

## Use of Complementary and Alternative Medicine among Korean Cancer Patients

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**Background :** Complementary and alternative medicine (CAM) is now being increasingly used among cancer patients. The objectives of our study were to assess the prevalence, types, cost, subjective effects, and side effects of CAM use, reasons for CAM use, characteristics of CAM users compared to those of nonusers, and patients' expectations of doctors regarding their CAM use among Korean cancer patients at a single cancer center.

**Methods :** From April to August, 2003, we interviewed 186 cancer patients hospitalized in the Korea Cancer Center Hospital using a structured questionnaire, and analyzed the data.

**Results :** 78.5% of experimental subjects (146 patients) had been treated with at least one type of CAM, in addition to conventional Western treatment, with a mean monthly cost of 1,380,000 Won/person (approximately, 1,100 U.S. dollars on July, 2004). The most prevalent types of CAM used by these patients included medicinal mushrooms (67.1%), herbs (54.1%), vegetable diets (50.6%), and ginseng (46.5%). The main reported reasons for the use of CAM in addition to conventional medicine were nutritional support (19.1%) and physical strengthening (17.8%). 5% of CAM users experienced side effects. The younger and more educated the patients were, the more likely they were to employ CAM. 66% of CAM users wanted to discuss CAM techniques with their doctors.

**Conclusion :** More than two-thirds of cancer patients used various kinds of CAM, incurring considerable costs. Therefore, in order to help patients make informed decisions, medical society should be open to communication with patients. Not only the scientific aspects, but also the economic aspects of CAM usage should be examined more thoroughly, in order to ensure proper distribution of medical resources.

**Key Words :** Complementary therapies, Cancer, Korea

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### INTRODUCTION

Complementary and alternative medicine (CAM) generally refers to a set of medical interventions which are not taught widely in medical schools, and are not generally available in hospitals<sup>1)</sup>. In more detail, complementary medicine is an unconventional medical technique accompanying conventional medical treatment, and alternative medicine refers to an

unconventional medical technique pursued in place of conventional treatment<sup>2)</sup>. There is some controversy as to the increasing popularity of CAM among cancer patients, as different studies report vastly different numbers with respect to its prevalence (16~83%)<sup>3-6)</sup>. The increasing interest in CAM among cancer patients may be due to the limitations of conventional treatment, the increasing advertisements for CAM, or the desire for holistic or natural treatments. Although

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clinicians care for many cancer patients using CAM in everyday clinics, little information is available regarding CAM, and there are, as yet, no available and definitive practical guidelines for CAM usage in Korea.

The present study was undertaken in order to assess various parameters of CAM usage among Korean cancer patients, using a sample group from a single cancer center. These parameters included the prevalence, types, cost, subjective effects, and side effects associated with CAM use. Other parameters included the patients' reasons for using CAM, the clinical characteristics of CAM users compared to those of nonusers, and the patients' expectations of doctors regarding CAM usage.

## MATERIALS AND METHODS

### Subjects

During the study period from April 1 to August 18, 2003, a total of 1,670 cancer patients were admitted to the Department of Internal Medicine of the Korea Cancer Center Hospital. We chose patients and family members who were able to cooperate, and asked them to participate in this study. Most

patients expressed unwillingness to enroll in this study, due to the grave status of their cancer. Finally, a total of 186 patients consented to participate in this study.

### Procedures

The nurse coordinators interviewed the patients and/or their family, using a structured questionnaire (Appendix). The questionnaire included questions regarding the prevalence, types, costs, source of information, subjective effect, side effects of CAM use, reasons for CAM use, patient demographics (age, level of education, and income) and medical condition. It also contained questions about the patients' expectations of their physicians regarding CAM usage.

### Statistics

Participants were classified as CAM users if they had used at least one type of CAM. The differences between CAM users and nonusers with respect to demographic and clinical characteristics were assessed by chi-square tests, independent samples *t*-tests, Fisher's exact tests and logistic regression analyses. Logistic regression analyses were performed using the SPSS Base 10.0 (for Windows XP; SPSS Inc, Chicago, IL). *p* values of < 0.05 were considered to be statistically significant.

