



# Complementary and alternative medicine application in cancer patients in Iran

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## Abstract

**Purpose** Nowadays, complementary and alternative medicine (CAM) is used by cancer patients all over the world. The aim of this study was to investigate the prevalence of CAM use in patients with cancer in Iran.

**Methods** This descriptive-analytical study was conducted on 320 cancer patients in Arak. For gathering information, a researcher-made questionnaire was used. This questionnaire was consisted of two parts: demographic and clinical information; and patient's attitude toward using complementary and alternative medicine treatments and their effectiveness, as well as how much they used different kinds of these treatments. The data were analyzed using SPSS software version 16.

**Results** Our findings showed that average age of participants was  $55.11 \pm 15.58$ . Most of them had leukemia (25.9%) and underwent chemotherapy (55%), and 141 (44.3%) of individuals were using CAM. Majority of patients (73.2%) were using CAM to improve physical conditions, 61.4% were using it simultaneously with conventional medical treatments, and 25% to reduce pain. Participants have reported visiting holy places, yoga, prayer therapy, and using medicinal plants and special diets, respectively.

**Conclusion** Considering the high number of patients using CAM treatments, proper planning and implementation to educate professional members of health team, especially doctors and nurses about CAM treatments is essential. The most important CAM treatments to be educated are spiritual therapies, yoga, medicinal plants, and diet therapy. Moreover, support and education about using these kinds of treatment should be considered in the supportive care program for patients with cancer.

**Keywords** Complementary and alternative medicine (CAM) · Cancer · Oncology · Iran

## Abbreviation

CAM Complementary and Alternative Medicine

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## Background

Cancer is a disease that does not have just a single cause; it includes a group of diseases which have different causes, symptoms, treatments, and prognoses. Despite significant improvements in diagnosis and understanding cancer including causes, prevention, early diagnosis, diagnostic tools, determinants of prognosis, treatment, and management of symptoms; most people still believe that cancer is associated with pain and death (Available from 2018). According to the latest statistics published by the World Health Organization (WHO), cancer as a non-communicable disease (NCD) with approximately 18 million 78 thousand new cases, and 9 million deaths in 2018, after cardiovascular diseases, is the second cause of death by non-communicable diseases in the world (World Health Organization 2018; Nejat and Mehrabi 2019).

Cancer occurs in all ages and in both genders; but it is more prevalent in men, in people over 65 years old, and in industrial societies. It is considered to be the third cause of

death in Iran; and the three most common cancers in Iran are breast cancer, colorectal cancer, and gastric cancer in both genders. Because of considerable prevalence, numerous complications, and high mortality at all ages, cancer is the focus of most health planning's and policies. In 3 recent decades, the overall incidence and mortality related to common cancers (lung, breast, colon, and prostate cancers) have not changed; and in lots of cases, traditional medical treatments were not enough to meet the medical needs of patients (Hekmatpou and Mehrabi 2018). Depending on the cancer stage and medical history of the patient, surgery, radiation therapy, chemotherapy, or hormone therapy may be necessary for its treatment (Mehrabi et al. 2019).

According to some studies, cancer survivors try to use different methods of complementary and alternative medicine (CAM). New studies indicate daily increase in the number of patients, particularly cancer patients to refer to different branches of CAM (Swisher et al. 2002). Based on available estimations, until 2016 in European countries, these referrals have reported to be 44.3% of total patients (Asfaw 2016). Patients with cancer who undergo traditional medical treatments usually refer to CAM therapists to decrease the side effects of the disease and its treatments, or to interrupt the spread of cancer, or prevent metastasis. Sometimes, they do that in a hope to be completely healed (Molassiotis et al. 2005; Boon et al. 2000; Ceylan et al. 2002).

