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Quality of life in terminally ill cancer patients: what is the role of using complementary and alternative medicines?

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Abstract

Background and purpose Cancer is the world's second greatest cause of mortality and a leading cause of death in both developed and developing countries. Patients employ a number of complementary and alternative medicine (CAM) methods to deal with the problems and difficulties of cancer, which can have an impact on their quality of life (QOL). The aim of the present study was to assess the correlation between QOL and the use of different CAM methods in terminally ill cancer patients.

Methods This was a cross-sectional study. In southern Iran, 238 individuals with advanced cancer were studied in oncology centers and doctors' offices. During the months of January to August 2021, patients were selected using convenience sampling. A demographic information questionnaire, the EORTC core quality of life questionnaire, and the CAM questionnaire were used to collect data.

Results The results showed that terminally ill cancer patients had a good quality of life. Last year, 85.7% of participants used at least one kind of CAM. Furthermore, 45.4% of participants used only one form of CAM, 30.3% used two types of CAM, 6.7% used three types of CAM, and 3.4% used four to five types of CAM. When all CAM users were compared to non-CAM users, CAM users had significantly higher social QOL and overall quality of life. Two subscales of QOL symptoms and function were correlated with cancer history, income, and use of CAMs, and the scores of QOL symptoms and function were greater in CAM users compared to non-CAM users. Among all the study variables, only the usage of CAM was correlated to overall QOL among terminally ill cancer patients.

Conclusion The current study found that using CAM could affect different aspects of QOL in terminally ill cancer patients. As a result, it is feasible that using CAM could help these people enhance their health and QOL.

Keywords Quality of life · Physical and psychological symptoms · Complementary and alternative medicines · Cancer

Introduction

Cancer is a term that refers to a set of diseases that are caused by abnormal cell growth in the body [1, 2]. Cancer is associated with a wide variety of problems, including physical and psychological complications that, in the absence of definite therapy, can impair a person's quality of life and disrupt their life [3]. Cancer patients develop depression as a result of the disease's denial and anger, which are related to feelings of loss, failure, despair, hopelessness, helplessness, emptiness,

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pessimism about the future, low self-esteem, and thoughts of worthlessness and inadequacy [4]. These conditions exacerbate the disease's psychological and physical symptoms, and the patient experiences fear, anxiety, rage, despair, and a sense of loss of control. These factors become significantly more evident in the final stages of a terminal illness [5]. Terminal cancer has one of the most detrimental effects on patients' quality of life [4]. The World Health Organization (WHO) defines quality of life as an individual's perception of his or her position in life in relation to their objectives, aspirations, standards, and concerns within the context of the culture and value systems in which they live [5]. However, in order to improve cancer patients' quality of life, it is vital to manage the condition and provide medical care.

Palliative care is included in the therapy of terminally ill cancer patients as the prognosis and outcome of treatment remain unknown in the majority of these patients. However, although early palliative care is frequently advocated, it is rarely administered. According to Zimmermann et al. (2016), participants' initial conceptions of palliative care were associated with mortality, hopelessness, reliance, and end-of-life comfort care for inpatients [6]. If palliative care is considered an essential evidence-based component of advanced disease management, then the advantages of palliative care assistance should be offered and recommended to all patients and carers at all stages of illness [7]. However, certain clinical trials using primary palliative care for patients with advanced disease show positive results [8, 9]. Palliative care is defined by the WHO as a means of enhancing the quality of life of patients who are facing a life-threatening situation through early detection and prevention of disease [4]. Palliative care is a relatively new field of medicine. More than 90% of people with advanced cancer can feel better physically and emotionally when they get palliative care [1].

Several types of complementary medicine have been utilized to provide palliative care for cancer patients, including Chinese medicine, acupuncture, Chinese herbal medicine (CHM), acupressure, Shiatsu, and hydrotherapy [10, 11]. Most people with cancer who are nearing the end of their lives have worsening symptoms in the last 6–12 months of their lives, which requires them to be admitted to a critical care ward [12].

Not only do palliative care therapies improve patient satisfaction and quality of life, but they also increase the likelihood of survival [13]. Patients with cancer frequently use complementary and alternative medicines in the expectation that they can cure their condition and improve their physical and mental well-being [14]. Thus, palliative care may be a way to save money on care at the end of life without lowering the quality of life [13]. Delisle et al. (2019) demonstrated that the initial use of palliative care decreased the chance of hospital death, health care utilization, and expenses in

patients with colorectal cancer [15]. According to Lec et al. (2020), palliative care is seldom employed in patients with advanced urological malignancies, and it is used less frequently in older patients and racial minorities [12]. Additionally, Vranas et al. (2020) showed that palliative care decreased utilization of end-of-life health care and might improve quality of care in patients with advanced lung cancer [16]. Numerous studies demonstrate that CAM is effective in relieving cancer-related complications and treating the body, which may result in a high number of patients seeking complementary and alternative medicine [17]. It has been shown that when cancer patients use CAM, their symptoms get better, which makes their quality of life better [18].

