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Effectiveness of Aromatherapy Massage in the Management of Anxiety and Depression in Patients With Cancer: A Multicenter Randomized Controlled Trial

Susie M. Wilkinson, Sharon B. Love, Alex M. Westcombe, Maureen A. Gambles, Caroline C. Burgess, Anna Cargill, Teresa Young, E. Jane Maher, and Amanda J. Ramirez

From the Marie Curie Palliative Care Research Unit, Royal Free and University College Medical School, Department of Mental Health Sciences, Cancer Research UK London Psychosocial Group, Institute of Psychiatry, King's College London, London; Lynda Jackson Macmillan Centre, Mount Vernon Cancer Centre, Middlesex; and Cancer Research UK Medical Statistics Group, Centre for Statistics in Medicine, Oxford, United Kingdom.

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Address reprint requests to Amanda Ramirez, MD, Cancer Research UK London Psychosocial Group, Institute of Psychiatry, King's College London CR-UK London Psychosocial Group, St Thomas' Hospital, London, United Kingdom SE1 7EU; e-mail: Amanda-jane.ramirez@kcl.ac.uk.

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ABSTRACT

Purpose

To test the effectiveness of supplementing usual supportive care with aromatherapy massage in the management of anxiety and depression in cancer patients through a pragmatic two-arm randomized controlled trial in four United Kingdom cancer centers and a hospice.

Patients and Methods

Two hundred eighty-eight cancer patients, referred to complementary therapy services with clinical anxiety and/or depression, were allocated randomly to a course of aromatherapy massage or usual supportive care alone.

Results

Patients who received aromatherapy massage had no significant improvement in clinical anxiety and/or depression compared with those receiving usual care at 10 weeks postrandomization (odds ratio [OR], 1.3; 95% CI, 0.9 to 1.7; $P = .1$), but did at 6 weeks postrandomization (OR, 1.4; 95% CI, 1.1 to 1.9; $P = .01$). Patients receiving aromatherapy massage also described greater improvement in self-reported anxiety at both 6 and 10 weeks postrandomization (OR, 3.4; 95% CI, 0.2 to 6.7; $P = .04$ and OR, 3.4; 95% CI, 0.2 to 6.6; $P = .04$), respectively.

Conclusion

Aromatherapy massage does not appear to confer benefit on cancer patients' anxiety and/or depression in the long-term, but is associated with clinically important benefit up to 2 weeks after the intervention.

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INTRODUCTION

Aromatherapy massage is one of the most popular complementary therapies among patients with cancer and the most widely practiced within cancer care settings.¹ Aromatherapy massage has been shown to relieve self-reported symptoms of anxiety in the immediate aftermath of the therapy, and patients perceive aromatherapy massage as positive and beneficial.²⁻⁷ Aromatherapy oils administered by inhalation without massage do not appear to reduce anxiety.⁸ The effect of aromatherapy on levels of clinically important anxiety and depression is unknown, as is whether any psychological benefit is sustained beyond the immediate aftermath of the therapy.

Robust evaluation of effectiveness of aromatherapy massage is important. There is a dearth of effective interventions for alleviating mild to moderate psychological distress experienced by a significant proportion of cancer patients.^{9,10} If the claims

for the benefit of aromatherapy massage can be demonstrated robustly, then this could offer a therapeutic option, alongside psychological interventions.^{11,12} In turn, given the link between psychological distress and pain, insomnia, nausea, and vomiting,^{13,14} aromatherapy massage might also be found to be effective in reducing these symptoms.

The aim of the study was to determine whether a course of aromatherapy massage confers greater improvement in clinically important anxiety and/or depression than does usual supportive care. In addition, we examined whether aromatherapy massage produced greater improvement on self-reported anxiety, depression, pain, fatigue, nausea and vomiting, and global quality of life.