Complementary and alternative medicine (CAM) include treatment methods such as homeopathy, acupuncture, chiropractic, aromatherapy, exercise therapy, kinesiotherapy, massage therapy, music therapy, image therapy, herbal therapy, nutritional therapy, pressure therapy, energy therapy or meditation, nutritional supplements, or other methods. These therapeutic methods which are not common treatments and used regionally or generally are so diverse (Ceylan et al. 2002; Sajadian et al. 2005). Application of CAM is also expanding in Australia, Europe, and North America. Some reports indicate that more than half of Europe's population are interested to use some CAM methods to improve their health. In Iran, using these methods is rooted in the Iranian people's attachments to their beliefs and old traditions. It can also be due to later achievements (Sajadian et al. 2005). Prevalence of using CAM treatments is reported 33% in the UK, 46% in Australia, 34% in the USA, 66–75% in Belgium, 49% in France, 18% in Netherlands, and 20–30% in Germany (Swisher et al. 2002). In many studies, the use of CAM has been reported in the Middle East region, including Iran, Qatar, Turkey, India, Pakistan, and Saudi Arabia, and it is popular (Gerber et al. 2014). In a study conducted by Ghaedi et al. in Iran (Ghaedi et al. 2017), the prevalence of CAM in chronic patients except cancer was 75.4%. In another study by Gerber (Gerber et al. 2014), 38.2% of midlife women in Qatar had used CAM in the previous 12 months. Pandey

et al. reported in India that 46.2% of their study sample used CAM (Pandey et al. 2021).

According to conducted surveys, understanding the concept of CAM and its application is on the rise in cancer patients. Similarly, in Iran different methods of CAM are used by incurable patients and patients with cancer, which using these methods is rooted in the culture and traditional Iranian treatment methods. It should be noted that using these methods without supervision and approval by the healthcare teams can cause interference with conventional medical treatments. It can also result in complications such as skin and gastrointestinal complications, delay in wound healing, delay in diagnosis and treatment of the disease, and many other problems. Also, there is no official statistics about amount and used methods of CAM. Obviously by investigating the status of using various CAM methods in different regions of Iran, patients' attitude toward CAM, and application of CAM's different sub-branches by cancer patients; health policies and public and regional approaches, can be planned for proper and optimal use. Moreover, occurrence of CAM complications can be minimized, and also, its beneficial effects can be used at the same time. Besides, employees of health care systems by recognizing different methods of CAM used by patients, and providing necessary educations, can play an important role to gain therapeutic goals; and they can move toward improving cancer treatment outcomes. The aim of this study was to investigate the use of complementary and alternative medicine in cancer patients in Iran.

## Methods

This research was a cross-sectional descriptive-analytical study, conducted on 320 patients in Arak (Iran). The entry criteria included over 18 years of age, cancer diagnosis with a specialist's approval, awareness of cancer diagnosis, being able to participate in study mentally and physically, being willing to participate in the study. Patient who suffered from acute complications of cancer and its treatments, in a way that they could not participate in the study, were excluded. The researchers explained the project for patients and assured them that their information will remain confidential, and their participation in this project has no effects on the treatment process. Then, by obtaining written consent from patients who were willing to participate the research, asked the questionnaire face to face, and recorded patients' responses.

The sample size was estimated to be 320 patient based on former studies, the average prevalence of CAM use for cancer treatment which was 30%, maximum estimate error of 5%, and 95% confidence level (Sajadian et al. 2005).

Data gathering was done using a questionnaire consisted two parts. First part included patient's personal information (age, gender, marital status, level of education, and occupation) and clinical information (type of cancer, time of diagnosis, and type of received treatment), and the second part was questions about patient's attitude toward using CAM treatments, CAM treatment effectiveness, and the amount and types of used CAM methods. The question part itself included three sections:

- (1) Determining patients' attitude regarding using CAM which has five items:
  - I totally disagree (with the score of zero)
  - I disagree (with the score of one)
  - I have no idea (with the score of two)
  - I agree (with the score of three)
  - I totally agree (with score of four).
- (2) Determining patient's attitude toward the used CAM method effectiveness. It was evaluated using following answers: completely effective, somewhat effective, without any effects, and with negative effect.
- (3) Type of used method, duration, frequency of use, side effects, and complications in each method was investigated.

