

## Original Article



# Use of Complementary and Alternative Medicine (CAM) in Patients With Colorectal Cancer

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### Conflict of Interest

The authors declare that they have no competing interests.

### Author Contributions

Conceptualization: Yeom J; Data curation: Yeom J, Lee JM; Formal analysis: Yeom J, Lee JM; Investigation: Yeom J; Methodology: Yeom J; Project administration: Yeom J; Resources: Yeom J, Lee JM; Software: Yeom J, Lee JM; Supervision: Yeom J; Validation: Yeom J; Visualization: Yeom J; Writing - original draft:

## ABSTRACT

This study was conducted to analyze the relationship between cancer-related stress and the types of complementary and alternative medicine (CAM) used by subjects diagnosed with colorectal cancer. The number of study subjects was 142, and for data analysis, descriptive statistics, t-test,  $\chi^2$  test, logistic regression procedures were performed. Of the subjects, 114 were CAM users, who accounted for 79.6%. When it came to using CAM, 82 (72.6%) said they did “to prevent cancer recurrence.” The most popular reason for not using CAM was “to focus on treatment as instructed by the doctor,” with 22 (75.8%) respondents selecting the answer. Of those who used CAM, 79 (55.6%) said they took “dietary supplements,” followed by 65 (45.8%) who picked “vitamins and minerals.” Regarding CAM usage, ginger, aloe, swimming, and walking had the highest satisfaction ( $4.25 \pm 0.71$ ). The cancer-related stress of subjects who use CAM ( $18.21 \pm 15.37$ ) was higher than that of subjects who did not use CAM ( $10.11 \pm 12.08$ ). Logistic regression analysis determined that cancer-related stress were factors significantly associated with CAM use. Patients using CAM had higher cancer-related stress, suggesting that stress on cancer increased CAM interest. Safe and reliable CAM information and standardized recommendations should be provided to cancer survivors. We propose the development of training programs for CAM to improve communication between medical staff and patients and to protect patients.

**Keywords:** Colorectal cancer; Complementary medicine; Stress; Health state

## INTRODUCTION

The number of cancer patients in Korea has increased rapidly since 2000, ranking first as the cause of death, and stomach cancer and colon cancer rank first and second among digestive system cancers. Due to the development of cancer diagnosis methods and the development of new treatment methods, the number of cancer survivors is increasing year by year, and in Korea, the 5-year survival rate increased to 70.7% in 2015–2019 compared to 65.5% the early 2000s [1].

Many studies have identified requirements for solving subjects' problems by identifying changes in bowel habits experienced by colorectal cancer patients in the treatment process, physical symptoms such as nausea and vomiting [2], and mental and psychological

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symptoms such as anxiety, depression, and sleep disorder [3]. Recently, it has been reported that high perception of psychological stress after being diagnosed with cancer affects the use of complementary and alternative medicine (CAM) [4]. Cancer patients' interest in CAM continues to increase, and their use and demand are increasing, and cancer patients sometimes expect CAM to provide psychological stability [5].

CAM is a supplement to traditional medical care that is based on safety and effectiveness. In the United States, a 1992 project was conducted to study CAM scientifically and determine whether it is acceptable in mainstream orthodox medicine. In 1998, the National Center for Complementary and Alternative Medicine (NCCAM) was established. Although CAM started in the United States, now it is widely used all over the world [6,7].

As a result of studies CAM in Korea, 86.1% of cancer patients in Korea are using CAM immediately after cancer diagnosis, and folk remedies such as herbal medicines and herbal medicines are widely used. In addition, there was no significant difference in social and psychological stress before and after CAM application [8,9]. In the United States, there is a similar trend, and various methods such as taking vegetable and organic supplements, eating special meals, and undergoing mental and physical therapy are mainly used [10]. Most cancer patients use religious and cultural approaches [11], while some use nutritional supplements and herbs [12].

As such, the number of studies on CAM has been gradually increasing, but whether this therapy affects psychological and behavioral responses has not been fully verified. Of colorectal cancer patients, 45.5% think positively about CAM and believe that it can make them healthier [13].

