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Factors related to the parallel use of complementary and alternative medicine with conventional medicine among patients with chronic conditions in South Korea

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ABSTRACT

Background: This study aims to examine the characteristics and behavioral patterns of patients with chronic conditions behind their parallel use of the conventional medicine (CM) and the complementary and alternative medicine (CAM) that includes traditional Korean Medicine (KM).

Methods: This cross-sectional study used the self-administered anonymous survey method to obtain the results from inpatients who were staying in three hospitals in Gyeongnam province in Korea.

Results: Of the 423 participants surveyed, 334 participants (79.0%) used some form of CAM among which KM therapies were the most common modalities. The results of a logistic regression analysis showed that the parallel use pattern was most apparent in the groups aged over 40. Patients with hypertension or joint diseases were seen to have higher propensity to show the parallel use patterns, whereas patients with diabetes were not. In addition, many sociodemographic and health-related characteristics are related to the patterns of the parallel use of CAM and CM.

Conclusion: In the rural area of Korea, most inpatients who used CM for the management of chronic conditions used CAM in parallel. KM was the most common in CAM modalities, and the aspect of parallel use varied according to the disease conditions.

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1. Introduction

Complementary and alternative medicine (CAM) is defined by the National Center for Complementary and Alternative Medicine (NCCAM) as "a group of diverse medical health care systems, practices, and products that are not presently considered to be part of conventional medicine."[1] Since studies have shown that the use of CAM is increasing worldwide, and that CAM use is widespread even in Western countries where they have an advanced national health care based on cutting-edge modern biomedicine,[2–4] many researchers have been puzzled over the behavior of CAM users that have contributed to its growing popularity.

Studies on CAM use have shown that chronic disease patients utilize CAM more than the general population.[3–6] However, research on the patient characteristics regarding the simultaneous use of CAM along with conventional medicine (CM) has not been established. A recent study conducted at an Israeli tertiary pain clinic demonstrated that chronic pain patients receiving CM treatment used manipulation techniques in addition to their conventional treatments, and also that CAM usage rate in the study population was related to ethnicity, age, and sex.[7] Another study performed at a primary care clinic in Israel also reported that sex, level of education, religious beliefs, and types of chronic conditions affected the utilization rate of the approaches based on integrative medicine that applies the CAM services along with the CM treatment patients get for their conditions.[8] Those findings, however, are limited in two aspects; first, the CAM modalities identified in the studies were confined to those that are available at the treatment sites, and second, the studies did not include therapies or modalities used by the patients on their own despite the fact that the significant portion of CAM use in the United States was accounted for by self-care-based choices.[9]

As a background against which this study should be evaluated, it is important to note the fact that South Korea has a dual health-care system in which Doctors of Korean Medicine (KM) who practice KM have the same legal and institutional rights as Western biomedicine doctors. Therefore, most KM treatments are received by patients under the guidance of the licensed medical doctors with key treatment modalities such as acupuncture and herbal extracts covered by national health insurance.[10] In this study, however, we used a broad, conventional category of CAM in which KM is simply grouped as "whole medical system," without further elucidating the institutional background considerations thus mentioned.

The objective of this study is to examine the characteristics and behavioral patterns behind the parallel or simultaneous use of CAM, including KM, so that appropriate scientific and policy intervention strategies can be devised to improve the health outcomes for those who resort to parallel use of CAM and CM treatment to control their chronic disease conditions.

2. Methods

This cross-sectional study involved a self-administered anonymous survey with 35 questions. The questionnaires were distributed to inpatients in three long-term care hospitals that were selected by convenience sampling and were all located in Gyeongnam province in South Korea. One researcher (B.C.) and a previously educated nurse working at one of those hospitals distributed the survey forms to all inpatients who were not in the severe state and explained the purpose of the study to get the consents. Patients who agreed to participate in the survey were then instructed to fill out the survey on their own.

The analytic tools and survey questions used in the study were based on the survey contents used by Eisenberg et al,[3] with some modifications to fit the purpose of this study and the circumstances in South Korea. The investigative tools related to the types of CAM were based on the data published by the NCCAM in the National Institutes of Health in the United States. However, some modifications had to be made in the specified CAM categories prepared by NCCAM, as many CAM therapies not only belong to multiple categories but also vary according to the sociocultural contexts where they are utilized. In South Korea, CAM is legally and officially defined as alternative and complementary therapies other than KM, but for the sake of international comparison, it was classified as CAM in this study.

We considered five categories of CAM as NCCAM classified: "natural products," "mind–body medicine," "manipulative and body-based practices," "movement therapies," and "whole medical systems." Specifically, items in the "natural products" refer to nutritional and dietary supplements that include cereals, royal jelly, squalene, rich soybean paste, chlorella, green vegetable juice, vitamin B complex, ginseng, and herbs. The category of mind–body medicine included yoga, meditation, hypogastric breathing, and qigong. The manipulative and body-based practices category included Korean hand acupuncture, massage, chiropractic, and reflexology. Movement therapies include stretching, and the category of whole medical system consists of KM therapies such as herbal medicine, acupuncture, cupping, and moxibustion.

