The Assessment of Spirituality Between Cancer and Chronic Inpatients: A Cross-Sectional Study

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Research Article

Keywords: Spirituality, FACIT-Sp-12, Cancer, Chronic diseases

Posted Date: November 15th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-919064/v1

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Version of Record: A version of this preprint was published at Supportive Care in Cancer on January 26th, 2022. See the published version at https://doi.org/10.1007/s00520-022-06847-4.
Abstract

Purpose

Spiritual well-being had protective effect on quality of life in cancer, due to the cultural, regional and custom differences, it was rarely been discussed between cancer and chronic diseases in Chongqing, China. We aimed at comparing the level of spirituality in two groups, and discussing its factors of subjects with cancer at county regions.

Methods

A cross-sectional questionnaire survey was distributed to 630 inpatients who received treatment between January and December 2020 in Chongqing University Three Gorges Hospital. In addition to basic demographic data, spirituality was measured using the Chinese version of Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-Sp-12). The mean, standard deviation, independent t-tests, ANOVA and multiple regression were used for statistical description and analysis.

Results

Significant differences were found between cancer and chronic diseases in total scores of FACIT-Sp-12 and each domain (P<0.05). The meaning, peace, faith and total scores in cancer were 11.21±3.38, 10.66±4.46, 11.43±3.54, and 33.3±10.35, respectively. Which were lower than chronic diseases (13.00±3.21, 12.95±4.76, 12.66±3.64, 38.61±10.88, respectively). The spiritual well-being had significant differences in gender, character, and emotional with spouse for cancer (P<0.05). The male and extravert character were significantly associated with a greater spiritual well-being.

Conclusion

The study shows a medium level of spiritual well-being in cancer, which stands the population with lower economic and education in county regions. It suggests that under the current nursing mode, we should provide specifically spiritual care to the female, introvert and those with poor relationship with spouses, and create a harmonious doctor-patient environment to improve the spiritual well-being.

Retrospectively registered

JSCC-D-21-01528, 17 Sep 2021

Introduction

Globally, cancer has become the first cause of death and a major public health problem, with the changes of disease spectrum and human living environment. The GLOBOCAN released there were an estimated 18.1 million new cancer cases in 2018 and 19.29 million in 2020[1]. While in China, an estimated 4.3 million new cases and 2.9 million new deaths occurred in 2018[2], and according to the 2020 China Health Statistical Yearbook[3], the mortality rate of cancer among urban and rural were 161.56/100,000 and 160.96/100,000 respectively, showing a high incidence and mortality rate of cancer and increasing year by year. Cancer has a long course, the patients mostly need radical surgery and combined with radiotherapy, chemotherapy, etc., they endure physical pain, psychological pressure and financial burden, require long-term care and social support[4]. The aim of palliative care is to alleviate the symptoms of patients with cancer, reduce pain and improve the quality of life. More than 90% of physical, psychological and spiritual problems can be alleviated[5]. However, the core of palliative care is holistic care, and meeting the spiritual needs is the basic requirements. As the health essence of human, spiritual well-being in cancer patients is lower than others [6–8].

Currently, scholars had different definitions of spirituality. Such as, Hawks[9] proposed that spiritual health is a high-level belief, hope, and commitment related to the worldview, provides the life purpose, existence and the direction for greater satisfaction of oneself. Other studies had also point out that spiritual health is a subjective feeling of happiness which affirms self-worth,
managing interpersonal relationships with an open, acceptable attitude and possessing inner energy[10]. A scholar believed that in nursing, it is a dynamic process of approaching God, and patients give disease meaning through communication with the Creator, self and others, etc.[11–12]. In short, there are no clear and unified definition, what is more agreed is that spirituality is a subjective feeling and internal experience, and a spiritual force that is intrinsically related to the meaning of life[13].

