

ORIGINAL ARTICLE

The prevalence and determinants of the use of complementary and alternative medicine in adult Turkish cancer patients

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Abstract

A study was undertaken to analyze the extent of using complementary alternative medicine (CAM) and to compare sociodemographic and medical characteristics of users and non-users of CAM in Turkish oncology patients. A total of 615 patients with cancer who attended ambulatory patient care units answered the questionnaires. Medical information was reviewed from chart data. Some 291 patients (47.3%) had used at least one type of CAM since the time of initial diagnosis. CAMs almost always consisted of herbal agents (95%). Nettle (*Urticae herba*) used in conjunction with (88%) or without (56%) various herbal agents were the most popular and prominent CAMs used by patients. Univariate and multivariate comparisons of users and non-users of CAM were performed. In multivariate analysis, female sex ($p=0.0006$), high income ($p=0.0008$), advanced stage at diagnosis ($p=0.02$), and usage of multiple chemotherapy applications ($p=0.03$) were determined as independent factors for CAM use.

Introduction

Today, while many types of cancer can be treated successfully, many other types are managed with the best conventional care only providing a short life gain and palliation. Additionally, conventional cancer treatments are often associated with severe side effects that substantially worsen quality of life. These realities motivate large number of cancer patients to seek therapies or unconventional treatments considered as natural, non-toxic, and health promoting [1–3]. Complementary and alternative medicine (CAM) has been defined as any therapy not included in the conventional, proven therapies in the treatment of cancer.

CAM has had a rising popularity among every aspect of healthcare in the world. This rising popularity has especially influenced cancer patients and many of them have been drawn to the use of unconventional therapies. Only a few of these modalities have been tested. Most of them remain unproven but they also keep their popularity. In most

cases, alternative medicine is used to complement, not to replace, conventional therapy.

CAM use by cancer patients is particularly common. It has been estimated that one in two people living with cancer had sought some type of complementary or alternative therapy [1].

The factors that cause patients to use alternative therapies have been investigated among the general population and among patients with various carcinomas such as breast, prostate, gynecologic cancers etc. in the Western world [3–9]. Cancer patients who use CAM tend to be younger, women, more educated, to have a higher income, and to have been treated with chemotherapy. Cancer patients use CAM across the disease continuum, regardless of disease stage. Many begin to use CAM therapies 4 to 6 months after their diagnosis and the major reason for a patient to turn to CAM is in the hope for a cure.

Unfortunately, in other parts of the world these studies are particularly lacking. We therefore performed a survey of Turkish oncology patients to examine the extent of their use of CAM and to

compare sociodemographic and medical characteristics of users and non-users of CAM.

Material and methods

Study population and procedures

This study was conducted on adult (18 years of age or older) patients diagnosed with malignant disease at the Department of Medical Oncology at the Institute of Oncology, University of Istanbul. Patients who were in a pre-terminal state or too ill to complete the interview were excluded. Patients were asked to complete the questionnaire immediately after their scheduled visits. All potentially eligible patients attending the clinics were chosen and assessed consecutively. Interviews took place between July 2001 and October 2001.

The questionnaires were handed out to the patients by their physician on arrival at the hospital as outpatients. The majority of the interviews were self-administered but they were occasionally face to face.

It was explained to the patients that all information offered would be treated confidentially, and that refusal to participate in the study would not in any way jeopardize the care and treatment they would receive in the hospital. Informed consent was obtained from all patients and the study was reviewed by a local ethical committee.

Definition of CAM

Alternative medicine is generally used for a wide range of unconventional approaches promoted to prevent, treat, or palliate a disease. Complementary medicine refers to practices thought to support the patient though a disease or to augment the action of conventional therapies. This article will use the term CAM to address the large variety of interventions subsumed under all the above terms. CAM was defined as any therapy not included in the conventional, proven therapies in the treatment of cancer.

Questionnaire

The questionnaire was designed to evaluate the patients' use of CAMs and their views on the importance of CAMs in the fight against cancer. The questionnaire consisted of multiple-choice questions but the patients were allowed to add further comments (see Appendix 1).

The questionnaire was structured to recover socio-demographic data and details pertaining to use of CAM among our patients, as well as patient–healthcare staff relations. The participating physi-

cians reported the medical characteristics and details of treatment for all patients who were admitted and treated in our clinic during the specified time periods. Medical data included diagnosis, date of diagnosis, stage at diagnosis, performance status, current or previous specific anticancer treatment modalities, and current disease status.

