RESEARCH ARTICLE

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The Effect of Multidimensional Spiritual Psychotherapy on the Quality of Life of Bone Cancer Survivors with a History of Lower Extremity Amputation

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Abstract

Introduction: This study aimed to investigate the effect of multidimensional spiritual psychotherapy on anxiety, depression, and attitude towards self and god in bone cancer patients after amputation. **Method:** Forty one cancer patients with a history of Below-The-Knee amputation were recruited in this quasi-experimental study. The design included pre- and post-tests in experimental and control groups. The experimental group received 15 sessions of multidimensional spiritual psychotherapy. Cattell Anxiety Inventory (CAI), Beck Anxiety Inventory (BAI), Beck's Depression Inventory (BDI), Religious Adherence Questionnaire (RAQ), and Self-concept-God concept questionnaire were administered for data collection. **Results:** There was a significant difference between the control and experimental groups in terms of anxiety (P=0.0001), Depression (P=0.0001), God-image (P=0.035, F(1,38)=4.79), God-concept (P=0.006, F(1,38)=8.58), self-image (P=0.0001, F(1,38)=98.62), and self-concept (P=0.0001, F(1,38)=120.56), psychological evolution (P=0.0001, F(1,38)=19.36), and religious adherence (P=0.0001, F(1,38)=84.21). **Conclusion:** The results of the study indicated that the emphasis on spirituality and the implementation of spiritual care could improve the cancer amputated patients' well-being.

Keywords: Amputation- psychotherapy- spiritual therapy- tumor

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Introduction

Amputation causes functional and structural limitations to natural activities and interrupts social communication [1, 2]. In particular, lower limb amputation may significantly affect body image and require long-term rehabilitation, home care and social support [2]. Body image is an important aspect of self-assessment that has complex psychological impact on the overall meaning of quality of life [3]. Quality of life is a multifaceted concept that is described by one's attitude of his/her mental health status, life expectancy, and sense of well-being [4, 5]. It is a known element of life satisfaction in patients who have undergone amputation [6, 7]. In fact, people who have undergone an amputation are at a higher risk of developing mental disorders [8]. In addition, spiritual concerns in cancer patients can negatively affect their overall quality of life while spirituality can truly serve as a space where peace and meaningfulness are encouraged to cope with the cancerous situation [9]. However, people with cancer face challenges such as high burdens of stress tending to get aggravated with the amputation experience. The present study therefore aimed to investigate the effect of religious multidimensional spiritual psychotherapy on pain, anxiety, and depression in cancer patients.

Materials and Methods

The present study is a quasi-experimental study with a pre-and post-test design which included experimental and control groups. The study was conducted on all bone cancer patients with history of amputation in lower extremity who were referred or admitted for follow-up visits in the tumor clinic of Shafa-Yahyaian Hospital. Patients were selected using simple sampling method. The inclusion criteria were documented diagnosis of primary bone cancer who were intended for or had a history of curative therapies and had a history of amputation

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during the past six months. Those who did not express willingness to cooperate or refused to convey their medical documents were excluded from the study. A verbal consent was obtained from the patients. The amputation criteria were evaluated based on Campbell's criteria [10]. At the beginning of the study, questionnaires of self-concept, self-image, God-concept, and God-image [11], religious adherence [12], and psychological evolution [13], Beck Anxiety Inventory (BAI), Beck's Depression Inventory (BDI) [14], and Visual Analogue Scale (VAS) [15] were completed for each person to assess the current status of variables of the patients in both experimental and control groups. In the next stage, multidimensional spiritual treatment was given to the patients in the experimental group by an expert during 15 one-hour sessions according to (Table 1). After the multidimensional spiritual treatment and at the end of the treatment, VAS and other above-mentioned questionnaires were filled out and evaluated again. The study protocol was approved by the Ethics Committee of Iran University of Medical Sciences, Tehran, Iran (IR.Iums.REC.1398.898). The data were analyzed using SPSS software (Version 19) after they were coded. Descriptive statistics were presented with the mean ± SD, percentage, frequency; the covariance test and independent t-test were used to test the study hypotheses.