PATIENTS AND METHODS

Design

We used a pragmatic, multicenter, two-arm, randomized, controlled trial design to evaluate the impact of

aromatherapy massage as offered in National Health Service (NHS) cancer care settings on anxiety and depression in patients with cancer in the United Kingdom. Patients were randomly allocated to receive a 4-week course of weekly, 1-hour sessions of aromatherapy massage with usual supportive care or usual supportive care alone. Those randomly assigned to usual care only were offered a course of aromatherapy massage at the end of the trial. Ethical approval was received from the local research ethics committees.

Participants

We recruited patients who were diagnosed with cancer with an estimated prognosis of more than 3 months and referred by a cancer health professional to complementary therapy services in the respective cancer care settings. Patients were recruited from four cancer centers and one hospice in England between September 1998 and May 2002.

Trial inclusion criteria. Clinical anxiety and/or depression according to modified *Diagnostic and Statistical Manual of Mental Disorders* criteria (DSM-IV; Table A1, online only). Symptoms of anxiety and depression were elicited using a shortened version of the Structured Clinical Interview (SCID).¹⁵ Potential participants were classified as full case, borderline, or noncase of anxiety or depression using the modified standardized criteria. Those who were classified as full- or borderline-case anxiety and/or depression were described as having clinical anxiety and/or depression. Full-case anxiety and/or depression is equivalent in severity to psychological distress likely to benefit from specialist psychological and psychiatric interventions, whereas borderline-case anxiety and/or depression is equivalent to that which might benefit from counseling or specific psychological interventions, such as anxiety management.¹¹

Trial exclusion criteria. Trial exclusion criteria included clinical concern requiring a psychiatric assessment and a patient's having been prescribed psychotropic medication or begun a formal psychological intervention within 3 months of baseline assessment.

Primary outcome variable. The primary outcome variable was change in anxiety and/or depression between full case and borderline and noncase, or between borderline and noncase at 10 weeks postrandomization (Table A1). Trial-specific outcome criteria for both case and borderline anxiety were created in order to measure change over time within the 10 weeks postrandomization. These included shortening the time required to have anxiety symptoms from 6 months to 2 weeks (Table A1). The diagnostic assessments were tape-recorded, and regular consensus meetings were held to ensure quality and consistency of diagnostic rating.

Secondary outcome variables. Secondary outcome variables included the following: change in clinical anxiety and/or depression, as defined for the primary outcome variable, at six weeks postrandomization; change in self-reported anxiety using the State Subscale of the State Anxiety Inventory (SAI), analyzed as a continuous measure, at 6 and 10 weeks postrandomization¹⁶; change in self-reported depression using the Center for Epidemiological Studies Depression (CES-D) Scale, analyzed as a continuous measure, at 6 and 10 weeks postrandomization¹⁷; and change in self-reported fatigue, pain, nausea, and vomiting, and global quality of life using European Organisation for Research and Treatment of Cancer (EORTC) QLQ-C30 (version 3), analyzed according to the EORTC reference manual, at 6 and 10 weeks postrandomization.¹⁸

Procedures

Informed consent was obtained from potential participants to the study. Demographic and clinical characteristics were collected at baseline. Socioeconomic status was assessed using the Townsend index, a measure of material deprivation.¹⁹ Interview and questionnaire measures were administered at baseline, and 6 (range, 5 to 7) and 10 (range, 9 to 12) weeks later. Assessments were mainly undertaken face to face in the trial centers; however, 50 were conducted on the telephone,²⁰ and 12 at home to suit the patient. Ten researchers who were blind to the patient's treatment status as far as possible conducted the assessments. To measure any potential bias in the assessments, 6.7% (29 of 430) of the postrandomization taped interviews were independently and blindly rated. Weighted kappas were 0.93 for case/borderline depression (very good), 0.73 for case/borderline anxiety (good), and 0.84 for case/borderline anxiety and/or depression (very good).

Interventions

Usual supportive care. All patients had access to psychological support services as part of their cancer care.