The CAM methods were examined in five groups; Iranian medicine, Chinese medicine, spiritual therapies, biological therapies, and movement methods. In each of the group, related treatments were considered.

The questionnaire was evaluated by ten faculty members of Arak University of Medical Sciences, to be examined in terms of formal validity and content. The reliability of the questionnaire was evaluated using Test–retest method, and Cronbach's alpha was calculated 89.2.

Informed written consent to participate in this study was provided by all participants (or their parent or legal guardian) before the starting of data collection.

## Results

### Demographic characteristics

The results showed that the average age of the participants was  $55.11 \pm 15.58$ . There were 161 (50.31%) men and 159 (49.69%) women. 258 (80.6%) were married, 214 (66.7%) were educated, 129 (40.1%) were housewives, and 307 (95%) were supported by one of the insurance companies, and 204 (63.7%) were living in the town (Table 1).

**Table 1** Socio-demographic characteristics of the participants ( $n = 320$ )

Variable	No. (%)
Gender	
Male	161 (50.31)
Female	159 (49.69)
Marital status	
Single	44 (13.8)
Married	258 (80.6)
Divorced	2 (6)
Widowed	16 (5)
Education status	
Illiterate	107 (33.3)
Primary school	86 (26.8)
Secondary school	45 (14)
Diploma	61 (19)
Graduated	22 (6.9)
Working status	
Worker	29 (9)
Employee	24 (7.5)
Business	42 (13)
Housekeeper	129 (40.1)
Unemployed	74 (23)
Others	24 (7.5)
Income adequacy	
Enough	17 (6.5)
Somewhat	112 (42.7)
Inadequate	133 (50.8)
Insurance	
Health service	61 (19)
Social security	152 (47.4)
Other insurance	96 (29.9)
No insurance	12 (3.7)
Residency	
City	204 (63.7)
Village	116 (63.3)

### Clinical characteristics

Average age of participants at the time of cancer diagnosis was  $52.18 \pm 16.65$ , the average time of being diagnosed with cancer was  $4.6 \pm 0.08$  years, and 208 patients had family history of cancer (72%). The majority had leukemia (25.9%) and were undergoing chemotherapy (55%) (Table 2).

### Using CAM

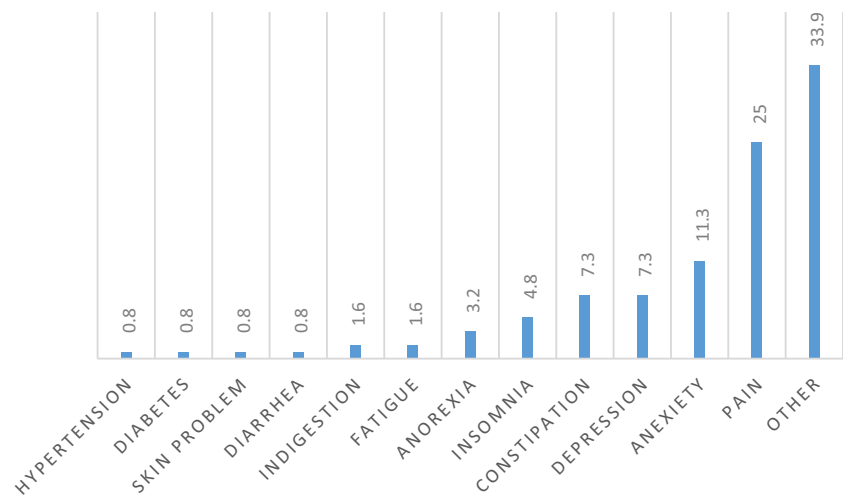
Majority of the participants were agreed to use CAM methods (178 people, 55.8%), and 141 patients (44.3%) were using CAM. The average time for using CAM was  $11.47 \pm 4.02$  months. Most subjects were using CAM