Study instruments

Beck's Depression Inventory

Beck's depression inventory consists of 21 items that are scored on a range of 0 and 3, with the total score ranging from 0 to 63. The concurrent validity of the questionnaire was 0.77 based on correlation with the psychiatric interview, and its reliability was estimated at 0.90 using the spilt-half method, and 0.75 using the test-retest method. The correlation of this questionnaire with Hamilton's depression rating scale, Zung self-rating depression scale, depression scale at Minnesota Multiphasic Personality Inventory and DSCL-90 factor in psychiatric patients was 0.60. Also, the psychometric properties of the Persian version of BDI-II are as follows Cronbach's alpha coefficient = 0.91, split-half correlation coefficient= 0.89, and biweekly test-retest coefficient= 0.94.

Religious Adherence Questionnaire (RAQ)

This questionnaire was developed to assess religious behavior and the degree of religious adherence of people in Islamic societies based on the propositions of the Holy Quran and Nahj al-Balagha about the outstanding characteristics of believers. This questionnaire comprises three subscales of religious adherence, religious ambivalence and religious non-adherence. The validity of this test has been computed to be 0.816. The reliability of each scale of religious adherence, religious ambivalence and religious non-adherence are estimated at 0.687, 0.878 and 0.725, respectively; also, the mean reliability of all subscales were 0.763 [16].

The Psychological Spiritual Evolution Questionnaire

This questionnaire was based on the clinical criteria of psychological clients reported by Genia [17] and was prepared with cultural and Muslim religious orientation. This tool has 68 items, of which 63 items are completed in the form of a three-choice scale (true = 2, almost = 1, and false =0); the remaining five items have five options that correspond to the five stages of psychological-spiritual evolution. Its Cronbach's alpha coefficient with 264 subjects was 0.885.

Beck's Anxiety Inventory

This inventory is a 21-item scale that measures the intensity of restlessness and anxiety in people. The total score of this inventory varies between 0 and 63. A score below 9 indicates lack of anxiety, 11-12 denotes mild anxiety, 21-31 exhibits moderate anxiety and over 31 indicates severe anxiety.

Kaviani and Mousavi [18] have standardized the reliability of BAI in Iran. In their study, 1513 men and women from different age-sex groups in Tehran were selected by random cluster sampling and filled out this inventory. In addition, 261 patients with anxiety referring to clinics and treatment centers participated in the study. Statistical analyses were conducted to calculate internal consistency coefficient and data analysis. Validity, reliability and Cronbach's alpha of this test were 0.72, 0.83, and 0.92, respectively

Self-concept-God concept questionnaire for spiritual interventions

The criteria related to "self-concept-God concept" have been set based on religious texts, clinical observations, and objective tools. It includes a demographic component with 6 questions, and also 40 questions for measuring self-concept-God concept. The findings in the qualitative methods contained a satisfactory content validity in the CVI> 0/79 and CVR> 0/62. Based on test re-test results, the reliability for God-concept subscale was 0.806 and for the self-concept was 0.582. Cronbach's alpha or internal consistency of the test was 0.815, which indicates a satisfactory level. The factor analysis was identified by the main components of the four factors in the response of the participants. Therefore, the final findings were derived from four main sub-scales that measured both the true and false impressions of God and Self.

Kettle Anxiety Questionnaire

This questionnaire can measure the physiological aspects of anxiety according to its apparent complications. It is placed in the scope of objective tests. This questionnaire is standardized in Farsi. In a research by Homan et al. [19], the reliability coefficient of Kettle's anxiety scale was reported to be 0.768, and its standard error was 5.007.

