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Original Research Article

The association between complementary and alternative medicine use with breast cancer recurrence in Taif city, Saudi Arabia

Sahar M. Alnefaie[1]*, Yousif A. Asiri[2], Razan S. Alqahtani[3], Maha O. Alshareef[3], Khalid M. Alzahrani[4], Sarah M. Albogami[5]

[1]Department of Surgery, College of Medicine, Taif University, Al-Taif, Saudi Arabia
[2]Department of Clinical Pharmacy, College of Pharmacy, Taif University, Taif, Saudi Arabia
[3]Taif University, Taif, Saudi Arabia
[4]Department of General Surgery, Taif University, Taif, Saudi Arabia
[5]Department of Biotechnology, College of Science, Taif University, Taif, Saudi Arabia

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***Correspondence:**
Dr. Sahar M. Alnefaie,
E-mail: Sahar.m@tu.edu.sa

ABSTRACT

Background: Breast cancer (BC) is the most common cancer among women worldwide. Among all types of cancer, 11.7% of cases diagnosed in 2020 were BC. Compare this to Saudi Arabia, where 28.8 out of every 100,000 women were diagnosed with BC. Furthermore, BC patients are more likely than other cancer survivors to use complementary and alternative medicine (CAM). Study aimed to investigate association between CAM use and BC recurrence rates in Saudi Arabia.
Methods: A cross-sectional study was conducted on 106 participants recruited from breast surgery clinics. Targeted women were diagnosed with BC and treated at Al Hada armed forces hospital. The data were collected by interviewing the patients using a validated questionnaire.
Results: The prevalence of CAM usage among BC patients was 35.8%. The recurrence rate of BC was 26.4%. CAM users accounted for 28.57% of the total, while non-CAM users comprised 71.43%. In addition, 50% of recurrences were distant metastases, and 50% occurred more than two years after diagnosis.
Conclusions: In conclusion, more than one-third of BC patients in this region incorporate CAM into their treatment regimen. Our findings reveal a practical but not statistical significance of a lower recurrence rate of BC among CAM users compared to non-CAM. These results emphasize the importance of healthcare providers engaging in detailed discussions with BC patients regarding CAM usage in conjunction with planned medical and surgical therapies.

Keywords: Complementary, Alternative medicine, BC, Recurrence

INTRODUCTION

Breast cancer (BC) is the most common cancer among women worldwide. In 2020, BC accounted for 11.7% of all cancer cases diagnosed.[1] On other hand, incidence rate of BC in Saudi Arabia was 28.8 per 100,000 women.[1] BC patients are more likely than other cancer survivors to use complementary and alternative medicine (CAM).[2] CAM is defined as a group of diverse medical and healthcare interventions, practices, products/ disciplines that are currently not considered part of conventional medicine, according to national center for CAM in United States.[3] Cross-sectional study was published in 2022. It conducted at Kosin university gospel hospital in Busan, South Korea, and included 389 BC survivors. Study revealed that, compared to CAM non-users, BC survivors who used CAM had greater fear of cancer recurrence.[4] A chart review study published in 2006 that included 33 patients who refused provided management. Study showed that using alternative treatments as primary

management for BC is linked to higher mortality and recurrence rates.[5]

In most cases, illness progression was the outcome of homeopathy rather than surgery.[5] In 2005, a study with 251 participants aimed to evaluate the presence of anxiety and depression in CAM-using BC patients and how they view their risk of BC death and recurrence compared to non-users. It has been shown that the use of CAM is linked to a higher perception of BC mortality and recurrence.[6] A case-control study was published in 2008. It included 744 white women between July 1, 1983 and December 31, 1988, and then re-contacted the survivors in 1998 and 1999. They managed to re-contact 371 participants and conduct interviews with them. They found that BC patients may use CAM because they are motivated to reduce cancer-related symptoms. However, women in their study who experienced recurrence, second BC, or other cancer-related conditions did not utilize CAM more frequently than those who did not.[7] Saudi Arabia is leading among Arab countries regarding scientific research output on integrative and complementary medicine.[8] However, to our knowledge, this is the first study done in Kingdom of Saudi Arabia that assesses cancer recurrence among CAM users. Therefore, our study aimed to investigate the prevalence of CAM usage among BC patients and determine the association between CAM use and BC recurrence.

METHODS

Study design

A descriptive cross-sectional study design was conducted, by identifying and including women diagnosed with BC, relying on histopathology data that confirmed the diagnosis.

