The Use of Complementary and Alternative Therapies by Cancer Patients in Northern Israel

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Abstract

Background: The use of complementary and alternative medicine has increased over the last decade in the western world.

Objectives: To evaluate the extent and characteristics of CAM use among cancer patients in northern Israel.

Methods: Telephone interviews were conducted with 2,176 newly registered cancer patients or their family members, at least 1 year following referral.

Results: The rates of CAM use varied significantly according to demographic characteristics and chemotherapy treatment, from 3% in the basically educated elderly group up to 69% of educated Israeli-born Jews younger than 70 years receiving chemotherapy. The overall rate of CAM use was 17%. The most influential factors determining CAM use were academic or high school education, chemotherapy treatment, Israel as country of birth, and age 41–50 years. All patients used CAM in addition to conventional therapies. Less than half of them reported it to their physicians. The most frequently used treatments were various chemical, biological, botanic and homeopathy remedies. Friends and relatives were the main recommenders of CAM. Most CAM users reported that they used CAM because they believed it "strengthens the immune system," alleviates side effects of chemotherapy, improves quality of life, and helps to overcome pain and stress; 62% of them reported subjective beneficial effects.

Conclusions: A predicting module of CAM user patients was built that may help physicians initiate conversations with their patients on CAM use. Expanding physicians' knowledge on CAM methods will encourage them to provide additional advice, promote the use of beneficial therapies, and inform patients about potentially harmful methods.

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The use of complementary and alternative therapies has increased dramatically in the last decade among patients in the western world. A corresponding increase also occurred in the volume of literature and reports about CAM [1–7]. The words "complementary" and "alternative" refer to a great variety of therapy methods and lifestyles that are not part of mainstream evidence-based medicine. The words are often used interchangeably but there are significant distinctions between them. The American Cancer Society defines complementary therapies as treatments used along with conventional medicine, while alternative therapies are designed and promoted for use instead of conventional therapy [5,8,9]. Accurate figures on the extent of CAM use by cancer patients are difficult to obtain. A summary of 26 surveys conducted in 13 countries estimated the general prevalence of CAM use by cancer

patients as 31.4% (range 7–64%) [7]. Most of the differences in these rates probably derive from demographic differences and cultural and disease factors [3]. It has been estimated that more than 50% of patients living with cancer by the year 2000 had experienced some type of CAM use [5]. Certain types of cancer patients, such as those with breast cancer, use CAM relatively more than others [10].

Two previous studies in Israeli hospitals, one in Tel Aviv and the other in Jerusalem, comprising 100 and 1,027 cancer patients, demonstrated 58% and 51% rates of CAM use, respectively [11,12]. Israel is characterized by mixed ethnic and cultural groups. Overall CAM use seems to have increased in the last few years but there are no regulations governing CAM treatments, education, qualifications or licensing. Most physicians have no formal education in these therapies and know very little about them, with the rare exception of those with a personal interest.

The objectives of this study were to evaluate the extent of CAM use among cancer patients in northern Israel, to describe patterns and determinants of use of CAM treatments by demographic and clinical characteristics, to assess patient aims and beliefs regarding CAM use, to assess how many patients inform their physicians about CAM use, and to assess patients' reports on benefits from these therapies. Additionally, it was felt that the study could assist healthcare professionals to improve their knowledge about CAM users in order to provide proper information and advice to their patients.

Patients and Methods

Study population and design

The target population included all 3,464 cancer patients newly registered in the Northern Israel Oncology Center from July 1997 to July 1999. Complete telephone interviews were conducted with 2,176 patients or close family members, who comprised 62.8% of the whole target population. Patients not included in the study were 1,067 (30.8%) who could not be reached by telephone, 165 (4.8%) who refused to be interviewed, and 56 (1.6%) due to communication problems. Two-thirds of the patients were aged 65–70, and one-third was over 71. Interviews were conducted at least 1 year after the initial diagnosis of the disease. A trained university student conducted the interviews in one of three languages: Hebrew, Russian or English. Interviews in the Arab sector were conducted in Hebrew, sometimes with the help of a family member.