Results

The present study was conducted on 41 patients, 20 patients in the intervention group and 21 in the control group. In total, 51% of the participant were male, and the rest were female. In 51% of patients with osteosarcoma (66% in the control group and 35% in the intervention group) and in the remaining 49% of patients with

Table 1. Content of Intervention Sessions

Session	Content of intervention sessions
Session 1	The first stage of treatment: Cognitive activation (internal diagnostic system) Instruction of treatment methods and initial insight seeking into natural reason Familiarity with psychological methods and multidimensional spiritual treatment methods Consent seeking Problem-based goal setting and spiritual goal setting: Goal setting can be at the level of balance creation or at the deeper level of preparing the condition for reaching excellence. The objectives must be precise, measurable, achievable, realistic, and scalable (Smart or Dandz technique). Objectives divide into measurable indicators on a daily basis or ... (personal questionnaire preparation technique). Assumption of correct and mandatory recognition of natural reason in action and self-restraint and self-regulation or voluntary restraint of human beings.
Session 2	Insight seeking into natural intellect and its structure Group or individual discussion Provision of violating cases (cases for which reason votes for "I do not know" mean that they should be handled by science, we should not take an action) Recognition of reason functions: there are two reactions against each action, one is cognitive (I know it is good (acceptance) or bad (rejection), the second is the action of restraint or self-regulation (I don't know, therefore, I stop) Implementation of Island technique Conclusion Worksheet
Session 3	Trust in reason and examination of the reason obstacles Exploration of experiences Discussion: If the reason is so judicious, why do not we trust it? Conclusion: Ways to trust the internal evaluator Practice and worksheets What conditions make us fail to obey the reason's judgment? Recognition of the reason's obstacles
Session 4	Rescue of the intellect Review of the experiences of the previous session Recognition of thinking structure Recognition of logical errors Recognition and change of middle thoughts and negative or non-spiritual rules and principles Recognition and change of fundamental thoughts The practice of the second stage of treatment worksheet: perceived origin
Session 5	Rational proof of God by the exploratory method Objective: Monotheistic feedback (the one life-giver) Being in touch with oneself Is there an initiator (or a Will) and a terminator? And what does it mean to believe in its existence? The repetition of the island technique with humans and the discovery of the meaning of beginning and end. Recording experiences Does God exist? Should we prove or deny God? The discovery of God through natural reason enhances one's spiritual commitment to oneself. Recognition of belief in God Absolute and only life-giver Conclusion Worksheet
Session 6	Recognition of God-images Review of the previous session Expression of God ideas Expression of the history of God ideas Analysis of participants Observation and analysis of life conflicts and their relationship with spiritual conflicts Worksheets
Session 7	Disillusionment of the idea of the origin Expression of experiences If there is no problem, we will continue, otherwise, the previous session will be continued Rewriting one's images of God Crossing them all out due to invalidation and dependence on one's personal life history Expression of the new challenge of having a valid understanding of God Conclusion and worksheet
Session 8	Exploration of God-image Objectives of the session Expression of experiences A motivational question: What is the best way to get a good understanding of something about which you have perfunctory knowledge? Discussion (usually the argument reaches the conclusion that the best source is God and the Scripture unless the person does not believe in the scriptures). Conclusion and worksheet

