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## Original Article

**Use of complementary and alternative medicine by self- or non-institutional therapists in South Korea: a community-based survey****Seung-Min Baek<sup>a</sup>, Sun Mi Choi<sup>b</sup>, Hyun-Ju Seo<sup>b</sup>, Sul Gi Kim<sup>c</sup>, Ji-Hoon Jung<sup>d</sup>, Minhee Lee<sup>e</sup>, Jeong Hwan Park<sup>e</sup>, Su Jeong Moon<sup>e</sup>, Sanghun Lee<sup>e,\*</sup>**<sup>a</sup> School of Medicine, Kyung Hee University, Seoul, Korea<sup>b</sup> Department of Nursing, College of Medicine, Chosun University, Gwangju, Korea<sup>c</sup> Department of Acupuncture and Moxibustion, College of Oriental Medicine, Wonkwang University, Iksan, Jeonbuk, Korea<sup>d</sup> Department of Information and Statistics, Natural Sciences, Chungnam National University, Daejeon, Korea<sup>e</sup> Acupuncture, Moxibustion, and Meridian Research Group, Medical Research Division, Korea Institute of Oriental Medicine, Daejeon, Korea

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## ABSTRACT

**Background:** The purpose of this study is to investigate the prevalence and utilization pattern of complementary and alternative medicine (CAM) administered by oneself or by non-institutional practitioners in a general population in South Korea.

**Methods:** Nationwide, face-to-face surveys were conducted from September 1, 2011 to October 5, 2011. We conveniently selected the participants by using a proportional allocation method according to age, gender, and region. The use of CAM in the last year, the patterns of use, sources of information, and counseling objects were investigated in addition to respondents' demographic characteristics.

**Results:** Among the 1284 people approached, 915 respondents (71.3%) reported having had at least one CAM therapy during the past 12 months. Natural products were used the most frequently (58.8%). Unexpectedly, 82.6% out of 1740 therapies reported were self-administered CAM. Healthcare professionals were the source of information on CAM in only 5.6% of all instances of use, and only 17.7% of participants had consulted with doctors regarding CAM use.

**Conclusions:** Owing to the widespread use of CAM in South Korea, researchers should focus on the safety and potential effectiveness of CAM therapy when self-administered by users or by unauthorized CAM practitioners.

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## 1. Introduction

Complementary and alternative medicine (CAM) is a category of diverse medical and healthcare systems, practices, and products that are not generally considered as part of conventional medicine.<sup>1</sup> CAM is becoming increasingly prevalent because it is used not only for disease treatment, but also for disease prevention and health promotion. Hence, it is increasingly important to survey CAM use among the general population by using nationwide samples.<sup>2</sup> By doing so, we will be able to understand how medical consumers make choices regarding the use of CAM. This can help prioritize the use of research funds regarding potentially effective or harmful treatments by providing information to healthcare policy makers.<sup>3</sup> Data on 1-year CAM use from other countries revealed that usage rate is 38.3% in the US<sup>4</sup> and 68.9% in Australia.<sup>5</sup> In European countries, this rate is 26.3% in the UK<sup>6</sup> and 34–49% in Scandinavian countries.<sup>7</sup> In particular, in the US and UK, national health surveys, which include CAM-related questions, are periodically conducted, which reflects the importance of monitoring CAM use in the general public.<sup>4,6</sup>

In Korea, a complex medical delivery system complicates the definition of CAM, which in turn obstructs the investigation of the exact usage rate of CAM in the general population. Korean medicine, which is defined as indigenous medicine consisting of treatment modalities such as acupuncture, moxibustion, cupping, and herbal medicine, is considered as CAM mainly by western medical doctors in Korea;<sup>8</sup> however, it is sometimes considered as conventional medicine because Korean medicine (KM) doctors undergo formal training and their medical services are covered by the national health insurance program.<sup>9</sup> In order to monitor the under-regulated domain of CAM, it is necessary to investigate CAM use, both through self-administration and through administration by non-institutional practitioners outside of conventional western medicine and Korean medicine.