At present, researches mainly focus on concepts, assessment tools, influencing factors and so on. Several studies have shown spiritual well-being interacts with quality of life, anxiety and depression. For example, a cross-sectional study about 705 patients diagnosed with primary gynecological cancer was conducted through the European Organization for Research and Treatment of Cancer quality of life instruments (EORTC QLQ-SWB32 and EORTC QLQ-C30), and the Hospital Anxiety and Depression Scale, and found that well spiritual well-being is associated with lower anxiety and depression, and better quality of life[14]. A research used EORTC QLQ-C30 and FACIT-Sp-12 for 97 cancer patients, and concluded that spirituality can improve quality of life and decrease the incidence of anxiety and depression, which is consistent with other researches[15–20]. Numbers of studies have shown that age, religious belief and educational were the influence factors of spirituality. Such as, a study of 202 advanced cancer found that patients with a religious affiliation showed higher score than those without a religious affiliation. Religious affiliation, individual spiritual activities and quality of life were significantly related to a greater spiritual well-being[21]. A survey of 176 adult cancer patients who received chemotherapy at an outpatient clinic revealed it were moderately to strongly associated with age, appetite, and quality of life, suggested that younger and stage I cancer patients need additional assistance to meet their spiritual needs, etc. [22–25]. In China, the earliest study originated in Taiwan, which found that the creation and the meaning of life were the most desired spiritual need for terminal cancer patients. Hong Kong scholars believed that spiritual care was an important aspect of cancer patient[26]. In short, it mainly focused on review of spiritual care and needs, reliability and validity test of assessment scale, etc. [27–32].

In general, due to the differences of culture, region and customs, the research can not represent the level of spiritual well-being among cancer patients in the world, and there are few data describing levels and influence factors of spiritual well-being among such patients in Chongqing which is a municipality directly under the Central Government of China. Therefore, the aim of this study were to explore the level of spirituality and analyze factors of cancer patients in the northeast of Chongqing, and compare it with that of chronic disease, in order to provide reference for intervention on the spiritual well-being of cancer patients.

Materials And Methods

Subjects

We randomly enrolled inpatients diagnosed with cancer and chronic diseases who had been treated in Chongqing University Three Gorges Hospital between January and December 2020. The inpatients of cancer were included if they were receiving all types of treatments, such as surgery, chemotherapy or radiotherapy. The chronic inpatients were from the department of Endocrinology. Inclusion criteria were as follows: 1) clear expression and effective communication capacity; 2) patients who voluntarily agreed to participate in the study. Exclusion criteria were as follows: 1) mental or cognitive disorders; 2) inability to understand or express autonomously; 3) unwillingness to participate.

Ethical considerations

The study protocol was approved by the ethics committee of Chongqing University Three Gorges Hospital and made in accordance with the ethical standards laid down in the declaration of Helsinki.

Data Collection and Study Design

This study is a cross-sectional investigation, the content includes basic information and the state of spirituality.
The basic information was self-designed and variables included demographic, social and biomedical factors, as follows: age, gender, education, occupation, religion, character, blood type, marital status, emotional with spouse, course of disease, relationship with caregivers, monthly household income and methods of payment.

We used the Chinese version of the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being, the 12-item Spiritual Well-Being Scale (FACIT-Sp-12) to measure the state of spirituality, which was translated by the Chinese scholar and developed to assess spiritual well-being of patients with chronic or life-threatening diseases, the Cronbach's alpha is from 0.711 to 0.920[33]. The Scale includes 12 items and composes 3 dimensions to assess meaning (including items 2, 3, 5, 8), peace (including items 9, 10, 11, 12) and faith (including items 1, 4, 6, 7) domain. Each item is assessed according to a five-point liker response scale: 0 (not at all), 1 (a little), 2 (medium), 3 (many), and 4 (very good), but there are two items are reversed, for item 4 and 8. The score calculation is performed by the sum of responses to different items, for each dimension ranged between 0 and 16, whereas the total score ranged between 0 and 48. The highest scores reflect higher levels of spirituality, lower than 24 is classified as low level, 24 to 35 as medium level, and more than 36 as high level.

Investigators were the head nurse and received unified training. Before being asked to complete the questionnaire, the detailed description of the purpose, the data application and the potential disclosure of the finding must provide to all participants and obtained the informed consent. The questionnaires was provided through mobile-internet platform and completed by participants with self administered. During the survey, investigators carefully explained each item, and checked that no missing items were submitted on the spot after completed it.

**Statistical analysis**

A total of 630 subjects underwent statistical analysis. The frequency, composition ratio, mean and standard deviation were used for statistical description. Independent t-tests was used to investigate the differences between the 2 groups (subjects with cancer and those with chronic diseases) according to the score of each items, each domain and the total score of FACIT-Sp-12. ANOVA analysis or t-tests were performed to investigate the differences according to the basic characteristics in the total score, and each domain. Multiple regression analyses were performed to investigate the factors associated with spirituality. The total and each domain score of FACIT-Sp-12 were entered into the model as dependent variables, respectively. The significant factors proven were considered as independent variables. All statistical analyses were performed using the SPSS 21.0. The statistically significant level was set at $P < 0.05$.