Complementary medicine is defined as "the collection of knowledge, skills, and practices based on theories, beliefs, and indigenous experiences from various cultures, whether explicated or unexplained, for the purpose of maintaining health and preventing, diagnosing, improving, or treating physical and mental illness" [17]. Complementary medicine is a term that refers to a collection of diagnostic and therapeutic fields that are used in conjunction with conventional medications [19]. Meanwhile, some types of CAM such as relaxation and prayer have shown positive effects in patients [20, 21]. Several studies in Iran have found that a high percentage of Iranians use complementary and alternative medicine [22–25]. Numerous studies demonstrate that CAM is widely used by cancer patients, and some studies' findings indicate a rise in the usage of CAM or its use over the last decade [26]. During crises such as the outbreak of COVID-19, some types of CAM, especially dietary supplements, herbs, and prayers, are commonly used to prevent COVID-19 and reduce the anxiety caused by the epidemic [25]. Due to the good attitude of the Iranian people toward CAM, the demand for this type of treatment is increasing [18]. Oncologists and cancer patients frequently discuss and employ complementary and alternative medicines [27]. Between 51 [28] and 80% [14] of cancer patients are reported to have utilized complementary and alternative medicine. According to Dehghan et al. (2022), last year, 87.3% of the participants used at least one type of CAM. Aside from prayer, 42.1% of the participants used at least one type of CAM in the last year, and the primary reason for using CAM was to relieve stress and anxiety associated with cancer and treat it [24].

Due to the nature of terminal cancer and the difficulties and consequences associated with its therapy, many patients turn to complementary and alternative medicine to relieve and alleviate physical and psychological symptoms, as well as to improve their quality of life. The quality of life is a critical indicator of the success of health care, one's degree of health, and one's sense of well-being. As a result, it is vital to investigate the use of CAMs and their relevance to quality of life in terminally ill cancer patients. The majority of studies in this field have focused on a specific form of

cancer or a branch of complementary medicine. Therefore, the purpose of this study was to examine the association between use of complementary medicine and quality of life in terminally ill cancer patients.

Method

Study design and setting

This descriptive, analytical, and cross-sectional study was conducted to determine the quality of life in terminally ill cancer patients and its association with the use of CAM methods in Iran. The study population in this study included all terminally ill cancer patients referred to oncology centers and doctors' offices in Kerman, southeast Iran. Data was collected from January to August 2021.

Sampling and sample size

Convenience sampling was conducted in Bahonar hospital, Javad Al-A'meh center, and doctors' offices after acquiring the necessary permissions. All patients in stages 3 and 4 (final stages) of cancer were included in the study, but those with mental, vision, or hearing impairments and those with incomplete questionnaires were excluded. The sample size was estimated at 227 using Cochran's formula for an infinite population in accordance with the study's primary objective ($Z = 1.96$, $d = 0.065$). According to dropout probability, 300 questionnaires were distributed. Finally, 238 participants completed the questionnaire. The response rate was 79.33%.

Ethical issue.

The ethics committee of Kerman University of Medical Sciences approved the study protocol (IR.KMU. REC.1399.445). At the beginning of the study, an informed consent form was provided to the participants. The objectives of the study, confidentiality, and anonymity of the information were explained, and the participants had full authority to complete the questionnaire. Written informed consent was obtained from the patients.

Questionnaire

Demographic information questionnaire

The demographic and clinical information questionnaire included variables such as age, sex, marital status, level of education, occupation, income, living place, type of insurance, duration of cancer, history of addiction, history of diabetes, history of hypertension, history of cardiovascular disease, a history of other chronic diseases, and a history of hospitalization.

The EORTC core quality of life questionnaire

The European Organization for Research and Treatment of Cancer (EORTC) designed the EORTC core quality of life questionnaire in 1987 to assess the quality of life of cancer patients. This questionnaire contains thirty questions divided into three subscales: functioning, symptoms, and general health/quality of life. Five multi-item scales (physical, role, emotional, cognitive, and social functioning) and nine single-item scales (fatigue, pain, financial impact, appetite loss, nausea/vomiting, diarrhea, constipation, sleep disturbance, and quality of life) are included in the questionnaire. Items 1–28 use a four-point Likert scale ranging from "Never = 1" to "Very High = 4," whereas items 29 and 30 use a seven-point Likert scale ranging from "Very Poor = 1" to "Excellent = 7." Each domain has a score between 0 and 100. A higher score in the subscales of functioning and quality of life indicates improved function or quality of life. A higher score in the subscale of symptoms indicates that the symptom or problem is more severe.

Aaronson et al. (1993) assessed the questionnaire's validity and reliability in lung cancer patients using version 3.0. Except for the role functioning, all domains were highly reliable (Cronbach's alpha > 0.7). According to the results, the questionnaire was valid [29]. Safaei et al. (2007) tested the questionnaire's validity and reliability in patients with breast cancer and found that it had good convergent validity ($r > 0.4$) in all dimensions. All items in physical function, with the exception of item 4, had differential validity. The questionnaire was highly reliable in the majority of domains (Cronbach's alpha > 0.7), with the exception of fatigue (0.65), pain (0.69), and nausea/vomiting (0.66), which were all less than 0.7 but within an acceptable range [30].