On the other hand, subjects who use CAM have higher stress than subjects who do not use it [14], and according to a study of colorectal cancer patients, subjects who use CAM actively think about their cancer, which was a stress factor [15]. In particular, the use of CAM after cancer diagnosis showed a significant inverse correlation, suggesting that CAM is related to stress [16].

Therefore, in the case of colorectal cancer patients, it is important to check the use and satisfaction of CAM, check the reason for CAM use, and provide safe and accurate CAM information for the healthcare of cancer patients. The purpose of this study is to prepare evidence to reduce stress from cancer and to reduce the damage of side effects from CAM in patients who attempt to preserve their health during or after cancer treatment.

The aim was to analyze CAM's relationship with patients by identifying the use, type, and effect on stress of CAM for subjects diagnosed with colorectal cancer.

- 1) To investigate the status, type, and satisfaction of CAM use by colorectal cancer patients.
- 2) To investigate the cancer-related stress of colorectal cancer patients.
- 3) Analyze the difference in stress according to the use of CAM in colorectal cancer patients.

## MATERIALS AND METHODS

### Research design

This study is a descriptive correlation study to analyze correlation by identifying the use, type, satisfaction, subjective health state, quality of life and stress of colorectal cancer patients who use CAM.

### Participants

The subjects of this study were convenience extractions from outpatients who visited Soonchunhyang University Bucheon Hospital in Gyeonggi-do, Korea for follow-up management after being diagnosed with colorectal cancer.

The sample size was calculated using the G\*power 3.1.9.2 program, t-test, 2-tail, effect size ( $f$ ) = 0.03, significance level = 0.05, and power = 0.95. As a result, the total number of subjects required was 134, and 142 patients were collected in this study. Subject selection criteria were patients who had completed treatment such as chemotherapy or radiation therapy after colon surgery, had normal cognitive function, were able to communicate, understood the purpose of the study, and agreed in writing to participate.

### Instruments

#### CAM

In this study, a complementary alternative therapy tool was evaluated by modifying and supplementing the alternative therapy use tool used in Kang et al. [16]. The tool can measure 16 types of effectiveness, frequency, and satisfaction among the 5 categories (biological-based practices, mind-body medicine, manual body-based practices, whole medical system, and energy medicine) presented by the NCCAM.

#### Cancer-related stress

Cancer-related stress was measured using 15 Impact of Event Scale questions from Horowitz et al. [17], and the reliability of previous studies was Cronbach's  $\alpha$  = 0.86. The score range is 0 to 8 points "no effect," 9 to 25 points "mild," 26 to 42 points "moderate," and 44 or more "severe" on a scale of up to 0 to 1 point "not at all" and 3 points "moderate" and 5 points "very much." The Cronbach's  $\alpha$  measuring the reliability of this study was 0.93.

#### Quality of life

The question of quality of life is a measure of "very dissatisfied" (0 points) to "very satisfied" (10 points), with higher scores indicating higher quality of life.

#### Self-perceived health

The question of subjective health perception was 1 point for "very good," 5 points for "very bad" as an answer to one's health condition.

### Data collection

Data collection for this study was conducted from November 2019 to May 2020.

Data collection was granted after explaining the background and purpose of the study to a professor at the colon cancer clinic in the hospital.

A structured questionnaire and consent form were provided in a sealable envelope for each individual so that participants who met the selection criteria could respond honestly to the questionnaire.

### Ethical considerations

This study was conducted after receiving approval from the Research Ethics Review Board of Soonchunhyang University Bucheon Hospital (approval number: No. 2018-07-009).

