The Use of Aromatherapy for Pain Reduction and 'Well-being' in the Treatment of Endometriosis Patients

by Valerie Ann Worwood ©

Abstract

This study sets out to examine the effects of aromatherapy treatment for pain reduction and improved quality of life in women with endometriosis, and also to assess the continued effect of treatment. Five essential oils were used in conjunction with particular bodywork technique, being bergamot (Citrus auranthium), Clary Sage (Salvia sclarea), Cypress (Cupressus sempervirens), Fennel (Foeniculum vulgare var. dulce), Geranium (Pelargonium odorantisimum, P. graveolens). All subjects noted symptoms and other factors on record-diary over a 168-day period, during half of which they received weekly aromatherapy treatment. Thirty-five comparative analyses were made. Amongst the findings, it was shown that aromatherapy treatment has a beneficial effect on women with endometriosis with respect to pain reduction and quality of life.

Introduction

Although in the clinical setting aromatherapy has been shown to have a marked effect on pain management and patient well-being or 'quality of life' in cases of endometriosis, there has hitherto been no research to test the hypothesis that aromatherapy can have a positive effect on endometriosis patients. This trial sets out to evaluate the efficacy of aromatherapy as a treatment for pain reduction in women with endometriosis, and also to assess the effects of aromatherapy on the frequently reported symptoms presented by them. It was not intended to evaluate the efficacy of individual essential oils, their constituents, or a formulation on the condition, but to evaluate the efficacy of aromatherapy as it is practised.

This paper presents the main findings of the trial results regarding the incidence of a) pain free days, b) abdominal pain, c) pelvic pain, d) left rib-cage pain. 'Well-being' was assessed under the headings e) feeling well, f) renewed vigour, g) depression, h) tiredness. Findings regarding the incidence and degree of the following symptoms of endometriosis are also presented: i) hot flushes, j) palpitations, k) vaginal discharge, l) fluid retention, m) headache, n) frequent urination, o)painful sexual intercourse, p) diarrhoea, q) constipation, r) painful defacation.

Endometriosis

Endometriosis is a disease which affects women of menstrual age, from 9 to post-menopausal, of all racial-types. An estimated six million women are affected in the United States, and half a million women in Canada. In the United Kingdom endometriosis is the second most common gynaecological condition which necessitates hospital treatment, with an estimated one-in-ten women being affected.

The name 'endometriosis' is taken from the word 'endometrium', which is the lining of the uterus. In endometriosis, tissue resembling uterine endometrial tissue is found outside the uterus - within the abdomen and elsewhere. Like uterine endometrial tissue, endometrial tissue outside the uterus reacts to cyclical hormonal signals - building up tissue, breaking it down again and bleeding.

Common sites at which this endometrial-like tissue is found are the cul-de-sac (adjacent to coccyx), right broad ligament, right and left uterosacral ligaments, left broad ligament, bladder, on the ovaries, outer surface of the uterus - especially the fundus, sigmoid flexure of the colon, fallopian tubes (both inside and out), lining of the abdominal cavity (peritoneum), intestinal tract, the cervix, vagina, the area between the vagina and rectum (perineum), and the vulva. Implants have also been found in the rectum and along

surgical scars. In some cases, endometrial tissue is found some distance from the abdominal cavity - on the lung, armpits, eye, thigh, arm, and other sites. A few rare instances have also been reported of endometrial tissue being found in men, associated with the prostate gland, bladder and urethra.

Although endometriosis implants (adhesions, growths, nodules, lesions) behave in the same way as uterine endometrium tissue, the blood and tissue they produce with each menstruation cannot leave the body in the usual way (through the cervix and vagina). The result is internal bleeding, inflammation of affected areas and the formation of scar tissue which can adhere internal organs to each other.

The symptoms of endometriosis differ in women, depending on the site/s of implantation. Most common symptoms are painful periods, abdominal and pelvic pain throughout the menstrual cycle, fatigue, constipation, diarrhoea, painful defecation, dyspareunia (painful sexual intercourse), repeated miscarriages, infertility.