Complementary and alternative medicine questionnaire

The second part is a researcher-made questionnaire developed by Dehghan et al. (2018) on the application of complementary and alternative medicine (CAM), which includes 10 questions on the use of some types of CAM (herbal medicines, wet cupping, dry cupping, massage, acupuncture, acupressure, homeopathy, relaxation techniques such as yoga and prayer). The items were scored using a 7-point Likert scale (from never/ rarely = 0 to every day = 6). Reasons to use CAM were also measured using three options: reducing physical symptoms, reducing anxiety and stress, and others. A yes/no question asked if you should consult your doctor before taking complementary and alternative medicine. There were also nine questions about satisfaction with the use of complementary medicine (completely satisfied = 4 to completely dissatisfied = 0). The range of satisfaction with the CAM score was between 0 and 36, with a higher score indicating more satisfaction. To determine the validity, the questionnaire was given to 10

faculty members of the Razi School of Nursing and Midwifery in Kerman. The experts were asked to check the questionnaire for the relevance, comprehensiveness, and comprehensibility of the items, response options, and instructions. For the content validity index to be calculated, the experts were asked to check and score the relevancy of each item according to a four-point Likert scale. The content validity index of the questionnaire was 0.96. For the internal consistency to be checked, 20 participants completed the questionnaire and Cronbach's alpha coefficient was 0.85 [22].

Data collection

After acquiring the code of ethics and the appropriate permits, the researcher visited selected centers during various shifts of the morning, evening, and night and went to doctors' offices for sampling. To begin with, the study's objectives and methodology were described to patients who met the inclusion criteria. Written consent was obtained, and arrangements were established for when patients would be prepared to participate and complete the questionnaire. A questionnaire was distributed to the research units when they were in a positive psychological state. The demographic information questionnaire, the EORTC core quality of life questionnaire, and the CAM questionnaire were provided to eligible samples to complete in the researcher's presence. If the people in the samples could not read or write and could not fill out the questionnaires, the researcher asked them questions.

Data analysis

Descriptive and inferential statistics were used to analyze the data. The software used in this study was SPSS25. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to describe demographic characteristics and mean scores. ANOVA and independent t-tests were used to figure out how the demographic information questionnaire and the EORTC core quality of life questionnaire's dimensions are related. In some cases, Mann–Whitney U and Kruskal–Wallis tests were used. To determine the relationship between the CAM questionnaire and the dimensions of the EORTC core quality of life questionnaire, Mann–Whitney U and an independent t-test were used. A significance level of 0.05 was considered.

Results

Participants' demographic and clinical characteristics

The mean age of the participants was 51.87 ± 14.01 years (with a minimum of 18 years and a maximum of 85 years).

Females who were married, educated, and unemployed comprised the majority of the samples. The majority of study samples had a monthly income of 2 million tomans (25,000 tomans = 1 dollar). Eighteen percent of patients were diagnosed with cancer in the previous year. The majority of participants did not have a history of chronic disease (Tables 1 and 2). Additionally, the majority of female patients had breast or ovarian cancer, whereas the majority of male patients had blood cancer, and they were all undergoing chemotherapy.

Different dimensions of quality of life in terminally ill cancer patients

The mean score for the functioning subscale of QOL and all five dimensions was between 82.03 and 92.58, indicating that the QOL of terminally ill cancer patients was almost acceptable in these areas. The mean score for the symptom subscale of the QOL and its three dimensions was between 11.41 and 32.84, indicating that the symptoms of terminally ill cancer patients were fewer than the questionnaire midpoint of 50. Among the single symptoms, sleep disturbance (28.01) had the highest score, while diarrhea received the lowest (3.94). The single symptoms of terminally ill cancer patients were fewer than the questionnaire midpoint of 50. The mean score for overall quality of life was 66.98 ± 19.72, which was slightly higher than the scale's midpoint of 50 (Table 3).

CAM use in terminally ill cancer patients

Overall, 85.7% ($n = 204$, 95% confidence interval = 81.1–89.9) of participants reported using at least one type of CAM in the previous year. Regardless of prayer, 43.3% ($n = 103$, 95% confidence interval = 36.6–49.6) of participants reported using at least one type of CAM in the previous year. Additionally, 45.4% ($n = 108$) of individuals used only one form of CAM, 30.3% ($n = 72$) used two types of CAMs, 6.7% ($n = 16$) used three types of CAMs, and 3.4% ($n = 8$) used four to five types of CAMs in the last year. Eighty-one point five percent of participants reported having used prayer, 33.6% reported using medicinal herbs, 9.2% reported using massage, 4.6% reported using nutritional supplements, 3.8% reported using wet cupping, 2.9% reported using relaxation and meditation, 2.1% reported using dry cupping, and 1.3% reported using acupuncture (Table 4).

Concerning the use of nutritional supplements, wet cupping, and dry cupping, 90%, 66.67%, and 60% of participants, respectively, sought medical advice. Only 5% of individuals sought medical advice before using medicinal plants.