Statistical analysis

Data analysis was performed using SPSS software (SPSS, Chicago, IL). Users of CAM were defined as those who reported usage of at least one CAM. For all statistical analyses, a two-sided p-value of 0.05 was considered statistically significant. Comparisons between the distribution of variables in CAM users and non-users were assessed by a χ^2 test. Logistic regression analysis was used to analyze potential variables that may have independently influenced the use of CAMs.

Final study population

Out of a total of 630 cancer patients who were invited to participate in the study, 615 (97.6%) accepted and answered the questionnaire. Fifteen patients did not give information on whether or not they were users of CAMs, and were therefore excluded from the analysis.

Results

The study population comprised 351 women (57.1%) and 264 men (42.9%), in total 615 cases. The median age was 53 years; ranging between 18 and 82. Sociodemographic and clinical characteristics of patients are given in Tables I and II.

Use of CAM

Of the 615 participants, 291 patients (47.3%) had used at least one type of CAM since the time of initial diagnosis. Among users, the median number of CAM modalities used was 2 (range 1 to 14).

In our patients, CAMs almost always consisted of herbal agents (Tables III, IVa, IVb). Use of non-herbal remedies such as acupuncture, hypnosis, relaxation techniques, massage etc. was minimal. Nettle (*Urticae herba*) used in conjunction with or without various herbal agents was the most popular and prominent CAMs method used by patients. Among the users, 56% used nettle alone and nearly 90% reported using it in combinations. Herbal agents were generally used in combination with nettle.

Table I. Sociodemographic characteristics of all patients.

Parameters	Users of CAM n%		Non-users of CAM n%		p
Age, years					
<50	134	53.6	116	46.4	0.010
≥50	157	43.0	208	57.0	
Gender					
Male	110	41.7	154	58.3	0.015
Female	181	51.6	170	48.4	
Marital status					
Married	236	47.7	259	52.3	NS ¹
Not married	55	46.2	64	53.8	
Children					
0-2	185	52.1	170	47.9	0.005
3+	106	40.8	154	59.2	
Education, years					
≤11	191	45.9	225	54.1	NS
>11	100	50.3	99	49.7	
Occupation					
Woman					
Housewife	129	48.5	137	51.5	0.05
Working	49	60.5	32	39.5	
Man					
Employee	65	40.4	96	59.6	NS
Employer	46	44.2	58	55.8	
Place of birth					
Rural	146	46.9	165	53.1	NS
Urban	145	48.2	156	51.8	
Place of residence					
Rural	47	46.1	55	53.9	NS
Urban	244	47.7	267	52.3	
Income, monthly					
<US\$200	141	42.3	192	57.7	0.001
≥US\$200	137	56.8	104	43.2	
Religious belief					
None to moderate	140	47.3	156	52.7	NS
Strong	142	47.8	155	52.2	
Belief in fate					
Yes	262	47.9	285	52.1	NS
No	28	45.2	34	54.8	
Psychological support					
Yes	75	49.0	78	51.0	NS
No	209	46.8	238	53.2	

¹NS =non-significant.

The majority of the patients used CAMs for treatment of their diseases soon after diagnosis (see Table III). The main informatory source was a close friend or family contact. CAM agents were generally combined with conventional anticancer treatment modalities and ingested regularly. Agents could easily be obtained from regular herbal stores at an insignificant cost. Adverse effects of CAMs were minimal; less than 10% of the patients experienced these, which were mainly nausea and

Table II. Clinical characteristics of patients.