Aromatherapy massage. In addition to usual supportive care, patients in the aromatherapy massage arm received a 4-week course of weekly, 1-hour sessions of aromatherapy massage. A treatment protocol for the aromatherapy massage that included 20 essential oils, massage strokes, timings, and overall massage style was agreed to by the 12 participating therapists.²¹ In accordance with best aromatherapy practice, the therapists prescribed the treatment they considered most appropriate to individual patients from within the protocol. The immediate effect of aromatherapy on anxiety was assessed by asking 12 patients at each center to complete a pre- and postaromatherapy massage session SAI. Fifty-seven patients participated, showing a mean improvement of 13.9 (95% CI, 11.3 to 16.4; $P < .0001$).

Sample Size

Our pretrial power calculation indicated that 214 patients were required to find a difference in improved anxiety and/or depression of 50% in the aromatherapy massage group and 30% in the usual care group, at the 5% level of significance with 80% power. In anticipation of a 25% attrition rate, we sought 286 patients.

Randomization

Patients were randomly assigned using random number sequence, stratified by disease stage (early/advanced) and trial center, and balanced in randomly sized blocks. Random allocation was performed by the trial statistician before the trial began and was placed in numbered, sealed, opaque envelopes which were opened by the trial researchers at each center once an eligible patient had consented.

Data Analysis

Change in clinical anxiety and/or depression was analyzed using the χ^2 statistic and adjusted using logistic regression. Change in continuous measures of self-reported anxiety, depression and other aspects of quality of life were analyzed by analysis of variance to test differences between the trial arms in change over time. Multivariate analyses were undertaken to examine the effect of prespecified variables thought to influence anxiety and/or depression or the effectiveness of the intervention: type of cancer, disease stage, cancer treatment during trial, use of psychotropic medication, ongoing psychological interventions, trial center and time frame within the trial (pre-2001, 2001, or 2002), receiving treatment (more than one session of aromatherapy), actual time from week 0 to week 10, and having a telephone versus face-to-face assessment at 10 weeks postrandomization. All outcome analyses were carried out on an intention-to-treat basis.

Two hundred twenty-one of 288 patients completed at least some of the final assessment. There were missing data in both the primary (23%) and the continuous secondary outcome measures (maximum, 31%). Along with missing questionnaires, the continuous secondary outcome measures were considered missing if fewer than half of the items of a factor were completed. The data available at 6 and 10 weeks postrandomization were not representative of the complete sample of randomly assigned patients. Because the assumption of missing at random was considered appropriate, multiple imputation of missing data was applied,²² and these results are presented as percentages rather than numbers.

For this trial, the imputation model used 38 variables, including all the outcome variables at each time point, those thought to affect outcome (eg, number of aromatherapy sessions received), and those thought to affect missingness (eg, receipt of treatment during trial). Five imputations were chosen to give a relative efficiency of 90%.²² A data augmentation approach²³ in PROC MI (SAS 9.1, SAS Institute, Cary, NC) was used to generate the imputed data sets, and PROC MIANALYZE (SAS Institute) was used to combine the estimates and give the final results table. Equivalent results using raw data are presented in Appendix Table A2 (online only).

A sensitivity analysis was performed to assess the stability of the conclusions to the missing-at-random assumption using a best- and worst-case analysis. The significance of the short-term improvement in the primary outcome was no longer apparent when all cases were imputed as not

improving ($P = .2$). Adjusting the secondary continuous outcomes by a clinically important difference did not have any effect on the conclusions.

RESULTS

Progress of Patients Into and Through the Trial

The numbers of patients at each stage of the process from referral to one of the complementary therapy services to completion of the trial is shown in Figure 1. There was considerable attrition of patients being considered for entry to the trial and throughout follow-up, mainly due to patients' poor physical health.

Patient Characteristics

The majority of participants were female, and more than half had breast cancer (Table 1). Nearly half of the participants had advanced cancer, and two thirds were undergoing chemotherapy and/or radiotherapy during the trial.

Baseline Assessments

Of the 288 patients randomly assigned, 109 (38%) were rated as having borderline anxiety and/or depression, and 179 (62%) as having case anxiety and/or depression. Descriptive data for all patient out-

come measures at each assessment point, after multiple imputation for missing outcomes, are shown in Table 2.