Table 1 Demographic characteristics of the participants and quality of life differences among the participants

Variable	Frequency (valid percent)	Quality of life-functioning		Quality of life-symptoms		Quality of life-global	
		Mean (SD)	Statistic test (P value)	Mean (SD)	Statistic test (P value)	Mean (SD)	Statistic test (P value)
Age (yr.)[*]							
≤ 30	19 (8.0)	84.95 (11.88)	$F = 0.36$ (0.88)	24.46 (15.77)	$H = 7.46$ (0.19)	59.65 (23.61)	$F = 0.99$ (0.43)
31–40	33 (13.9)	85.96 (9.53)		35.58 (24.86)		64.90 (22.51)	
41–50	58 (24.5)	86.70 (10.41)		23.63 (17.67)		66.24 (20.20)	
51–60	50 (21.1)	87.60 (9.46)		23.15 (16.40)		70.0 (15.88)	
61–70	62 (26.2)	87.40 (9.87)		22.64 (15.12)		68.95 (18.61)	
> 70	15 (6.3)	88.38 7.85)		20.86 (11.14)		65.56 (22.68)	
Sex							
Female	131 (55.0)	86.39 (10.36)	$t = 1.02$ (0.31)	28.06 (18.65)	$t = -3.18$ (0.002)	67.94 (17.56)	$t = -0.83$ (0.41)
Male	107 (45.0)	87.70 (9.24)		20.80 (16.02)		65.81 (22.10)	
Marital status							
Single	27 (11.3)	86.75 (11.23)	$F = 4.02$ (0.02)	22.22 (17.37)	$F = 0.42$ (0.66)	65.74 (26.79)	$H = 3.04$ (0.22)
Married	197 (82.8)	87.51 (9.24)		24.98 (18.05)		68.06 (17.73)	
Divorced/ widow(er)	14 (5.9)	79.88 (13.37)		27.25 (16.60)		54.17 (26.70)	
Education level[*]							
Uneducated	45 (19.1)	86.50 (9.62)	$F = 0.14$ (0.97)	22.88 (15.20)	$F = 0.24$ (0.92)	61.30 (19.15)	$F = 2.20$ (0.07)
Elementary school	52 (21.9)	86.82 (10.37)		25.57 (20.32)		71.15 (18.92)	
Middle/high school	42 (17.7)	87.39)		24.47 (16.94)		65.28 (18.21)	
Diploma	61 (25.7)	86.51)		25.20 (19.44)		65.57 (20.32)	
Academic	37 (15.6)	87.78 (8.60)		26.43 (15.76)		71.40 (20.37)	
Job[*]							
Employed	78 (32.9)	87.92 (9.72)	$F = 0.62$ (0.54)	22.74 (17.16)	$F = 2.58$ (0.08)	65.92 (19.97)	$F = 0.17$ (0.84)
Unemployed	127 (53.6)	86.55 (10.4)		27.27 (18.77)		67.06 (19.24)	
Retired	32 (13.5)	86.02 (7.91)		20.78 (14.14)		68.23 (20.89)	
Income (Million Tomans) [*]							
< 1	108 (45.6)	84.84 (11.02)	$H = 10.91$ (0.004)	29.06 (19.45)	$F = 6.04$ (0.003)	66.13 (19.58)	$F = 0.28$ (0.75)
1–2	43 (18.1)	88.75 (9.47)		23.34 (16.21)		66.08 (17.0)	
> 2	86 (36.3)	88.52 (7.98)		20.46 (15.23)		68.12 (21.05)	
Living place							
Kerman city	96 (40.3)	89.60 (8.37)	$H = 5.09$ (0.16)	23.67 (16.32)	$F = 2.16$ (0.09)	68.92 (18.44)	$F = 0.69$ (0.56)
Villages around Kerman	33 (13.9)	88.40 (7.25)		19.47 (14.38)		66.16 (20.30)	
Cities around Kerman	92 (38.7)	84.79 (10.43)		26.77 (19.05)		64.94 (20.66)	
Other cities	17 (7.1)	81.29 (14.0)		30.83 (23.12)		68.63 (20.94)	
Insurance[*]							
Yes	208 (87.8)	87.20 (9.79)	$t = 1.13$ (0.26)	25.12 (17.54)	$t = 0.51$ (0.61)	67.47 (19.10)	$t = 1.32$ (0.19)
No	29 (12.2)	84.99 (10.32)		23.31 (19.92)		62.36 (23.0)	

[*]Missing value, *SD* standard deviation, *t* independent *t* test, *F* analysis of variance, *H* Kruskal–Wallis H

The association between different aspects of quality of life and CAM use in terminally ill cancer patients

When prayer is included in the total CAM usage, the social aspect of QOL and the global quality of life scores were significantly higher in the CAM users compared to non-CAM users, while the sleep disturbance score was significantly lower in the CAM users compared to non-CAM users. When prayer was excluded from the total CAM usage, the social aspect of QOL and the global quality of life scores were significantly higher in the CAM users compared to non-CAM users, while the dyspnea and financial scores were significantly lower in the

Table 2 Clinical characteristics of the participants and quality of life differences among the participants