**Table 1.** Prevalence and Characteristics of the Subjects

	CAM users n (%)	CAM nonusers n (%)	<i>p</i> -value
Total	146 (78.5)	40 (21.5)	
Age (mean ± SD)	52.0 ± 12.2	57.6 ± 9.0	0.024*
Gender (Male / Female)	93 / 53	30 / 10	0.181**
Education (graduation)			0.012**
Elementary school	23 (15.7)	14 (35.0)	
Middle school	25 (17.1)	6 (15.0)	
High school	51 (34.9)	14 (35.0)	
University	25 (17.1)	0 (0)	
No answer	22 (15.0)	6 (15.0)	
Income (Won / month)			0.059***
No income	9 (6.2)	4 (10.0)	
< 3 million	34 (23.3)	5 (12.5)	
3–6 million	24 (16.4)	3 (7.5)	
>6 million	2 (1.4)	3 (7.5)	
No answer	77 (52.7)	25 (62.5)	
Diagnosis of Cancer			0.636****
Lung	59 (40.4)	25 (62.5)	
Gastrointestinal	47 (32.1)	9 (22.5)	
Hematologic	18 (12.3)	3 (7.5)	
Gynecologic / Breast	11 (7.5)	1 (2.5)	
Others	11 (7.5)	2 (5.0)	

\* , *p*-value by independent samples *t*-test.

\*\* , *p*-value by chi-square test.

\*\*\* , *p*-value by chi-square test. This result might not be valuable, because majority of patients didn't answer to their income (52.7% and 62.5% in CAM users and nonusers, respectively).

\*\*\*\* , *p*-value by Fisher's exact test.

CAM, complementary and alternative medicine

## RESULTS

### Prevalence of CAM use and characteristics of CAM users

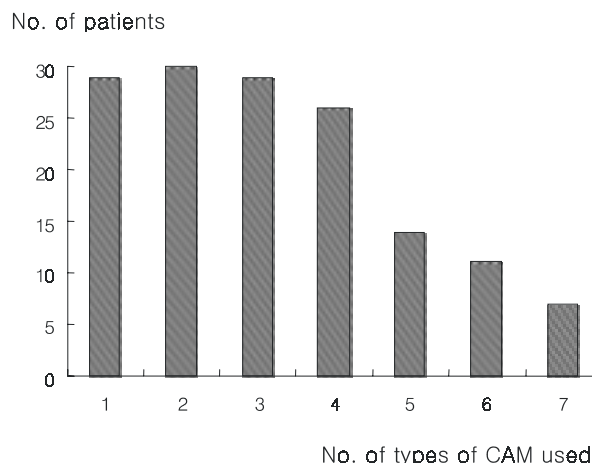
We interviewed 186 patients who had agreed to participate in this study. Among the 186 subjects, 78.5% (146 patients) had used at least one type of CAM.

Comparison of the characteristics between CAM users and nonusers revealed that CAM users tended to be younger ( $p=0.024$ ) and more educated ( $p=0.012$ ) than nonusers. No significant differences between CAM users and nonusers were determined with respect to gender or diagnosis of cancer (Table 1). As the majority of patients (CAM users 53%, nonusers 63%) refused to answer questions regarding their income, we were unable to assess statistical differences with respect to income. Logistic regression analysis revealed that more educated patients were significantly more likely to use CAM (odds ratio, 2.327; 95% confidence interval, 1.082–5.003)

### Commonly-used types of CAM and monthly expense of CAM use

The four most commonly-used types of CAM were: extracts of Korean red ginseng (35.6%,  $n=52$ ), *Phellinus linteus*-a medicinal mushroom (33.5%,  $n=49$ ), vegetable green juice (18.4%,  $n=27$ ) and *Ulmus davidiana*-a medicinal tree (18.4%,

$n=27$ ) (Table 2). Among the 146 CAM users, 29 had used only one type of CAM, 30 had used two types of CAM, and 87 patients had used three or more types of CAM (Figure 1). The patients' main source of information regarding CAM was family members (52.1%,  $n=76$ ), followed by books or magazines (17.8%,  $n=26$ ), other cancer patients (8.2%,  $n=12$ ), the Internet (6.2%,  $n=9$ ), and doctors of Oriental medicine (1.4%,  $n=2$ ). The main site from which patients obtained CAM products was

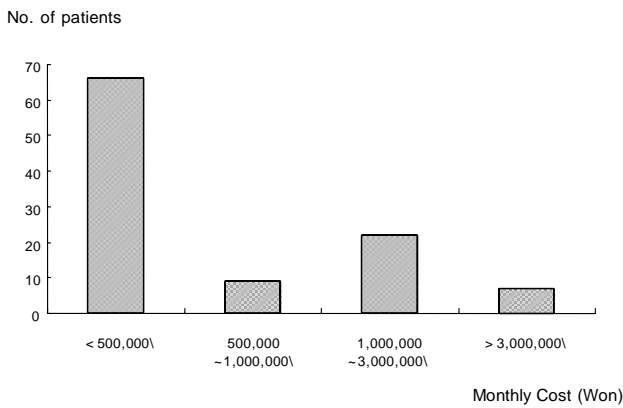


**Figure 1.** Number of types of CAM used per patient. 29 patients (20%) used only one type of CAM and 117 patients (80%) used more than one type of CAM.