Three previous studies have surveyed CAM use with nationwide samples.<sup>8,10,11</sup> Two of these surveys did not distinguish CAM modalities from Korean medicine;<sup>8,10</sup> thus, information focusing on CAM use outside of institutions was not provided. In addition, the results of the third study is rather outdated.<sup>11</sup> Therefore, this study investigated CAM use that was not suggested by a medical doctor or a doctor of Korean medicine and that involved a self-administered procedure or administration by a non-institutional practitioner. We also examined the characteristics of users of this type of CAM and their patterns of use.

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## 2. Methods

### 2.1. Participants

This study comprised a face-to-face cross-sectional survey involving 1284 Korean residents who were not hospitalized, over 18 years old. We calculated that a sample size of 1284 people is required to estimate the population proportion with a  $\pm 2.75$  margin of error and a 95% confidence interval. The participants were selected by gender and age from 16 cities and

provinces in Korea through a quota sampling method based on the 2010 Housing Census by the Korean National Statistical Office. To provide an adequate representation of the elderly, people younger than 60 years old were assigned to groups created with 10-year intervals while people aged 60–75 were assigned to groups with 5-year intervals.

### 2.2. Survey instruments

A structured questionnaire was developed by three doctors of Korean medicine and one public health research expert. In this questionnaire, we defined CAM as either self-treatment or as the recommendation or carrying out of a procedure administered by a non-institutional practitioner for health management or disease treatment.

We extracted 1375 treatment items from 45 previous studies of CAM use to develop the questionnaire. These were then condensed to 31 items and summarized into the following four categories according to the National Center for Complementary and Alternative Medicine (NCCAM) categorization:<sup>1</sup> (1) Korean medicine practice conducted by a practitioner other than an authorized doctor of Korean medicine, which included acupuncture, moxibustion, etc.; (2) manipulative and body-based therapies that included chiropractic practice, massage, etc.; (3) mind-body medicine, which included external Qi treatment, *Qigong* training, etc.; and (4) natural products that included vegetable and fruit juices, mushroom dietary treatment, etc.

The questionnaire also requested demographic details, including age, sex, marital status, religion, residence, education, profession, and monthly income. In addition, participants answered questions on lifestyles and health status such as engagement in smoking, drinking, and exercise, and self-perceived health status. Participants were also asked the frequency with which they read health-related newsletters or viewed broadcasts by mass media as an indicator of their interest in health.

A detailed guideline outlining the cases to be included in each of the 31 items was prepared. Furthermore, to resolve the ambiguity between self-treatment (or administration) and a non-institutional practitioner's procedure (or prescription), a detailed guideline with examples was provided by interviewers.

### 2.3. Data collection

We began collecting data after receiving approval from the Korea Institute of Oriental Medicine Institutional Review Board (IRB) (IRB No.: I-1108/004-001-01). A pilot test was conducted on a sample of 50 people in the Seoul area to improve the construct validity of the questionnaire. Sixteen interviewers were deployed; they were trained for 6 hours, during which they practiced in pairs through role play, in which one interviewer acted as the interviewer and the other as the respondent. The main survey in this study was then conducted by face-to-face interviews that were held from September 1, 2011 to October 5, 2011. To avoid information bias resulting from respondents' preconceived ideas on hearing concepts and words such as "CAM" or "folk remedy," the survey was given the title "Survey on the health-seeking

behaviors of Koreans.” The interviewer stated the purpose of the survey and the lead institution prior to the survey and requested for participants’ consent. After obtaining participants’ consent, the interviewer first asked if the respondent had had any self-administered CAM treatments or had undergone CAM treatments from a non-institutional practitioner who is not a doctor (including a doctor of Korean medicine) for health management or disease treatment in the past year. Respondents were then asked about their use of each of the 31 items in the past year with the interviewer evaluating each of them. This was followed by questions about whether the treatment was self-administered or whether a practitioner had administered the treatment, their knowledge of the origin of each treatment item, the subjective effectiveness of the treatment in question, the main purpose of use, the average yearly costs, etc. When the respondent did not completely understand the pertinent treatment item, the interviewer explained with a detailed example of the treatment. In cases where the respondent was confused about whether the procedure was carried out by an authorized doctor of Korean medicine, the interviewer asked in-depth questions about the circumstances at the time of the procedure.