Inclusion criteria

Inclusion criteria for participant selection in study encompassed females aged 18 years/ older who met eligibility criteria for diagnosis of BC. Participants must have confirmed diagnosis of BC through histo-pathological reports between years 2010 and 2017. Who diagnosed and treated at Alhada armed forces hospital in Taif City, Saudi Arabia. This includes all the nationalities.

Exclusion criteria

The exclusion criteria study involved women who had depression or anxiety. This criterion was implemented to ensure that the research focused on a cohort without the potential influence of these mental health conditions.

Participants

Participants were recruited from breast surgery clinics. The study focused on women who were diagnosed with BC and received treatment at Al Hada armed forces hospital in Taif, Saudi Arabia. We identified eligible participants based on histopathology reports confirming the diagnosis of BC. Total of 155 surveys/questionnaires were disseminated during the study. Of these, 106 participants responded thus included in the study.

Informed consent

Informed consent was obtained from all participants. The research ethics committee of armed forces hospitals, having meticulously evaluated research project and the application number 2021-555, has granted its approval under the expedited normal procedure.

Data collection

The data were collected by interviewing the patients using a 5-validated questionnaire. This involved the careful exclusion of deceased participants and individuals with inaccuracies in contact information they provided. Following application of these rigorous inclusion criteria, our diligent efforts yielded a total of 106 participants for study. We proceeded to send a structured questionnaire through WhatsApp. Questionnaire was designed to gather relevant information about patient's experiences and perspectives related to BC diagnosis and treatment.

The questionnaire utilized in this research was adapted from the study titled "Quality of life and CAM use among women with BC," published in Saudi pharmaceutical journal (2018).[9] Modifications were made to align with the specific objectives and context of the current research.

Study duration

The study duration was 1 year, starting on April 1, 2022.

Statistical analysis

Data were analyzed using the statistical package for the social sciences (SPSS), version 25.

RESULTS

A total of 155 surveys/questionnaires were disseminated during the study. Of these, 106 participants responded, indicating a response rate of approximately 68.39%.

Sociodemographic characteristics

The descriptive statistics of age distribution showed that the majority fall within the 55-64 age range (n=42, 39.6%). The vast majority are Saudi nationals (n=102, 96.2%) and primarily reside in Taif (n=80, 75.5%). In terms of education, a notable proportion have completed college or higher education (n=32, 30.2%), and the marital status is predominantly married (n=74, 69.8%). The occupational status shows a significant percentage of individuals being housewives (n=80, 75.5%). In terms of monthly income, almost half of the sample earns less than 5,000 Saudi Riyals (n=50, 47.2%) (Table 1).

Table 1: Sociodemographic characteristics.

Variables		N (%)
Age (in years)	25-34	6 (5.7)
	35-44	12 (11.3)
	45-54	22 (20.8)
	55-64	42 (39.6)
	65-74	18 (17)
	75 years and over	6 (5.6)
Nationality	Saudi	102 (96.2)
	Non-Saudi	4 (3.8)
Current residence	Taif	80 (75.5)
	Others	26 (24.5)
Highest level of education	Uneducated	28 (26.4)
	Elementary	14 (13.2)
	Middle school	16 (15.1)
	High school	16 (15.1)
	College or higher education	32 (30.2)
Marital status	Single married widowed	4 (3.8), 74 (69.8) 28 (26.4)
Occupational status	Government employee	16 (15)
	Private sector	2 (1.9)
	Private business	4 (3.8)
	Retired	4 (3.8)
	Housewife	80 (75.5)
Avg. monthly income (Saudi Riyals)	Less than 5,000	50 (47.2)
	5,000-10,000	34 (32)
	More than 10,000	22 (20.8)

BC characteristic

The majority of respondents have undergone cancer treatment (n=100, 94.3%), with surgery alone and surgery along with chemotherapy being the most common form (n=22, 22.0%). Currently, 37.7% (n=40) are receiving cancer treatment, with hormonal therapy (n=24, 60.0%) and chemotherapy (n=12, 30.0%) being prevalent. Approximately 26.4% (n=28) experienced cancer recurrence, with the majority occurring more than 2 years after treatment (n=14, 50.0%). The determined sites of recurrence as metastasis to distant organs in half of the recurrent cases (n=14, 50.0%). The site of BC recurrence and timing were counter-checked by medical records which confirmed accuracy of these information (Table 2).