Variable	Frequency (valid percent)	Quality of life-functioning		Quality of life-symptoms		Quality of life- global	
		Mean (SD)	Statistic test (*P* value)	Mean (SD)	Statistic test (*P* value)	Mean (SD)	Statistic test (*P* value)
History of cancer (months)							
< 3	48 (20.2)	89.03 (8.96)	*F* = 3.89 (0.004)	19.44 (15.18)	*H* = 10.26 (0.04)	65.10 (20.24)	*F* = 1.38 (0.24)
3–6	73 (30.7)	89.04 (9.25)		23.03 (15.88)		70.55 (20.23)	
7–12	53 (22.3)	84.56 (10.67)		28.23 (18.76)		67.61 (18.96)	
13–36	38 (16.0)	87.15 (8.70)		24.37 (16.58)		65.79 (17.94)	
> 36	26 (10.9)	82.08 (10.92)		33.26 (23.64)		60.90 (20.65)	
History of diabetes							
Yes	29 (12.2)	89.16 (8.78)	*t* = −1.27 (0.20)	27.46 (16.01)	*t* = −0.86 (0.39)	72.13 (17.0)	*t* = −1.50 (0.13)
No	209 (87.8)	86.68 (10.0)		24.43 (18.10)		66.27 (20.0)	
History of hyper-tension							
Yes	39 (16.4)	87.43 (9.23)	*t* = −0.31 (0.76)	25.74 (13.49)	*Z* = −1.12 (0.26)	67.95 (16.39)	*t* = −0.33 (0.74)
No	199 (83.6)	86.89 (10.01)		24.61 (18.61)		66.79 (20.33)	
History of cardio-vascular disease							
Yes	18 (7.6)	83.91 (8.65)	*t* = 1.38 (0.17)	26.65 (12.67)	*t* = −0.46 (0.65)	68.06 (16.48)	*t* = −0.24 (0.81)
No	220 (92.4)	87.23 (9.94)		24.65 (18.22)		66.89 (19.99)	
History of other chronic disease							
Yes	19 (8.0)	82.20 (11.51)	*t* = 2.22 (0.03)	30.41 (17.65)	*t* = −1.43 (0.15)	67.54 (14.67)	*t* = −0.13 (0.90)
No	219 (92.0)	87.39 (9.64)		24.31 (17.83)		66.93 (20.12)	
History of hospitalization[*]							
Yes	160 (69.0)	86.10 (10.12)	*t* = −1.96 (0.05)	27.41 (18.94)	*Z* = −2.67 (0.008)	65.73 (19.02)	*t* = −1.71 (0.09)
No	72 (31.0)	88.83 (9.21)		19.96 (14.35)		70.37 (19.42)	

[*]Missing value, *SD* standard deviation, *t* independent *t* test, *F* ANOVA, *H* Kruskal–Wallis H, *Z* Mann–Whitney *U*

CAM users compared to non-CAM users. In addition, CAM users had considerably greater constipation scores than non-CAM users (Table 3).

The association between demographic and clinical characteristics and quality of life in terminally ill cancer patients

The functioning scale of QOL was found to be associated with marital status, income, cancer history, and other chronic disease histories (Tables 1 and 2). Sex, income, a history of cancer, a history of opium addiction, and a history of hospitalization were all associated with the symptom scale of QOL (Tables 1 and 2). There is no correlation between global QOL and background variables (Tables 1 and 2).

The correlates of different aspects of quality of life in terminally ill cancer patients

Multiple regression models were tested to explore how study variables predicted functioning, symptoms, and global QOL. Place of living, history of cancer, history of other chronic diseases, income, and using CAM were associated with the functioning scale of QOL. On the other hand, the functioning score is higher in CAM users compared to non-CAM users (including prayer).

The history of opium use, cancer history, income, and use of CAMs were all related to the symptom scale of QOL. On the other hand, CAM users have a higher symptom quality of life score than non-CAM users (excluding prayer). Among all the study variables, only CAM usage was associated with

Table 3 The quality of life of terminally ill cancer patients and its association with complementary and alternative medicines usage