#### 2.4. Statistical analyses

Respondents’ CAM use was measured as a percentage. To identify the factors that affect CAM use, age was considered as a continuous variable and tested with a two-sample two-tailed *t* test; categorical variables such as gender, marital status, religion, residence, education level, and occupation were tested with a Chi-square test. Predictive Analytics Software (PASW) statistics 18 (IBM Corporation, Armonk, NY, USA) was used for all analyses. All statistical tests were two-tailed with the significance level set at 0.05.

## 3. Results

### 3.1. Sample characteristics

A total of 1284 participants were included in the survey [men: 621 (48.4%); women: 663 (51.6%); mean age = 45.93 ± 16.07 years]. The number of married participants was 942 (73.4%), and 671 (52.3%) were religious. Residents of megalopolises constituted the largest group (*n* = 607; 47.3%). High school and college graduates comprised 557 (44.7%) of all survey residents, and the mode monthly household income was between 3,010,000 and 4,000,000 Korean won (KRW; *n* = 385; 30.0%). In terms of occupation, office workers constituted the largest group (*n* = 631; 50.8%).

Five hundred and thirty-four (41.6%) participants were smokers, and 963 (75.9%) consumed alcohol periodically. In total, 53.6% of the respondents answered that they did not exercise regularly, and 618 people (48.1%) evaluated their health as “good” (out of the options “good,” “moderate,” and “bad”). In addition, 605 people (46.4%) reported reading health-related articles two to three times a week.

### 3.2. Prevalence of CAM use

Among the 1284 survey respondents, 915 (71.3%) had used more than one CAM therapy in the past 12 months. The average number of methods used was 1.9 per person. The average age of CAM users was significantly higher than that of non-users (*p* < 0.001). Furthermore, women (*p* < 0.001); married people (*p* < 0.001); non-religious people (*p* < 0.001); those with less than high school education (*p* < 0.001); non-smokers (*p* = 0.007); non-drinkers (*p* = 0.030); those who perceived their own health status to be bad (*p* < 0.001); and those who read health-related articles frequently (*p* < 0.001) were more likely to use CAM (Table 1).

The total number of CAM types used by the respondents was 1740. Natural products (58.8%) were the most common treatment option, which was followed by manipulative and body-based therapies (23.6%), Korean medicine practice conducted by a practitioner other than an authorized doctor of Korean medicine (12.5%), and mind-body medicine (4.8%) (Table 2). Among natural products, dietary treatment (34.5%) was the most commonly used. Of these, dietary treatment involving eating raw or simply processed herbs or vegetables comprised 32.9%. Among natural products, the rates for herbal medicine prescribed by non-institutional practitioners, external application of natural products, and aromatherapy were insignificant at 4.2%, 2.9%, and 0.2%, respectively.

### 3.3. Patterns of CAM use

Among respondents who have used CAM, 25.6% of Korean medicine practice involved non-authorized practitioners while 86.7% of manipulative and body-based therapies, 79.7% of mind-body medicine, and 82.9% of natural product treatments involved self-administration (Table 3). Thus, the involvement rate of practitioners other than authorized doctors was relatively high in Korean medicine practice. For other methods, however, it was approximately 10%.

When asked about the origins of CAM, most of the survey respondents stated that it was a unique Korean method that is commonly performed by non-authorized practitioners (95.5%) and that it could be found in approximately 60% of manipulative and body-based therapies (64.9%), mind-body medicine (56.2%), and natural product use (65.8%).

In terms of adverse effects, only 0.8% of CAM methods reported in this survey involved adverse effects during use. In addition, most respondents (70.9%) used CAM for a specific health condition rather than for general health promotion.