Delivery of Aromatherapy Massage

One hundred twenty-four (86%) of 144 patients randomly assigned to the usual supportive care plus intervention received two to four sessions of aromatherapy massage, whereas 20 (14%) of 144 received one or no sessions.

Improvement in Clinical Anxiety and/or Depression Postintervention

Sixty-three percent of all patients at 10 weeks postrandomization had improvement in anxiety and/or depression. There was, however, no difference in the improvement experienced by those who received aromatherapy massage compared with those who received usual care only (68% v 58%; odds ratio [OR], 1.3; 95% CI, 0.9 to 1.7; $P = .1$; Table 3). Patients taking psychotropic drugs at baseline were less likely to improve (OR, 0.6; 95% CI, 0.4 to 0.9).

At 6 weeks postrandomization 55% of patients had improvement in their clinical anxiety and/or depression from full case to borderline or noncase, or from borderline to noncase. More patients who received aromatherapy massage had an improvement than did those who received usual care only (64% v 46%; OR, 1.4;

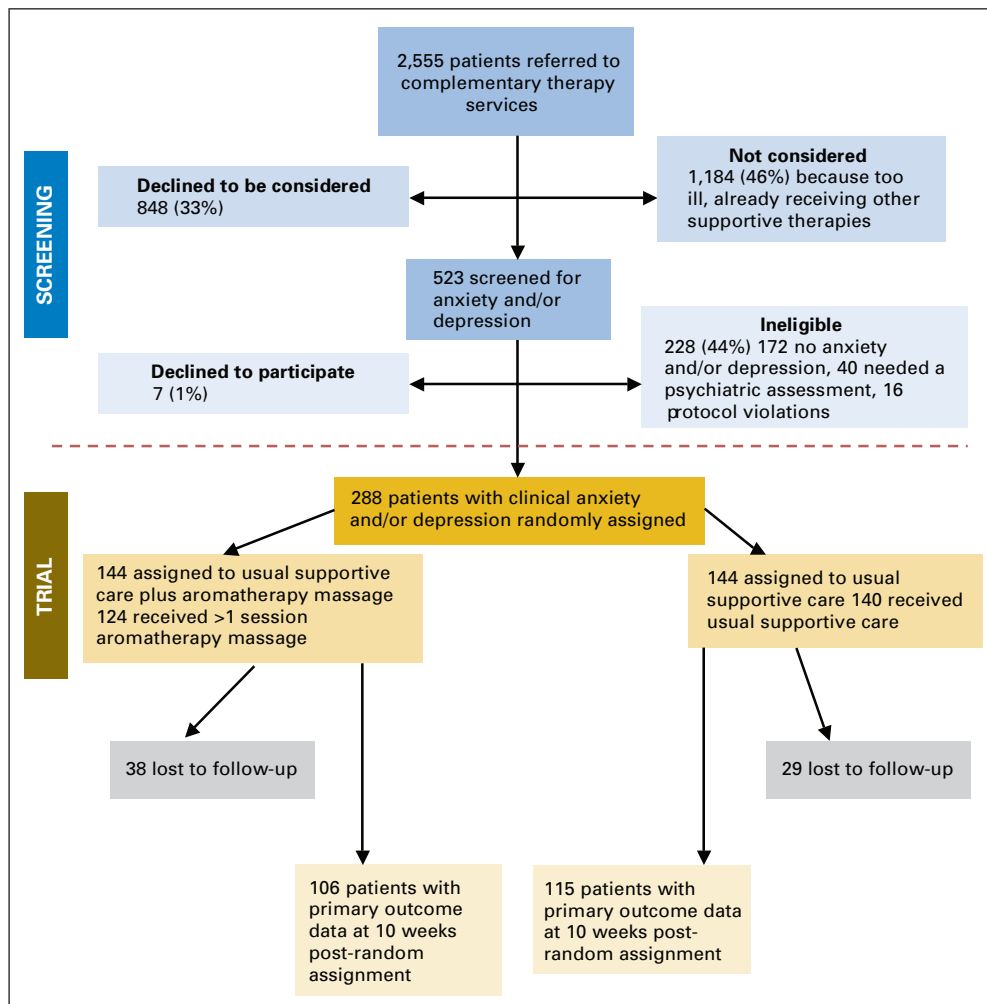


Fig 1. Flow chart of patient progress into and through the trial.