**Results**

Table 1 shows the basic characteristics of subjects. A total of 588 questionnaires for inpatients with cancer were collected, of which 571 were effective (97.1%). In the department of Endocrinology, there were collected 59 and with an effective rate of 100%. For inpatients of cancer and chronic disease, the average ages were 59.66±12.19 and 59.97±17.93, respectively, and the education below Junior high school accounted for 89.32% and 71.19% respectively. The majority of patients were married, had no religious, and had good relationship with spouses were 80.39% and 64.41% respectively. The treatment costs were paid by medical insurance for 93.87% and 93.22% respectively.

Table 2 shows the differences of FACIT-Sp-12 scores between two groups. The total score, meaning, peace and faith domain for cancer inpatients were 33.3±10.35, 11.21±3.38, 10.66±4.46 and 11.43±3.54 respectively. And for those inpatients with chronic diseases were 38.61±10.88, 13.00±3.21, 12.95±4.76 and 12.66±3.64 respectively.

Significant differences were found between inpatients with cancer and those with chronic diseases in the total score of FACIT-Sp-12, as well as in the meaning, peace and faith domains ($P < 0.05$). Except item 3 and item 4, the score of each item in the two groups were statistically significant ($P < 0.05$).

Table 3 shows the relationships of FACIT-Sp-12 scores to the basic characteristics in subjects with cancer. The male showed a significantly higher score of FACIT-Sp-12, peace, meaning and faith domain compared to female ($P < 0.05$). In terms of
character, introvert showed a significantly lower score of FACIT-Sp-12 and each domain compared to extravert (P < 0.05) and hybrid (P < 0.05). The better relationship with spouse, the higher score of FACIT-Sp-12, peace and meaning domain. However, there were no significant differences among age, education, occupation, religious and so on.

The results of multivariate analysis are shown in Table 4. Gender (β=-2.406, P<0.05), character (β=-1.421, P<0.05) were significantly associated with the total score of FACIT-Sp-12, and the influence of gender (β=-1.421, P<0.05) and character (β=-0.695, P<0.05) on the peace domain was consistent with it. The score for the meaning domain was positively associated with the emotional with spouse (β=0.683, P<0.05), and it also related to gender (β=-0.722, P<0.05) and character (β=-0.382, P<0.05). The total score, peace and faith domain was not related to emotional with spouse (P>0.05). In addition, the score for the faith domain was only correlated with gender (β=-0.105, P<0.05).

Discussion

Human beings are the unity of biology, psychology, society and spirituality, the quality of life can not ignore spirituality, especially for cancer patients. Our study used the FACIT-sp-12 scale to access the spirituality, and its total score was 33.3±10.35, which was lower than the results of Munoz [15, 34–36], but higher than Lewis[37, 21]. The differences may be affected by the cultural background and religious beliefs of the subjects. The faith domain includes religious contents, thus, having religious affiliations may increase the total FACIT-Sp-12 scores[21], while 97.2% of the patients in our study had no religious beliefs. In this study, the level of spiritual well-being was moderate. It may be that 88.79% of the patients have spouses, and 86.87% are taken care by relatives. As the core of family support, spouse and their relatives can provide support and understanding when cancer patients are helpless or negative, thus increasing self-affirmation and confidence[38]. At the same time, 77.41% of patients extroverted, they could adjust themselves to feel the meaning of life and have a peaceful heart.

Studies have shown that higher education is a protective factor for spiritual health. Our hospital is responsible for cancer prevention and treatment of 8,064,628 population in 11 districts and counties in northeast Chongqing, where the regional economic level is low and the rural population is in the majority, and the education is low. It is the only third-class hospital in this area with advanced cancer treatment equipment such as linear accelerators and PET-CT. In this study, 89.32% had a primary school education and 71.98% had a family income below 3000. In the face of diseases with high recurrence and high cost, it is difficult to accept the guidance of positive energy to seek spiritual sustenance, and the overall level of spirituality not high and lower than that of patients with chronic diseases. Chronic diseases with a long survival and high quality of life, as it through healthy lifestyles and dietary interventions can control the progression. Cancer belongs to the category of chronic diseases, but because of its rapid progression, high recurrence and death, once diagnosed and known to the patient, the spirit has become a serious burden, suggesting that the spirituality of cancer patients needs to be improved. Previous studies [39–40] have shown that cancer patients have higher spiritual needs, and meeting spiritual needs is the focus of nursing. Timely intervention should be conducted to make them face the disease with peaceful and strength.