Variable	Mean (SD)	CAM user include prayer		Statistic test (P value)	CAM user exclude prayer		Statistic test (P value)
		Yes (mean/SD)	No (mean/SD)		Yes (mean/SD)	No (mean/SD)	
Functioning (QOL)	86.98 (9.87)	87.51 (9.44)	83.80 (11.79)	Z = − 1.71 (0.09)	86.62 (10.42)	87.25 (9.46)	t = 0.49 (0.63)
Physical	82.03 (18.09)	81.91 (17.95)	82.74 (19.15)	t = 0.25 (0.80)	78.98 (21.43)	84.34 (14.71)	Z = − 1.19 (0.23)
Role	85.15 (19.52)	85.87 (18.87)	80.88 (22.89)	t = − 1.38 (0.17)	83.82 (18.74)	86.17 (20.11)	t = 0.92 (0.36)
Emotional	84.31 (16.17)	84.97 (15.97)	80.39 (17.03)	t = − 1.53 (0.13)	84.06 (17.47)	84.51 (15.17)	t = 0.21 (0.83)
Cognitive	92.58 (13.73)	92.81 (13.13)	91.18 (17.03)	t = − 0.64 (0.52)	92.07 (15.63)	92.96 (12.13)	t = 0.50 (0.62)
Social	90.83 (15.50)	91.99 (13.87)	83.82 (21.90)	Z = − 2.40 (0.02)	94.18 (11.83)	88.27 (17.40)	Z = − 3.15 (0.002)
Symptom (QOL)	24.80 (17.85)	25.20 (18.59)	22.38 (12.49)	Z = − 0.27 (0.78)	28.03 (20.78)	22.33 (14.86)	Z = − 1.84 (0.07)
Fatigue	30.14 (22.16)	30.58 (22.89)	27.45 (17.13)	Z = − 0.16 (0.87)	33.28 (24.36)	27.74 (20.08)	Z = − 1.59 (0.11)
Nausea and vomiting	11.41 (18.79)	11.85 (19.64)	8.82 (12.47)	Z = − 0.16 (0.87)	15.53 (23.13)	8.27 (13.94)	Z = − 2.30 (0.02)
Pain	32.84 (23.29)	33.17 (23.92)	30.88 (19.30)	Z = − 0.19 (0.85)	35.28 (25.06)	30.99 (21.76)	t = − 1.41 (0.16)
Single symptoms							
Dyspnea	13.44 (21.57)	13.24 (21.55)	14.70 (22.0)	Z = − 0.53 (0.59)	9.39 (17.38)	16.54 (23.70)	Z = − 2.55 (0.01)
Sleep disturbance	28.01 (28.88)	26.31 (27.87)	38.24 (32.96)	Z = − 2.01 (0.04)	27.18 (31.22)	28.64 (27.06)	Z = − 0.86 (0.39)
Appetite loss	29.97 (29.34)	29.74 (29.92)	31.37 (25.87)	Z = − 0.58 (0.56)	31.72 (32.80)	28.64 (26.44)	Z = − 0.33 (0.74)
Constipation	14.0 (27.56)	14.22 (27.87)	12.74 (25.97)	Z = − 0.25 (0.80)	18.12 (30.88)	10.86 (24.38)	Z = − 2.12 (0.03)
Diarrhea	3.94 (12.78)	41.10 (13.25)	2.94 (9.60)	Z = − 0.30	4.53 (14.80)	3.48 (11.02)	Z = − 0.28 (0.78)
Financial impact	20.25 (27.32)	19.21 (26.70)	26.47 (30.46)	Z = − 1.42 (0.16)	16.18 (26.76)	23.38 (27.43)	Z = − 2.44 (0.02)
Global quality of life	66.98 (19.72)	68.79 (18.22)	56.13 (24.64)	Z = − 2.99 (0.003)	69.98 (18.90)	64.69 (20.08)	t = − 2.07 (0.04)

SD standard deviation, *t* independent *t* test, *Z* Mann–Whitney *U*

global QOL. On the other hand, CAM users have a higher global QOL score than non-CAM users (including prayer) (Table 5).

Discussion

The goal of this study was to investigate the role of complementary and alternative medicines in terminally ill cancer patients' quality of life during the COVID-19 outbreak.

According to the findings of this study, the quality of life of terminally ill cancer patients is nearly optimal. Loss of appetite or sleep disturbance was the most common symptom reported by terminally ill cancer patients, whereas diarrhea/nausea and vomiting were the least common. Velenik et al. (2017) found that the quality of life of cancer patients was perfect, which was consistent with the findings of the current study. In addition, men reported decreased fatigue, nausea/vomiting, pain, dyspnea, sleep disturbance, constipation, and financial impacts. Women, on the other hand,

Table 4 The use of CAMs and the reasons for using each type of CAMs in terminally ill cancer patients

Variable	Frequency of the users (%)	Confidence interval of percentage (%)	Reasons for using the CAM methods (*n* [%]*)		
			Reducing physical complications of the cancer and its treatment	Reducing stress and anxiety resulting from cancer and its treatment	Others
Medicinal herbs	80 (33.6)	27.7–39.5	10 (12.7)	52 (65.8)	17 (21.5)
Dry cupping	5 (2.1)	0.4–4.2	4 (80.0)	-	1 (20.0)
Wet cupping	9 (3.8)	1.3–6.3	5 (83.3)	-	1 (16.7)
Massage	22 (9.2)	5.9–13.4	16 (72.8)	3 (13.6)	3 (13.6)
Nutritional supplements	11 (4.6)	2.1–7.1	6 (66.7)	-	3 (33.3)
Acupuncture	3 (1.3)	0–0.29	1 (100)	-	–
Relaxation and meditation	7 (2.9)	1.3–5.5	1 (16.7)	4 (66.6)	1 (16.7)
Prayer	194 (81.5)	76.5–100	46 (25.7)	83 (46.4)	50 (27.9)

*Valid percent; Others: strengthening the immune system, decreasing fatigue

Table 5 The multiple regression analysis summary for quality of life in terminally ill cancer patients

Variable		B	SE‡	Beta	T	P	95% confidence interval for B	Adjusted R^2
Functioning	Constant	88.23	2.88		30.59	<0.001	82.54–93.91	0.13
	Living place	−2.20	0.60	−0.23	−3.68	<0.001	−3.38−−1.03	
	History of cancer	−1.26	0.48	−0.16	−2.62	0.009	−2.20−−0.31	
	History of other chronic disease	−6.60	2.22	−0.18	−2.97	0.003	−10.98−−2.22	
	Income	1.68	0.69	0.15	2.42	0.02	0.31–3.04	
	CAM use (include prayer)	4.73	1.77	0.16	2.67	0.008	1.24–8.23	
Symptom	Constant	13.11	5.84		2.24	0.03	1.59–24.63	0.10
	History of opium addiction	5.71	2.39	0.16	2.39	0.02	1.002–10.41	
	History of cancer	2.39	0.88	0.17	2.71	0.007	0.65–4.13	
	Income	−2.81	1.32	−0.14	−2.13	0.03	−5.40−−0.21	
	CAM use (exclude prayer)	4.58	2.27	0.13	2.02	0.045	0.11–9.05	
Global QOL	Constant	57.55	3.23		17.32	<0.001	51.00–64.10	0.04
	CAM use (include prayer)	11.0	3.58	0.20	3.07	0.002	3.94–18.05	

‡: standard error; *QOL*, quality of life; *CAM*, complementary and alternative medicines

experienced less diarrhea and a loss of appetite [31]. Furthermore, Derogar et al. (2012) in Sweden discovered that men reported greater functioning and fewer symptoms compared to women, with fatigue, pain, and sleep disturbance being the most common symptoms [32].