Questionnaire and data extraction

The questionnaire consisted of two parts. Part one pertained to demographics, disease, and conventional treatment. Demographic

CAM = complementary and alternative medicine

details were extracted from the hospital registry and interviews. Diagnosis, year of diagnosis and the oncology treatment were obtained from the patients' charts. The patients, or family members on behalf of the patients, were asked if they had ever used complementary or alternative treatments in relation to their cancer disease, from a list of treatment types. Part two contained specific questions for the 368 patients who were identified as CAM users. The patient was questioned on the main reason for having used each therapy, e.g., pain, relaxation, lessening side effects of conventional therapy, treatment of the cancer with or instead of conventional treatment, and strengthening the immune system. Additional questions pertained to whether the patient felt that the therapy had helped, who referred him/her to this treatment, and whether or not the patient had discussed it with his/her family physician or oncologist.

CAM therapies were defined as any unconventional therapy that was administered as treatment for the current cancer disease and not provided through mainstream conventional medicine. Not included were sports, physical exercise, religious customs, support groups, and psychotherapeutic treatments. Various mixes of regular vitamins, green tea and garlic capsules were not considered as CAM use, except for specific high dose vitamins that are known to be prepared and assigned specifically for cancer patients, such as high dose Vitamin C. Categorization of the variety of treatments was made on the basis of literature searches, personal knowledge, and interviewing naturopathic professionals. All unknown "food supplements" taken as pills or unspecified drugs were considered pharmacologic or biological remedies.

Data analysis

Data analysis was performed using SPSS software. Univariate and multivariate analyses were performed, comparing users to non-users in all parameters. The chi-square test was used to assess relations between categorical variables and to examine statistical differences between users and non-users. A two-sided $P = 0.05$ was considered statistically significant. A statistical model for predicting the rate of use among different cancer populations was built, based on logistic regression methods. The model took into consideration all demographic factors, years since cancer diagnosis, type of cancer, and conventional treatments used.

Results

Extent of CAM use

Of the 2,176 interviews almost half (1,057 patients, 48.5%) involved close family members, including 525 representing patients who had died. The 532 interviews with family members on behalf of patients were conducted according to the patient's request, with the patient nearby and willing to answer specific subjective questions. Of the 2,176 patients, 368 (17%) were identified as CAM users. A great variety of therapies were used, as categorized and detailed in Table 1. The average number of therapies used was 1.7 types per patient who used CAM. The extent of use varied according to demographic characteristics and main conventional treatment groups

Discussing CAM use with physicians

While 273 (74%) of the identified CAM users or their family members responded to this question, 51% of the patients had never discussed it with any physician. Forty-four percent discussed it with the oncologist and less than 5% with the family physician. Almost 37% of the patients who used CAM, or their family members on their behalf, reported their desire to receive more information about it.

Recommendations/referrals for CAM use

Family members, friends and other patients referred the majority (41%) of patients to CAM treatments. Homeopathic and naturopathic healers recommended CAM to 19% of patients, and physicians referred 16% (2.5% of all cancer patients interviewed). Chemical pharmacologic treatments were the main type of treatment recommended by physicians, including mainly vitamins and remedies considered "food supplements." Almost 13% used CAM following exposure to journals, books and mass media.

Therapies used

Chemical or biological pharmacologic remedies were the most popular treatments, used by 41.3% of all CAM users. Categorization and frequency of the variety of therapies used is shown in Table 1. The most commonly used remedies were various specified and unspecified or undefined "unknown" drugs and "food supplements."

Botanical (herb) extracts were used by a third of the identified CAM users, while unspecified herbal medicines were the most commonly used. Other preparations frequently used were a variety of folkloric traditional herb mixes – Arab, Indian, Chinese, Russian, and Tibetan. Homeopathy was administered to 20.7% of CAM users.

Manual therapies were used by almost 20% of CAM users, mostly for alleviating pain and emotional stress and promoting a general feeling of well-being. Reiki or Healing were the most popular in this group.

Specific lifestyles, dietary regimes or folk medicines were used by almost 13% of CAM users. The majority were therapies known as "Gerson" or "Ann Wigmore" methods that combined fasting, colonic irrigation and sequences of water, coffee or wheat herb enemas, vegetable juices (as a sole source of nutrition for a certain period) and wheat grass juice as daily lifestyle habits.

Spiritual mind-body therapies were used by 7% of CAM users. These were mostly used for alleviating emotional stress and to improve general feeling and quality of life.

Electronic and other devices were used as therapies by 4% of CAM users for a variety of purposes.