Usage of CAM among respondents

Descriptive statistics on involved participants (n=106) revealed that about 35.8% (n=38) have used CAM, while 64.2% (n=68) have not used it. Among those who haven't used CAM, 88.2% (n=60) would not consider using it in future. For those who have used CAM, primary source of knowledge is friends/ family (62.9%, n=22), and personal choice influences selection of alternative treatment (78.9%, n=30). Majority use CAM 2/ more times a week (84.2%, n=32), and 73.7% (n=28) rely on friends/family for provision. Before diagnosis, 63.2% (n=24) had not used any CAM, while 36.8% (n=14) used spiritual remedies, 31.6% (n=12) used herbal remedies/ plant extracts. After diagnosis, more than half of users, 52.6% (n=20) used herbal remedies/ plant extracts (Table 3).

Table 2: Descriptive statistics of BC characteristics.

Variables		N (%)
Have you ever had cancer treatment?	Yes	100 (94.3)
	No	6 (5.7)
If yes, what kind of treatment?	Chemotherapy	18 (18)
	Hormonal therapy	2 (2)
	Radiation	8 (8)
	Surgery	22 (22)
	Surgery and chemotherapy	22 (22)
	Surgery and radiation	14 (14.)
	Surgery and radiation and chemotherapy	14 (14)
Are you currently receiving cancer treatment?	Yes	40 (37.7)
	No	66 (62.3)
If yes, what kind of treatment?	Hormonal therapy	24 (60)
	Chemotherapy	12 (30)
	Surgery and radiation	2 (5)
	Biologic therapy	2 (5)
Recurrence of cancer	Yes	28 (26.4)
	No	78 (73.6)
When did cancer recurrence happen?	Less than a year after treatment	10 (35.7)
	1-2 years after treatment	4 (14.3)
	More than 2 years after treatment	14 (50)
Determined site of recurrence	Same site as the original cancer	6 (21.4)
	The other breast	6 (21.4)
	Axillary lymph node	2 (7.1)
	Metastasis to organs like lung or liver	14 (50)

Table 3: Descriptive statistics of CAM treatment usage.

Variables		N (%)
Have you ever used CAM?	Yes	38 (35.8)
	No	68 (64.2)
If no; would you be able to use it in the future?	Yes	8 (11.8)
	No	60 (88.2)
If yes; knowledge of complementary medicine	Nobody, I haven't heard about it at this point	10 (28.6)
	Media (television, magazines, newspapers)	1 (2.9)
	Internet	2 (5.7)
	Friends / family	22 (62.9)
Selection of alternative treatment	Personal choice	30 (78.9)
	common beliefs in family/ friends	8 (21.1)
Usage of complementary medicine	Once a month	6 (15.8)
	Two or more times during the week	32 (84.2)
Provision of complementary treatment	No-one	10 (26.3)
	A friend/family member	28 (73.7)
Complementary and alternative therapy before diagnosis	Nothing	24 (63.2)
	Spiritual remedies	12 (31.6)
	Herbal remedies and plant extracts	2 (5.3)
Complementary and alternative therapy after diagnosis	Nothing	2 (5.3)
	Spiritual remedies	14 (36.8)
	Herbal remedies and plant extracts	20 (52.6)
	Hejama	2 (5.3)

Reasons for using CAM among participants

Reasons for using CAM among participants who have integrated it into their cancer treatment strategy is detailed as follows: for its beneficial and non-harmful approach (n=18, 47.4%) and for its use to the improvement of both physical and psychological performance (n=16, 42.1%). This information provides a comprehensive breakdown of the motivations underlying CAM utilization among the surveyed individuals (Figure 1).

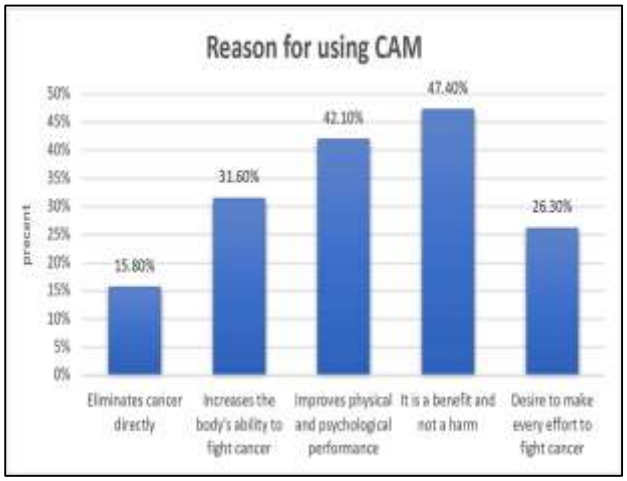

Figure 1: Reasons of utilizing CAM.