In contrast to the current study's findings, King et al. (2018) studied 1979 Australian cancer patients and discovered that the quality of life of cancer patients was mostly good to very good. Cancer-related dimensions had a moderate effect on nausea and bowel problems, but a small effect on fatigue, trouble sleeping, and appetite [33]. The reason for this disparity could be related to the bigger sample size and more samples in the age range of 18 to 49 years in the study conducted by King et al. Furthermore, utilizing a web-based sampling method can enhance selection bias.

While social and demographic features influence quality of life and clinical quality scores, it appears that disease complications have a specific effect on all scales of QOL and should be considered as a prominent confounder in all quality of life assessments [34]. The effect of health problems on health-related quality of life (HRQL) can sometimes be greater in cancer patients due to the late therapeutic effect. The deterioration of HRQL with age can also be explained by the fact that physical strength and vital function decline with age, as older people are more prone to pain, insomnia, and dyspnea, all of which are symptoms of more illnesses. However, the majority of individuals in the current study (26.2%) are between 61 and 70 years old and are associated with various age-related problems. This could be one of the key causes of the high rate of appetite loss and sleep disturbance in the current study. An examination of demographic confounding factors and diversity in cancer symptoms and consequences reveals that all contribute to a wide range of

reports. Certainly, the effect of cancer complications on various groups could be the topic of additional research in this area.

According to the results of the current study, 85.7% of participants used at least one sort of CAM in the previous year. Furthermore, last year, 45.4% of people used only one form of CAM, 30.3% used two types of CAM, 6.7% used three types of CAM, and 3.4% used four to five types of CAM.

According to a study on cancer patients, the use of CAM is common among cancer patients and may represent individual and social beliefs in treating or reducing cancer symptoms. Al-Naggar et al. (2013) found that 72.7% of patients used CAM in the course of treatment and 37% used CAM in less than 6 months, which is consistent with the current study's findings [35]. According to Ping Lei et al. (2014), 70.7% of breast cancer patients undergoing chemotherapy used complementary and alternative medicine [36]. Jazieh et al. (2021) found that 78.9% of cancer patients used CAM between 2006 and 2008, and 96.8% used CAM between 2016 and 2018 [26]. According to Er et al., 43% of cancer patients used CAM [37].

Examining the reported data revealed various percentages of CAM usage among cancer patients, although they are less than the rate reported in the current study, which may be attributed to the prevalence of terminal cancer, illness severity, recurrence, and cultural differences in the current study. According to Tarhan et al., 42.3% of cancer patients used at least one type of CAM, and the usage of CAM among patients with advanced disease was much significant. Furthermore, knowing the disease's diagnosis and recurrence was an effective factor in using CAM. The most critical factors influencing CAM use were disease severity (recurrence

and spread) and patients' awareness of diagnosis [38]. Jang et al. revealed that younger age, higher level of education, higher income, fewer doctor consultation, and advanced stage of cancer were all associated with a higher prevalence of CAM [39]. This disparity in results could be attributed to the particular and acute impacts of cancer on patients. These results underscore the importance of future research into the reasons for the use of various types of CAM, as well as the factors affecting disease in the use of complementary and alternative medicine.

According to the results of the current study, 81.5% of participants used prayer and 33.6% used medicinal plants. Given Iran's religious tradition as an Islamic country, the high rate of prayer use in the current study was unsurprising. The usage of medicinal herbs came in second. Er et al. found that 90% of cancer patients utilized herbal medicines, which is consistent with the current study's findings [37]. Furthermore, Tarhan et al. found that plant products were the most commonly used type of CAM in cancer patients (36.3%) [38]. Herbal medicines, on the other hand, are advised for the treatment and alleviation of patients' symptoms [40]. According to Sheikh Rabori et al. [41], the most important reasons for using herbal medicines were ease of use, safety of medicinal plants, satisfaction with symptom relief, and no concerns about drug interactions, and approximately 92.3% felt good after using plants, with 86.1% recommending plants to others. Herbal medicines are preferred over other CAM methods for a variety of reasons, including their frequency and ease of use. Iranians appear to be more likely to use and trust natural remedies.

Another cause for the usage of herbal medicines has been the herbal medicine users' lack of awareness of possible toxicity [42]. However, past research has associated the use of herbal medicines with adverse consequences such as cardiac arrhythmias [43] and vascular problems [44]. However, another issue that draws people's attention is method availability. The acceptance of herbal medicines is influenced significantly by culture and tradition, as well as differences in public health systems. Cancer patients in this study reported no adverse effects from CAM.