From the perspective of dimensions and items, the lowest score were the peace domain and item 9 "I find comfort in my faith or spiritual beliefs", which was consistent with another study [41]. It may be that cancer patients with varying degrees of anorexia, pain and other symptoms, and coupled with financial pressure that lead they are easy to anxiety and depression, the mood is difficult to calm and ease. Related studies have shown that spiritual care affects the clinical outcomes, relieves pain and contributes to health promotion, so that patients can feel content and enjoy peace in mind[42–43]. Therefore, under the condition of solving the economic pressure and using treatment methods to alleviate discomfort symptoms, it is necessary to meet their spiritual needs as the premise and provide appropriate measures of spiritual care.

Spiritual well-being was related to gender, character, and emotional with spouse from the ANOVA test or t test, and the results of multiple regression analysis showed that gender and character jointly affected it. Male and extroverted cancer patients had a higher level of spirituality. The differences can be explained as follows. First, gender. The score of male was higher than that of female, which may be due to the fact that 78.07% of male patients are migrant workers and farmers, have rich experience and profound inner experience. They are brave, strong and unrestrained, and they are better able to see through the world and understand the essence of life. On the contrary, female patients are mainly emotional and focusing on family, and rooted in
traditional Chinese thoughts. Once they suffer from cancer, their physiological functions are impaired and the ability to perform family duties is lacking, the physical and mental symptoms interact and shows more serious spiritual impairment. Therefore, female patients need targeted supportive care, maximize the guidance to appreciate the meaning of life, relax family responsibilities to reduce their ideological burden. Second, character. The extrovert had a higher score than the introvert. It may be an optimistic and open-minded personality trait, is easier to form a harmonious, long-term and stable interpersonal relationship, accept the guidance of positive energy to seek spiritual sustenance and appreciate life. They show a scene of calm and serene, full of strength in the heart, it prompts that more spiritual care should be given to patients with introverted cancer. Third, emotional with spouse. It was related to the score of the meaning dimension. It is possible that the support, understanding and tolerance of the spouse can provide patients with rich emotional interaction and spiritual support, which can alleviate loneliness and helplessness, facilitate the integration with the outside, and deepen the understanding of the meaning of life. Therefore, medical staff should be good at communicating with patients to create a harmonious doctor-patient environment. For patients without a spouse or have a poor relationship with spouse, relatives and friends should be encouraged to actively participate in disease care, and carry out family-centered health education to increase the social support for patients[44]. Because of the influence of religion and culture, western countries have matured spiritual care and with a higher level of spiritual well-being than that in China. In recent years, through the continuous exploration and efforts of scholars, tranquility treatment and end-of-life education are gradually developing. How to improve the spiritual well-being of cancer patients? The model should be suitable for the regional characteristics and rooted in Confucianism, Taoism, Legalism and other historical culture, customs, and medical systems, and pay attention to the subjects of focus.

Limitations

Our study did have some limitations. Due to the time and resources, only recruited one medical institution and collected the basic demographic characteristics information. While the informations about cancer staging, psychological characteristics, quality of life, etc. were not included, at the same time, the cross-sectional study was unable to find changes the trends. In the future, a multi-center longitudinal study can be carried out to comprehensively explore the influencing factors and dynamic changes of spirituality.

Conclusion

In our study, it found a medium level of spirituality of cancer patients in the northeast area of Chongqing, and gender, character, emotional with spouse were the influencing factors. Therefore, under the current nursing model, the overall nursing should focus the patients on female, introverted, and those with poor relationship with spouses, create a harmonious interpersonal environment and provide spiritual care to improve the spiritual well-being.

Declarations

Funding This research received no specific funding/grant from any funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interest The authors declare that they have no conflict of interest.

Availability of data and material The data that support the findings of this study are available from the corresponding author upon reasonable request.