### 3.4. Sources of information on CAM and counseling objects

For the 915 survey respondents who had used CAM in the past year, 645 (70.5%) obtained the information from family members or friends. This was followed by media (*n* = 149, 16.3%), themselves (*n* = 55, 6.0%), healthcare providers such as doctors or doctors of Korean medicine (*n* = 51, 5.6%), and non-institutional CAM practitioners (*n* = 15, 1.6%). Family members and friends formed the largest group (*n* = 400, 43.7%) consulted about CAM use; 245 (26.8%) did not consult anyone. The number of people who consulted authorized healthcare providers

**Table 1 – Characteristics of study participants according to use of CAM (n = 1,284).**

Characteristics	Total (n = 1,284)	CAM users (n = 915)	Non-CAM users (n = 369)	p *
Age (y)	45.93 ± 16.07	48.40 ± 15.67	39.81 ± 15.42	<0.001
Sex				<0.001
Male	621	397 (63.9)	224 (36.1)	
Female	663	518 (78.1)	145 (21.9)	
Marital status				<0.001
Married	942	724 (76.9)	218 (23.1)	
Not married	342	191 (55.8)	151 (44.2)	
Religious				<0.001
Yes	671	449 (66.9)	222 (33.1)	
No	613	466 (76.0)	147 (24.0)	
Region				0.344
Metropolitan	607	439 (72.3)	168 (27.7)	
Town	452	311 (68.8)	141 (31.2)	
Village	225	165 (73.3)	60 (26.7)	
Level of education				<0.001
No high school diploma	262	215 (82.1)	47 (17.9)	
High school diploma	557	375 (67.3)	182 (32.7)	
College or university	465	325 (69.9)	140 (30.1)	
Occupation				<0.001
Office worker	631	422 (66.9)	209 (33.1)	
Physical labor	134	91 (67.9)	43 (32.1)	
Others	519	402 (77.5)	117 (22.5)	
Monthly household income †				0.294
≤200	305	220 (72.1)	85 (27.9)	
201–300	305	221 (72.5)	84 (27.5)	
301–400	385	281 (73.0)	104 (27.0)	
≥400	289	193 (66.8)	96 (33.2)	
Smoker				0.007
Yes	534	359 (67.2)	175 (32.8)	
No	750	556 (74.1)	194 (25.9)	
Drinker				0.030
Yes	963	671 (69.7)	292 (30.3)	
No	321	244 (76.0)	77 (24.0)	
Frequency of physical exercise				0.127
Never	688	474 (68.9)	214 (31.1)	
Twice a week or less	371	276 (74.4)	95 (25.6)	
More than three times a week	225	165 (73.3)	60 (26.7)	
Self-perceived health status				<0.001
Bad	162	143 (88.3)	19 (11.7)	
Moderate	504	368 (73.0)	136 (27.0)	
Good	618	404 (65.4)	214 (34.6)	
Reading health-related articles or news				<0.001
Rarely	377	234 (62.1)	143 (37.9)	
Occasionally	605	443 (73.2)	162 (26.8)	
Frequently	302	238 (78.8)	64 (21.2)	

Data are presented as numbers (%), or mean ± standard deviation.

CAM, complementary and alternative medicine; KRW, Korean won.

\* p values are based on the Chi-square test.

† Unit: 10,000 KRW

was 162 (17.7%), and the number who consulted others with similar symptoms was 84 (9.2%). Twenty-two respondents (2.4%) consulted relevant practitioners, and two people consulted another source (0.2%).

#### 4. Discussion

In the present study, we found that CAM usage rate was 71.3% and that the average cost per method per year was 210,875 KRW. This is similar to the results of a 2006 national survey, which found a 74.8% usage rate.<sup>10</sup> Previous studies suggested

that the use of Korean medicine was the main cause for higher CAM usage rate in Korea compared with western countries.<sup>10,12</sup> However, this study found that CAM usage rate remained above 70% even after excluding institutional Korean medicine treatments.

We also found that the usage rates of acupuncture, moxibustion, and cupping, represent Korean medicine treatments, were 3.3%, 1.9%, and 3.0%, respectively, in this study. In a study by Lee et al, who considered Korean medicine as a type of CAM, these rates were 5.8%, 1.0%, and 0.4% respectively, signifying an increase in the use of acupuncture and cupping therapy.<sup>8</sup> This implies that the prevalence