**Table 1.** Participants' characteristics according to CAM use

Variables	Categories	Total	CAM users (n = 113, 79.6%)	Non-users (n = 29, 20.4%)	$\chi^2$ (p)
Age (yr)	≤ 49	14 (9.9)	11 (9.7)	3 (10.3)	2.054 (0.561)
	50–59	36 (25.4)	31 (27.4)	5 (17.2)	
	60–69	54 (38.0)	40 (35.4)	14 (48.3)	
	> 70	38 (26.8)	31 (27.4)	7 (24.1)	
Sex	Male	99 (69.7)	81 (71.7)	18 (62.1)	0.367 (0.216)
	Female	43 (30.3)	32 (28.3)	11 (37.9)	
Spouse	Yes	110 (77.5)	83 (73.5)	27 (93.1)	0.025 (0.016)
	No	32 (22.5)	30 (26.5)	2 (6.9)	
Education	Elementary	25 (17.6)	20 (17.7)	5 (17.2)	1.414 (0.842)
	Middle school	23 (16.2)	17 (15.0)	6 (20.7)	
	High school	68 (47.9)	55 (48.7)	13 (44.8)	
	University	26 (18.3)	21 (18.6)	5 (17.2)	
Job	Yes	58 (40.8)	45 (39.8)	13 (44.8)	0.675 (0.388)
	No	84 (59.2)	68 (60.2)	16 (55.2)	
Income	< 100	22 (15.5)	18 (16.2)	4 (13.8)	0.769 (0.857)
	100–200	35 (24.6)	29 (26.1)	6 (20.7)	
	200–300	37 (26.1)	27 (24.3)	9 (31.0)	
	> 300	48 (33.8)	37 (33.3)	10 (34.5)	
Diagnosis	≤ 1	29 (20.4)	23 (20.4)	5 (17.2)	0.159 (0.923)
	1–5	95 (66.9)	76 (67.3)	20 (69.0)	
	> 5	18 (12.7)	14 (12.4)	4 (13.8)	

Data represented as number (%). The p value by  $\chi^2$  test (categorical variables) and independent t-test (continuous variables). CAM, complementary and alternative medicine.

### Data analysis

The collected data were analyzed using SPSS/WIN 22.0 (IBM Corp., Armonk, NY, USA). The general characteristics of the subjects were analyzed by frequency, percentage, mean, and standard deviation using descriptive statistics. Differences in demographic and disease characteristics and CAM use, satisfaction, and stress were analyzed by  $\chi^2$  test, and t-test. Factors affecting the use of CAM were analyzed using logistic regression procedures.

## RESULTS

### General characteristics of participants

The total number of participants was 142, and the average age was 61.96; with 99 (69.7%) males; 54 (38.0%) aged 60 to 69; 110 (77.5%) had a spouse; 68 (47.9%) graduated from high school; 84 (59.2%) had no job; 48 (33.8%) earned more than 3 million won per month.

Regarding diagnosis period, 95 (66.9%) had 1 to 5 years.

There were 113 CAM users, accounting for 79.6%. Participants' characteristics according to CAM use showed significant differences according to spouse (t = 0.025, p = 0.016) (**Table 1**).

### Types of CAM use and satisfaction

Of CAM types, 79 (55.6%) used dietary supplements, followed by 65 (45.8%) taking vitamins and minerals; 41 (28.9%) used prayer, holistic therapy, or relational therapy; 40 (28.2%) used herbal therapy; 32 (22.5%) used massage, yoga, taichi or chiropractic; 27 (19.0%) used relaxation therapy or meditation; 24 (16.9%) used oriental medicine; and 19 (13.4%) used psychological counseling.

**Table 2.** Type of CAM use and satisfaction

Type of CAM	Frequency	Satisfaction
Dietary supplements	79 (55.6)	3.68 ± 1.14
Massage, yoga, taichi, chiropractic	32 (22.5)	3.36 ± 1.11
Vitamin & minerals	65 (45.8)	3.41 ± 1.06
Relaxation & meditation	27 (19.0)	3.15 ± 1.20
Oriental medicine (acupuncture, acupressure)	24 (16.9)	3.04 ± 1.23
Psychological counseling	19 (13.4)	3.26 ± 1.23
Herbal therapy	40 (28.2)	3.29 ± 1.06
Prayer, holistic therapy, relational therapy	41 (28.9)	3.95 ± 1.19
Traditional folk remedies	17 (12.0)	2.59 ± 1.14
Others (ginger, aloe, swimming, walking, etc.)	7 (4.9)	4.25 ± 0.71

Data represented as mean ± standard deviation and number (%).  
 CAM, complementary and alternative medicine.

Satisfaction with complementary alternative therapy was highest with those who used ginger, aloe, swimming or walking 4.25 ± 0.71; followed by 3.95 ± 1.19 using prayer, holistic therapy and religious therapy; 3.68 ± 1.14 using dietary supplements; 3.41 ± 1.06 using vitamins and minerals; 3.36 ± 1.11 using massage, yoga, taichi and chiropractic; 3.29 ± 1.06 using herbal therapy; and 3.26 ± 1.23 using psychological counseling (**Table 2**).