Aims and benefits

Most of the patients who used CAM, or their family members on their behalf, reported that they did so for more than one purpose. Two-thirds of the patients reported using CAM to "strengthen the immune system," or to alleviate side effects of conventional therapies, to improve general well-being and reduce anxiety, or to relieve pain. The majority of these patients (62%) reported subjective benefits. Only 27.4% reported using CAM for "curing the disease" and almost 5% for "preventing recurrence"; 44% of

Table 1. Frequency of CAM use by the study population (n = 368)

CAM category	Specific CAM treatment	No. of treatments	CAM users (%)
Chemical or biological pharmacologic remedies	Various specified/unspecified/unknown by patient (n=39) or unspecified 'food supplements' taken as tablets, drops or syrups (n=8)	50	
	Vitamin C large dose (1,000–6,000 mg)	34	
	Other megavitamins	23	
	Various commercial preparations of Sunrider, Solgar, Intra/Lifestyle, Tivoni, Herbalife	23	
	Shark liver or cartilage	15	
	Selenium	14	
	Iscador/Viscum Album	14	
	"Dr. Nona" and other preparations, Biococktails	12	
	Q10 enzyme preparation	8	
	Infusion implants, ozone and unknown	5	
	Fish oil and omega 3	4	
	Urine therapy	2	
	Chinese remedies	2	
	Subtotal	**152 (206)**	**41.3**
Botanical (herb) therapies	Various and unspecified herb mix	32	
	Chinese herb mix preparations	17	
	Echinacea	16	
	Chinese mushrooms	15	
	Arab, Indian or Tibetan herb mix	13	
	Propolis	10	
	Russian herb mix	7	
	Aloe vera extracts	6	
	Seaweed	6	
	Ginseng	5	
	Soy	3	
	Bach flowers	3	
	Subtotal	**115 (133)**	**31.3**
Homeopathy	**Subtotal**	**76 (79)**	**20.7**
Manual therapies	Reiki or Healing	45	
	Acupuncture	24	
	Reflexology, Shiatsu, massage	20	
	Chiropractic	2	
	Subtotal	**72 (91)**	**19.6**
Specific lifestyles, dietary regimes or folk medicines	Metabolic ("detoxification") therapies: Ann Wigmore or Gerson's theory principles (combination of fasting, enemas of water or coffee, colon irrigation, wheat grass juices)	20	
	Specific diets, including macrobiotics	15	
	Vegetable juices	8	
	Anthroposophy	3	
	Naturopathy	3	
	Honey	2	
	Subtotal	**47 (51)**	**12.8**
Spiritual mind-body therapies	Meditation, yoga	14	
	Variety of mind-body and spiritual methods, e.g., hypnosis, instructed imagination, autosuggestion, rebirthing, painting therapy, iridology, spirolina	14	
	Feldenkreis, Paula, kinesiology (brain)	6	
	Subtotal	**26 (34)**	**7.1**
Devices	Electronic (Tense)	14	
	Hyperthermy	2	
	Radioactive needle implants, silver plates	2	
	Subtotal	**15 (18)**	**4.1**
	Total patients (total treatments)	**368 (612)**	

these reported subjective improvement. Half of all patients reported benefits regardless of the specific purpose of use, and 3.8% felt that CAM treatments were harmful to them, with no further details.

CAM use by type of cancer

Breast cancer patients, 29% of our study population, had the highest rate of CAM use (23%). Other types of cancer with relatively high rates of CAM use (21.5%–17.1%) are (in descending order) lymphatic system neoplasias, soft tissue tumors, and cancer of the esophagus, liver, pancreas, skin, and brain. Thyroid and urinary system cancers had the lowest rates of CAM use (5.4–6.8%). An average of more than two types of CAM treatments per patient was seen in females with genital cancer disease and in those with lymphatic system neoplasias.

CAM use by conventional cancer treatments

Chemotherapy was mostly associated with CAM use. Half the study population received chemotherapy and 23% of them used various CAM therapies, while only 11% of those who did not receive chemotherapy used CAM ($P < 0.00001$).

CAM use by demographic characteristics

Gender: The patient population consisted of 41% males and 59% females. Women used significantly more CAM as compared to men: 19.4% vs. 13.5% ($P = 0.0004$).

Age: The median age of the patients was 66; one-third was over 71 years. Significant differences were found in CAM use among the various age groups. The highest use was among patients in the 41–60 age group, almost twice the rate among patients younger than 30 or between age 61 and 70 (27–30% vs. 15–16%). Only 6–7% of CAM users were 71 years and older ($P < 0.000001$).