**Table 2 – Prevalence of CAM use by therapy type (n = 1,284).**

CAM type	Prevalence n (%)
Korean medicine practices by non-institutional practitioners	160 (12.5)
Acupuncture	43 (3.3)
Moxibustion	24 (1.9)
Cupping therapy	38 (3.0)
Bloodletting therapy	93 (7.2)
Chuna manipulation treatment	1 (0.1)
Manipulative and body-based therapies	303 (23.6)
Chiropractic	5 (0.4)
Massage	87 (6.8)
Thermotherapy	176 (13.7)
Special exercise therapy	20 (1.6)
Physical therapy with home medical devices	74 (5.8)
Mind-body medicine	62 (4.8)
External Qi treatment	0 (0.0)
Qigong training	27 (2.1)
Spiritual treatment	12 (0.9)
Activity therapy	2 (0.2)
Forest therapy	23 (1.8)
Natural products	755 (58.8)
Dietary treatment	443 (34.5)
Raw material †	423 (32.9)
Other diet therapies †	36 (2.8)
Herbal medicines prescribed by non-institutional practitioners	54 (4.2)
Functional food	406 (31.6)
Herbal medicine-based product	197 (15.3)
Other functional foods ‡	275 (21.4)
External application of natural products	37 (2.9)
Aromatherapy	3 (0.2)
Total	915 (71.3)
CAM, complementary and alternative medicine.	
* Includes vegetable and fruit juices, mushroom, greens and seaweed, charcoal and bamboo salt, animal products, medicinal tea, medicinal liquor, etc.	
† Includes fasting, specific dietary treatment according to yin-yang 5-element theory, etc.	
‡ Includes vitamin, omega 3, saw palmetto, etc.	

of non-institutional Korean medicine procedures, even after excluding orthodox Korean medicine, may be higher than previously reported. Because these procedures can sometimes cause severe adverse events<sup>13</sup> and a certain level of training is required to perform such procedures,<sup>14</sup> there is a need to be cautious about CAM procedures that are self-administered or carried out by unqualified practitioners.

This study found that treatments involving natural products are the most commonly used CAM methods, which is consistent with the results of previous studies.<sup>8,10,11</sup> However, instead of using processed products such as omega 3, glucosamine, and flaxseed pills like in western countries,<sup>4</sup> participants in this study seemed to prefer raw herbs or vegetables that were processed through simple methods. This is especially true for older people residing in rural areas in Korea, where folk remedies involving herbs are known to alleviate minor discomfort in daily life.<sup>15–17</sup> Such traditional knowledge should be recorded in books and investment in research is required to study potential efficacies of this practice. At the same time, appropriate information must be provided to users

to prevent them from being exposed to harm from agricultural pesticides, heavy metals, and overuse of non-standardized herbs.

In this study, CAM usage rate was high in participants who were married, non-religious, had a relatively high interest in health but poor self-perceived health, and with a lower education level. This finding is partly similar to that of an existing study, which showed that people with health-related interests used more CAM treatments.<sup>6</sup> However, the relationship between education and CAM usage in this study is markedly different from the results seen in studies in western countries. The holistic point of view suggested by some CAM methods is considered “new” in western society,<sup>18</sup> while CAM is considered “old” in places where traditional medicine use is widespread.<sup>8</sup> This may explain the discrepancy in CAM use preferences by education level. However, because some studies have suggested that highly educated people have higher CAM usage rates,<sup>10,11</sup> further research on the relevance of public awareness on CAM characteristics and users’ education level and income is needed.

In addition, the present study found that only 0.8% of CAM methods resulted in a worsening of health conditions among our study participants; other studies conducted in community settings also reported a low incidence of adverse events.<sup>11,19</sup> Conversely, in a study of hospitalized patients or outpatients, relatively severe adverse events related to CAM were reported.<sup>20</sup> Prospective studies are therefore needed to follow up and observe such events, which could be due to long-term use. Furthermore, we found that only 5.6% of our study participants obtained information on CAM from healthcare providers and only 17.7% consulted with healthcare providers regarding the method of usage. Therefore, patients’ CAM use should be confirmed in detail during clinical diagnosis.