### Reasons for using and not using CAM

Among reasons for using CAM, the highest with 82 (76.6%) was “to prevent cancer recurrence”; 75 (66.4%) “thought to increase immune function”; 71 (62.8%) “for the well-being of physical health”; 63 (55.8%) “to do something actively for a cure”; and 58 (51.3%) “for psychological and mental well-being” (**Table 3**).

Among reasons for not using CAM, the highest with 22 (75.8%) was “to focus on treatment as instructed by the doctor”; followed by 20 (68.9%) “never thought about CAM”; 16 (55.2%) “satisfied with my chemotherapy”; 8 (27.6%) “because the effect of CAM has not been scientifically proven”; 8 (27.6%) “negative to CAM”; 3 (10.3%) “discontinued the use of CAM”; and 2 (6.9%) “hard to pay for CAM” (**Table 4**).

**Table 3.** Reasons for using complementary and alternative medicine

Reason	No. (%)
To prevent cancer recurrence	82 (76.6)
For the well-being of physical health	71 (62.8)
Thought to increase immune function	75 (66.4)
To do something actively for the cure	63 (55.8)
For psychological and mental well-being	58 (51.3)
Helps relieve stress	50 (44.2)
Effective against cancer	47 (41.6)

**Table 4.** Reasons for not using CAM

Reason	No. (%)
To focus on treatment as directed by a doctor	22 (75.8)
Never thought about CAM	20 (68.9)
Satisfied with my chemotherapy	16 (55.2)
Because the effect of CAM has not been scientifically proven	8 (27.6)
Negative to use alternative security therapy	8 (27.6)
Discontinued the use of CAM	3 (10.3)
Hard to pay for CAM	2 (6.9)

CAM, complementary and alternative medicine.

### Self-perceived health, quality of life, cancer-related stress difference according to CAM use

Self-perceived health averaged  $3.39 \pm 0.82$  and quality of life averaged  $5.63 \pm 1.96$ .

As a result of analyzing the difference in cancer-related stress according to the use of CAM, there was a statistically significant difference ( $t = -2.858$ ,  $p = 0.006$ ). The cancer-related stress of subjects who used CAM ( $18.17 \pm 15.24$ ) was higher than that of subjects who did not use CAM ( $10.55 \pm 12.09$ ).

However, there was no significant difference in self-perceived health or quality of life according to the use of CAM (Table 5).

### Factors affecting the use of CAM

The effects of spouse and self-related health, quality of life and cancer-related stress, which showed significant differences in the subject's characteristics, on CAM use were analyzed by logistic regression analysis. The fit of the regression model was verified by Hosmer-Lemeshow test with an  $\chi^2$  value of 9.707, 8 degrees of freedom, and  $p = 0.081$ . The explanatory power of the regression model for the dependent variable was 8.1%–12.7% (Cox & Snell  $R^2$  & Nagelkerke  $R^2$ ). Cancer-related stress (odds ratio, 1.05; confidence interval, 1.01–1.10) were significant factors (Table 6). The higher the cancer-related stress, the probability of using the CAM was increased by 1.05 times.

## DISCUSSION

This study attempted to identify the correlation between the use of CAM and the satisfaction of colorectal cancer patients, self-perceived health, quality of life, and cancer-related stress. In this study, 79.6% of the subjects said they used CAM. Our study showed relatively high CAM use. This is different than the result of a study in Europe that found CAM was used by 49.6% of colorectal cancer patients [18].

CAM is used as a purely patient choice, irrespective of medical benefit, and is generally used for psychological stability, disease recovery, and reduction of symptoms during treatment [19]. In our study, the most popular reason for using CAM at 82 patients (57.7%) was “to prevent cancer recurrence,” followed by “increase in immune function” at 75 patients

**Table 5.** Self-perceived health, quality of life, cancer-related stress difference according to CAM use

Variables	Total	CAM users (n = 113)	Non-users (n = 29)	t	p
Self- perceived health	$3.39 \pm 0.82$	$3.36 \pm 0.81$	$3.51 \pm 0.83$	0.908	0.365
Quality of life	$5.63 \pm 1.96$	$5.63 \pm 1.96$	$5.62 \pm 1.98$	-0.032	0.974
Cancer-related stress	$16.61 \pm 14.94$	$18.17 \pm 15.24$	$10.55 \pm 12.09$	-2.858	0.006

Data represented as mean  $\pm$  standard deviation.  
CAM, complementary and alternative medicine.