**Table 2** Clinical characteristics of the participants ( $n=320$ )

Variable	Mean $\pm$ SD
Duration of diagnosis of Cancer (month)	0.08 $\pm$ 4.6
Type of cancers	No. (%)
Leukemia	83 (25.9)
Breast	43 (13.4)
Intestine	37 (11.5)
Lung	31 (9.7)
Stomach	22 (6.9)
Bone	22 (6.9)
Liver	18 (5.6)
Prostate	10 (3.1)
Brain	9 (2.8)
Kidney	7 (2.2)
Esophagus	5 (1.6)
Pancreas	1 (0.3)
Other	33 (10.3)
Treatment modality	
Chemotherapy	157 (55.1)
Surgery	22 (6.9)
Radiotherapy	31 (9.7)
Combined	90 (28.3)
Nonhereditary cancers	
Yes	81 (28)
No	208 (72)

simultaneously with conventional medical treatments (81 people, 61.4%) and their motivation was to improve their physical conditions (73.2%) such as pain (25%).

Figure 1 shows other problems which caused patients to use CAM. These are the problems and complications associated with cancer. Most participants reported using CAM to be partly effective in improving the irritating complications (66 patients, 48.2%) and improving the overall health status (73 patients, 53.7%). Also 5.9% of the participants reported a reduction in side effects using CAM method.

**Fig. 1** Reasons for use of CAM

Majority of participants (38.6%) received information about CAM treatments from their families (Fig. 2).

Figure 3 shows different CAM methods used by cancer patients. The most used methods by subjects were visiting holy places, yoga, and then prayer and, using medicinal plants, and using special diets, respectively; but regarding the number of times, the method was used, listening or reading the Qur'an had the highest rate. In this figure, the mean number of duration and frequency of using CAM are displayed with two colors.

The results of the studies showed that the use of CAM with demographic variables (age, gender, marital status, education status, working status, income adequacy, insurance, and residency) had no statistically significant relationship ( $P > 0.05$ ). However, the type of cancer showed a significant relationship with the use of CAM ( $P = 0.033$ ).

## Discussion

Cancer patients have complex conditions. They sometimes resort to other therapies such as CAM to speed recovery or frustration with treatment. Sometimes, the use of CAM causes drug and therapeutic interactions and even abandon chemotherapy and their main treatments. In this article, we examine the use of CAM by cancer patients to see which type of CAM they use the most and whether there is a relationship between the type of CAM and the type of cancer or their treatment?

Findings of this study showed that 44.3% of participants were using CAM methods, which is consistent with statistics in European countries (44.7%) (15).

The rate of CAM use has been reported 29% in the UK, 13% in the United States, 57% in Turkey, 79% in Ethiopia, 62.5% in Malaysia, 64% in Australia, 71.2% in Canada, 74.8% in Korea, 90% in Saudi Arabia, and 93.4% in

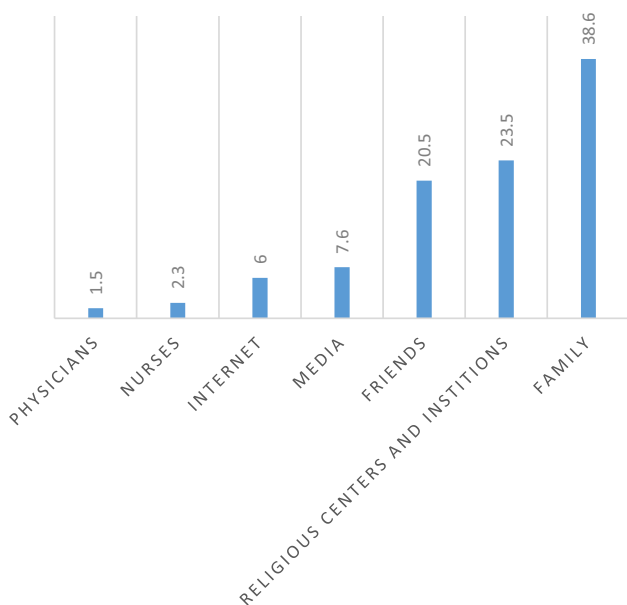


Fig. 2 Source of information about CAM (n=320)

China (Adams and Paul 2007; Ozturk and Karayagiz 2008; Greenlee et al. 2009; Ock et al. 2009; Downer et al. 1994; Kiwanuka 2018).

