

# Active Participation, Mind–Body Stabilization, and Coping Strategies with Integrative Medicine in Breast Cancer Patients

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## Abstract

**Purpose:** Increasing numbers of breast cancer survivors have led to a growing demand for integrative medicine. When patients have completed treatments associated with severe side effects, attention turns to reducing psychological symptoms, coping behavior, and self-care. The aim of this study was to assess patient-reported benefits in relation to active participation, mind–body stabilization, and coping strategies in breast cancer patients receiving integrative medicine. **Methods:** In a cross-sectional study, health counseling and treatment provided by a standardized integrative medicine consultancy service at the University Breast Center of Franconia were evaluated in 75 breast cancer patients over a 15-month period. At the baseline, the patients answered a questionnaire on their medical history, symptoms, and the treatment goals they were hoping to achieve with integrative medicine. Patient-reported outcomes relative to active participation, mind–body stabilization, and coping strategies were analyzed. **Results:** A large majority of the patients had previous experience with integrative medicine (91%). Most reported that they achieved their treatment goals with integrative medicine. Ninety-one percent achieved active participation in cancer treatment, 90% mind–body stabilization, and 79% improvement in coping strategies. Besides active participation, which was greatest in patients with stable disease, the success of integrative therapy was independent of age, concomitant diseases, previous integrative medicine experience, treatment state, and systemic cancer therapy. **Conclusion:** Breast cancer patients benefit from the counseling and treatment provided with integrative medicine in mind–body stabilization and coping with cancer. Active participation in cancer treatment is important for the patients. Integrative treatment services should form part of routine patient care.

## Keywords

integrative medicine, complementary and alternative medicine, breast cancer, oncology, active participation, coping, mind–body

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## Introduction

Breast cancer is the most common cancer among women, with an incidence of around 69 000 new cases per year in Germany. One in 8 women will develop breast cancer during her lifetime, according to the current incidence rates. Around 18 570 patients with breast cancer die in Germany each year.<sup>1</sup>

The prognosis for patients with breast cancer has clearly improved over the last few years as a result of improving and targeted therapies.<sup>2,3</sup> With the increasing numbers of

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breast cancer survivors and longer lifespans, attention is now turning to the physical and psychological side effects, the patients' quality of life, and ways of coping with the cancer. Cancer treatments are often associated with side effects, a reduction in the quality of life, and psychological symptoms, creating an additional burden for patients.<sup>4-8</sup>

These may be among the reasons why increasing numbers of breast cancer patients are using complementary and alternative medicine (CAM) methods as supportive measures in cancer therapy.<sup>9-11</sup> The most important and most frequently used complementary methods in Germany are: sport and exercise, nutrition therapy, nutritional supplements, phytotherapy, traditional homeopathy, mistletoe therapy, acupuncture, and relaxation techniques.<sup>11-15</sup>

In this paper, "integrative medicine" is used to mean the integration of complementary medicine into conventional treatment approaches; the term "CAM" is not used, as alternative medicine was not taken into account in the study. Integrative medicine reaffirms the importance of the relationship between the practitioner and the patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic and lifestyle approaches, health care, and various disciplines to achieve optimal health and healing.<sup>16</sup> It addresses the full range of physical, emotional, mental, social, spiritual, and environmental influences that affect a person's health, drawing on both conventional and complementary approaches within the current medical system.<sup>17,18</sup>

After a patient has completed stressful systemic cancer therapies, such as chemotherapy or antibody therapy, or local therapies like radiation therapy, mind-body stabilization and strategies for coping with cancer and combatting mental symptoms become more and more important. Mind-body-based therapies summarize techniques that influence the body by thinking, feeling, and spiritual experience or general relaxation.<sup>17,19</sup> Mind-body stabilization means strengthening and consolidation of the body and the mind and bringing body and mind into harmony. Patients use various strategies to cope with the distress during and after cancer treatments,<sup>20</sup> and CAM has become a common coping strategy.<sup>21</sup> For patients, the main motivations for using CAM are firstly to alleviate therapy-induced toxicities,<sup>22,23</sup> to improve the quality of life, and to increase the chances of the cancer being cured.<sup>10,24</sup> Later, the patient's focus moves on to improving mental health, reducing stress and anxiety,<sup>25</sup> and coping with cancer and everyday life.<sup>20,26</sup> Another aspect is that the patients, especially breast cancer patients, are interested in and benefit from becoming actively involved in the therapy.<sup>27,28</sup> Active participation in cancer treatment is defined as follows: the patient is compliant with conservative therapies, actively contributes to the therapy herself, and tries everything she can to improve the course of the therapy and the prognosis—for example, with regular checkups, a healthy lifestyle, and integrative methods.

This enables the patient to feel valued and to give her a sense that she is making an important contribution to recovery and stabilizing the body and the mind. The patients actively and progressively deal with the disease, are more satisfied, and have a better quality of life.

Studies have confirmed that CAM can improve mental health and mind-body stabilization.<sup>24-26</sup> It has also been reported that patients benefit from active participation in cancer treatment and from improved self-care through CAM.<sup>20,28</sup> In a German study including 506 cancer patients, "to become active themselves" was one of the main reasons given for using CAM.<sup>27</sup> Integrative oncology provides patients with skills that enable them to help themselves and become active participants before, during, and beyond cancer treatment.<sup>29</sup> There are also data showing that using CAM improves breast cancer patients' ability to cope with cancer and everyday life.<sup>30-32</sup>

The aim of this study was to investigate self-reported outcomes regarding active participation, mind-body stabilization, and coping strategies associated with integrative medicine in breast cancer patients treated in an integrative medicine consultancy service.