Table 1. Demographic and Clinical Characteristics of Patients

Characteristic	Usual Care Plus Aromatherapy Massage (n = 144)		Usual Care Alone (n = 144)		Total (n = 288)	
	No.	%	No.	%	No.	%
Age, years						
Mean	51.5		52.8		52.1	
Standard deviation	11.7		11.7		11.3	
Sex						
Male	20	14	18	13	38	13
Female	124	86	126	87	250	87
Marital status						
Married/cohabiting	84	58	93	65	177	61
Single/divorced/widowed	56	39	49	34	105	36
Unknown	4	3	2	1	6	2
Townsend deprivation scores	134		133		267	
Median	2.10		1.40		1.76	
Range	−5.1-12.4		−7.6-11.4		−7.5-12.4	
Mean	2.61		2.11		2.36	
Standard deviation	4.25		4.50		4.37	
Stage of cancer						
Early	81	56	83	58	164	57
Advanced	64	44	61	42	124	43
Type of cancer						
Breast	76	53	82	57	158	55
Lower GI	9	6	16	11	25	9
Gynecologic	14	10	11	8	25	9
Hematologic	11	8	11	8	22	8
Head and neck	11	8	4	3	15	5
Upper GI	8	6	6	4	14	5
Urologic	7	5	2	1	9	3
Lung	3	2	3	2	6	2
Brain	2	1	2	1	4	1
Skin	0	0	3	2	3	1
Other	3	2	4	3	7	2
Chemotherapy ± radiotherapy during trial	94	65	97	67	191	66

95% CI, 1.1 to 1.9; $P = .01$; Table 3). The only predictor for improvement in anxiety and/or depression at 6 weeks postrandomization was aromatherapy massage.

A breakdown in the improvement of clinical anxiety and/or depression according to the nature and severity of the mood disorder is shown in Table 4. Most of the overall improvement in clinical anxiety and/or depression at 6 weeks postrandomization was the result of improvement in case anxiety and borderline depression.

Improvement in Self-Report of Anxiety, Depression, and Other Quality-of-Life Outcomes Postintervention

Self-reported anxiety improved significantly more for patients receiving aromatherapy massage compared with those receiving usual care only at both 6 and 10 weeks postrandomization (difference in mean improvement at 6 weeks is 3.4; 95% CI, 0.2 to 6.7; $P = .04$ and at 10 weeks is 3.4; 95% CI, 0.2 to 6.6; $P = .04$; Table 3). Adjusting for other variables did not alter these results.

There was no significant difference in the improvement of self-reported depression between the aromatherapy massage and the usual care only arm at 6 or 10 weeks postrandomization (difference in mean improvement at 6 weeks is 2.0; 95% CI, −0.6 to 4.6; $P = .1$ and at 10

weeks is 2.5; 95% CI, −0.7 to 5.8; $P = .1$; Table 4). Adjusting for other variables did not alter these results.

For pain, fatigue, nausea and vomiting, and global quality of life, there was no significant difference between the two arms in the improvement from random assignment to 6 weeks or random assignment to 10 weeks (Table 3). Adjusting for other variables did not affect these results.

DISCUSSION

We have shown that four weekly sessions of aromatherapy massage improves clinical anxiety and/or depression experienced by cancer patients up to 2 weeks after the end of the intervention. This benefit is not, however, sustained at 6 weeks postintervention. Although improvement in self-reported anxiety was evident up to 6 weeks postintervention, we found no evidence of benefit for aromatherapy massage on pain, insomnia, nausea and vomiting, or global quality of life at either assessment point. This trial of aromatherapy massage in clinical practice has addressed many of the criticisms leveled at research

Table 2. Descriptive Data for Outcome Measures at Each Assessment Point Using Imputed Data