The aetiology of the disease is unknown. It has been suggested that retrograde menstruation (endometrial tissue leaving the uterus through the fallopian tubes) deposits endometrial tissue in the abdominal cavity. However the incidence of endometrial tissue implants in men suggests an embryonic tissue and hormonal development route. Immunological or hormonal disorder has been postulated. Chemical pollutants such as dioxin may be implicated. A genetic predisposition is possible and the subject of current research. The wide dispersal of endometrial tissue supposes a lymphatic or circulatory distribution mechanism.

Current management of endometriosis involves pain relief and hormone treatments. These include Danazol [Danocrine; Cyclomen] (androgen - synthetic testosterone derivative - suppresses oestrogen and progesterone), Dimetriose [gestrinone] (androgen; anti-progestin, suppresses the release of follicle stimulating [FSH] and luteinising hormones [LH] from the pituitary gland), Synarel [naferelin] (GnRh agonist, suppresses the release of FSH and LH), Suprecur [Buserelin] (GnRH agonist), Zoladex [Goserelin] (blocks FSH and

LH), Prostap S.R [Leuperolin acetate] (nonapeptide GnRH alalogue), Duphaston (progestogen), Provera (progestogen), Norethisterone (progestogen). Unfortunately these treatments often cause side-effects in patients, and when stopped symptoms most often return. They cannot be taken if pregnancy is suspected or desired. For such women, lazer surgery is the preferred option. Radical surgery (hysterectomy and/or oophorectomy) is often recommended in cases of endometriosis but as the implants are often in sites additional to the uterus and/or ovaries, symptoms can continue.

Background to the Project

During a period of ten years the author found aromatheraputic methods consistently beneficial to women with endometriosis. Over this time a treatment plan was formulated which could be adapted to the presenting women's symptomatic profiles, lessening the incidence of radical surgery requirement, and often resulting in pregnancy in women who previously experienced non-conception. This method of treatment involved not only the use of specific essential oils formulated to suit the unique set of symptoms individually presented, but particular specialist bodywork techniques, dietary advice, and other holistic factors.

Clearly such an individualistic treatment system could not be utilised for trial procedures. Therefore for the purpose of this trial a simple aromatherapeutic procedure was designed by the author. This involved the use of five essential oils which had previously been found to be effective with the majority of women treated, although due to financial considerations a primary choice could not be included. The original compliment of 22 IFA volunteer therapists were instructed by the author in a simplified bodywork procedure to use when applying the undisclosed diluted essential oils. The therapists were instructed to offer no counselling, dietary or other advice.

Trial Design

The preliminary study design was suggested during the Research Methodology Conference held in Oxford by the Research Council for Complimentary Medicine. In particular thanks must be given to Dr Peter Davies, formerly Senior Research Fellow at The Royal Free Hospital, London, and Dr Stuart Pocock, formerly Professor of Medical Statistics and Director, Clinical Trials Research Centre, Royal Free Hospital, London.

It was suggested at the conference that the trial follow the 'cross-over' procedure, in view of the fact that it would be impossible due to the distinctive odours of essential oils to use double-blind procedures.

The trial took place in various places in England over a period of 24 consecutive weeks with the patient sample being divided into two groups (Groups A and B) using a random selection procedure. The women were treated by one of twenty five therapists initially taking part in the trial.

Patients Inclusion Criteria:

a) a member of The National Endometriosis Society

b) must have had a firm diagnosis of endometriosis

c) has currently rejected drug therapy for various reasons

d) aged between 18-45, and not menopausal

e) must have had the condition for a minimum period of two years

f) be free from any other major medical disorder unrelated to endometriosis

g) has not undergone radical surgery (hysterectomy or ovariotomy)

h) must have the written consent of current consultant gynaecologist

Therapists Inclusion Criteria:

a) must be registered members of the International Federation of Aromatherapists (IFA)

b) must have attended the training seminar and protocol discussion.