## Methods

### *Patients and Description of Study*

From January 2016 to March 2017, this retrospective, single-center, cross-sectional study was conducted at the University Breast Center of Franconia, Germany. Patients with a diagnosis of breast cancer and with special medical advice regarding integrative medicine—equivalent to health counseling—and treatment provided by a standardized integrative medicine consultancy service at the University Breast Center of Franconia were included. All of the patients also received standard conventional treatment for their carcinomas in parallel with the integrative medicine treatment.

On first contact in the consultancy service for integrative medicine, the patients were asked to complete a standardized questionnaire (IMed questionnaire) while waiting for the doctor's appointment, in order to provide their medical history, lifestyle information, experience with integrative medicine, physical and mental symptoms, as well as individual therapy goals in relation to integrative medicine. The baseline IMed questionnaire has been published previously.<sup>33</sup> "Experience with integrative medicine" means that the patients had used integrative methods before presentation at the integrative consultation, and it includes previously completed therapies as well as currently ongoing treatments. In accordance with internal standard operating procedures, an individual treatment plan was developed for each patient, including all traditional European naturopathic medicines—specifically, lifestyle regulation

therapy involving mind–body-based techniques, exercise therapy, hydrotherapy, phytotherapy, and nutritional therapy. The detailed standard operating procedure used in the standardized integrative medicine consultancy service has been described in an earlier publication.<sup>33</sup> The patients were advised to incorporate the integrative treatment plan recommendations into their everyday lives. Implementation of individual therapy recommendations was up to the patients themselves. Compliance with implementation of the therapy plan was to be maintained for at least 4 consecutive weeks. Individual patient compliance with the integrative treatment plan was assessed in the follow-up questionnaire.

A single follow-up interview was conducted at least 2 months after the patients had received their treatment plan, during their next appointment at the hospital as part of follow-up care. The interviews were conducted face to face by the same research staff, or in exceptional cases by phone if the patients had no further appointments. The standardized follow-up questionnaire included questions on treatment compliance, physical and mental state, therapy goals, improvement in side effects, and quality of life.<sup>34</sup> The overall study plan and analyses of side effects and quality of life have been published in an earlier article.<sup>28,34</sup> Both the baseline questionnaire and the standardized follow-up questionnaire have been published previously.<sup>33,34</sup>

The study protocol was in accordance with the Declaration of Helsinki and was approved by the ethics review committee at Friedrich Alexander University of Erlangen–Nuremberg. Written informed consent was obtained from all patients.

### *Outcome Measures and Statistical Considerations*

Data on patient and tumor characteristics were collected from the clinical records. The patients' disease state was classified into the categories neoadjuvant, adjuvant, and palliative. Information concerning tumor recurrences was classified as primary breast cancer or recurrent breast cancer. These categories were exclusive. Information on cancer therapy at the baseline and during the follow-up was collected. Information on patients' expectations in relation to integrative medicine was obtained from the IMed questionnaire. During the follow-up interview, patients were asked whether they had achieved their treatment goals. The goals were stated in a predetermined list in the follow-up questionnaire. Success in achieving individual treatment goals was assessed using standardized questions in which the patients had to assign grades from 1 (extremely satisfied) to 6 (very dissatisfied). "I don't know" responses were excluded from the data. For further analysis, patients were considered to have fully reached their individual therapy goals if they answered 1 (very satisfied) or 2 (satisfied), or were considered partially successful in achieving their

therapy goals if they answered 3 (partly satisfied) or 4 (partly dissatisfied). The treatment goals were considered not to have been achieved if there was an assessment with grade 5 (dissatisfied) or 6 (very dissatisfied).

A further analysis investigated factors associated with the achievement of individual therapy goals, such as improved coping strategies, mind–body stabilization, and active participation in cancer treatment. Therapy goals for which patients evaluated the achievement as "I don't know" were not included in the analysis.

Evaluation was performed using descriptive analysis. Spearman's rank correlation and the Kruskal–Wallis test were used to test for significance. Missing data were excluded from the analysis. The software program IBM SPSS Statistics, version 24.0.0.2 (IBM Corporation, Armonk, New York, USA) was used for statistical analyses. A *P* value <.05 was considered statistically significant.

## **Results**

### *Patients' Characteristics*

Since the establishment of the integrative medicine consultancy at the University Breast Center of Franconia, a total of 106 patients have received medical advice on and treatment with integrative medicine and were documented in the database. For the study, patients were excluded in the following hierarchical order: not satisfying the inclusion criteria (15 patients excluded), death before a follow-up interview (10 patients excluded), and data collection of the follow-up questionnaire not available (6 patients excluded). A total of 75 patients answered the IMed and follow-up questionnaires and remained for the analysis.

The patients' characteristics and their experience in integrative medicine are listed in Table 1. The patients' mean age at study entry was  $52.5 \pm 12.1$  years. Younger patients under the age of 60 with a recent diagnosis of breast cancer in the (neo-)adjuvant setting who were receiving chemotherapy made particularly frequent use of the integrative medicine advice service. All of the patients underwent standard conventional therapy. The integrative medicine treatment was carried out additionally. Seventy-seven percent of the patients were receiving systemic cancer therapy at the baseline, and 84% were receiving ongoing drug therapy during the follow-up. A large majority of the patients (91%) stated that they had previous experience with integrative medicine or CAM, and 73% of the patients reported concomitant diseases.