Parameters	Taken CAM n%		Not taken CAM n%		p
Diagnosis					
Site of cancer					
Respiratory	39	58.2	28	41.8	0.06
Breast	86	54.8	71	45.2	0.03
Gynecological	31	52.5	28	47.5	NS ¹
Gastrointestinal	65	47.1	73	52.9	NS
Skin	14	38.9	22	61.1	NS
Hematological	29	35.4	53	64.6	0.02
Urological	13	35.1	24	64.9	NS
Sarcoma	10	34.5	19	65.5	NS
Others	4	40.0	6	60.0	NS
Stage of disease					NS
Locally	179	46.1	209	53.9	
Local advanced	65	50.0	65	50.0	
Metastatic	43	47.8	47	52.2	
Performance status of patients					0.04
0	108	43.6	140	56.4	
1	141	53.6	122	46.4	
2 and +	25	41.7	35	58.3	
Treatment (previous or current)					
Chemotherapy					0.03
None	9	23.7	29	76.3	
1 type	212	47.5	234	56.5	
2 type	41	57.7	30	42.3	
3 and +	19	55.9	15	44.1	
Radiotherapy					0.04
None	146	44.0	186	56.0	
1 application	124	52.1	114	47.9	
2 and +	12	60.0	8	40.0	
Recurrence					
Number of relapses					0.05
0	186	44.6	231	55.4	
1	62	47.7	68	52.3	
2	26	63.4	15	36.6	
3 and +	14	70.0	6	30.0	
Site of relapse					0.002
Local, soft tissue, lymph node	26	38.2	42	61.8	
Distant	69	65.1	37	34.9	
Combined	8	44.4	10	55.6	

¹NS =non-significant.

abdominal pain (Table V). Some 70% of users had confidence in CAM, and only 7% of the patients were aware that these forms of therapy were ineffective.

Cooperation between CAM users and medical staff concerning CAM use was weak (Table VI). About 80% of all people trying complementary or alternative therapies did not consult their physicians about CAM use. The collaboration with nurses was worse. The major reason for failure to consult medical staff about CAM was the belief that CAM was harmless. According to patients, their nurses and physicians generally did not have a negative attitude towards CAM use.

Table III. CAM types and features.

Features of CAM	n	%
Type of CAM		
Herbal agents	276	94.9
Nettle +/- honey	162	55.7
Nettle+other herbal agents	94	32.3
Other herbal agents	20	6.9
Non-herbal agents	6	2.1
Combined	9	3.1
Aim of usage for		
Treatment	182	78.4
Supportive	44	19.0
Prevention	6	2.6
Advised to use by		
Family, friends	128	47.4
Patient, patient's relatives	40	14.8
Media, TV, press	32	11.9
More	70	25.9
Type of supply from		
Shopping	185	64.7
Natural source (shrubs, trees, etc)	89	31.1
More	12	4.2
Able to afford		
No	185	64.5
Mild	68	23.7
Moderate	25	8.7
Severe	9	3.1
Time of initial usage (... from diagnosis)		
Within first 3 months	189	70.3
Later	80	29.7
Regularity of usage		
Regular	171	60.4
Irregular	112	39.6
Adverse effect		
Present	21	7.5
Absent	206	73.0
Not aware of	55	19.5
Combined with oncological therapy		
Yes	186	66.7
No	93	33.3
Do you believe that the method you use will be useful for your treatment?		
No	21	7.4
Yes, partially	139	49.1
Yes, completely	60	21.2
I don't know, due to helplessness	63	22.3

Univariate analysis

Table I shows the relationship between potential sociodemographic variables and the use of CAM. Female gender, younger age, low parity, employment, and high income were associated with a higher likelihood for CAM use.

Table II shows the association between medical variables and CAM use. Compared with other sites, use of CAM was more prevalent among patients with

Table IVa. Herbal agents (n=472).

	n	%
Nettle (<i>Urtica</i>)	261	55.3
Garden thyme (<i>Thymus vulgaris</i>)	33	7.0
Bee pollen	24	5.1
Daisy (<i>Bellis perennis</i>)	10	2.1
Juniper (<i>Juniperus</i>)	9	1.9
French lavender (<i>Lavendula stoechas</i>)	8	1.7
Pewter grass (<i>Equisetum arvense</i>)	8	1.7
Plantain (<i>Plantago</i>)	8	1.7
Black cumin (<i>Nigella sativa</i>)	7	1.5
Garden sage (<i>Salvia officinalis</i>)	6	1.3
Senna (<i>Cassia acutifolia</i>)	5	1.1
Cinchona bark (<i>Cinchona</i>)	5	1.1
Hip (<i>Rosae canina</i>)	5	1.1
Parsley (<i>Carum petroselinum</i>)	4	0.8
Yarrow (<i>Achillea millefolium</i>)	4	0.8
Chinese tea (<i>Camellia sinensis</i>)	4	0.8
Mallow (<i>Malva sylvestris</i>)	4	0.8
Garlic (<i>Allium sativum</i>)	3	0.6
Germander (<i>Teucrium chamaedrys</i>)	3	0.6
Blackberry (<i>Rubus caesius</i>)	3	0.6
Carob (<i>Ceratonia siliqua</i>)	3	0.6
Celery (<i>Apium graveolens</i>)	3	0.6
Wormwood (<i>Artemisia absinthium</i>)	3	0.6
Centaury (<i>Centaurea acaulis</i>)	2	0.4
Rosemary (<i>Rosmarinus officinalis</i>)	2	0.4
Hemp (<i>Cannabis sativa</i>)	2	0.4
Flaxseed (<i>Linum usitatissimum</i>)	2	0.4
Myrtle (<i>Myrtus communis</i>)	2	0.4
Common fennel (<i>Foeniculum vulgare</i>)	2	0.4
Radish (<i>Raphanus sativus</i>)	2	0.4
Others ¹	1	0.2