The administrative team were members of the Research Committee of the IFA.

All therapists and other participating IFA members contributed their time without charge.

Weeks 1-12 : Group A

a) kept a daily record of symptoms, and completed a weekly summary

b) visited a therapist once every four weeks to hand in the symptom report

Weeks 1-12 : Group B

a) had an aromatherapy treatment with application of trial essential oils

b) treatment duration was one hour per week, for twelve consecutive weeks

c) also kept a daily record of symptoms, and completed a weekly summary

During weeks 13-24 of the trial, Groups A and B exchanged protocol, with Group A receiving the aromatherapy treatment and keeping the daily and weekly records of symptoms, while Group B kept the daily and weekly records of symptoms only, and visited the therapist once every four weeks only to hand in the symptom report.

No other form of allopathic or complementary treatment was undertaken during the entire 24 week period.

Setting

Patients in both Group A and Group B were seen at the business address of the individual participating aromatherapists. In some cases, this was at hospitals and clinics, in others, at the residential business address of the therapist.

Interventions

The following essential oils were used in equal proportions, to a total of 5%, which was diluted in sweet almond oil:

a) Bergamot (*Citrus auranthium, ssp Bergamia rinds)*
b) Clary Sage *(Salvia sclarea)*
c) Cypress *(Cupressus sempervirens)*
d) Fennel *(Foeniculum vulgare var. dulce)*
e) Geranium *(Pelargonium odorantisimum, P. graveolens)*

The essential oils were diluted at the outset of each treatment by the therapists from a bottle provided to them which contained the equal-proportioned essential oils listed above. The bottle containing the essential oils was labelled "Research Essential Oils".

Dosage: between 20-25mls diluted oil per week of treatment; see *Discussion.*
Application by therapist once per week

Chemical constituents of essential oils used in the trial

The complexity of essential oils is such that each oil contains many constituents. Differences in sources depend to some degree upon variable factors such as the species of the sample analysed, the particular crop (growing conditions, weather etc), the technology used and interpretation of data by the operator or others. What follows are the variable figures in the brief analysis of the major components detailed in literature reviewed, which is written for the therapist:

Bergamot *(Citrus auranthium, ssp bergamia rinds)*

Linalyl acetate (23-45%); Limonene (19-38%); Linalol (4-29%); a-terpinene (4-13%); B-pinene (3-13%); Bergapten (0.3-0.4%)

Clary Sage *(Salvia sclarea)*

Linalyl acetate (62-82%); Linalol (6-28%); B-caryophyllene (1-3%); Sclareol (0.8-7%); Germacrene D (2.5-4%)

Cypress *(Cupressus sempervirens)*

Cedrol (5-7%); a-pinene (4-5%); D-3-carene (5%)

Fennel *(Foeniculum vulgare var. dulce)*

trans-anethole (30-75%); cis-anethole (0.3-0.5%); Fenchone (2.5-25%); Methyl chavicol (1-5%); Limonene (3.5-55%); a-pinene (1.5-15%); 1,8-cineole (4-6.5%)

Geranium *(Pelargonium odorantisimum, P. graveolens)*

Citronnellol (28-48%); Geraniol (7-25%); Linalol (3-10%); Isomenthone (4-7.5%); Citronellyl formate (5-13%); Geranyl formate (1-4%)

Bodywork Technique

Specialised techniques developed by the author were included amongst therapist's normal treatment practice.

Data Analysis

During both treatment and non-treatment phases the participating women with endometriosis were provided with weekly 'diary' sheets upon which records could be kept

of symptoms experienced on a daily basis. On the reverse, a series of 8 questions were asked, forming a weekly summary. Each of the following symptoms could be measured on a scale of 1-5 indicating the severity of the symptoms on a scale: very mild (1), mild (2), moderate (3), severe (4) and very severe (5).