### *Achievement of Treatment Goals*

In the baseline questionnaire, the patients were asked about the individual treatment goals that they wanted to achieve by using integrative medicine. The following treatment

**Table 1.** Characteristics of the Patients (n=75), Showing Absolute Numbers, Percentages, and Means.

Characteristics	N	%	Mean (SD)
Age at baseline (years)			52.5 (12.1)
≤40	13	17.3	
41-60	43	57.3	
>60	19	25.3	
Disease state at baseline <sup>a</sup>			
Neoadjuvant	24	32.0	
Adjuvant	36	48.0	
Palliative	15	20.0	
Recurrence state at baseline			
Primary breast cancer	61	81.0	
Recurrence	14	19.0	
Cancer treatment at baseline <sup>b</sup>	58	77.0	
Chemotherapy	38	50.7	
Endocrine therapy	18	24.0	
Targeted therapy	13	17.3	
Combined therapies	20	27.0	
Cancer treatment at follow-up (after at least 2 mo) <sup>b</sup>	63	84.0	
Chemotherapy	19	25.0	
Endocrine therapy	38	51.0	
Targeted therapy	14	19.0	
Combined therapies	28	37.0	
Concomitant diseases	55	73.0	
Experience with integrative medicine	68	91.0	

Missing values were not included in the analysis. Multiple responses were permitted for systemic therapies.

<sup>a</sup>Missing values: 1.

<sup>b</sup>Multiple responses allowed.

goals were mentioned most frequently: delaying tumor progression (n=64, 85.3%), reducing the side effects of conventional therapy (n=60, 80.0%), mind–body stabilization (n=59, 79%), active participation in cancer treatment (n=56, 75%), improving the disease-related quality of life (n=56, 75%), and improvement in coping with cancer (n=42, 56%).

It was found that most of the patients were able to achieve or at least partly achieve their initially defined therapy goals through the use of integrative medicine as recommended in their individual therapy plan. Only 1.8 to 7.1% of the patients stated that they had not achieved their treatment goals. The greatest success was reached with the goals “active participation in cancer treatment” (achieved by n=41, 73.2% and partly achieved by n=10, 17.9%) and “mind–body stabilization” (achieved by n=24, 40.7% and partly achieved by n=29, 49.2%). Nineteen of 42 patients (45.2%) stated that they had improved their ability to cope with cancer through integrative medicine, while another 14 patients (33.3%) reported partial achievement of this. The self-reported achievement of treatment goals is summarized

in Table 2. The extent to which reduced side effects of conventional therapy and an improved disease-related quality of life were achieved was evaluated in a previous analysis.<sup>34</sup>

The items “mind–body stabilization,” “active participation in cancer treatment,” and “improvement in coping with cancer” were included in the further analysis. Therapy goals such as prolonging survival, although stated by cancer patients, led to a large number of “I don’t know” answers and were therefore not considered for further analysis. It was examined whether mind–body stabilization, active participation in cancer treatment, and improvement in coping with cancer were associated with age, presence of concomitant diseases, experience with integrative medicine, disease state at the baseline and during the follow-up, and current cancer therapy at baseline and follow-up.

Achievement of active participation in treatment of the disease was dependent on the treatment state during the follow-up, with patients in the palliative situation with stable disease reporting that they had achieved this goal best, followed by patients in the curative situation. None of the other factors revealed any statistically significant results regarding the achievement of the individual therapy goals active participation in cancer treatment, mind–body stabilization, and coping with cancer (Tables 3-5). The self-reported success of integrative therapy—in relation to active participation in cancer treatment, mind–body stabilization, and coping with cancer—was thus independent of age, concomitant diseases, previous integrative medicine experience, treatment state, and systemic cancer therapy.

## Discussion

With the improvement in the prognosis for patients with breast cancer and the increasing numbers of breast cancer survivors,<sup>2,3</sup> greater attention is being given to the physical and psychological side effects of systemic cancer therapy. During treatment and also after completing therapy, patients are particularly concerned with self-care, mind–body stabilization, and strategies for coping with cancer, and they wish to make their own contribution to recovery and want to participate actively in cancer treatment.<sup>27,28</sup>

The major treatment goals for the breast cancer patients who made use of the integrative medicine consultancy service in the present study were delaying tumor progression, active participation in cancer treatment, mind–body stabilization, and improvement in the ability to cope with cancer, in addition to improving their disease-related quality of life and reducing the side effects associated with cancer treatment. The last 2 treatment goals have already been examined in a separate analysis.<sup>34</sup> Delaying tumor progression is one of the most commonly stated therapy goals that patients wish to achieve. This is in accordance with the findings of other studies that have reported that reducing tumor

**Table 2.** Achievement of Individual Treatment Goals as Evaluated by Patients at the Follow-Up Interview, Showing the Numbers of Patients with Each Treatment Goal, Percentages, Means, and Medians.<sup>a</sup>

Treatment goal	Patients with treatment goal at baseline (n = 75)	Patients with treatment goals achieved (Grades 1-2)	Patients with treatment goals partly achieved (Grades 3-4)	Patients with treatment goals not achieved (Grades 5-6)	Don't know/ k.A. (%)	Mean grade	Median grade	Range of grades
	n (%)	n (%)	n (%)	n (%)				
Reduced side effects of conventional therapy	60 (80.0)	26 (43.3)	20 (33.3)	2 (3.3)	12 (20.0)	2.6	2	1-6
Improvement of disease-related quality of life	56 (74.7)	26 (46.4)	20 (35.7)	2 (3.6)	8 (14.3)	2.5	2	1-6
Improvement in coping with cancer	42 (56.0)	19 (45.2)	14 (33.3)	3 (7.1)	6 (14.3)	2.7	2	1-6
Mind-body stabilization	59 (78.7)	24 (40.7)	29 (49.2)	3 (5.1)	3 (5.1)	2.8	3	1-6
Active participation in cancer treatment	56 (74.7)	41 (73.2)	10 (17.9)	1 (1.8)	4 (7.1)	2.0	2	1-6

