communities. The present study coincided with the onset of COVID-19 and it seems that pandemic

Table 5. Regression of Caregiver Burden and Spiritual Intelligence

Variable	β	P value	95 CI%	Adjusted R-Square
Spiritual Intelligence	- 0.39	<0.0001	0.33 - 0.44	0.34

conditions can be an aggravating factor of care pressure.

In our study caregiving pressure was different according to the level of education, economic status, monthly income, working hours and employment status of caregivers. According to the results, caregivers with higher education had more pressure than caregivers with lower education. Durante et al found that the higher levels of emotional stress are associated with the higher levels of education in heart patients' caregivers (26). Another study conducted by Guerriere et al in Canada also indicated that people with higher education were more likely to have caring stress (27). This association seems to be probably due to the busy schedule of highly educated people. Getting involved in patient care for people who engage in multiple activities during the day is likely to be more stressful than for those who are less busy (28).

In this study, caregivers with higher income reported more stress. Similarly, Hu et al in their study on caregivers of patients with lung cancer reported that caregivers whose monthly income was \leq \$1000 felt less caring pressure than those with more than \$1000 (29). However, the association between income and care pressure is complex, so that in García-Castro and colleagues' study conducted on caregivers of patients with dementia, the results showed that people who considered their income insufficient, reported more care pressure (30).

Since the monthly income is one of the socioeconomic factors, it is not clear exactly that people with higher incomes necessarily have more working hours or less mental worries, so depending on the community and personality traits of the samples, income could be considered as a predisposing or protective factor against the caregiver burden.

In the present study, the average burden of care increased with increasing working hours. In fact, people with long working hours have less time to rest, and according to previous studies, cluttered daily schedules and limited rest time were some factors in increasing caregiver burden (30,31). According to the results, there was a significant difference between the type of treatment and the caregiver burden, and the caregivers of patients who underwent surgery suffered more pressure. Since surgery is usually performed in the early stages of the disease and caregivers at this stage have not yet been able to adopt coping mechanisms well, so they are under more pressure. Cairo et al and Maguire et al performed studies on the spouses of breast cancer patients in Switzerland and showed that surgery puts a lot of pressure on patients and their caregivers due to complications, pain and mobility limitations. Similar results have been observed

for colon cancer (31,32).

Participants in this study demonstrated a high level of spiritual intelligence. According to the previous studies on Iranian population (33,34), it seems that in governmental, social and cultural structure of Iran, spirituality plays a prominent role in people's lives. Therefore, their spiritual intelligence as one of the dimensions of spirituality is at a good level.

Based on the results, there was a significant relationship between the spiritual intelligence score and some variables such as educational level, economic status, monthly income, working hours and employment status of caregivers. According to the literature review, there were not many studies on the relationship between demographic variables and spiritual intelligence, and in a study conducted on nurses, no significant relationship was found between spiritual intelligence and demographic variables.

Other findings showed that there was a significant inverse relationship between caregiver pressure and spiritual intelligence, so that with increasing spiritual intelligence, there was a significant decrease in all dimensions of caregiver burden (time-dependency, development, physical, social and emotional). In a study done by Sunaryo et al on nurses, it was found that spiritual intelligence as a predictor had an adverse effect on burnout and a positive effect on caring behaviours (35). Also, in Ebrahimi Barmi and colleagues' study on rehabilitation experts in Iran, there was a significant relationship between the dimensions of spiritual intelligence and stress. In addition, it was proven that the average spiritual intelligence in people with high stress is less than people with moderate stress (36).

Investigation of caregivers of children with leukemia also showed that different dimensions of spirituality predicted 6-34% variances of caregiver burden (37). In fact, spiritual intelligence as a vital approach to cope with stressful conditions has a positive performance, and the higher level of spiritual intelligence, the less caregiver burden (38). In other words, spiritual intelligence enables people to be more adaptable to problems, stress and inevitable damage in life and to form an optimistic outlook on life (39).

Despite the efforts of the authors, there were some limitations in our study. One of the limitations was the effect of factors such as the mental state of individuals at the time of completing the questionnaire, which was out of the researchers' control. Respondents might also avoid expressing their beliefs accurately and truthfully.

Conclusion

There is an inverse association between all spiritual intelligence dimensions and cancer's caregiver burden. Higher level of spirituality may act as a protective factor in regard to burden of care in breast cancer patients'

caregivers.

In this regard, the strengthening of spiritual intelligence in each dimension can reduce the burden of care and thus increase the quality of care and improve the health of caregivers.

It is suggested that the impact of improving the spiritual intelligence of caregivers on cancer patients' quality of life, should be investigated in future studies.

Acknowledgements

We are grateful for the sincere cooperation of family caregivers of cancer patients, radiotherapy nurses and officials of Shahid Sadoughi Educational Center in Yazd.

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Ethical Approval

This study has been approved by the ethics committee of Shahid Sadoughi University of Medical Sciences, Yazd with IR.SSU.MEDICINE.REC.1399.114 code.

Funding

Nil.

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