Reasons for not using CAM among participants

Presents reasons for not using CAM among respondents who have not utilized it. The most common reason is a lack of belief in complementary therapy (n=24, 35.3%) and the unnecessity of using it as they were satisfied with medications currently receiving (n=24, 35.3%) (Figure 2).

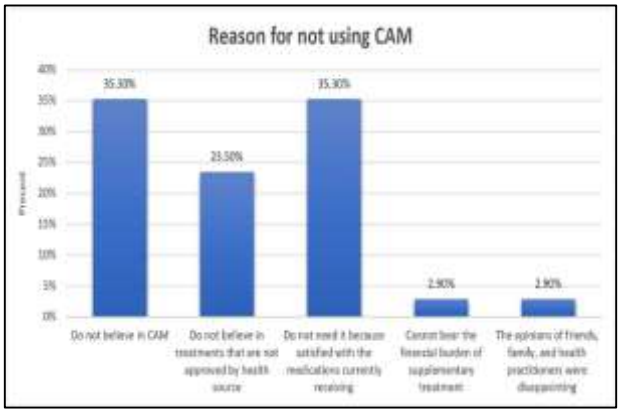

Figure 2: Graphical representation of not utilizing CAM.

Characteristics of CAM treatment among respondents, (n=38)

The most perceived benefit of CAM is reported as improving physical and mental health (73.7%, n=28). Only 5.3% (n=2) reported experiencing side effects from CAM. Approximately 56.8% (n=21) of respondents indicated that their doctors were aware of their CAM usage. The mean approximate cost per month for CAM was 185±295 Saudi Riyals, and respondents reported a mean success rate of 6±2 and an effectiveness rating of 5±2 in treating BC with CAM (Table 4).

Table 4: Characteristics of CAM treatment.

Variables		N (%)
Benefits of CAM	There is no benefit	6 (15.8)
	Direct reduction in cancer	4 (10.5)
	Increase the body's ability to fight cancer	14 (36.8)
	Improves in physical and mental health	28 (73.7)
	Decreases the side effects of cancer treatments	2 (5.3)
Side-effects of CAM	Yes	2 (5.3)
	No	36 (94.7)
Doctor's awareness regarding usage of CAM	Yes	21 (56.8)
	No	16 (43.2)
Approximate cost per month of CAM (SAR), Mean±SD		185±295
Success rate of CAM after cancer diagnosis (Mean±SD)		6±2
Effectiveness of CAM in treating BC (Mean ± SD)		5±2

The association between sociodemographic data and the prevalence of CAM usage

The variables of age, nationality, current residence, marital status, occupational status and average monthly income did not show statistically significant associations with CAM usage ($p>0.05$).

However, the highest level of education showed statistically significant associations with CAM usage with the elementary and middle school level of education as the highest prevalence of CAM use ($p<0.001$) (Table 5).

Association between characteristics of BC and prevalence of CAM usage

Analysis reveals that current status of receiving cancer treatment is significantly associated with CAM usage ($p=0.012$) with it usage less prevalent among participants currently receiving cancer treatment. However, other characteristics such as past cancer treatment history, type of treatment received, cancer recurrence, timing of recurrence, and site of recurrence did not demonstrate statistically significant associations with prevalence of CAM use among study participants (Table 6).

Table 5: Association between sociodemographic data and prevalence of CAM.

Variables		Prevalence of CAM, N (%)		Sig.
		Yes	No	
Age (in years)	18-24	0 (0.0)	0 (0)	0.128
	25-34	0 (0.0)	6 (100)	
	35-44	6 (50)	6 (50)	
	45-54	8 (36.4)	14 (63.6)	
	55-64	16 (38.1)	26 (61.9)	
	65-74	8 (44.4)	10 (55.6)	
	75 years and over	0 (0)	6 (100)	
Nationality	Saudi	38 (37.3)	64 (62.7)	0.294
	Non-Saudi	0 (0)	4 (100)	
Current residence	Taif	28 (35)	52 (65)	0.815
	Others	10 (38.5)	16 (61.5)	
Highest level of education	Uneducated	4 (14.3)	24 (85.7)	<0.001
	Elementary	10 (71.4)	4 (28.6)	
	Middle school	10 (62.5)	6 (37.5)	
	High school	8 (50)	8 (50)	
	College or higher education	6 (18.8)	26 (81.3)	
Marital status	Single	2 (50)	2 (50)	0.547
	Married	28 (37.8)	46 (62.2)	
	Divorced	0 (0)	0 (0.)	
	Widowed	8 (28.6)	20 (71.4)	
Occupational status	Government employee	4 (25)	12 (75)	0.325
	Private sector employee	0 (0)	2 (100)	
	Private business	0 (0)	4 (100)	
	Student	0 (0)	0 (0)	
	Retired	2 (50)	2 (50)	
	Housewife	32 (40)	48 (60)	

Continued.