**Table 2.** Types of CAM used (total patient number=146) \*

Dietary treatment
Vegetables / cereals / fruits
Green juice (27), mixed vegetables (15), bean (14), brown rice (8), kale (7), carrot (6), garlic (6), jujube (4), mixed cereals (4), others (23)
Uncooked mixed food (11) / parched mixed food (4)
Marine products
Eel (4), crucian carp (3), swell fish (2), snail (2), others (2)
Dairy products : cow's first milk (1), yoghurt (1)
Medicinal plants
Medicinal mushrooms
<i>Phellinus linteus</i> (49), <i>Ganoderma lucidum</i> (17), Active Hexose Correlation Compounds (11), <i>Agaricus brazilia</i> (9), others (12)
Medicinal tree
<i>Ulmus davidiana</i> (27), <i>Morus alba</i> (7), <i>Acanthopanax sessiflorus</i> (6), Others (13)
Ginsengs
Korean red ginseng (52), Korean ginseng (9), others (7)
Medicinal herbs
<i>Taraxacum mongolicum</i> (13), <i>Angelica makino</i> (10), <i>Oenanthe javanica</i> (9), <i>Houttuynia cordata</i> (4), <i>Pinus densiflora</i> (4), <i>Glycyrrhiza glabra</i> (3), <i>Viscum album</i> (3), others (33)
Health food / immune-reinforcement / anticancer products
Vitamin (8), Chitosan (6), squalene (4), sulfurous duck (3), Royal Jelly (3), others (22)
Chinese medical clinic : acupuncture (9), herbs (8)
Physical therapy : moxibustion (6), massage (4), heat (3), others (2)
Others : charcoal powder (4), coffee enema (3), pray (3), others (4)

\*The answers can be more than one from a patient.



**Figure 2.** Monthly cost of CAM usage per person with mean value of 1,380,000 Won.

selling agencies (22.6%, n=34), followed by markets (14.3%, n=21), cultivated land (11.6%, n=17), directly collecting plants or mushrooms from a mountain (10.9%, n=16), buying from Oriental medical practitioners (10.2%, n=15), direct cultivation (4.7%, n=7), and Internet stores (4.7%, n=7).

The monthly costs of CAM use were substantial, at a mean value of 1,380,000 Won (about 1,100 U.S. dollars on July 13, 2004)/month/person. 45.2% of CAM users paid less than 500,000 Won per month, 6.2% paid 500,000 to 1,000,000 Won, and 19.9% paid more than 1,000,000 Won for their CAM (Figure 2).

**Reasons for CAM use, subjective effects, and side effects of CAM**

Patients’ major reasons for using CAM were to (in order): augment nutritional status (19.1%), to assist the body’s healing power (17.8%), and to boost the immune system (6.9%) (Table 3). The CAM users felt that the CAM had a positive emotional or psychological effect (13%) and improved physical strength (8.2%), but 53.4% of users detected no benefit resulting from their usage of CAM (Table 4). 84 users (57.5%) expressed willingness to continue their CAM usage, but 62 patients (42.4%) were contemplating discontinuing their CAM regimens in the near future.

**Table 3.** Reasons for CAM use (n=146)

Reasons	No. of patients
Nutritional support	28 (19.1%)
Body strengthening	26 (17.8%)
Boost immune system	13 (6.9%)
Increase appetite	9 (6.1%)
Anti-cancer effect	7 (3.7%)
Don’t know/others	56 (38.3%)

\*The answers can be more than one from a patient.

Out of 146 CAM users, 7 patients (4.8%) experienced side effects, including toxic hepatitis or ascites (n=2), renal failure (n=1), hematochezia (n=1), indigestion (n=1), sore throat (n=1), and progression of disease (n=1).

**Expectations of medical personnel regarding CAM use**

66.1% (123 patients) of CAM users wanted to discuss their CAM usage with their physicians. 33.9% of the CAM users didn’t wish to discuss this, as they believed in the effectiveness of CAM, and also feared that physicians might discourage their CAM use (n=9). Other patients were unwilling to discuss these issues with their physicians because they felt that their physicians were not fully informed about CAM (n=3), or because they planned to discontinue their CAM regimen shortly (n=11).