Code availability Not applicable.

Authors’ contributions All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Yalan Liu, Xue Hao and Yan Li. The first draft of the manuscript was written by Yalan Liu and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.
Compliance with ethical standards The study protocol was approved by the ethics committee of Chongqing University Three Gorges Hospital and made in accordance with the ethical standards laid down in the declaration of Helsinki.

Consent to participate Informed consent was obtained from all individual participants included in the study.

Consent for publication All individual participants provided informed consent for publication of the data.

Acknowledgments The authors would like to thank all the persons who participated in the study.

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Tables

Table 1 Basic Characteristics of the Inpatients with Cancer and Chronic Diseases
| Variables         | Cancer       | Chronic diseases | Total       |
|-------------------|--------------|------------------|-------------|
|                   | N  | %  | N  | %  | N  | %  |
| Gender            |    |    |    |    |    |    |
| Male              | 342 | 59.89 | 24 | 40.68 | 366 | 58.10 |
| Female            | 229 | 40.11 | 35 | 59.32 | 264 | 41.90 |
| Age               |    |    |    |    |    |    |
| Less than 40      | 28  | 4.90  | 11 | 18.64 | 39  | 6.19  |
| 41 to 65          | 343 | 60.07 | 26 | 44.07 | 369 | 58.57 |
| More than 65      | 200 | 35.03 | 22 | 37.29 | 222 | 35.24 |
| Education         |    |    |    |    |    |    |
| Junior high school | 510 | 89.32 | 42 | 71.19 | 552 | 87.62 |
| High school       | 39  | 6.83  | 15 | 25.42 | 54  | 8.57  |
| College           | 22  | 3.85  | 2  | 3.39  | 24  | 3.81  |
| Occupation        |    |    |    |    |    |    |
| Enterprise        | 26  | 4.55  | 6  | 10.17 | 32  | 5.08  |
| Civil servant     | 3   | 0.53  | 0  | 0.00  | 3   | 0.48  |
| Worker            | 51  | 8.93  | 5  | 8.47  | 56  | 8.89  |
| Self-employed     | 28  | 4.90  | 10 | 16.95 | 38  | 6.03  |
| Others            | 463 | 81.09 | 38 | 64.41 | 501 | 79.52 |
| Religion          |    |    |    |    |    |    |
| Yes               | 16  | 2.80  | 0  | 0.00  | 16  | 2.54  |
| No                | 555 | 97.20 | 59 | 100.00 | 614 | 97.46 |
| Character         |    |    |    |    |    |    |
| extravert         | 255 | 44.66 | 16 | 27.12 | 271 | 43.02 |
| hybrid            | 187 | 32.75 | 34 | 57.63 | 221 | 35.08 |
| introvert         | 129 | 22.59 | 9  | 15.25 | 138 | 21.90 |
| Blood type        |    |    |    |    |    |    |
| A                 | 35  | 6.13  | 2  | 3.39  | 37  | 5.87  |
| B                 | 23  | 4.03  | 1  | 1.69  | 24  | 3.81  |
| AB                | 16  | 2.80  | 0  | 0.00  | 16  | 2.54  |
| O                 | 44  | 7.71  | 1  | 1.69  | 45  | 7.14  |
| Others            | 453 | 79.33 | 55 | 93.22 | 508 | 80.63 |
| Marital status    |    |    |    |    |    |    |
| Married           | 517 | 90.54 | 43 | 72.88 | 560 | 88.89 |
| Single            | 8   | 1.40  | 6  | 10.17 | 14  | 2.22  |
| Widowed           | 38  | 6.65  | 9  | 15.25 | 47  | 7.46  |
| Divorce           | 8   | 1.40  | 1  | 1.69  | 9   | 1.43  |
| Emotional with spouse |    |    |    |    |    |    |
| Well              | 459 | 80.39 | 38 | 64.41 | 497 | 78.89 |
| Ordinary          | 109 | 19.09 | 21 | 35.59 | 130 | 20.63 |
| bad               | 3   | 0.53  | 0  | 0.00  | 3   | 0.48  |
| Course of disease |    |    |    |    |    |    |
| Less than 12 months | 408 | 71.45 | 25 | 42.37 | 433 | 68.73 |
| 12 to 24 months   | 106 | 18.56 | 6  | 10.17 | 112 | 17.78 |
| More than 24 months | 57  | 9.98  | 28 | 47.46 | 85  | 13.49 |
| Relationship with caregivers | Spouse | 272 | 47.64 | 15 | 25.42 | 287 | 45.56 |
|-----------------------------|--------|-----|-------|----|-------|-----|-------|
| Parents                     |        | 19  | 3.33  | 1  | 1.69  | 20  | 3.17  |
| Offspring                   |        | 196 | 34.33 | 17 | 28.81 | 213 | 33.81 |
| Brothers & Sisters           |        | 9   | 1.58  | 1  | 1.69  | 10  | 1.59  |
| Nurse                       |        | 7   | 1.23  | 7  | 11.86 | 14  | 2.22  |
| Others                      |        | 68  | 11.91 | 18 | 30.51 | 86  | 13.65 |
| Monthly household income    |        |     |       |   |       |     |       |
| Less than 3000              |        | 411 | 71.98 | 5  | 8.47  | 416 | 66.03 |
| 3000 to 5000                |        | 108 | 18.91 | 15 | 25.42 | 123 | 19.52 |
| 5000 to 7000                |        | 33  | 5.78  | 11 | 18.64 | 44  | 6.98  |
| 7000 to 10000               |        | 13  | 2.28  | 5  | 8.47  | 18  | 2.86  |
| More than 10000             |        | 6   | 1.05  | 23 | 38.98 | 29  | 4.60  |
| Methods of payment          |        |     |       |   |       |     |       |
| Own expense                 |        | 17  | 2.98  | 1  | 1.69  | 18  | 2.86  |
| Workers medical insurance   |        | 140 | 24.52 | 34 | 57.63 | 174 | 27.62 |
| Residents medical insurance |        | 396 | 69.35 | 21 | 35.59 | 417 | 66.19 |
| Commercial insurance        |        | 4   | 0.70  | 0  | 0.00  | 4   | 0.63  |
| Others                      |        | 14  | 2.45  | 3  | 5.08  | 17  | 2.70  |