General sociodemographic characteristics and other patterns of CAM use were analyzed by frequency analysis, cross-tabulation analysis, and t tests. Furthermore, a logistic regression analysis was conducted using SPSS version 18 (SPSS Inc., Chicago, IL, USA) to identify the factors related to the use or nonuse of CAM in chronic disease patients utilizing both CAM and CM simultaneously.

3. Results

A total of 529 questionnaires were distributed and 449 were returned (return rate, 84.9%). Of these, we excluded 26 incomplete questionnaires. Finally, 423 questionnaires were used in the analysis.

3.1. *Experience of CAM use*

As much as 79.0% of the total 423 respondents in the study hospitals experienced CAM utilization. Women (63.8%), patients aged 60–69 (27.8%), married patients (62.6%), patients who believed in Buddhism (39.8%), and lower income patients (49.7%) experienced CAM more than other patients in each sociodemographic group. Subjective health status was lower among CAM users (2.68 ± 0.795, $p < 0.05$), and the degree of

Table 1 – Sociodemographic characteristics of the respondents.

		$n = 423$		
		CM + CAM 334 (79.0)	Only CM 334 (21.0)	χ^2 or t value
Sex	Male	121 (36.2)	57 (64.0)	22.311*
	Female	213 (63.8)	32 (36.0)	
Age (y)	20–39	40 (12.0)	19 (21.3)	17.163†
	40–49	83 (24.9)	30 (33.7)	
	50–59	53 (15.9)	3 (3.4)	
	60–69	93 (27.8)	17 (19.1)	
	70+	65 (19.5)	20 (22.5)	
Work	Employed	169 (50.6)	53 (59.6)	0.152
	Not employed	165 (49.4)	36 (40.4)	
Education	<High school	175 (52.4)	37 (41.6)	4.249
	High-school graduate	106 (31.7)	31 (34.8)	
	College graduate	53 (15.9)	21 (23.6)	
Marriage	Married	209 (62.6)	73 (82.0)	11.960*
	Unmarried	125 (37.4)	16 (18.0)	
Religion ($n = 406$)	Christianity	82 (24.6)	35 (39.3)	14.169†
	Catholicism	12 (3.6)	2 (2.2)	
	Buddhism	133 (39.8)	19 (21.3)	
	None	104 (31.1)	33 (37.1)	
	Others	3 (0.9)	0 (0.0)	
Monthly income (1000 Won)	<1000	166 (49.7)	22 (24.7)	20.847*
	1000–2000	58 (17.4)	16 (18.0)	
	>2000	110 (32.9)	51 (57.3)	
Perceived level of health‡	M (±SD)	2.68 (±0.795)	2.94 (±0.909)	2.471§
Subjective health condition‡	M (±SD)	3.59 (±0.941)	3.11 (±1.027)	–4.171*
Chronic disease ($n = 623$)‖	Cancer	3 (0.6)	0 (0.0)	N/A
	Heart disease	16 (3.1)	2 (1.9)	
	Cerebrovascular disease	61 (11.8)	16 (14.8)	
	Diabetes	55 (10.7)	33 (30.6)	
	Chronic lower respiratory disease	38 (7.4)	3 (2.8)	
	Liver failure	13 (2.5)	8 (7.4)	
	Hypertension	83 (16.1)	11 (10.2)	
	Articular disease	177 (34.4)	26 (24.1)	
	Others	69 (13.4)	9 (8.3)	
	Subtotal	515 (100.0)	108 (100.0)	
Severity of disease ($n = 415$)¶	M (±SD)	4.74 (±1.927)	4.74 (±1.927)	2.212§
Total		334 (100.0)	89 (100.0)	N/A

Values are presented as n (%) unless otherwise indicated.
CM, conventional medicine; CAM, complementary and alternative medicine; SD, standard deviation; N/A, not applicable.
* $p < 0.001$.
† $p < 0.01$.
‡ 1 = very low to 5 = very high.
§ $p < 0.05$.
‖ Multiple responses allowed.
¶ 1 = very low to 10 = very high.

subjective health condition was higher among CAM users (3.59 ± 0.941, $p < 0.001$).

For patients' reported chronic disease conditions, patients with articular diseases (24.1%) experienced CAM followed by those with hypertension (16.1%), cerebrovascular diseases (11.8%), and others (13.4%) as seen in Table 1.