<sup>a</sup>At the follow-up interview, the patients were asked how satisfied they were with the extent to which their treatment goals have been achieved (1, very satisfied, 2 satisfied, 3 partly satisfied, 4 partly dissatisfied, 5 dissatisfied, 6 very dissatisfied; 1 don't know). Of the 75 patients enrolled, only the patients who stated each therapy goal at the baseline were included in the analysis of the achievement of individual therapy goals.

progression is a major long-term treatment goal for breast cancer patients who use integrative medicine.<sup>35</sup> However, it is difficult for patients to draw firm conclusions on whether this therapy goal has been achieved, and no links have been established between the use of integrative medicine and disease prognosis or mortality.<sup>15</sup> However, a fear of tumor recurrence has been found to be associated with the use of CAM by patients.<sup>36</sup>

Overall, almost 90% of the patients included in the present study stated that they had achieved mind-body stabilization. This result is similar to the findings of other studies investigating several CAM intervention strategies.<sup>24,26,37</sup> A study investigating alternative medicine in 480 breast cancer patients observed an improved mental and physical health score in patients using alternative medicine in comparison with non-users.<sup>36</sup> Cancer is often associated with a high psychological burden for patients. Breast cancer patients in particular show a high level of distress.<sup>38</sup> Achieving mind-body stabilization can therefore contribute to an overall improvement in coping with the disease and to an improved quality of life.<sup>19</sup>

One of the most frequently reported reasons given by the patients for using integrative medicine in this study was to improve their active participation in cancer treatment. This finding is consistent with other studies.<sup>27,28</sup> One study examined patients' use of and interest in CAM and correlated these with ways of coping with illness.<sup>39</sup> Use of CAM by cancer patients was associated with active coping behavior. When asked about active participation, most patients stated that they had subjectively achieved the treatment

goal. Particularly patients in the palliative state with stable disease, as well as patients receiving curative treatment, reported that they were satisfied or very satisfied with the extent to which they had achieved this goal. However, no other factors associated with achieving this treatment goal were identified in this study. Active participation in cancer treatment requires changes in lifestyle or habits, which may be perceived as demanding by patients with tumor progression, leading to a smaller number achieving this treatment goal. Similarly, patients with stable disease and those who are in the curative setting appear to be highly motivated to avoid passivity. Patients generally appear to regard CAM as supplementary to standard medical methods and as a way of coping with feelings of hopelessness.<sup>39</sup>

In the present study, it was found that the patient's treatment state during follow-up influenced whether or not active participation in treating the disease was achieved. Patients with stable disease in the palliative setting were most successful in achieving this goal. No other factors associated with the achievement of treatment goals were identified. This means that all of the patient groups were equally able to subjectively achieve the individual treatment goals. Results from a clinical trial have shown that breast cancer patients receiving CAM treatment in addition to conventional cancer treatment report achievement of prespecified treatment goals as a result of CAM use and high satisfaction regarding CAM treatment.<sup>40</sup> It is known that younger breast cancer patients in particular, in the neoadjuvant or adjuvant setting and without medication for other concomitant diseases, are interested in integrative

**Table 3.** Active Participation in Cancer Treatment (n = 56).\*

	Achieved	Partly achieved	Not achieved	P
	n (%)	n (%)	n (%)	
Age				
≤40	11 (21)	2 (4)	0 (0)	.531 <sup>a</sup>
41-60	29 (56)	5 (10)	1 (2)	
≥60	1 (2)	3 (6)	0 (0)	
Concomitant diseases				
Yes	27 (52)	9 (17)	1 (2)	.372 <sup>b</sup>
No	14 (27)	1 (2)	0 (0)	
Experience with integrative medicine or CAM				
Yes	37 (71)	9 (17)	1 (2)	.742 <sup>b</sup>
No	4 (8)	1 (2)	0 (0)	
Treatment state at initial presentation				
Neoadjuvant	15 (29)	5 (10)	0 (0)	.252 <sup>b</sup>
Adjuvant	19 (36)	4 (8)	1 (2)	
Palliative	7 (13)	1 (2)	0 (0)	
Treatment state at follow-up				
Palliative, progressive disease	0 (0)	2 (4)	0 (0)	.018 <sup>b</sup>
Palliative, stable disease	7 (13)	0 (0)	0 (0)	
Curative, undergoing therapy	12 (25)	1 (2)	0 (0)	
Curative, tumor-free	22 (42)	7 (13)	1 (2)	
Current cancer therapy at initial presentation				
Chemotherapy				
Yes	22 (42)	6 (12)	1 (2)	.866 <sup>b</sup>
No	19 (37)	4 (8)	0 (0)	
Endocrine therapy				
Yes	9 (17)	0 (0)	0 (0)	.715 <sup>b</sup>
No	32 (61)	10 (20)	1 (2)	
Targeted therapy				
Yes	5 (10)	2 (4)	0 (0)	.829 <sup>b</sup>
No	36 (69)	8 (15)	1 (2)	
Combined therapies				
Yes	9 (17)	3 (6)	0 (0)	.842 <sup>b</sup>
No	32 (62)	7 (13)	1 (2)	
Current cancer therapy at follow up				
Chemotherapy				
Yes	8 (15)	3 (6)	0 (0)	.530 <sup>b</sup>
No	33 (63)	7 (16)	1 (2)	
Endocrine therapy				
Yes	23 (44)	4 (8)	1 (2)	.867 <sup>b</sup>
No	18 (35)	6 (12)	0 (0)	
Targeted therapy				
Yes	6 (12)	1 (2)	0 (0)	.488 <sup>b</sup>
No	35 (67)	9 (17)	1 (2)	
Combined therapies				
Yes	13 (25)	3 (6)	1 (2)	.147 <sup>b</sup>
No	28 (54)	7 (13)	0 (0)	