Table 1. Continued

Session	Content of intervention sessions
Session 9	Creatorship Objective: Feeling of self-worth and unity The expression of experiences My relationship with the true God: How did he create me? Rational argument: Does indirect creation make sense? Spiritual discussion: What does God say about the creation of humans? Analysis of spiritual discussion and its effects Conclusion and worksheet
Session 10	Divinity Objective: Spiritual support, the importance of God's ownership The expression of experiences Is it possible that God does not have a plan for his creation or does not care for it? Spiritual evidence of divinity (guidance, provision, management, and God's ownership). Why does God's divinity help our mental health? Discovery of credit and imaginative Gods Conclusion Worksheet Step 3: Perceived self
Session 11	Self-image Objective: Discovery of psychological conflicts in self-definition and the psychological-spiritual function of negative self-image definitions. Awareness of self-image Self-image function Discovery of conflicts Conclusion Worksheet Expression of experiences Discussion of negative self-images Explanation of the history of self-concepts Awareness about the effects of negative self-images (ungratefulness, duplicity, unconsciousness, or the performance of meaningless actions)
Session 12	Self-discovery (self-concept) Objective: Exploration of spiritual identity Which image of us is closer to reality? My understanding when a special program is received from God Is it possible to live without reliance on a specific program? Comparison of my image from the perspective of myself, the other, and God Conclusion and worksheet (exploration of spiritual identity)
Session 13	Revelation of reason: appreciation Objective: Meditation on spiritual identity Expression of experiences Areas of satisfaction Numeration of blessings The practice of appreciation and its impacts Exploration of experiences and the feeling of being appreciated Conclusion Appreciation worksheet Stage 4: Transcending the world; the perceived purpose
Session 14	Perception of Death and conceptualization (disillusionment of Death) The ultimate goal setting for life and rewriting the indicators for self-monitoring Examination of the perception of Death and its reciprocating effect on one's actions History of the formation of these perceptions Exploration of incorrect rules according to the findings of previous steps Analysis of negative emotion The true signification of Death Convictions about Death Analysis of the concept of death and its real effects on one's spiritual life Worksheets
Session 15	Giving meaning to death Expression of emotions Visualization of Death Analysis of emotions Giving meaning to death (which we will all experience) and its impacts on one's problems Conclusion Worksheet of giving meaning to death

Chondrosarcoma (34% in the control group and 65% in the intervention group), there was no significant difference between the two groups (p=0.683). As for their financial status, the patients were in the poor financial condition.

In terms of age distribution, there was no significant difference between the intervention group (M=34.55, SD=5.86) and the control group (M=34.6, SD=4.94) (t (38) = -0.029, P-value= 0.977).

The results of the independent t-test showed no significant difference in the baseline between the individuals in both groups in terms of pain level, BAI, CAI, BDI, spiritual psychological evolution, self-image, self-concept, God-image, God-concept, and religious adherence in the pre-test stage (Table 2). Also, there was no significant difference between the two groups in terms of gender (P=0.624), age (P=0.977) and education (p=0.918). In addition, there was significant difference between the two groups in terms of analgesic use (p=0.07), which was higher in the control group (10 vs. 2).

After the intervention, the questionnaires were completed again for patients, and VAS was conducted to estimate the pain intensity. A covariance test was performed to compare the two study groups, where the results showed a significant difference between the intervention (M=5.9, SD=0.6) and control (M=7.55, SD=1.27) groups in terms of the mean level of pain (P=0.0001, F (1,38) =25.32).

Also, the results of the covariance test showed a significant difference between the two groups in terms of CAI, BAI, BDI, Religious adherence, God-image, God-concept, self-image, and self-concept, psychological evolution, and religious adherence scores (Table 3).

Discussion

Some studies compared QOL in limb amputated patients with limb salvage patients in bone tumors. In a study by Manson et al., the QOL of limb salvage patients was better in the aspects of material well-being, job satisfaction, , and occupational relations compared with amputated limb patients. Therefore, improving QOL in limb amputated patients is important [20].

The results of the present study revealed a significant difference between the experimental group (that received multidimensional spiritual care) and the control group in terms of anxiety, depression, religious adherence, self-image, self-concept, God-image and God-concept. The experimental group patients significantly overcame their problems after receiving multidimensional spiritual intervention, and the observed differences in the post-test showed that the intervention group participants' anxiety mean was reduced to a normal range. This shows that well-being (with its physical, emotional, and spiritual components) which is described as absence of negative

Table 2. Results of Independent t-test for Pre-Test in the Two Groups

Type of variable	Intervention group Mean±SD	Control group Mean±SD	t (df) t (38)	P-value
Level of pain (based on Visual Analogue Scale)	9.25±0.91	9.2±0.89	0.175	0.862
Beck Anxiety Inventory	44±2.47	44.99±2.7	-1.088	0.283
Cattell Anxiety Scale	7.85±0.87	7.45±1.19	1.21	0.234
Beck Depression Inventory	44±2.47	44.9±2.75	-0.131	0.896
Religious adherence	24.6±2.99	25.7±2.73	-0.853	0.399
Spiritual psychological evolution	1.45±0.51	1.6±0.59	-1.157	0.254
Self-concept	19.8±1.39	19.85±2.1	-0.088	0.93
Self-image	24±1.29	23.55±1.30	1.072	0.29
God-image	45.6±3.4	44.1±3.49	1.371	0.178
God-concept	25.5±2.46	25.7±2.71	-0.244	0.809