¹Almond (*Prunus amygdalus*), Avens (*Geum urbanum*), Balsam cucumber (*Momordica charantia*), Bird's-foot (*Lotus corniculatus*), Bistort (*Polygonum bistorta*), Caper (*Capparis spinosa*), Cinnamon (*Cinnamomum zeylanicum*), Coltsfoot (*Tussilago farfara*), Couch grass (*Agropyron repens*), Dead-nettle (*Lamium album*), Dill (*Anethum Graveolens*), Essiac tea, Ginger (*Zingiber officinalis*), Ginseng (*Panax ginseng*), Harmal seeds (*Peganum harmala*), Lemon balm (*Melissa officinalis*), Lime flower (*Flos tiliae*), Long pepper (*Piper longum*), Miltwaste (*Herba ceterachi*), Mountain ash (*Sorbus aucuparia*), Peppermint (*Mentha piperita*), Rose mallow (*Althaea rosea*), Saffron (*Crocus sativus*), Succory (*Cichorium intybus*), Sweet basil (*Ocimum basilicum*), Turmeric (*Curcuma longa*).

Table IVb. Non-herbal agents.

	n	%
Royal jelly	11	28.2
Grape syrup	8	20.5
Shark cartilage	5	12.8
Mulberry syrup	5	12.8
Pine resin	4	10.3
Schwedenbitter	3	7.7
Fish oil	2	5.1
Others ¹	1	2.6

¹Black raisin, egg shell, fish oil, horse milk, quail egg, turtle blood, yolk.

Table V. Adverse effects of CAMs.

Adverse effect	No. of patients (n=21) n (%)
Nausea	7 (33)
Abdominal pain	4 (19)
Oral soreness	2 (10)
Allergic reaction	2 (10)
Constipation	1 (5)
Diarrhea	1 (5)
Abdominal bloating	1 (5)
Dyspepsia	1 (5)
Vomiting	1 (5)
Polyuria	1 (5)
Urine darkening	1 (5)
Itching	1 (5)
Headache	1 (5)

breast cancer ($p=0.03$) and lung cancer ($p=0.06$). Conversely, the rate of CAM users among patients with hematological malignancies, particularly malignant lymphoma, was quite low ($p=0.02$). Stage of disease at the time of diagnosis was not associated with CAM use. However, there was a significant correlation of CAM use with performance status of the patients ($p=0.04$). Previous or current administration of cytotoxic chemotherapy ($p=0.03$) and radiotherapy ($p=0.04$) also showed a significant correlation with CAM use. Furthermore, patients with relapsed disease ($p=0.05$), particularly those with distant recurrence ($p=0.002$), had a higher propensity for CAM use.

Table VI. Collaboration between patients' use of CAM and medical staff.

	n	%
Consultation with doctor about CAM		
Yes	61	21.3
No	226	78.7
If yes, what is his/her reaction?		
Not use	3	4.9
Use	15	24.6
You know	43	70.5
Consultation with nurse about CAM		
Yes	14	5.0
No	267	95.0
If yes, what is his/her reaction?		
Not use	0	0.0
Use	4	28.6
You know	10	71.4
Reason for failure to consult with medical staff about CAM		
For its harmless nature	86	55.9
Hesitation	15	9.7
For its not recommendable nature	17	11.0
No idea	36	23.4

Table VII. Influence of factors that were statistically significant in patients' use of CAMs.