\*Only patients who stated this goal at baseline were included in the analysis (achieved=rated at 1 + 2; partly achieved=rated at 3 + 4; not achieved=rated at 5 + 6); significance level 0.05; missing values: 4 (no answers on treatment goal).

<sup>a</sup>Spearman's rank correlation.

<sup>b</sup>Kruskal-Wallis test.

**Table 4.** Mind-Body Stabilization (n = 56).\*

	Achieved	Partly achieved	Not achieved	P
	n (%)	n (%)	n (%)	
Age				
≤40	3 (5)	4 (7)	1 (2)	.357 <sup>a</sup>
41-60	19 (34)	14 (25)	2 (4)	
≥60	2 (4)	11 (20)	0 (0)	
Concomitant diseases				
Yes	20 (36)	22 (39)	2 (4)	.839 <sup>b</sup>
No	4 (7)	7 (13)	1 (2)	
Experience with integrative medicine or CAM				
Yes	22 (39)	28 (50)	3 (5)	.403 <sup>b</sup>
No	2 (4)	1 (2)	0 (0)	
Treatment state at initial presentation				
Neoadjuvant	8 (14)	12 (33)	1 (2)	.791 <sup>b</sup>
Adjuvant	11 (20)	11 (20)	2 (4)	
Palliative	5 (9)	6 (11)	0 (0)	
Treatment state at follow-up				
Palliative, progressive disease	1 (2)	4 (7)	1 (2)	.155 <sup>b</sup>
Palliative, stable disease	4 (7)	2 (4)	0 (0)	
Curative, undergoing therapy	4 (7)	9 (16)	0 (0)	
Curative, tumor-free	15 (27)	13 (23)	2 (4)	
Current cancer therapy at initial presentation				
Chemotherapy				
Yes	10 (18)	19 (34)	1 (2)	.200 <sup>b</sup>
No	14 (25)	10 (18)	2 (4)	
Endocrine therapy				
Yes	7 (13)	2 (4)	1 (2)	.193 <sup>b</sup>
No	17 (30) <sup>4</sup>	27 (48)	2 (4)	
Targeted therapy				
Yes	5 (9)	5 (9)	0 (0)	.891 <sup>b</sup>
No	19 (34)	24 (43)	3 (5)	
Combined therapies				
Yes	9 (16)	4 (7)	1 (2)	.254 <sup>b</sup>
No	15 (27)	25 (45)	2 (4)	
Current cancer therapy at follow up				
Chemotherapy				
Yes	4 (7)	8 (14)	1 (2)	.133 <sup>b</sup>
No	20 (36)	21 (38)	2 (4)	
Endocrine therapy				
Yes	11 (20)	14 (25)	2 (4)	.759 <sup>b</sup>
No	13 (23)	15 (27)	1 (2)	
Targeted therapy				
Yes	4 (7)	6 (11)	0 (0)	.715 <sup>b</sup>
No	20 (36)	23 (41)	3 (5)	
Combined therapies				
Yes	7 (13)	12 (21)	2 (4)	.116 <sup>b</sup>
No	17 (30)	17 (30)	1 (2)	

\*Only patients who stated this goal at baseline were included in the analysis (achieved=rated at 1 + 2; partly achieved=rated at 3 + 4; not achieved=rated at 5 + 6); significance level 0.05; missing values: 3 (no answers on treatment goal).

<sup>a</sup>Spearman's rank correlation.

<sup>b</sup>Kruskal-Wallis test.