Herbal medicine, acupuncture, and moxibustion, which are considered as CAM in western countries, are practiced by licensed doctors of Korean medicine. These treatments are also covered by national health insurance and patients regard treatment by Korean medicine doctors as orthodox medicine.<sup>21</sup> Thus, such treatments are not viewed as CAM in Korea. However, an opinion exists that the principles of diagnosis and treatment of Korean medicine are not completely understood according to biomedicine theory and the system is “not revealed”; thus, it should be considered as CAM.<sup>8,10</sup> By contrast, if we do not distinguish orthodox Korean medicine from CAM, it would be difficult to independently estimate the unregulated areas of CAM that are considered to have larger potential risks. In addition, without this distinction, it would be hard to obtain independent demographic characteristics for unregulated CAM. A study conducted in Taiwan, which, like Korea, is a country where traditional East Asian medicine doctors work in institutions, reported that CAM use was different in and out of institutions.<sup>22</sup> Thus, future studies need to clarify whether practices such as acupuncture, moxibustion, cupping, or herbal medicine have been practiced by an authorized doctor. This should also be separately reported so that the usage rate by provider can be established.

This study has several limitations. First, the recall period was limited to 1 year, but recall bias cannot be completely excluded. Second, CAM modality was listed after extensive literature research, but there is a possibility that this

**Table 3 – Utilization patterns of CAM therapy by category (n = 1,740).**

	KM practices by non-institutional practitioners	Manipulative and body-based therapy	Mind-body medicine	Natural products	Total
Provider					
Self	148 (74.4)	314 (86.7)	51 (79.7)	924 (82.9)	1,437 (82.6)
Practitioner	51 (25.6)	44 (12.2)	9 (14.1)	167 (15.0)	271 (15.6)
Both	0 (0.0)	4 (1.1)	4 (6.2)	24 (2.1)	32 (1.8)
Respondents' recognition for origin of therapy					
Traditional	190 (95.5)	235 (64.9)	36 (56.2)	734 (65.8)	1,195 (68.7)
Overseas	2 (1.0)	28 (7.7)	14 (21.9)	132 (11.9)	176 (10.1)
Do not know	7 (3.5)	99 (27.4)	14 (21.9)	249 (22.3)	369 (21.2)
Self-perceived effectiveness					
Effective	176 (88.4)	312 (86.2)	55 (85.9)	705 (63.2)	1,248 (71.7)
Do not know	22 (11.1)	48 (13.2)	8 (12.5)	401 (36.0)	479 (27.5)
Worse	1 (0.5)	2 (0.6)	1 (1.6)	9 (0.8)	13 (0.8)
Reason for use					
General health promotion	6 (3.0)	35 (9.7)	16 (25.0)	450 (40.4)	507 (29.1)
Specific condition	193 (97.0)	327 (90.3)	48 (75.0)	65 (59.6)	1,233 (70.9)
Expenditure					
Yes	68 (34.2)	197 (54.4)	30 (46.9)	1,062 (95.2)	1,357 (78.0)
No	131 (65.8)	165 (45.6)	34 (53.1)	53 (4.8)	383 (22.0)
Mean expenditure, if applicable*	87,603	287,863	309,667	201,696	210,875

Data are presented as number (%).  
CAM, complementary and alternative medicine; KM, Korean medicine; KRW, Korean won.  
\* Unit: KRW/1 year.

list did not include all methods used by respondents, or that there was insufficient detail in describing the methods used. Nevertheless, this study contributes considerably to existing knowledge because it is the most recent study to confirm that self-administered CAM and CAM administration by non-institutional practitioners, excluding orthodox Korean medicine, is prevalent in Korea. Future studies need to compare CAM use outside the medical system as well as Korean medicine use within the medical system. In the future, qualitative studies need to be performed to better understand the reason and decision-making involved when choosing CAM outside of institutions. Finally, there is a need for continued research into the potential benefits or risks of self-administered CAM therapy or CAM therapy undertaken by non-institutional practitioners.

## 5. Conclusion

This study demonstrates that CAM administered by oneself or by non-institutional practitioners is widespread in South Korea. There is thus a need for accurate information regarding the safety and effectiveness of these treatments. Continuous monitoring of both CAM usage rate and possible adverse consequences of CAM treatments are also required to ensure responsible use of these treatments.

## Conflicts of interest

The authors declare no conflicts of interest.

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