Variables		Prevalence of CAM, N (%)		Sig.
		Yes	No	
Average monthly income (Saudi Riyals)	Less than 5,000	20 (40)	30 (60)	0.626
	5,000-10,000	10 (29.4)	24 (70.6)	
	More than 10,000	8 (36.4)	14 (63.6)	

Table 6: Association between characteristics of BC and prevalence of CAM.

Variables		Prevalence of CAM, N (%)		Sig.
		Yes	No	
Have you ever had cancer treatment?	Yes	36 (36.0)	64 (64)	1.000
	No	2 (33.3)	4 (66.7)	
If yes, what kind of treatment?	Chemotherapy	8 (44.4)	10 (55.6)	0.085
	Hormonal therapy	2 (100)	0 (0)	
	Radiation	8 (100)	0 (0)	
	Surgery	12 (54.5)	10 (45.5)	
	Surgery; chemotherapy	16 (72.7)	6 (27.3)	
	Surgery; radiation	10 (71.4)	4 (28.6)	
	Surgery; radiation; chemotherapy	8 (57.1)	6 (42.9)	
Are you currently receiving cancer treatment?	Yes	8 (20)	32 (80)	0.012
	No	30 (45.5)	36 (54.5)	
If yes, what kind of treatment?	Hormonal therapy	6 (25)	18 (75)	0.878
	Chemotherapy	2 (16.7)	10 (83.3)	
	Surgery, radiation	0 (0)	2 (100)	
	Biologic therapy	0 (0)	2 (100)	
Recurrence of cancer	Yes	8 (28.6)	20 (71.4)	0.491
	No	30 (38.5)	48 (61.5)	
When did cancer recurrence happen?	Less than a year after treatment	2 (20)	8 (80)	0.315
	1-2 years after treatment	0 (0)	4 (100)	
	More than 2 years after treatment	6 (42.9)	8 (57.1)	
Determined site of recurrence	Cancer recurrence in same site as original cancer	2 (33.3)	4 (66.7)	0.102
	Cancer recurrence in other breast	4 (66.7)	2 (33.3)	
	Cancer recurrence in axillary lymph node	0 (0)	2 (100)	
	Cancer spread to other area of body like lung or liver	2 (14.3)	12 (85.7)	

Cancer recurrence rates based on utilization of CAM treatments

Among those using CAM, merely 28.6% had experienced cancer recurrence, while 38.8% did not. In contrast, CAM non-users showed higher cancer recurrence rate of 71.4% (Figure 3).

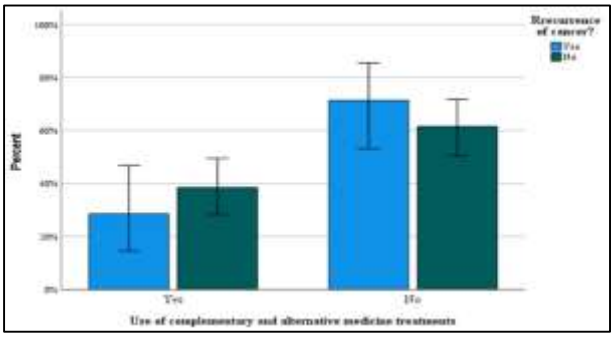

Figure 3: Cancer recurrence rates based on utilization of CAM treatments. Error bars: 95% CI.

DISCUSSION

The prevalence of CAM usage among our study population was found to be 35.8%, where only 13.2% of patients had started using it before their BC diagnosis, and 22.6% of patients used it after the diagnosis.