**Table 5.** Improvement in Coping with the Disease (n=36).\*

	Achieved	Partly achieved	Not achieved	P
	n (%)	n (%)	n (%)	
Age				
≤40	5 (14)	2 (6)	1 (3)	.811 <sup>a</sup>
41-60	13 (36)	10 (28)	2 (6)	
≥60	1 (3)	2 (6)	0 (0)	
Concomitant diseases				
Yes	15 (42)	8 (22)	2 (6)	.214 <sup>b</sup>
No	4 (11)	6 (17)	1 (3)	
Experience with integrative medicine or CAM				
Yes	17 (47)	13 (36)	3 (8)	.621 <sup>b</sup>
No	2 (6)	1 (3)	0 (0)	
Treatment state at initial presentation				
Neoadjuvant	6 (17)	7 (47)	1 (3)	.406 <sup>b</sup>
Adjuvant	10 (28)	2 (6)	2 (6)	
Palliative	3 (8)	5 (14)	0 (0)	
Treatment state at follow-up				
Palliative, progressive disease	1 (3)	1 (3)	1 (3)	.684 <sup>b</sup>
Palliative, stable disease	2 (6)	3 (8)	0 (0)	
Curative, undergoing therapy	4 (11)	5 (14)	0 (0)	
Curative, tumor-free	12 (33)	5 (14)	2 (6)	
Current cancer therapy at initial presentation				
Chemotherapy				
Yes	9 (25)	9 (25)	2 (6)	.229 <sup>b</sup>
No	10 (28)	5 (14)	1 (3)	
Endocrine therapy				
Yes	4 (11)	2 (6)	1 (3)	.635 <sup>b</sup>
No	15 (42)	12 (33)	2 (6)	
Targeted therapy				
Yes	3 (8)	4 (11)	0 (0)	.590 <sup>b</sup>
No	16 (44)	10 (28)	3 (8)	
Combined therapies				
Yes	6	4 (11)	1 (3)	.926 <sup>b</sup>
No	13	10 (28)	2 (6)	
Current cancer therapy at follow up				
Chemotherapy				
Yes	4 (11)	4 (11)	1 (3)	.554 <sup>b</sup>
No	15 (42)	10 (28)	2 (6)	
Endocrine therapy				
Yes	7 (19)	8 (22)	2 (6)	.252 <sup>b</sup>
No	12 (33)	6 (17)	1 (3)	
Targeted therapy				
Yes	1 (3)	3 (8)	0 (0)	.265 <sup>b</sup>
No	18 (50)	11 (31)	3 (8)	
Combined therapies				
yes	4 (11)	6 (17)	2 (6)	.128 <sup>b</sup>
No	15 (42)	8 (22)	1 (3)	

\*Only patients who stated this goal at baseline were included in the analysis (achieved=rated at 1 + 2; partly achieved=rated at 3 + 4; not achieved=rated at 5 + 6); significance level 0.05; missing values: 6 (no answers on treatment goal).

<sup>a</sup>Spearman's rank correlation.

<sup>b</sup>Kruskal-Wallis test.

medicine and show the best compliance.<sup>14,41,42</sup> However, the present study demonstrated that older patients and women in the palliative situation and with concomitant diseases also report the same degree of satisfaction with the treatment. There are data that demonstrate a strong interest in and frequent use of integrative medicine among patients with advanced breast cancer.<sup>11</sup>

The present study has several strengths and limitations. It should be noted that it was a retrospective, single-center cross-sectional study including a clearly defined, homogeneous group of 75 patients. Among 91 patients who met the inclusion criteria, it was not possible to carry out a follow-up interview in 16 patients, leading to a very high response rate of over 80%. Since the analysis was conducted exclusively in the setting of the integrative medicine consultancy service, there was no control group. Although the consultancy service was open to all patients, there might still have been some potential bias in relation to the study population. Therapy goals and treatment effects were inquired about using self-reported outcomes in patient follow-up interviews, either by personal contact or by phone. This might have led to potential bias, with patients offering responses that were too positive. This was also a one-arm study investigating the integrative medicine consultancy service as a whole, rather than any specific treatment recommendation. The achievement of individual goals can therefore not be linked to any specific integrative medicine procedure. The achievement of treatment goals may have been influenced by factors such as a general improvement in mental health or a reduced tumor burden. Future research should therefore focus on confirming these results in a standardized and controlled setting. In addition, it would be interesting to incorporate standardized research tools focusing on integrative medicine and quality of life into future research. Investigating additional factors influencing the achievement of treatment goals, such as surgery, radiation therapy, or different lines of chemotherapy would also be of interest.

The study also has a variety of strengths, however. Very few data are available regarding active participation in cancer treatment, mind–body stabilization, and improvement in the ability to cope with cancer in homogeneous groups of cancer patients, and only little information is available about the potential benefits of an integrative care approach in the clinical oncology setting.<sup>40,43–45</sup> To the best of the authors' knowledge, the present study is the first to focus exclusively on breast cancer patients who used a standardized integrative therapy service that has been incorporated into everyday clinical routine work in patient care. This study concentrated specifically on breast cancer patients, as they are reported to be among the most frequent users of complementary therapy.<sup>43,46</sup> Data were acquired using only standardized, validated, and published questionnaires at the baseline and follow-up visits. Furthermore, the follow-up interviews were conducted face to face or by phone contact always by the same study staff. This was done to ensure that

patients understood the questions correctly and to make it possible to answer patients' questions in case anything was not clear. Direct communication with the patients during the follow-up interviews also ensured that patients answered the questionnaire in full, leading to very good data quality. The rating scales used for the assessment were simple, easy to understand, and familiar, as they are based on German school grades. The hospital's integrative medicine consultancy service is unique, since it follows a standardized and validated procedure. The patients have an opportunity to receive integrative treatment from an oncologist who is also specialized in naturopathy.<sup>33</sup> All of the integrative treatment recommendations go hand in hand with cancer treatment and provide a high level of treatment safety.

## Conclusion

This study shows that integrative medicine can contribute to mind–body stabilization and improvement in patients' ability to cope with cancer, and that it provides an opportunity for patients to participate actively in cancer treatment. Patients of all ages and at all stages of cancer benefit considerably from using integrative treatments. It therefore appears reasonable to offer an integrative approach with a standardized and professional integrative medicine consultancy service as part of standard patient care. More attention could therefore be given to providing counseling and individualized information about integrative medicine to the women affected.

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## Authors' Contributions

CCH, AKT, and MWB contributed to the conception of the current analysis, and all authors were involved in the design and acquisition of data from the study. AKT performed the statistical analysis. CCH, AKT, SDD, and PAF contributed to the analysis and interpretation of the data. CCH and AKT drafted the manuscript, and all authors revised the final draft critically for important content. All authors have given final approval of the version to be published.

## Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: PAF has carried out research for Novartis and Amgen and

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### References

1. Robert-Koch-Institute. Cancer in Germany 2015/2016. Accessed June 27, 2020. [https://www.krebsdaten.de/Krebs/DE/Content/Publikationen/Krebs\\_in\\_Deutschland/kid\\_2019/krebs\\_in\\_deutschland\\_2019.pdf](https://www.krebsdaten.de/Krebs/DE/Content/Publikationen/Krebs_in_Deutschland/kid_2019/krebs_in_deutschland_2019.pdf)
2. Schneeweiss A, Hartkopf AD, Muller V, et al. Update breast cancer 2020 part 1—early breast cancer: consolidation of knowledge about known therapies. *Geburtshilfe Frauenheilkd.* 2020;80:277-287.
3. Luftner D, Schneeweiss A, Hartkopf AD, et al. Update breast cancer 2020 part 2—advanced breast cancer: new treatments and implementation of therapies with companion diagnostics. *Geburtshilfe Frauenheilkd.* 2020;80:391-398.
4. National Cancer Institute. Side effects. Accessed June 27, 2020. <http://www.cancer.gov/about-cancer/treatment/side-effects>
5. Hamer J, McDonald R, Zhang L, et al. Quality of life (QOL) and symptom burden (SB) in patients with breast cancer. *Support Care Cancer.* 2017;25:409-419.
6. Burstein HJ, Lacchetti C, Anderson H, et al. Adjuvant endocrine therapy for women with hormone receptor-positive breast cancer: ASCO clinical practice guideline focused update. *J Clin Oncol.* 2019;37:423-438.
7. Schmidt ME, Scherer S, Wiskemann J, Steindorf K. Return to work after breast cancer: the role of treatment-related side effects and potential impact on quality of life. *Eur J Cancer Care (Engl).* 2019;28:e13051.
8. Ferreira AR, Di Meglio A, Pistilli B, et al. Differential impact of endocrine therapy and chemotherapy on quality of life of breast cancer survivors: a prospective patient-reported outcomes analysis. *Ann Oncol.* 2019;30:1784-1795.
9. Horneber M, Bueschel G, Dennert G, Less D, Ritter E, Zwahlen M. How many cancer patients use complementary and alternative medicine: a systematic review and meta-analysis. *Integr Cancer Ther.* 2012;11:187-203.
10. Keene MR, Heslop IM, Sabesan SS, Glass BD. Complementary and alternative medicine use in cancer: a systematic review. *Complement Ther Clin Pract.* 2019;35:33-47.
11. Fremd C, Hack CC, Schneeweiss A, et al. Use of complementary and integrative medicine among German breast cancer patients: predictors and implications for patient care within the PRAEGNANT study network. *Arch Gynecol Obstet.* 2017;295:1239-1245.
12. Paul M, Davey B, Senf B, et al. Patients with advanced cancer and their usage of complementary and alternative medicine. *J Cancer Res Clin Oncol.* 2013;139:1515-1522.
13. Klein E, Beckmann MW, Bader W, et al. Gynecologic oncologists' attitudes and practices relating to integrative medicine: results of a nationwide AGO survey. *Arch Gynecol Obstet.* 2017;296:295-301.
14. Luo Q, Asher GN. Complementary and alternative medicine use at a comprehensive cancer center. *Integr Cancer Ther.* 2017;16:104-109.
15. Neuhaus ML, Smith AW, George SM, et al. Use of complementary and alternative medicine and breast cancer survival in the Health, Eating, Activity, and Lifestyle Study. *Breast Cancer Res Treat.* 2016;160:539-546.
16. GW Center for Integrative Medicine. What is integrative medicine (Consortium of Academic Health Centers for Integrative Medicine). Accessed June 29, 2020. <https://www.gwvim.com/about/about-integrative-medicine>
17. Hack C, Hüttner N, Paepke D, et al. Integrative medicine in gynecologic oncology—possibilities and limits part 1. *Geburtshilfe Frauenheilkd.* 2013;73:R65-R78.
18. The Bravewell Collaborative. Accessed June 29, 2020. [https://bravewell.org/integrative\\_medicine/what\\_is\\_IM](https://bravewell.org/integrative_medicine/what_is_IM)
19. Paepke DHC, Hüttner NBM, Paepke D, et al. Integrative medicine in gynecologic oncology—possibilities and limits part 2. *Geburtshilfe Frauenheilkd.* 2014;74: R73-R20.
20. Gibbons A, Groarke A. Coping with chemotherapy for breast cancer: asking women what works. *Eur J Oncol Nurs.* 2018;35:85-91.
21. Frenkel M, Slater R, Sapire K, Sierpina V. Complementary and integrative medicine in lung cancer: questions and challenges. *J Altern Complement Med.* 2018;24:862-871.
22. Kessel KA, Lettner S, Kessel C, et al. Use of Complementary and Alternative Medicine (CAM) as part of the oncological treatment: survey about patients' attitude towards CAM in a University-Based Oncology Center in Germany. *PLoS One.* 2016;11:e0165801.
23. Lee SM, Choi HC, Hyun MK. An overview of systematic reviews: complementary therapies for cancer patients. *Integr Cancer Ther.* 2019;18:1534735419890029.
24. Cramer H, Lauche R, Klose P, Lange S, Langhorst J, Dobos GJ. Yoga for improving health-related quality of life, mental health and cancer-related symptoms in women diagnosed with breast cancer. *Cochrane Database Syst Rev.* 2017;1:CD010802.
25. Haller H, Winkler MM, Klose P, Dobos G, Kummel S, Cramer H. Mindfulness-based interventions for women with breast cancer: an updated systematic review and meta-analysis. *Acta Oncol.* 2017;56:1665-1676.
26. Greenlee H, DuPont-Reyes MJ, Balneaves LG, et al. Clinical practice guidelines on the evidence-based use of integrative therapies during and after breast cancer treatment. *CA Cancer J Clin.* 2017;67:194-232.
27. Wortmann JK, Bremer A, Eich HT, et al. Use of complementary and alternative medicine by patients with cancer: a cross-sectional study at different points of cancer care. *Med Oncol.* 2016;33:78.