When prayer was considered among all CAM users, the present study found that the social aspect of QOL and global quality of life were significantly greater in CAM users than in non-CAM users, while the sleep disturbance score was significantly lower in CAM users. Consistent with the results of this study, Ping Lei et al. (2014) showed that prayer-for-health (PFH) increased CAM use in breast cancer patients undergoing chemotherapy and that when PFH was excluded from the definition of CAM, CAM use was reduced [36]. Iranians place a premium on prayer and spiritual healing. Thus, it is foreseeable that prayer and spiritual healing will be used in the presence of diverse diseases and critical situations. According to

Dehghan et al., 71.8% of infertile couples in Iran used prayer and 70.2% used vows [23]. Additionally, Alyousefi and Alrowais examined the prevalence of CAM among Saudis and discovered that prayer and Qur'an recitation were more frequently used than other forms of CAM [45]. These findings emphasize the importance of religious context and religious guidance on the acceptance and usage of CAM. As a result, future research should pay special attention to the religious background of society regarding the use of CAM.

The current study demonstrated that a history of cancer, income, and use of CAM were all associated with two subscales of QOL symptoms and functioning, and that CAM users scored higher on both subscales than non-CAM users. In contrast to the current study's findings, Chui et al. (2015) found no significant difference in QOL functioning subscale between CAM and non-CAM users with cancer disease. CAM users, on the other hand, reported more financial problems than non-CAM users [46]. This also supports the findings of Farooqui et al. [47], who discovered no significant difference in all functioning subscales of the QOL between CAM and non-CAM users in Malaysia. One explanation could be that the study was conducted in Malaysian public hospitals with patients from middle- to low-income families. The financial burden of cancer treatment and the added cost of complementary and alternative medicine may account for this disparity. Additionally, the study examined individuals with breast cancer who were less likely to use CAM due to financial problems.

However, many patients reported that certain types of CAM were beneficial for enhancing overall well-being throughout chemotherapy [36]. According to Al-Naggar et al. (2013), 65.5% of cancer patients indicated that CAM was beneficial to them and that 80% were satisfied with it [35]. Additionally, Er et al. discovered that nearly half of CAM users believed the therapy was effective [37]. These findings suggest that the use of CAM may have been successful in improving QOL symptoms and function.

Only the usage of CAM was associated with global QOL across all research variables. On the other hand, CAM users had a higher global quality of life score than non-CAM users. Consistent with the current study's findings, previous studies on cancer patients [48, 49] demonstrated that CAM users had a superior quality of life than non-CAM users. In contrast to the current study's findings, Farooqui et al. [47] and Chui et al. (2015) [46] demonstrated that the use of CAM methods in cancer patients was not significantly associated with improved global quality of life scores and that there was no significant difference in global quality of life between CAM users and non-CAM users. Kang et al. [50] and Tautz et al. [51] similarly observed that global QOL was comparable between CAM users and non-users with breast cancer in Korea and Germany, respectively.

This discrepancy could be explained by patients' perceptions of their disease state. Wyatt et al. (2010) discovered that breast cancer patients who were more attracted to CAM were believed to be recovering from low QOL [49]. Other possible explanations for this discrepancy include distinct patient groups and cancer types. Chui et al. (2015) [46] studied breast cancer patients, whereas Farooqui et al. [47] studied men and women with various forms of cancer [28]. [20]. Additionally, because patients may not have reported the proper usage of CAM, the results should be interpreted with caution. Furthermore, to improve understanding of CAM's uses, patients should be encouraged to discuss CAM use with health care providers without fear and to disclose any benefits and/or drawbacks of CAM use. Healthcare providers may employ CAM to alleviate symptoms and induce therapeutic effects in patients. Keene et al. (2019) demonstrated that the use of CAM is increasing in cancer patients and that CAM use has an effect on cancer and general health [28]. However, the absence of clinical practice guidelines (CPGs) for cancer patients regarding CAM or management recommendations shows a significant gap in guidance for physicians and clinical researchers about the use of CAM [14].

Limitations

Our work has some limitations that could be studied more in the future. Due to the cross-sectional nature of this study and the absence of an examination of the cause-and-effect relationship, it is proposed that longer longitudinal or interventional studies be done in the future. Given that the current study's sample consisted of cancer patients in southeastern Iran and used the self-reported data of the patients, which may affect the results, caution should be applied when generalizing the findings. Owing to the fact that the unique situation of cancer patients and the lengthy course of therapy can affect the variables examined in these patients, it is vital to pay attention to their status and treatment courses. Also, it is suggested that another study be done with a different group of patients, especially those with certain types of cancer or in older age groups, and that future studies look into other ways that patients use CAM.

Conclusion

The study's findings revealed that cancer patients commonly use complementary and alternative medicine, and that religious, individual, and social beliefs could influence the usage of CAM to treat or alleviate cancer symptoms. When compared to non-CAM users, the use of CAM can enhance symptoms, function of QOL, and global quality of life in cancer patients. According to the findings, it is suggested that the use of CAM in these patients be viewed as a viable option for improving the global quality of life and the health status of cancer patients. However, because of the wide range of CAM, future research should take into account different forms of CAM and their consequences.

Declarations

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