3.2. *Behavioral characteristics and perceptions of the CAM use*

Table 2 shows the patients' behaviors and perceptions regarding the simultaneous use of CM and CAM use. Multiples responses were also permitted for this question, and KM therapies were the most widely used modalities. One in three patients stated that they initiated the CM and CAM parallel use "before the diagnosis" of their conditions and this ratio was the same for patients who reported that they started to utilize them "right after they found out about their disease." As for the frequency of its use, two times a week was the most common, and close acquaintances (friends and family) were the primary channels through which CAM use began. More than half of the respondents replied that they were currently using CAM alongside their CM treatment. Of those who were not currently using CAM, half of the respondents said that

Table 2 – Attitudes of CAM use in CM-using chronic disease patients.

Question	Result $n = 334$
Type of CAM used ($n = 774$)*	Natural products = 242 (72.9) Mind–body medicine = 118 (35.5) Manipulative and body-based practices = 110 (33.1) Movement therapies = 1 (0.1) Whole medical systems (KM) = 303 (91.3)
Time started	Before diagnosis = 98 (29.3) At the same time as diagnosis = 125 (37.4) As needed after diagnosis = 111 (33.3)
Frequency of use ($n = 332$)	<2/mo = 98 (29.5) <2/wk = 132 (39.8) <2/d = 91 (27.4) 3 + /d = 11 (3.3)
Channel of use ($n = 331$)	Family = 71 (21.5) Friend = 99 (29.9) Doctor = 40 (12.1) Self = 121 (36.5)
Current use (Yes/No)	Yes = 205 (61.4) No = 129 (38.6)
Reason for nonuse or discontinuation ($n = 270$)	Negative opinion of physician = 34 (12.6) Distrust of treatment effect = 82 (30.4) Fear of side effects = 30 (11.1) Doubt of provider competency = 18 (6.7) Far distance = 29 (10.7) Expensive cost = 59 (21.8) Other = 18 (6.7)
Perception of CAM effect†	M (±SD) = 5.46 (±2.563)
Perception of reduction in medication use after CAM use†	M (±SD) = 5.23 (±2.566)
Perception of decrease in medical costs after CAM use†	M (±SD) = 4.96 (±2.401)
Perception of reduced time to recovery after CAM use†	M (±SD) = 5.21 (±2.485)
Overall satisfaction with CAM use†	M (±SD) = 5.73 (±2.607)

Values are presented as *n* (%) unless otherwise indicated.
CM, conventional medicine; CAM, complementary and alternative medicine; KM, Korean medicine; SD, standard deviation.
* Multiple responses allowed.
† 1 = very low to 10 = very high.

the reasons for not using it were the lack of trust in its efficacy, concerns about side effects, and lack of trust in provider competency. There was a positive perception of CAM because of its therapeutic effect (5.46 ± 2.563), its role in making them reduce the use of CM (5.23 ± 2.566), shortened time to recovery (5.21 ± 2.485) compared with CM use alone, and overall satisfaction (5.73 ± 2.607); however, patients had somewhat negative perception regarding the costs (4.96 ± 2.401), as seen in Table 2.

3.3. *Factors influencing the simultaneous use of CM and CAM among patients with chronic conditions*

Table 3 shows the results of a logistic regression analysis of the factors related to chronic disease patients' parallel use of CM and CAM. The parallel use was more widely observed in the 40–59 years [odds ratio (OR), 4.583; 95% confidence interval (CI), 1.923–10.920] and in over 60 years (OR, 3.403; 95% CI, 1.145–10.114) age groups. Patients with moderate (OR, 2.877; 95% CI, 1.230–6.725) or high (OR, 2.189; 95% CI, 1.116–4.294) subjective health condition utilized the simultaneous use more often than others.

According to the classification of chronic disease states, patients with hypertension (OR, 2.552; 95% CI: 1.171–5.563) or joint diseases (OR, 2.886; 95% CI, 1.484–5.611) were more likely to show the parallel use patterns, but patients with diabetes (OR, 0.338; 95% CI, 0.171–0.668) were not found to be specifically related to the parallel use pattern.

4. Discussion

The increasing CAM use among chronic disease patients is a global trend, and the proportion of usage varies among countries, ranging from 12.4% to 83.3%.[3,11–14] The results of this study showed that the majority of chronic disease patients receiving CM services at the three South Korean rural health facilities in 2009 used CAM therapies. The CAM usage rate of this study was significantly higher than what was reported in studies conducted in Western countries,[12,15] but did not differ greatly from the usage rate reported in research conducted in

Table 3 – Factors related to the parallel use of CAM and CM in chronic disease patients.