28. Hack CC, Antoniadis S, Hackl J, et al. Breast cancer patients' satisfaction with individual therapy goals and treatment in a standardized integrative medicine consultancy service. *Arch Gynecol Obstet*. 2018;298:147-156.
29. Witt CM, Balneaves LG, Cardoso MJ, et al. A Comprehensive definition for integrative oncology. *J Natl Cancer Inst Monogr*. 2017;2017:52. doi:10.1093/jncimonographs/lgx012
30. Gok Metin Z, Karadas C, Izgu N, Ozdemir L, Demirci U. Effects of progressive muscle relaxation and mindfulness meditation on fatigue, coping styles, and quality of life in early breast cancer patients: an assessor blinded, three-arm, randomized controlled trial. *Eur J Oncol Nurs*. 2019;42:116-125.
31. Carlsson M, Arman M, Backman M, Hamrin E. Coping in women with breast cancer in complementary and conventional care over 5 years measured by the mental adjustment to cancer scale. *J Altern Complement Med*. 2005;11:441-447.
32. Gaston-Johansson F, Fall-Dickson JM, Nanda JP, Sarenmalm EK, Browall M, Goldstein N. Long-term effect of the self-management comprehensive coping strategy program on quality of life in patients with breast cancer treated with high-dose chemotherapy. *Psycho-oncology*. 2013;22:530-539.
33. Hack CC, Hüttner NB, Fasching PA, Beckmann MW. Development and validation of a standardized questionnaire and standardized diary for use in integrative medicine consultations in gynecologic oncology. *Geburtshilfe und Frauenheilkunde*. 2015;75:377-383.
34. Hack CC, Hackl J, Huttner NBM, et al. Self-reported improvement in side effects and quality of life with integrative medicine in breast cancer patients. *Integr Cancer Ther*. 2018;17:941-951.
35. Grimm D, Mathes S, Woelber L, et al. Demand for integrative medicine among women with breast and gynecological cancer: a multicenter cross-sectional study in Southern and Northern Germany [published online December 2, 2020]. *Arch Gynecol Obstet*. 2020. doi:10.1007/s00404-020-05880-0
36. Burstein HJ, Gelber S, Guadagnoli E, Weeks JC. Use of alternative medicine by women with early-stage breast cancer. *N Engl J Med*. 1999;340:1733-1739.
37. Wurtzen H, Dalton SO, Christensen J, et al. Effect of mindfulness-based stress reduction on somatic symptoms, distress, mindfulness and spiritual wellbeing in women with breast cancer: results of a randomized controlled trial. *Acta Oncologica*. 2015;54:712-719.
38. Linden W, Vodermaier A, Mackenzie R, Greig D. Anxiety and depression after cancer diagnosis: prevalence rates by cancer type, gender, and age. *J Affect Disord*. 2012;141:343-351.
39. Sollner W, Maislinger S, DeVries A, Steixner E, Rumpold G, Lukas P. Use of complementary and alternative medicine by cancer patients is not associated with perceived distress or poor compliance with standard treatment but with active coping behavior: a survey. *Cancer*. 2000;89:873-880.
40. Witt CM, Ausserer O, Baier S, et al. Effectiveness of an additional individualized multi-component complementary medicine treatment on health-related quality of life in breast cancer patients: a pragmatic randomized trial. *Breast Cancer Res Treat*. 2015;149:449-460.
41. Tautz E, Momm F, Hasenburg A, Guethlin C. Use of complementary and alternative medicine in breast cancer patients and their experiences: a cross-sectional study. *Eur J Cancer*. 2012;48:3133-3139.
42. Hack CC, Fasching PA, Fehm T, et al. Interest in integrative medicine among postmenopausal hormone receptor-positive breast cancer patients in the EvAluate-TM study. *Integr Cancer Ther*. 2017;16:165-175.
43. Munstedt K, Kirsch K, Milch W, Sachsse S, Vahrson H. Unconventional cancer therapy—survey of patients with gynaecological malignancy. *Arch Gynecol Obstet*. 1996;258:81-88.
44. Cramer H, Cohen L, Dobos G, Witt CM. Integrative oncology: best of both worlds—theoretical, practical, and research issues. *Evid Based Complement Alternat Med*. 2013;2013:383142.
45. Kalder M, Muller T, Fischer D, et al. A review of integrative medicine in gynaecological oncology. *Geburtshilfe Frauenheilkd*. 2016;76:150-155.
46. Toivonen KI, Tamagawa R, Specca M, Stephen J, Carlson LE. Open to exploration? Association of personality factors with complementary therapy use after breast cancer treatment. *Integr Cancer Ther*. 2018;17:785-792.