Education: Patients with an academic education used significantly more CAM (30.3% users) than those with only high school or elementary education (15% and 4.5%, respectively, $P < 0.000001$).

Country of birth: Israeli and American-born Jews were significantly more likely to use CAM therapies than were Israeli Arabs or Jews born elsewhere. One-third of the Israeli-born Jewish patients used CAM therapies vs. 8% among Israeli Arabs, or 10–15% among Jews born in all other countries ($P < 0.000001$).

Employment status: Only half of our interviewed population who were under the age of 60 were employed at the time of the interview. Of these, 35% had used CAM therapies vs. 20% in the non-working patients ($P < 000001$).

Socioeconomic status: The higher the status, the greater the rate of CAM use. Only 15.5% of our study population was classified as high socioeconomic status; 38.3% used CAM vs. 8% in the lower socioeconomic group ($P < 0.000001$).

Predicting rate of CAM use by population characteristics

Based on logistic regression analysis, a statistical model was drawn, taking into consideration all the demographic factors, type of cancer, and main conventional oncology therapy. The overall prediction rate of this model is 84.4% certainty for a cancer patient

Table 2. Rates of CAM in demographic and chemotherapy treatment groups

Demographic characteristics	Patients interviewed No.	Patients interviewed %	CAM users %	CAM users P	% CAM users Chemo-therapy	% CAM users Non- chemo-therapy	% CAM users P
Group A							
Age <70 Education: high school and more, Israeli or American-born Jews	322	14.8	41.3*		52.9%	27.5%	<0.00001
Academic education	112	5.1	53.6		69.4%	34.7%	0.0003
Professional education	105	4.8	40.0	0.001	55.6%	25.0%	0.002
High school education	105	4.8	29.5		32.8%	22.2%	NS
Group B							
Age <70 Education: high school and more, Jews not born in Israel or America, and Israeli Arabs	719	33.0	21.8*		28.4%	13.9%	<0.000001
Academic education	243	11.2	30.9		40.0	20.0	0.0009
Professional education	253	11.6	19.4	0.00008	27.2	9.6	0.0004
High school education	223	10.2	14.8		16.8	12.6	NS
Group C							
All patients with elementary education and aged 71 years or more, regardless of education or ethnic origin	1,135	52.2	6.9*		8.0	6.0	NS
71 years or more, high school education and more	427	19.6	8.7	0.02	10.8	7.7	NS
Up to 70 years, elementary education	413	19.0	7.0		7.0	6.4	NS
71 years or more, elementary education	295	13.6	4.1		5.7	3.1	NS
Total	**2,176**	**100**	**16.9**		**23.2**	**11.2**	**0.00001**

* Significant differences in CAM use rates between the three groups (P < 0.000001)

to use CAM. According to the model, the most influential factors determining CAM use are (in descending order of influence):
- education: academic (β = -2.03) or professional (β = -1.58) or high school education (β = -1.58)
- chemotherapy treatment (β = -1.01)
- country of birth and ethnic source: Jews born in Israel (β = 0.91)
- age 41–50 years (β = -1.01).

Gender, employment status and the type of cancer were not the most influential factors, although univariate analysis showed that certain groups used CAM therapies significantly more than others. In this model, based on logistic regression results, a demographic profile of the CAM user was developed. All patients were categorized into three main groups of CAM use according to age, education, and ethnic origin, which were significantly different from each other (P < 0.000001). Each of these groups included three subgroups that were also significantly different in CAM use [Table 2]. Multivariate analysis found that chemotherapy was the most significant among all the disease and treatment characteristic variables. In all combinations of demographic groups, patients who underwent chemotherapy treatments used significantly more CAM therapies than those who did not have chemotherapy. Patients under age 70 with an academic education and born in Israel or North America had the highest rate of CAM use (53.6%). In this group, chemotherapy increased the rate of CAM use to almost 70%! In contrast, among patients aged 71 years or more and patients with a low level of education in all ages, the use rate was 3.1% in patients not treated by chemotherapy and up to 7.7% in patients

undergoing chemotherapy. Aims of treatment did not differ significantly in any demographic group.

Difference in reporting between patients and family members
Among patients who were personally interviewed, 20.6% reported CAM use, while interviews of close family members showed a 13% use (P = 0.0002). Although the difference is significant and it seems that family members reported less use of CAM than the patients themselves, a multivariate analysis of all groups found no statistical differences in the rate of reporting CAM use between the two groups [Table 3].