A study done in Italy by Crocetti et al reported that 16.5% of BC patients used CAM after diagnosis, while 8.7% used it before diagnosis among 242 BC patients.[10] Another study by the American cancer society's study of cancer survivors-I reported that people with BC were the most likely to use CAM therapies 10 to 24 months after their cancer diagnosis.[11] People who had used CAMs before developing cancer were more likely to continue using them after being diagnosed with the disease. People who had not used them before were less likely to use them.[10] The reported prevalence of CAM usage among BC patients was found to be 66.7% in Canada and 48%-80% in the USA.[8,12,13] Recent evidence shows that CAM use by BC patients after their diagnosis has increased over the past 20 years, but there have been few studies

that have examined the usage of CAM immediately after diagnosis and throughout the post-treatment phase.[14]

Our study found that CAM usage was higher among individuals with middle school and elementary education compared to those with higher education or who were uneducated.

The previous statement contrasts with the findings of Greenlee and colleagues in the USA, who reported that CAM usage was significantly higher among patients with higher educational qualifications.[15] CAM therapies vary based on a person's demographic, clinical, and behavioral aspects.[16] CAM therapies include herbal products, Chinese medicine, homeopathy, special diets, mind-body techniques, body-based treatments, energy-based treatments, and other systems of healing.[17,18]

In our study, herbal remedies and plant extracts were the most commonly used CAM therapies among BC patients after diagnosis.

Reports show that the methods of CAM therapies vary from country to country; in Italy, the most frequently used CAM approaches were homeopathy, manual healing methods, herbalism, and acupuncture.[10] In the USA, metabolic therapies, diets, and megavitamins were popular, while in the United Kingdom, mind cures and psychosocial methods were favored.[19-21]

Even though there is no internationally agreed-upon definition for CAM, there may be differences in how people perceive it, which should be interpreted with caution.

In our study, the most commonly reported perceived benefits were the "lack of side effects," and the most commonly received benefits in using CAM after a BC diagnosis were the "improvement in physical and mental health." CAM therapies are usually portrayed as an extreme, desperate attempt made by incurable patients following the failure of conventional cancer treatments. Still, the current study's findings suggest a totally different perspective.

Furthermore, it has a significant impact on the physician-patient interaction in various ways. However, despite the absence of scientific evidence to support the efficacy of CAM on BC recurrence and cure.[19] many patients have reported psychological advantages and expressed satisfaction with their CAM therapy.[22] Concerns should be raised about the possible conflict between conventional therapies and treatments, such as diet therapy, because of the documented side effects.[22] Moreover, using CAM therapies suggests possible unhappiness with conventional medicine's technical aspects and other impersonal characteristics.[19] With the increasing interest in CAM therapies among cancer patients, the boundaries between conventional and unconventional treatments are becoming less defined. Conventional medical establishments and researchers are placing greater emphasis on this topic. In a study conducted in China, 42.1% of cancer patients reported that their oncologists supported CAM usage.[23]

When oncologists feel that conventional treatments are ineffective and become uncertain about their treatment options, they may consider using CAM as a form of supportive care, which has the potential to improve their overall survival. Therefore, physicians and oncologists should inquire about patients' experiences with these treatments as part of their medical history, which could help understand these patients' psychological aspects. In addition, physicians and oncologists should improve their knowledge of CAM therapies to help their patients understand the risks and benefits of these treatments based on strong scientific evidence.

Our research discovered that CAM users had a practical but not statistical significance of lower risk of BC recurrence than CAM non-users. This is in contrast to the study conducted by Rakovitch and colleagues, which showed that the use of CAM is linked to a higher perception of mortality and recurrence rates in BC.[6]

This study was the first to investigate the association of CAM utilization with tumor recurrence among women with BC in Saudi Arabia. However, this study has a limitation that it was conducted at a single center; therefore, our findings cannot be generalized. Further future research with a larger sample size and more centers involved is recommended.

In conclusion, our study conducted in Taif City provides a comprehensive perspective on CAM usage among BC patients. More than one-third of BC patients in this region incorporate CAM into their treatment regimen, with a frequency exceedingly twice per month. Notably, this phenomenon is statistically significantly higher among participants with elementary and middle school education, underscoring the influence of educational backgrounds on healthcare choices. Our findings reveal a practical but not statistical significance of a lower recurrence rate of BC among CAM users compared to non-CAM. These results emphasize the importance of healthcare providers engaging in detailed discussions with BC patients regarding CAM usage in conjunction with planned medical and surgical therapies. The study highlights the nuanced relationship between education, CAM utilization, and cancer outcomes, advocating for personalized healthcare approaches that consider patients' educational backgrounds and preferences within the acceptable evidence based medicine of managing BC. Further future research with a larger sample size and more centers involved is recommended.

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