**DISCUSSION**

The present survey revealed that the use of CAM was fairly widespread, with 78.5% of patients using at least one type of CAM, in addition to conventional treatment. This prevalence seems slightly higher what might be found in Western countries<sup>7, 8)</sup>. We were able to interview only 186 patients among 1,670 total patients admitted during the study period, as the majority of hospitalized patients were unwilling to enroll in this study, due to the grave status of their cancer. Therefore, our results might not reflect the true prevalence. Furthermore, most of the subjects were in advanced stages of cancer, which might be related to the high prevalence of CAM use in our results.

In our study, younger and more educated patients were significantly associated with the use of CAM (Table 1). However, logistic regression analysis showed that only higher education was a significant predictor for CAM use. Gender and

**Table 4.** Subjective effects after use of CAM (n=146)\*

Feelings after use	No. of patients
Emotional comfort	19 (13%)
Physical strengthening	12 (8.2%)
Feel as if effective	9 (6.1%)
Improve digestion or nutritional support	7 (4.7%)
Decrease nausea and vomiting	5 (3.4%)
Decrease side effect of chemotherapy	4 (2.7%)
Improve respiratory function	4 (2.7%)
Antitumor effect	3 (2.0%)
Improve urine or bowel habit	3 (2.0%)
Decrease cancer pain	2 (1.3%)
Others	4 (2.7%)
Only side effect	4 (2.7%)
No effect	78 (53.4%)

\*The answers can be more than one from a patient.

diagnosis of cancer were not significantly associated with CAM use. The majority of patients were unwilling to answer questions regarding their income, therefore we were unable to assess statistical differences with respect to income. In outpatient<sup>3</sup>, inpatient<sup>7</sup>, and telephone survey<sup>9</sup> studies from various cancer centers, gender (women)<sup>3, 7, 9</sup>, younger<sup>3</sup>, more educated<sup>3, 7, 9</sup>, and higher income<sup>9</sup> patients with advanced metastasis<sup>3</sup>, breast cancer<sup>3</sup>, or central nervous system tumors<sup>9</sup> have been found to be associated with CAM use. However, in other studies<sup>4, 5, 10, 11</sup>, gender<sup>4, 5, 10</sup>, age<sup>5, 10</sup>, education<sup>4, 5, 10, 11</sup>, income or profession<sup>10, 11</sup>, cancer diagnosis<sup>5, 11</sup> and severity of disease severity<sup>5</sup> were not significantly associated with CAM use. Therefore, the pattern of CAM usage appears to be more closely related to the cultural and socioeconomic status of the subjects.

The patients' main source of information regarding CAM was, largely, family members (52.1%)<sup>4, 5</sup>, followed by books or magazines (17.8%), or other cancer patients (8.2%)<sup>4, 5</sup>, and infrequently, doctors of Oriental medicine (1.4%). In a Taiwanese study, 30% of patients were found to have obtained the prescriptions for the CAM products from Chinese medical clinics<sup>4</sup>. This indicates that a large section of the Korean population believes in CAM and its purported effects.

In our study, the most commonly-used types of CAM in our study were extract of Korean red ginseng (35.6%), *Phellinus linteus*—a medicinal mushroom (33.5%), vegetable green juice (18.4%) and *Ulmus davidiana*—a medicinal tree (18.4%). In the United States of America, the most commonly-used types of CAM include dietary treatments and megavitamins<sup>4, 9</sup>. Therefore, the types and patterns of CAM usage appear to be closely related to the patients' cultural and socioeconomic background.

The reasons for CAM use include nutritional support, physical strengthening, and improvement of immunity, which are all complementary, rather than alternative, therapies. Many studies have shown that CAM users expected the CAM to improve their quality of life<sup>3, 4, 8, 10</sup>, augment their immune systems<sup>3, 8, 10</sup>, relieve symptoms<sup>3</sup>, cure their illnesses<sup>3, 4, 8</sup>, or give them feelings of hope<sup>3, 5</sup>. Rari et al.<sup>6</sup> reported that many of the psychological side effects of cancer, such as fear, anxiety, and hopelessness, become the major reasons for patients to turn to CAM<sup>6, 12</sup>. Most patients initially approached CAM with the expectation of direct anti-cancer effects. However, even though the expected anti-cancer effects did not materialize, these patients continued CAM therapies, mostly due to psychological benefits<sup>8</sup>.