Variable	Odds ratio	95% CI	p
Gender			
Female	1.92	1.32–2.78	0.0006
Male			
Income			
High	1.89	1.30–2.74	0.0008
Low			
Stage at diagnosis			
Advanced	1.57	1.06–2.31	0.0237
Locally			
Application of chemotherapy			
≥ 2	1.71	1.05–2.78	0.0316
< 2			

Multivariate analysis

Table VII depicts the final logistic regression model predicting use of CAM. The basic model includes all of the sociodemographic and medical variables that were investigated. In descending order of statistical significance, the use of CAM was associated with female gender ($p=0.0006$), high income ($p=0.0008$), advanced stage at the time of diagnosis ($p=0.02$), and use of multiple chemotherapy applications ($p=0.03$).

Discussion

Among cancer patients worldwide CAM use is frequent. It is estimated that up to 50% of people living with cancer had sought some type of complementary or alternative therapy [1]. As would be expected, there is a small variability within different types of CAM modalities among various countries. A total of 26 surveys from 13 countries were retrieved and the use of CAM therapies in adult populations ranged from 7% to 64%; the average prevalence was 31.4% [3]. Although reliable prevalence rates do not exist, CAM is used by 25–50% of the general population in developed countries.

Nearly half of our patients with cancer had used at least one type of CAM since the time of their cancer diagnosis. The finding is comparable to those reported by investigators [3,6]. In our patients CAM use was generally limited to herbal remedies, the most frequent ingredient being the nettle, reaching 90% among all combinations. The use of other known CAM approaches was minimal. The possible explanation for this behavior is being less educated, having a lower income, and the higher rural inhabitation of Turkish people. It is estimated that 4 billion people, 80% of the world's population, presently

use herbal remedies as medicine for some health-related cause. In many underdeveloped areas of the world herbal remedies are the only type of medicine available to treat various diseases including cancer [1].

The nettle, also known as *Urtica dioica* and *Urtica urens* species in Turkish folk medicine, grows almost worldwide as a wasteland plant. The leaf, fruit, and root of the plant are used as medications. The plants are collected during the flowering period and dried. Dried or sometimes fresh leaves are either boiled directly for a short time or brewed in boiled water. Our data revealed that Turkish oncology patients prefer the leaves and fruits rather than the roots of the plant.

Extracts that consist of leaves or fruits of nettle herbs have an anti-diabetic, anti-inflammatory, and diuretic effect. Root extract also has a diuretic effect and is recommended in benign prostate conditions such as prostate hyperplasia [10]. Antiproliferative activity was reported only in human prostatic epithelial cancer cells, and not in stromal cells [11].

It has been reported previously that CAM users were less able to consult to their doctors regarding complementary and alternative therapies. Cassileth et al. [12] reported that doctor–patient relations were worse among patients with cancer who received conventional and CAM compared with those who received conventional therapy alone. Improved physician education regarding CAM, even in the absence of definitive evidence of efficacy and safety, will provide better physician–patient communication in this field.

The sociodemographic factors associated with CAM use, such as female gender and younger age, were consistent with those reported in other surveys [6,13,14]. Similarly, higher income and education have been identified as significant predictive factors that define a higher propensity for CAM use [4–6,13,14]. Similarly, we have observed a significantly higher ratio of patients in the high-income group who reported CAM use compared with those with a lower income. Education was not a predictive factor in our group of patients. In addition, after controlling for sociodemographic variables, advanced disease at the time of diagnosis and history of previous or current multiple chemotherapy applications were medical factors that remained significantly associated with CAM use. Although an association between the use of psychological support and/or therapies and CAM use has been previously observed [5,6], we did not find such a relationship.

We conclude that the use of CAM by cancer patients is common and widespread. As long as current treatment strategies fail to achieve longer

survival or a cure, complementary treatment modalities will remain to be frequently employed by cancer patients who are seeking a better chance of survival. To improve patient–health care personnel relations in this regard and prevent potential damage due to misuse, further large-scale studies are required to gain a thorough understanding of various issues related to CAM use. Patient expectations, psychological reactions and acceptance of health status, cost, and clinical outcomes pertaining to the specific treatment strategy should be evaluated in order to optimize complementary or alternative treatment methods on a patient-base level.

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