Discussion
This study reinforces other studies on the extent of CAM use by cancer patients and characteristic patterns of users. Rates of CAM use vary from 7% to 64% [7]. Most of the differences in the published rates probably derive from demographic differences and from the case-mix of the study populations. Various studies conducted in the United States and Israel found that CAM use by cancer patients was mostly associated with females aged 35–59, who had a higher education, higher socioeconomic status, advanced disease status and used chemotherapy [4,11–15].

The general rate of 17% CAM use in our study was lower than in two other studies conducted in hospitals in Jerusalem and Tel Aviv in 1997–1998, which reported a 58% and 51% CAM use, respectively [11,12]. Differences in case-mix characteristics explain the large variation in results: there were fewer women in our study as compared to the Jerusalem study [12] (59% vs. 70%), the patients were much older (median 66 vs. 43 years), and a smaller proportion were highly educated (25.5% with 13 years and more in our study vs. 56%). Specific analysis of demographic group combinations in our study enabled us to depict the profile of a CAM user and a non-user. Most patients (69%) in the group of Israeli-born Jews younger than

Table 3. Differences in reporting CAM use between patients and family members

Group*	No. of patients	No. of reports by family members (%)	% from family members' reports	% of CAM use reported by patients	% of CAM use reported by family members	P
A	322	90 (28%)	8.5%	44%	32%	0.051
B	719	328 (46%)	31%	24%	20%	0.15
C	1,135	639 (56%)	60.5%	6.4%	7%	0.69
Total	2,176	1057 (48.5%)	100%	20.6%	13%	0.0002

* Definitions according to groups in Table 2.

70 with a high education and who received chemotherapy used CAM. In contrast, only 3% of elderly patients with an elementary education used CAM, regardless of other demographic characteristics.

One of the main possible limitations of this study was the phone interviews conducted with family members instead of the patients themselves. Although univariate analysis showed a statistically significant difference in the rate of CAM use between reports by patients and close family members (20.6% vs. 13%, $P = 0.0002$), no statistical difference was found in the rate of CAM use between patients and family members in the multivariate analysis of all patient groups. Most family members interviewed (60.5%) represented patients from the elderly uneducated group who were identified in this study as having the lowest CAM use rate.

Many patients do not know what CAM remedies are and what substances they contain. Therefore, it is difficult to categorize the various therapies used, and statistical conclusions about their use can only be considered a rough evaluation. Much research is still needed on the effects of each therapy. Two-thirds of the interviewed patients who used CAM (146/228 patients), and 57% of patients who used CAM (35/62 patients) when the interviews were conducted with their family members, reported subjective beneficial effects in terms of alleviating side effects, improving well-being, or minimizing pain and emotional stress. Among the patients who had died, 45% (34/76 patients) or their family members reported improvement with CAM therapy during the patient's life. The improvement reported by the patients in the current study was subjective only, and was not studied in the interviews. Nevertheless, some of the known complementary therapies used by our patients have been studied and reported as being beneficial. Complementary therapies like mind-body medicine, acupuncture, music therapy, and massage were found to be effective for control of pain, anxiety, nausea and vomiting [8]. The use of herbal remedies for cancer patients is more problematic. It is beyond this study to review the benefits and harms of herbal remedies in reducing side effects of oncology treatment or improving quality of life of cancer patients. The main concern regarding the use of those remedies is potentially adverse interactions with anticancer agents [16].

Many of the botanic, biological, pharmacologic therapies and some of the dietary lifestyles that are considered alternative treatments are promoted to cure cancer or retard its development, although controlled trials have shown their ineffectiveness [8,9]. Among these, we recognized a relatively high rate of use by our study patients, such as Vitamin C mega-doses, shark's liver and cartilage, and a macrobiotic diet. More information about different CAM remedies for cancer patients, including evidence-based studies, can be found on the Internet, in the site of the National Cancer Institute of USA (http://www.cancer.gov/cancertopics/treatment/cam).

The trend of increasing CAM use by cancer patients should be recognized as a public call to health policymakers to demand higher academic standards in teaching, training, qualifying and licensing of CAM caregivers, to enable integrative medicine to be incorporated in oncology as it is in other medical disciplines [17].

Conclusions

A predicting module of CAM user patients was built that may help physicians to initiate conversations with their patients on CAM use. Expanding physicians' knowledge on CAM methods will encourage them to provide additional advice, promote the use of beneficial therapies, and inform patients about potentially harmful methods.

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