	Patients Receiving Usual Care Plus Aromatherapy Massage		Patients Receiving Usual Care		Total	
	Mean	SE	Mean	SE	Mean	SE
At randomization						
Clinical anxiety and/or depression, %	99*		100		99	
SAI	48.7	1.1	50.4	1.0	49.6	0.7
CES-D	26.1	0.9	26.0	0.8	26.0	0.6
EORTC pain	39.9	6.4	44.9	2.6	42.4	1.8
EORTC fatigue	58.8	4.3	62.0	2.1	60.4	1.5
EORTC nausea/vomiting	22.5	5.7	23.1	2.1	22.8	1.6
EORTC global QOL	48.4	2.6	44.9	1.7	46.7	1.2
6 weeks postrandomization						
Clinical anxiety and/or depression, %	64		46		55	
SAI	42.2	1.3	47.3	1.2	44.8	1.0
CES-D	20.5	1.2	22.4	1.0	21.5	0.8
EORTC pain	37.4	3.4	36.0	3.0	36.7	2.0
EORTC fatigue	52.5	2.3	58.4	2.4	55.4	1.7
EORTC nausea/vomiting	14.1	3.4	15.9	2.2	15.0	2.2
EORTC global QOL	51.8	2.5	49.3	2.3	50.5	1.7
10 weeks postrandomization						
Clinical anxiety and/or depression, %	66		58		62	
SAI	42.2	1.2	47.3	1.3	44.7	0.9
CES-D	19.3	1.2	21.7	1.2	20.5	0.8
EORTC pain	35.8	3.6	37.7	3.0	36.8	2.1
EORTC fatigue	48.3	2.5	56.9	2.6	52.6	1.7
EORTC nausea/vomiting	11.9	2.1	14.1	2.2	13.0	1.4
EORTC global QOL	56.0	2.0	51.0	2.1	53.5	1.4

Abbreviations: SAI, State Anxiety Inventory; CES-D, Center for Epidemiological Studies Depression Scale; EORTC, European Organisation for Research and Treatment of Cancer; QOL, quality of life.

*Two patients who were randomized based on the trial inclusion criteria, failed to meet trial outcome criteria for change in clinical anxiety. To prevent bias from exclusions postrandomization, these are included in all analyses.

evaluating the effectiveness of complementary therapies. To the best of our knowledge, this is the first large, multicenter, randomized, controlled trial of a complementary therapy in a health care setting. It involved patients with both early and advanced cancer and long-term

follow-up. We used a range of standardized, patient-centered outcome measures including observer and self-report and categoric and continuous measures. These enable comparison with findings from other studies evaluating interventions to improve anxiety and

Table 3. Effects of Aromatherapy Massage on All Outcomes at 6 and 10 Weeks Postrandomization Using Imputed Data

Table 3. Effects of Aromatherapy Massage on All Outcomes at 6 and 10 Weeks Postrandomization Using Imputed Data																							
Data	Baseline Assessment				Outcome at 6 Weeks Postrandomization							Outcome at 10 Weeks Postrandomization											
	Usual Care Plus Aromatherapy Massage			Usual Care	Usual Care Plus Aromatherapy Massage			Usual Care				Usual Care Plus Aromatherapy Massage			Usual Care								
	Mean Improvement	SE	P		Mean Improvement	SE	Odds Ratio	95% CI	P	Mean Improvement	SE	Odds Ratio	95% CI	P									
SCID anxiety ± depression, %	*99			100			64			46		1.4	1.1 to 1.9	.01		68		58		1.3	0.9 to 1.7	.1	
SAI	48.7	1.1		50.4	1.0		6.5	1.4		3.1	1.1	3.4	0.2 to 6.7	.04		6.6	1.3		3.2	1.1	3.4	0.2 to 6.6	.04
CES-D	26.1	0.9		26.0	0.8		5.5	1.0		3.5	0.9	2.0	−0.6 to 4.6	.1		6.7	1.2		4.2	1.0	2.5	−0.7 to 5.8	.1
EORTC pain	39.9	6.4		44.9	2.6		2.5	3.4		8.9	3.0	−6.4	−16.8 to 4.0	.2		4.1	3.7		7.2	2.6	−3.1	−13.3 to 7.2	.5
EORTC fatigue	58.8	4.3		62.0	2.1		6.3	2.2		3.6	1.9	2.6	−3.1 to 8.3	.4		10.5	2.7		5.1	2.3	5.3	−2.2 to 12.9	.2
EORTC nausea/vomiting	22.5	5.7		23.1	2.1		8.3	3.7		7.2	2.4	1.1	−7.5 to 9.7	.8		10.6	2.9		9.0	2.6	1.5	−6.8 to 9.9	.7
EORTC global QOL	48.4	2.6		44.9	1.7		3.4	2.5		4.3	2.3	−1.0	−8.0 to 6.0	.8		7.6	1.9		6.1	2.0	1.5	−4.1 to 7.1	.6