Differences in the results of these studies about using CAM can be due to socio-cultural diversity, differences in access to these treatments, and their costs. On the other hand, variation in designing studies and the type of CAM treatment can be effective too (Shaharudin et al. 2011).

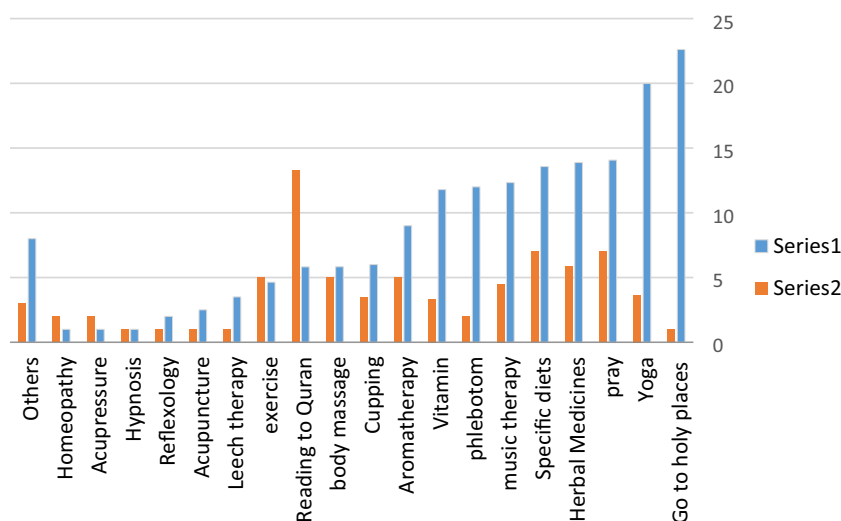
The average age for using CAM in this study was  $52.18 \pm 16.65$  years which is consistent with other studies in Asia in which it is reported to be 30 to 59 years (Naja et al. 2014; Harris et al. 2003; Rakovitch et al. 2005). In this study, the most people who used CAM were patients with leukemia and then breast cancer. This can

be due to high incidence of leukemia in this region of Iran (Poorcheraghi et al. 2019). Similarly, Wode et al. in 2019 and Al-Naggar et al. in 2013 have reported that patients with breast cancer use CAM more than others (Al-Naggar et al. 2013). The reasons to use CAM methods in this study were improving physical condition, fighting the disease, management and reducing complications related to cancer and its treatment, improving mood, and increasing strength, respectively. These findings are similar to the results of other studies on this issue (Risberg et al. 2003; Wode and Henriksson R et al. 2019). Comparably, using CAM methods simultaneously with conventional medical treatments is reported in other studies. Al-Naggar et al. have reported that 85% of cancer patients were using conventional medical treatments and CAM at the same time. Using CAM and conventional medical treatments simultaneously can result in production of potentially dangerous compounds which, in turn, may cause various side effects (Poorcheraghi et al. 2019). This is a serious problem for health care systems and patients, and should seriously be considered. To proper management of this issue, careful planning and implementation is necessary. In this study, there was no report on the toxicity of CAM. However, doctors and other health care teams should be advised to be careful when treating cancer. Because, patients may also use CAM that interferes with the type of treatment.

Participants of our study mostly used CAM to reduce pain, anxiety, constipation, anorexia, insomnia, fatigue, and shortness of breath. The results of a study by Al-Naggar is consistent with our finding (26). While in a study by Shirinabadi et al. in Iran, patients mostly used CAM to reduce anxiety and depression, and then to reduce pain (Shirinabadi Farahani et al. 2019).