We compared the mean monthly expense for CAM use with the monthly cost of standard chemotherapy for various cancers. If we assume that an adult patient with a body surface area of 1.7 m<sup>2</sup> carried governmental health insurance, the patient usually has to pay 6,176 Won (about \$5.80) for chemotherapeutic agents of 5-fluorouracil plus cisplatin for the treatment of

metastatic stomach cancer per month, and 386,545 Won (about \$315) for one-cycle paclitaxel plus cisplatin for non-small cell lung cancer, because the patient pays only 20% of the total price of these drugs under the coverage of national health insurance. The mean monthly cost of CAM use in our study was 1,380,000 Won, which was much higher than the cost of conventional medicine covered by health insurance. The total national cost of CAM use, if calculated, would amount to an enormous sum. Therefore, nationwide reasonable guidelines for the usage of CAM would be greatly appreciated.

4.8% of our patients experienced adverse effects from CAM, including hepatotoxicity and renal toxicity. This rate of frequency, however, might have been underestimated, as it depended only on the patients' perceptions and memory. Moreover, potential harmful interactions definitely exist between conventional medicine and CAM.

In two hospitals in England, 6 patients of 66 CAM users with diet therapy reported dissatisfaction, due to such criteria as severe weight loss and the unpalatable nature of the diet, and 1 patient described feeling physically unwell after being treated with an herbalist regimen<sup>8</sup>. In the United States of America, 6% of cancer patients who have used CAM reported side effects, while 53% of 91 physicians attending their patients noted adverse effects, including the delay of conventional treatment (46%). 35% of these cases involved the direct toxicity of the treatment: these discrepancies may be an unfortunate product of the way patients and physicians perceive communications<sup>9</sup>.

Two-thirds of CAM users wanted to discuss their interest in CAM with their doctors. If patients are combining these agents with conventional treatment, the doctors should discourage these agents, as this combined therapy often results in the delay of conventional treatments of proven efficacy. Physicians should also always monitor patients for possible drug-herb-vitamin interactions<sup>3, 11</sup>.

Doctors should discourage any treatment by unlicensed professionals, and the injection of substances not approved by the Food and Drug Administration, particularly during periods of active chemotherapy or radiation therapy<sup>12-14</sup>, even though current evidence remains inadequate to actually make predictions regarding which supplements may increase or decrease the effects of chemotherapy or radiation therapy<sup>13, 15</sup>.

In order to facilitate patient-doctor communication, appropriate databases and information regarding CAM products are essential. Expanded research is required in order to determine the safety and efficacy of a variety of drug and herb interactions<sup>3</sup>. Only proper scientific and chemical trials will clarify the issue of whether CAM really plays any role whatsoever in cancer treatment or improvement of quality of life. If, indeed, this is the case, we should find reasonable ways of incorporating CAM into conventional treatments<sup>16</sup>.

Our present study showed that more than two-thirds of Korean cancer patients used various kinds of CAM, at considerable costs and risks of side effects. Therefore, medical society should be open to communication with patients, in order to assist patients in making informed choices. Not only scientific, but also economic aspects of CAM usage should be studied further, in order to ensure proper distribution of medical resources.

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## Appendix

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### CAM questionnaire\*

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1. Have you ever used CAM since the diagnosis of cancer?
  - Yes
  - No (even if you have answered no, please answer the appropriate headings below.)
  
2. Check the according category you have used, monthly cost and duration of the therapy.
  - 1) Dietary treatment  
Examples: vegetables, parched mixed food, marine products, others (specify)
  - 2) Medicinal plants  
Examples: medicinal mushrooms, ginsengs, medicinal herbs
  - 3) From Chinese medical clinic
  - 4) Health food / immune-reinforcement / anticancer products
  - 5) Physical therapy  
Examples: moxibustion, massage, others (specify)
  - 6) Others (specify)
  
3. Who recommended the CAM?
  - 1) Family
  - 2) Friends
  - 3) Books or magazines
  - 4) Others
  
4. Where did you buy the CAM and where did the therapy held?
  
5. What did you think about the benefit from the therapy?  
Were there any benefits from the therapy? (please describe)
  
6. Were there any side effects from the therapy?
  
7. Do you want to discuss with your doctor about the CAM?
  - Yes
  - No
  - If no, why?
  
8. Would you take the therapy again?
  - Yes
  - No
  - If no, why?

Patient's number:

Name:

Sex/Age:

Telephone number:

Diagnosis of cancer:

The highest education level:

Occupation:

Income:

Doctor's name:

Nurse's name:

Date:

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\*The original questionnaire was written in Korean.