Abdominal Pain	Diarrhoea	Vaginal Discharge
Pelvic pain	Constipation	Joint swelling
Painful sexual intercourse	Painful defecation	Muscle weakness
Left ribcage pain	Frequent urination	Palpitations
	Fluid retention	Hot flushes
		Headache

Well-being or 'quality of life' was measured, also on a scale of 1-5, with the following categories:

Pain free day (not measured 1-5)	Renewed vigour
'Feeling well'	Depression
Tiredness	

Data was analysed in two ways. Days on which there was a symptom-recording was taken as a 'unit', and the degree (1-5) was also measured. The data analysis that follows is therefore in two parts: Units and Degree.

The diaries also recorded: treatment day; menstrual flow began; menstrual flow - light, medium or heavy; cessation of menstrual flow

A section allowed patients to enter other unlisted symptoms. It was noticed that tender breasts and giddiness were often noted in this section, both during treatment and non-treatment.

Each day provided "Comments" space, which was used to record events such as "on holiday", "moving day, very upset", etc. and physiological and psychological changes such as "felt much better after massage", "slept well", "better able to think clearly and a bit more energy", "energetic and enthusiastic at conference". These comments do not form part of the data analysed but are an interesting aside for those working with complementary therapies or endometriosis.

At the first consultation with the endometriosis volunteer, a medical history questionnaire was completed which was provided as part of the trial. This included questions relating to age and status, childhood factors, age of menarche, questions relating to the menstrual cycle, drug treatments undertaken, tampon use, STD occurrence, the age at which the patient thinks endometriosis developed, age at which endometriosis diagnosed. This information does not form part of this report.

Also, at the first consultation a questionnaire was completed, which was provided as part of the trial, in which questions were asked relating to physiological and psychological factors around the time of the menstrual period (recorded as week before; during; week after). Each answer could be marked on a scale of 0 to 3. Twenty-eight questions were asked including the incidence of headaches, feeling bloated in abdomen, angry for no good reason, craving for sweet foods, craving for salty foods, poor concentration or memory, tender breasts, feeling tense, backache, violent feelings, nausea etc. This information does not form part of this report.

At the last consultation a questionnaire was completed by the therapist, in consultation with the volunteer. This questionnaire was provided as part of the trial. A series of twenty questions were asked relating to the emotional well-being of the woman. Each question was answered on a scale A-E, indicating totally agree (A), very much agree (B), somewhat agree (C), slightly disagree (D), strongly disagree (E).

Results

Several patients dropped out of the trial for various personal reasons - such as becoming pregnant during the trial, conflict of religious interests, non-compatibility between patient and therapist. Some patients only completed either the 12 week treatment, or non-treatment, diary. Their data was excluded from the findings. A total number of 15 women completed both 12-week diaries.

Two further patients completed the non-treatment diary but did not complete the full 12 weeks of the treatment diary (Patient 1 - 4 weeks; Patient 5 - 6 weeks). Their data has been included in the findings, only including 4 and 6 weeks respectively for both treatment and non-treatment phases.

To our knowledge at least one further patient became pregnant during the non-treatment phase, following treatment.

Main Findings

This information is presented in two parts:

Group A

Group B

Group A

This group of 8 women kept a daily record-diary of their main symptoms for 12 weeks (84 days). They then continued to keep these daily record-diaries while receiving the aromatherapy treatment during the following 12 weeks (84 days). The total number of days recorded was 168.

All symptoms were recorded as units (days) and degree (on a scale 1-5, from very mild to very severe).

Pain

The number of pain-free units was found to be 59% more frequently recorded during the treatment phase:

	Pain Free Days
Before Treatment Phase	**12.37**
During Treatment Phase	**19.62**
% Change During Treatment	**59% Increase in pain-free days**

During the treatment phase there was found to be a considerable reduction in the recorded incidence of both pain units (days) and degree (severity), for both Abdominal Pain and Pelvic Pain. The reduction was less marked in Left Ribcage Pain.