Table 3. Results of Covariance in the Two Groups

Type of variable	Intervention group Mean±SD	Control group Mean±SD	F (df) F(1,38)	P-value
religious adherence	31.5± 1.35	26± 3.1	84.21	0.0001
psychological evolution	2.55± 0.51	2.05± 0.51	19.36	0.0001
self-concept	27.8± 1.76	21.2± 2.5	120.56	0.0001
self-image	14.15± 1.18	21.4± 2.91	98.62	0.0001
God-concept	40± 2.2	29.1± 6.01	8.58	0.006
God-image	32.85± 2.18	42.80± 4.45	4.79	0.035
Beck Anxiety	21± 2.86	42.95± 3.34	56.98	0.0001
Beck's Depression	18.8±3.84	43.55± 2.98	60.3	0.0001
Cattell Anxiety Scale	3.65±0.93	6.8±1.54	75.93	0.0001

moods such as distress, anxiety, and depression) [9] improved in the participants . In a study by Pierano et al., the relationship between existential or religious spirituality and QOL in patients with limb amputation was investigated, and the most common cause of amputation was trauma; existential spirituality and female gender correlated with improving QOL [21]. The integrated spiritual therapy of as well as the commitment and acceptance therapy of Damiz were the focus of Multidimensional spiritual psychotherapy [16]. Spiritual multi-dimensional therapy is according to the origin of existence and dissolution of human doubts about God, and it can create a source of confidence and hope which can lead to emotional stability, behavioral adaptation, logical thinking, control and guidance of mental imagery, regulation and stability of interpersonal relationships and improvement of healthy lifestyle. A study conducted by Imeni et al. [22] examined the effect of spiritual care on patients who underwent amputation due to diabetes. Based on their findings, meditation can create a better body image in patients; therefore, this method was introduced for improving the mental condition of patients because it created no side effects. The results of a study conducted by Sabouhi et al. [23] showed that spiritual care could improve the quality of life in amputated patients. Similarly, the results of the research project by Adjei [24] in China showed a significant difference in the quality of life of amputated individuals who had received psychological interventions. In this project, for the better effectiveness of psychotherapy, it was recommended that psychologists or psychiatrists should accompany the treatment team from the beginning of the treatment process to deeply understand and deal with many of the problems associated with amputation.

Due to the lack of similar studies in religious population with an Islamic background (with the same title as the present study) to compare the obtained results, we opted to review those studies conducted on different areas with the same basis. Moreover, the limitations of the present study may involve the rather small sample size due and lack of detailed examination of the baseline mental state of patients. Further studies with a larger sample size and longer duration of follow-up are recommended to be performed on the topic we investigated.

In conclusion, based on the obtained results in the present study, the emphasis on spirituality and the implementation of spiritual care are suggested to improve the amputated individuals' mental state and pain. The importance of mental health and attention to the mental state of cancer patients highlights their need for psychological interventions, such as multidimensional spiritual therapy.

Author Contribution Statement

Study conception and design: A.M.A. and A.F.; acquisition of data: S.H.S. and S.V.A.; analysis and interpretation of data: Kh. J; drafting of the manuscript: F.Sh.; critical revision of the manuscript for important intellectual content: Kh.J. and A.M.A.; statistical analysis and reporting

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Ethical approval statement

The study protocol was approved by the Ethics Committee of Iran University of Medical Sciences, Iran (IR.Iums.REC.1398.898); a written informed consent form was also obtained from the patients or their legal guardian.

Data availability statement

All data generated and analyzed during this study can be accessed through direct communication with the corresponding author and the agreement of all research team members.

Conflict of interest statement

The authors report no conflicts of interest.

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