NOTE. Boldfacing indicates significance.

Abbreviations: SCID, Structured Clinical Interview; SAI, State Anxiety Inventory; CES-D, Center for Epidemiological Studies Depression Scale; EORTC, European Organisation for Research and Treatment of Cancer; QOL, quality of life.

*Two patients who were randomized based on the trial inclusion criteria, failed to meet trial outcome criteria for change in clinical anxiety. To prevent bias from exclusions postrandomization, these are included in all analyses.

Table 4. Effects of Aromatherapy Massage on Clinical Anxiety and Depression Using Imputed Data

Condition	Total Trial Sample (n = 288)		Randomized to Usual Care Plus Aromatherapy Massage (n = 144)		Randomized to Usual Care (n = 144)	
	Case	Borderline Case	Case	Borderline Case	Case	Borderline Case
Anxiety and/or depression						
Outcome at 6 weeks postrandomization, %						
Worse	0	16	0	11	0	21
Same	42	33	33	27	49	42
Improved	59	51	67	62	51	37
Outcome at 10 weeks postrandomization, %						
Worse	0	12	0	11	0	12
Same	36	26	27	24	44	28
Improved	64	63	73	64	56	60
No. of patients	173	113	79	63	94	50
Anxiety only						
Outcome at 6 weeks postrandomization, %						
Worse	0	7	0	5	0	10
Same	23	40	7	37	39	44
Improved	77	52	93	58	61	47
Outcome at 10 weeks postrandomization, %						
Worse	0	7	0	3	0	12
Same	18	32	7	28	28	35
Improved	82	61	93	69	72	53
No. of patients	60	165	30	81	30	84
Depression only						
Outcome at 6 weeks postrandomization, %						
Worse	0	18	0	5	0	36
Same	38	23	30	22	44	23
Improved	62	59	70	73	56	41
Outcome at 10 weeks postrandomization, %						
Worse	0	14	0	14	0	14
Same	35	16	29	14	41	18
Improved	65	70	71	72	59	68
No. of patients	160	60	73	34	87	26

depression. Of particular importance was the use of structured interviews and modified standardized diagnostic criteria to assess changes in anxiety and depression, which means we can make inferences regarding the clinical significance of the effect of aromatherapy.

We elected to evaluate packages of aromatherapy, as they are currently delivered in the NHS, in order to maximize the real-world application of the results. These packages are based on best practices, allowing therapists a fair degree of autonomy in practice while imposing parameters to maintain broad consistency between centers.²¹ Several aromatherapists were involved in delivering the intervention, thereby testing the intervention rather than the specific application of it by a particular therapist.

Previous studies have focused on women with early breast cancer as the predominant users of complementary therapies. The participants in this trial are more representative of the general population of patients with cancer, and included patients with all of the common cancers and a significant proportion of patients with advanced disease as well as those undergoing active anticancer treatment. The trial centers were geographically well distributed across the United Kingdom, and the patients were from a wide range of social backgrounds. These considerations make the short-term benefit of aromatherapy massage reported by this trial all the more striking.