*Table 2 The Score of FACIT-Sp-12 for the Inpatients with Cancer and Chronic Diseases*
### Table 3 Associations between Basic Characteristics and the Score of FACIT-Sp-12 in Cancer

| FACIT-Sp-12 | Cancer (Mean ± SD) | Chronic disease (Mean ± SD) | t-Value | P-Value |
|-------------|--------------------|-----------------------------|---------|---------|
| Total       | 33.30±10.35        | 38.61±10.88                 | -3.731  | 0.000   |
| Faith       | 11.43±3.54         | 12.66±3.64                  | -2.535  | 0.012   |
| Q1: I feel peaceful | 2.82±1.19    | 2.92±1.26                  | -0.586  | 0.558   |
| Q4: I have trouble feeling peace of mind | 2.99±1.24    | 3.39±0.70                  | -3.874  | 0.000   |
| Q6: I am able to reach down deep into myself for comfort | 2.77±1.14    | 3.15±1.16                  | -2.435  | 0.015   |
| Q7: I feel a sense of harmony within myself | 2.85±1.09    | 3.2±1.16                   | -2.345  | 0.019   |
| Meaning     | 11.21±3.38         | 13.00±3.21                  | -3.89   | 0.000   |
| Q2: I have a reason for living | 2.95±1.14    | 3.49±0.90                  | -4.31   | 0.000   |
| Q3: My life has been productive | 2.78±1.16    | 3.07±1.10                  | -1.832  | 0.067   |
| Q5: I feel a sense of purpose in my life | 2.74±1.13    | 3.19±1.09                  | -2.876  | 0.004   |
| Q8: My life lacks meaning and purpose | 2.74±1.39    | 3.25±1.12                  | -3.262  | 0.002   |
| Peace       | 10.66±4.46         | 12.95±4.76                  | -3.725  | 0.000   |
| Q9: I find comfort in my faith or spiritual beliefs | 2.61±1.21    | 3.2±1.28                   | -3.552  | 0.000   |
| Q10: I find strength in my faith or spiritual beliefs | 2.64±1.22    | 3.27±1.14                  | -3.821  | 0.000   |
| Q11: My illness has strengthened my faith or spiritual beliefs | 2.69±1.24    | 3.24±1.14                  | -3.243  | 0.001   |
| Q12: I know that whatever happens with my illness, things will be okay | 2.72±1.23    | 3.24±1.26                  | -3.048  | 0.002   |
| Variables         | Total          | Peace         | Meaning        | Faith          |
|-------------------|----------------|---------------|----------------|----------------|
|                   | Mean ± SD      | P-Value       | Mean ± SD      | P-Value        | Mean ± SD      | P-Value        |
| Gender            | Male 34.30±10.25 | 0.005         | 11.05±4.46    | 0.011          | 11.51±3.23    | 0.01           | 11.74±3.42    | 0.011          |
|                   | Female 31.82±10.34 |             | 10.08±4.40    |               | 10.76±3.55    |               | 10.97±3.68    |               |
| Age               | Less than 40   | 35.21±9.36    | 0.398         | 11.71±3.77    | 0.242         | 11.57±3.24    | 0.685         | 11.93±3.21    | 0.595         |
|                   | 41 to 65       | 32.90±10.90   |               | 10.45±4.63    |               | 11.12±3.54    |               | 11.33±3.71    |               |
|                   | More than 65   | 33.74±9.47    |               | 10.89±4.23    |               | 11.32±3.13    |               | 11.54±3.28    |               |
| Education         | Junior high school 33.17±10.20 | 0.316         | 33.17±10.20   | 0.522         | 11.15±3.32    | 0.186         | 11.40±3.52    | 0.443         |
|                   | High school    33.18±12.57 |             | 33.18±12.57   |               | 11.26±4.13    |               | 11.28±4.11    |               |
|                   | College        36.59±9.26 |             | 36.59±9.26    |               | 12.50±3.14    |               | 12.36±3.02    |               |
| Occupation        | Enterprise    34.88±10.76 | 0.845         | 11.04±4.64    | 0.782         | 12.19±3.70    | 0.566         | 11.65±3.56    | 0.927         |