Knowing for which side effects patients refer to CAM, a comprehensive care plan should be organized by the care team and pay special attention to these side effects. In this

Fig.3 Type and frequency of use of CAM (n=320). Series1: duration of use. Series2: frequency of use



way, the need of cancer patients to use CAM without caution and its side effects will be reduced.

In this study, incidence of CAM side effects in this was 5.9%, in other studies; however, this item was reported to be 5.6% to 18.6% (Asfaw 2016; Naja et al. 2014). In our study, the source of information about CAM were family, friends, and relatives. In contrast, physicians and nurses are reported to be the least information source about using CAM. Our findings partly confirm the results of studies in Korea (Tautz et al. 2012) and Sweden (Poorcheraghi et al. 2019) which indicated that family and relatives are the main source of information about CAM. However, other studies reported media like the Internet, television, radio, and newspapers as the major source of informing about CAM (Naja et al. 2014; Harris et al. 2003; Rakovitch et al. 2005; Poorcheraghi et al. 2019; Al-Naggar et al. 2013; Risberg et al. 2003; Wode and Henriksson I R et al. 2019; Shirinabadi Farahani et al. 2019; Tautz et al. 2012; Kang et al. 2012; Wanchai et al. 2010).

This finding also confirms that general and basic education about CAM is not given to cancer patients and they turn to limited information from family and relatives, and this causes them to interfere in the treatment process and drug interference by having wrong information. A separate study should be conducted in this regard and a specific guideline should be provided for cancer patients, so that they know which CAM methods are allowed to use in relation to cancer complications and this program should be taught to patients by doctors and nurses. It should also be emphasized that this program should not replace the main treatment. Given the prevalence of coronavirus in the world and the fear of cancer patients from going to medical centers, knowing the use of complementary and alternative drugs by cancer patients may provide useful information to those interested in this field. It can also guide them in treating patients with cancer and treatment interactions.

In this study, the most used methods by participants were visiting holy places, yoga, and then prayer therapy, using medicinal plants and using special diets, respectively; but regarding the number of times which the method was used, listening or reading the Qur'an had the highest rate.

In another study in Iran, the most common used CAM in cancer patients was reported as praying (86.1%). The most used medicinal plants were the subgroups of mint and garlic with (41.7%). In Ethiopia, 72.1% of cancer patients used medicinal plants more than any other CAM method (Asfaw 2016). In Malaysia, using Sea Cucumber (22%) and Homeopathy were the most used methods (10.5%) (Poorcheraghi et al. 2019). In Sweden, using vitamins and minerals and relaxation methods were the most common (Wode and Henriksson I R et al. 2019). In Lebanon, the most used CAM methods were dietary supplements and then medicinal plants (Naja et al. 2014).

## Conclusions

Considering high prevalence of cancer, and cancer patients who use CAM treatments, proper planning to educate doctors and nurses, as well as other professional members of health care team about CAM treatments is a vital approach. Moreover, it will be useful for cancer patients to educate and support them in terms of using CAM methods. This will prevent unwanted side effects, as well as interference with conventional medical treatments.

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**Author contributions** NN: conceptualization and methodology. AR: data curation and software. FM: conceptualization, methodology, writing—reviewing and editing, and supervision. FR: formal analysis. All authors read and approved the final manuscript for submission.

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**Availability of data and materials** All data generated or analyzed during this study are included within the article.

## Declarations

**Conflict of interest** The authors declare that they have no competing interests.

**Ethics approval and consent to participate** The study was approved by the research ethical committee of faculty of medicine, Arak University of Medical Sciences. Our study conforms to provisions of the Declaration of Helsinki. Informed written consent to participate in this study was provided by all participants (or their parent or legal guardian) before the starting of data collection.

**Consent for publication** Informed written consent for publication was obtained from all participants (or their parent or legal guardian) before the starting this study.

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