**Table 6.** Factors affecting the use of CAM

Variables	B	SE	Wald	p	OR	95% CI
Spouse	-0.462	0.854	0.293	0.589	0.630	1.09–21.78
Self-perceived health	2.167	0.922	5.518	0.137	8.729	0.48–1.31
Quality of life	-1.259	1.181	1.138	0.286	0.284	0.72–15.56
Cancer-related stress	0.048	0.022	5.075	0.024	1.050	1.01–1.09

The p value by logistic regression (continuous variables).  
SE, standard error; OR, odds ratio; CI, confidence interval.

(66.4%). The results of the Hwang et al.'s study [20] also reported that 71.4% intended to cure the disease and relieve symptoms. As our research shows, cancer survivors mainly use CAM to prevent disease progression and improve health, indicating that the use of CAM is an important health.

Regarding type of CAM used by the subjects in this study, "diet" was the highest with 79 patients (55.6%). In a study on gastric cancer patients, "diet" was the highest at 52%, suggesting that "diet" is the most popular CAM category [21]. In other words, it means that gastrointestinal cancer patients have a high interest in diet-related treatment of all types of CAM.

Regarding reasons for not using CAM, 22 patients (75.8%) selected "focus on treatment as directed by the physician." As such, negative opinions about the use of CAM are related to the negative effects between chemotherapy and CAM [22]. Further research is needed to further explore the attitudes and beliefs of patients regarding the use of CAM.

Most of the existing studies had research results on CAM use and type satisfaction, but the difference in this study is that the level of stress related to cancer was compared and evaluated according to whether CAM was used.

After Korean cancer survivors receive a cancer diagnosis, stress is high, and it still exists in the treatment process, and the higher the stress, the higher the level of interest in CAM [23]. Similarly, breast cancer survivors with high levels of fatigue, depression, and anxiety were more likely to use CAM as a result of individual efforts to prevent cancer recurrence, which may be a stress factor for actively coping with cancer. A significant difference was also found in the use of CAM in breast cancer patients with high stress [20]. Further research is needed to evaluate social psychological stress such as anxiety and depression of cancer survivors using CAM. However, although most CAM users did not consult their doctors, Korean doctors still have many negative attitudes toward CAM. Meanwhile, in Europe, doctors have already recommended guidelines for discussing CAM with patients, and oncology nurses have been trained on the importance of communicating with patients about possible interactions between CAM and existing treatments [24]. In addition, the regulation of CAM modalities in Canada and the United States has minimal requirements for registration. Some may argue that CAM has already been incorporated into conventional medication under the name of integrative medicine, and many cancer centers in the United States already provide integrative oncology in their cancer care strategies [25].

In conclusion, cancer survivors have high stress related to cancer and use CAM to prevent cancer recurrence. Safe and reliable CAM information and standardized recommendations should be provided to cancer survivors. In addition, patients should be able to consult their doctor about the use of CAM for stability. Developing training programs on CAM use can improve patient-to-physician communication regarding CAM and protect patients from unexpected risks.

Findings of our study have given more insight into the trend of using CAM among colorectal cancer patients. Further studies are suggested using larger samples in different settings to more investigate the relationship between CAM use and stress associated with colorectal cancer and its treatment.

## CONCLUSION

This study is a descriptive investigation study attempting to provide basic data by investigating the use of alternative therapy in patients with colorectal cancer and investigating the relationship with stress. Most colorectal cancer patients use CAM, and the main reason for use was to prevent cancer recurrence by using CAM related to diet. Patients using CAM had higher cancer-related stress, suggesting that stress from cancer increased CAM interest. Therefore, it is necessary to provide more safe and standardized CAM information to patients. We propose the development of training programs for CAM to improve communication between medical staff and patients and to protect patients.

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