|                   | Civil servant  34.67±9.29 |             | 11.00±4.36    |               | 12.00±2.00    |               | 11.67±3.06    |               |
|                   | Worker         32.65±11.00 |             | 10.29±5.00    |               | 11.33±3.47    |               | 11.02±3.76    |               |
|                   | Self-employed  31.89±11.07 |             | 9.79±4.41     |               | 10.79±4.00    |               | 11.32±4.27    |               |
|                   | Others         33.37±10.24 |             | 10.73±4.40    |               | 11.16±3.32    |               | 11.47±3.48    |               |
| Religion          | Yes 34.00±8.15  | 0.785         | 12.06±3.04    | 0.084         | 10.88±3.78    | 0.688         | 11.06±3.09    | 0.673         |
|                   | No 33.28±10.41 |             | 10.62±4.49    |               | 11.22±3.37    |               | 11.44±3.55    |               |
| Character         | extravert     33.98±10.40 | 0.003         | 11.05±4.44    | 0.003         | 11.42±3.36    | 0.017         | 11.51±3.46    | 0.006         |
|                   | hybrid         34.27±9.24 |             | 10.94±4.05    |               | 11.44±3.19    |               | 11.89±3.32    |               |
|                   | introvert      30.57±11.33 |             | 9.50±4.88     |               | 10.47±3.60    |               | 10.61±3.88    |               |
| Blood type        | A 33.66±9.03 | 0.885         | 11.83±3.82    | 0.455         | 11.37±3.06    | 0.943         | 10.46±3.28    | 0.301         |
|                   | B 34.43±9.99 |             | 11.39±5.29    |               | 11.57±3.16    |               | 11.48±3.38    |               |
|                   | AB 31.69±6.68 |             | 10.00±3.41    |               | 11.06±2.52    |               | 10.63±3.12    |               |
|                   | O 32.27±9.04 |             | 10.39±4.00    |               | 10.89±3.22    |               | 11.00±2.96    |               |
|                   | Others 33.38±10.70 |             | 10.59±4.53    |               | 11.22±3.47    |               | 11.57±3.63    |               |
| Marital status    | Married       33.11±10.43 | 0.416         | 10.57±4.52    | 0.437         | 11.17±3.37    | 0.335         | 11.38±3.56    | 0.565         |
|                   | Single        34.50±6.09 |             | 11.50±2.51    |               | 11.38±2.13    |               | 11.63±2.26    |               |
|                   | Widowed       34.55±10.15 |             | 11.50±3.92    |               | 11.29±3.81    |               | 11.76±3.52    |               |
|                   | Divorce       38.50±9.13 |             | 12.13±3.94    |               | 13.38±3.02    |               | 13.00±3.42    |               |
| Emotional with spouse | Well 33.26±10.38 | 0.047         | 10.56±4.493   | 0.002         | 11.34±3.41    | 0.021         | 11.37±3.51    | 0.091         |
|                   | Ordinary      33.89±10.03 |             | 11.284.184    |               | 10.80±3.15    |               | 11.81±3.62    |               |
| Course of disease                  | Less than 12 months | 12 to 24 months | More than 24 months |
|-----------------------------------|---------------------|-----------------|---------------------|
| bad                              | 19.00±10.54         | 4.67±4.509      | 6.67±3.79           | 7.67±3.22 |
|                                   | 33.22±10.62         | 32.60±9.82      | 35.21±9.18          |
|                                   | 0.295               | 10.64±4.62      | 11.26±4.26          |
|                                   | 0.522               | 11.13±3.32      | 11.81±3.02          |
|                                   | 0.373               | 0.373           | 0.16               |