		B	Odds ratio	95% Wald confidence intervals Exp (*B*)	
				Lower	Upper
Intercept		–0.008			
Sex	Female (ref)				
	Male	–1.194*	0.326	0.179	0.597
Age (y)	20–39 (ref)				
	40–59	1.522*	4.583	1.923	10.920
	60+	1.225†	3.403	1.145	10.114
Marriage	Married (ref)				
	Unmarried	–1.337*	0.263	0.132	0.524
Education	<High school (ref)				
	High-school graduate	0.578	1.783	0.778	4.084
Work	Unemployed (ref)				
	Employed	0.157	1.170	0.585	2.342
Religion	No (ref)				
	Yes	0.445	1.567	0.863	2.846
Concern for health	Low (1,2) (ref)				
	Middle (3)	1.057‡	2.877	1.230	6.725
	High (4,5)	0.783†	2.189	1.116	4.294
Chronic disease	Without cerebrovascular disease (ref)				
	Cerebrovascular disease	0.253	1.288	0.578	2.867
	Without diabetes (ref)				
	Diabetes	–1.089*	0.338	0.171	0.668
	Without hypertension (ref)				
	Hypertension	0.937‡	2.552	1.171	5.563
	Without articular disease (ref)				
	Articular disease	1.060*	2.886	1.484	5.611
–2 Log L		Intercept only		Intercept and covariates	
435.257		341.686			
Scores		Chi-square		*df*	
92.617*		13			
C-statistics		0.796			

CM, conventional medicine; CAM, complementary and alternative medicine.
* $p < 0.001$.
† $p < 0.05$.
‡ $p < 0.01$.

other Asians countries.[6,16,17] The large disparity in CAM usage between South Korea and Western countries can be accounted for the fact that KM in South Korea is in the official health-care system where KM co-exists with CM with the same legal and social recognition.[18]

In the comparison of our results with prior CAM usage studies conducted in South Korea, we find that the usage rate reported here at 79% as of 2009 showed a significant increase from that of one in three persons in 1999,[19] more than seven in 10 persons in 2006,[20] assuming that the rate has increased substantially in the last decade. However, this large increase might be exaggerated because of the difference of CAM definition used among these studies. Lee et al[19] used NCCAM's original classification scheme, but this study and Ock et al[20] used the modified version of the NCCAM classification that widened the boundary of CAM modalities.

In this study, participants' CAM use was mainly based on suggestions by close acquaintance, or based on personal choice. These results were similar to the motives driving CAM provider selection observed in a previous study.[15] Experts expressed concerns about such results, as most CAM therapies are not conducted by health professionals, and the safety and effectiveness of most CAM therapies cannot be guaranteed. However, throughout these studies it is apparent that patients make decision on their CAM use through nonprofessional means such as recommendations by the acquaintances or their self-judgment. This shows that health-care providers must recognize consumers' behavioral patterns, and try to provide patients with professional information or appropriate methods of consumption rather than to discourage their use entirely on the basis of scientific approaches. The results of this study show that more than two-thirds of chronic disease patients use easily accessible natural products, emphasizing the importance of providing knowledge to patients on correct use of these products that are indeed used in parallel with the CM treatment.

This study showed that a number of sociodemographic and health-related characteristics are factors related to the par-

allel use of CAM among chronic disease patients receiving CM treatment. Among the sociodemographic characteristics, women were more likely to use CAM, as was shown in previous studies.[7,12] In our case, we found that the presence of hypertension was a factor related to more frequent use of CAM therapies alongside CM treatment. One study, which based its results on 2002 National Health Interview Survey data, attempted to find whether hypertension as a complication of stroke was an influencing factor, but found no significant relationship.[21] Thus, in future studies, additional research should be conducted on patients with hypertension. In contrast with hypertension, patients with diabetes did not show the parallel use pattern in this study. This result was partly supported by another Korean study[22] involving elderly patients who were recruited in the southeastern area, in which patients with diabetes used complementary therapies less than patients with hypertension. However, this result should be interpreted restrictively, because the number of patients in both studies was relatively small, and most elderly patients had more than one chronic medical problem.

This study has some limitations. First, our study used a cross-sectional design, and thus chronologic relationships between the variables could not be ascertained. Second, as the age range of the patients tended to be high, self-administered questionnaires might increase information bias (due to the memory deterioration of the aged) and experimenter bias (the researcher might have influence on patients' responses). Third, the study did not involve the analysis of the use of KM which was guided by licensed doctors of KM, though the CAM category used contained KM in it. Lastly, the study was set in a limited area that cannot be generalized to South Korea's overall situation.

Despite these aforementioned limitations, this study investigated the behaviors related to parallel use of CM and CAM, and identified several of the important related factors. By identifying the actual circumstances and possible causes of parallel use of CAM and CM in South Korea, this study can contribute to the future studies in devising the appropriate ways to integrate the country's CM and KM medical practices that are currently operating on a separatist basis.

Author contributions

B.C., D.H., and B.L. conceived and designed the study; B.C. and D.H. performed survey; B.C., D.H., and B.L. analyzed data; and B.C., D.H., S.N., and B.L. wrote and revised the paper. All authors read and approved the final manuscript.

Conflicts of interest

The authors have no conflict of interest.

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