	Abdominal Pain Units	Abdominal Pain Degree	Pelvic Pain Units	Pelvic Pain Degree	Left Ribcage Pain Units	Left Ribcage Pain Degree
Before Treatment	**14.25**	**39.00**	**18.87**	**52.37**	**6.37**	**18.75**

During Treatment	**7.50**	**20.75**	**11.62**	**29.00**	**5.87**	**14.62**
% Change During Treatment	**47% Reduction in pain**	**47% Reduction in pain**	**38% Reduction in pain**	**45% Reduction in pain**	**8% Reduction in pain**	**22% Reduction in pain**

Well-Being

One of the main objects of the trial was to test the common perception that aromatherapy has a positive influence on 'well-being', or improves what is commonly referred to as the 'quality of life'. Various questions in the patient questionnaire pertained to this subject. Clearly, the evaluation of 'well-being' is subjective, however, by allowing the subject to record degrees on a scale of 1-5, a day-to-day self-evaluation was obtained.

	Feeling Well Units	Feeling Well Degree	Renewed Vigour Units	Renewed Vigour Degree	Depression Units	Depression Degree	Tiredness Units	Tiredness Degree
Before Treatment	**19.00**	**46.25**	**1.25**	**2.12**	**8.62**	**20.50**	**31.50**	**84.62**
During Treatment	**30.75**	**73.87**	**6.50**	**12.50**	**3.12**	**8.00**	**26.00**	**66.00**
% Change During Treatment	**62% Increase in Well-being**	**60% Increase in Well-being**	**420% Increase in Vigour**	**490% Increase in Vigour**	**64% Reduction in Depression**	**61% Reduction in Depression**	**17% Reduction in Tiredness**	**22% Reduction in Tiredness**

Symptoms of Endometriosis

There are many symptoms of endometriosis, some of which are listed above. These depend upon the severity of the condition, amongst other factors. Some of the most common symptoms were recorded and the findings are shown below.

A reduction was seen in both incidence and degree of the following symptoms:

	Hot Flushes Units	Hot Flushes Degree	Palpitat-ions Units	Palpitat-ions Degree	Vaginal Discharge Units	Vaginal Discharge Degree	Fluid Retentio n Units	Fluid Retentio n Degree
Before Treatment	1.87	3.75	1.75	3.50	11.87	19.12	12.25	28.75
During Treatment	1.12	2.87	.50	.50	8.50	14.75	7.00	15.37
% Change During Treatment	40% Reduction in Hot Flushes	23% Reduction in Hot Flushes	71% Reduction in Palpitations	86% Reduction in Palpitations	28% Reduction in Discharge	23% Reduction in Discharge	43% Reduction in Fluid Retentio n	46% Reduction in Fluid Retentio n

Painful sexual intercourse is a commonly reported symptom of endometriosis. According to Lauersen and de Swaan, "Endometrial lesions, especially when they are trapped and growing in the cul-de-sac, can push the uterus into a retroverted position. Retroversion is a tilting back of the uterus. When the uterus is thus pulled out of its normal position deep vaginal penetration during intercourse can be extremely painful" (note...).

The figures here reported with regard to painful sexual intercourse relate to one subject only, the other subjects in the group reporting no incidence of painful sexual intercourse either before or during the trial.

	Headache Units	Headache Degree	Frequent Urination Units	Frequent Urination Degree	Painful Sexual Intercourse Units	Painful Sexual Intercourse Degree
Before Treatment	11.37	25.62	7.87	20.00	0.37	0.75
During Treatment	10.87	24.25	5.50	14.00	0.50	0.87
% Change During Treatment	4% Reduction in Headaches	5% Reduction in Headaches	30% Reduction in Frequency of Urination	30% Reduction in Frequency of Urination	35% Increase in Painful Intercourse	16% Increase in Painful Intercourse

The reduction in the incidence of constipation during the treatment phase is found on individual patient analysis to relate to the reduction of pain during defecation. The increase in the incidence of diarrhoea (10% degree) during the treatment phase may relate to the toxin elimination process often suggested to be an element in this type of aromatherapy treatment.