| Relationship with caregivers      | Spouse              | Parents         | Offspring          |
|-----------------------------------|---------------------|-----------------|-------------------|
|                                   | 32.95±10.27         | 34.11±8.08      | 33.61±9.98        |
|                                   | 0.902               | 11.84±3.67      | 10.93±4.34        |
|                                   | 0.377               | 11.11±2.54      | 11.19±3.28        |
|                                   | 0.995               | 11.49±3.52      | 10.78±3.49        |
|                                   | 0.976               |                 |                   |

| Monthly household income          | Less than 3000      | 3000 to 5000    | 5000 to 7000      |
|-----------------------------------|---------------------|-----------------|-------------------|
|                                   | 33.56±10.47         | 33.00±10.27     | 30.79±8.95        |
|                                   | 0.673               | 10.17±4.58      | 8.36±4.27         |
|                                   | 0.013               | 11.60±3.38      | 11.15±3.73        |
|                                   | 0.736               | 11.23±3.57      | 11.27±4.00        |
|                                   | 0.88                |                 |                   |

| Monthly household income          | 7000 to 10000       | More than 10000 |
|-----------------------------------|---------------------|-----------------|
|                                   | 33.85±12.56         | 33.67±3.39      |
|                                   | 10.77±4.64          | 12.33±2.34      |
|                                   | 11.54±4.33          | 11.00±2.37      |
|                                   | 11.54±3.93          | 10.33±3.20      |

| Method of payment                 | Own expense         |
|-----------------------------------|---------------------|
|                                   | 31.29±11.00         |
|                                   | 0.739               |
|                                   | 10.71±4.73          |
|                                   | 0.646               |
|                                   | 10.59±3.37          |
|                                   | 0.771               |
|                                   | 10.00±4.02          |
|                                   | 0.353               |

Table 4 Multivariate Analysis of Factors Related to the Score of FACIT-Sp-12 in Cancer
| Dependent variable | Factors            | β      | Standardized beta | t-Value | P-Value |
|--------------------|--------------------|--------|-------------------|---------|---------|
| Total Score        | Gender             | -2.406 | -0.114            | -2.75   | 0.006   |
|                    | Character          | -1.421 | -0.109            | -2.613  | 0.009   |
|                    | Emotional with spouse | -0.028 | -0.001            | -0.027  | 0.978   |
| Peace              | Gender             | -0.937 | -0.103            | -2.488  | 0.013   |
|                    | Character          | -0.695 | -0.123            | -2.97   | 0.003   |
|                    | Emotional with spouse | 0.415  | 0.039             | 0.931   | 0.352   |
| Meaning            | Gender             | -0.722 | -0.105            | -2.526  | 0.012   |
|                    | Character          | -0.382 | -0.089            | -2.151  | 0.032   |
|                    | Emotional with spouse | -0.683 | -0.084            | -2.019  | 0.044   |
| Faith              | Gender             | -0.105 | -0.104            | -2.487  | 0.013   |
|                    | Character          | -0.089 | -0.077            | -1.842  | 0.066   |
|                    | Emotional with spouse | -0.084 | 0.028             | 0.672   | 0.502   |