Recruitment to this trial was extremely challenging.²¹ The problems encountered have been experienced by others who have attempted randomized studies of supportive care in patients with cancer, particularly among patients with advanced cancer.^{24,25} The low recruitment rate was partly attributable to the high levels of physical morbidity among patients. Also, recruitment was challenging because none of the clinical trial centers had organizational structures for supportive care research. Once patients were considered for the trial, the numbers of patients who were excluded or who declined were higher than expected. On average throughout the trial, it was necessary to consider 10 patients for each one randomly assigned. This ratio is not, however, particularly unusual for a trial of supportive care in a population of patients with cancer.²⁶

Similarly, attrition was a particular issue in this trial. Eight percent of participants died during the trial, and a further 15% were too ill for or declined a 10-week follow-up. The nonmissing data at the two outcome assessment points were not representative of the patients randomly assigned. We used multiple imputations to investigate and reduce the impact of the missing data and the findings of this trial need to be interpreted in the context of this approach.

The pattern of change in clinical anxiety and depression and also in self reported anxiety in this trial is one of improvement for patients

in both the aromatherapy massage and usual-care arms. This may reflect the natural improvement in mood for patients after the crisis that precipitated the referral for aromatherapy massage. There is certainly good evidence for spontaneous improvement in depression and anxiety after the diagnosis and treatment of cancer.^{9,27} The potentially therapeutic effect of the interview-based assessment all participants underwent on three occasions during the trial may also help to explain the overall pattern of improvement seen across the trial.

The important issue from the therapeutic point of view is the difference in the trajectory of the improvements between the patients in the two arms of the trial. The patients receiving aromatherapy massage experienced a significant improvement in anxiety and depression at 2 weeks after intervention and this was maintained at 6 weeks after intervention. By contrast, the rate of improvement in the mood of the patients in the usual-care arm was slower.

The majority of the distress experienced by patients with cancer involves a combination of anxiety and depression; hence, we chose as our main trial inclusion and outcome measure a summation of anxiety and depression.²⁸ Our findings nevertheless suggest that the benefit of the aromatherapy massage is most evident for anxiety rather than depression. This finding is consistent with previous studies.⁷

Although the patients recruited to this trial all had clinical anxiety and/or depression according to DSM-IV criteria, they did not include those with levels of psychiatric morbidity causing clinical concern. Those causing clinical concern were excluded by the referring health professionals and at the point of inclusion assessment for the trial by the researchers. In the context of these exclusions, the results of this trial suggest that aromatherapy massage is an effective therapeutic

option for the short-term management of mild to moderate anxiety and depression in patients with cancer. The benefits of aromatherapy massage need to be compared with those of psychological interventions for this patient group.

This randomized, controlled trial makes a significant contribution to the body of evidence on the effectiveness of complementary therapy in cancer care and should help guide the commissioners of cancer care in determining what complementary therapy services they wish to fund.²⁹

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The authors indicated no potential conflicts of interest.

AUTHOR CONTRIBUTIONS

Conception and design: Susie M. Wilkinson, Sharon B. Love, Alex M. Westcombe, Teresa Young, E. Jane Maher, Amanda J. Ramirez

Collection and assembly of data: Sharon B. Love, Maureen A. Gambles, Caroline C. Burgess

Data analysis and interpretation: Susie M. Wilkinson, Sharon B. Love, Alex M. Westcombe, Anna Cargill, Teresa Young, Amanda J. Ramirez

Manuscript writing: Susie M. Wilkinson, Sharon B. Love, Alex M. Westcombe, Caroline C. Burgess, Anna Cargill, Teresa Young, E. Jane Maher, Amanda J. Ramirez

Final approval of manuscript: Susie M. Wilkinson, Sharon B. Love, Alex M. Westcombe, Maureen A. Gambles, Caroline C. Burgess, Teresa Young, E. Jane Maher, Amanda J. Ramirez

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Acknowledgment

The Acknowledgment is included in the full-text version of this article, available online at www.jco.org. It is not included in the PDF version (via Adobe® Reader®).

Appendix

The Appendix is included in the full-text version of this article, available online at www.jco.org. It is not included in the PDF version (via Adobe® Reader®).