	Diarrhoea Units	Diarrhoea Degree	Constipation Units	Constipation Degree	Painful Defecation Units	Painful Defecation Degree
Before Treatment	**2.00**	**4.87**	**9.12**	**21.00**	**2.12**	**4.62**
During Treatment	**2.50**	**5.37**	**6.00**	**16.75**	**0.75**	**1.37**
% Change During Treatment	**25% Increase in Diarrhoea**	**10% Increase in Diarrhoea**	**34% Reduction in Constipation**	**20% Reduction in Constipation**	**65% Reduction in Painful Defecation**	**70% Reduction in Painful Defecation**

GROUP B

This group of nine women received aromatherapy treatment during the first 12 weeks of the trial, while also keeping the daily record-diary. For the following 12 weeks they continued to keep the daily record-diary, and visited the therapist every four weeks only to hand in the records.

One of the main objectives of the trial was to test the common perception amongst aromatherapists that the benefits of aromatherapy treatment continue for a period of time after the cessation of treatment or indeed only become apparent following

treatment. Group B therefore recorded symptoms during treatment, and for 12 weeks after treatment.

All symptoms were recorded as Units (days) and Degree (on a scale 1-5, from very mild to very severe).

Pain

It was found that the incidence of pain-free days rose slightly (7%) during the after-treatment phase.

GROUP B	Pain Free Days
During Treatment Phase	23.22
After Treatment Phase	24.77
% Change After Treatment	7% Rise in pain-free days

During the after-treatment phase there was a considerable reduction in the incidence of Abdominal Pain (Units 51%; Degree 43%), while little reduction was seen in the incidence of Pelvic Pain units and degree (both 3%). No women in this sample reported any incidence of left ribcage pain.

GROUP B	Abdominal Pain Units	Abdominal Pain Degree	Pelvic Pain Units	Pelvic Pain Degree	Left Ribcage Pain Units	Left Ribcage Pain Degree
During Treatment	15.55	32.11	32.44	68.22	0	0

After Treatment	7.66	18.00	31.33	70.33	0	0
% Change After Treatment	51% Fall Abdominal Pain Units	43% Fall Abdominal Pain Degree	3% Fall Pelvic Pain Units	3% Rise Pelvic Pain Degree	0%	0%

Well-Being

'Feeling Well' and Renewed Vigour were found to be higher during the treatment phase. The incidence of Depression rose during the after-treatment phase. The incidence of Tiredness fell during the after-treatment phase.

GROUP B	Feeling Well Units	Feeling Well Degree	Renewed Vigour Units	Renewed Vigour Degree	Depression Units	Depression Degree	Tiredness Units	Tiredness Degree
During Treatment	36.11	94.66	2.66	6.33	11.55	27.00	40.33	101.22
After Treatment	33.88	85.77	2.22	2.44	14.00	35.44	34.11	88.89
% Change After Treatment	6% Fall Feeling Well	9% Fall Feeling Well	16% Fall Renewed Vigour	61% Fall Renewed Vigour	21% Rise Depression	31% Rise Depression	15% Fall Tiredness	12% Fall Tiredness

Symptoms of Endometriosis

The incidence of Hot Flushes fell during the after-treatment phase. Only three women in this sample recorded experiencing Palpitations - in this small sample there was no change in the Units, and a 50% rise during the after-treatment phase. The incidence of Vaginal Discharge rose during the non-treatment phase by 14% and 17%. Although there was an increase in the units of Fluid Retention during the

after-treatment phase, the degree of Fluid Retention showed only a 1% fall during this time.

GROUP B	Hot Flushes Units	Hot Flushes Degree	Palpitat-ions Units	Palpitat-ions Degree	Vaginal Discharge Units	Vaginal Discharge Degree	Fluid Retentio n Units	Fluid Retentio n Degree
During Treatment	2.55	6.11	0.89	1.11	16.22	27.77	11.33	25.11
After Treatment	1.67	4.11	0.89	1.67	18.44	32.55	12.33	24.77
% Change After Treatment	34% Fall in Hot Flushes	33% Fall in Hot Flushes	0%	50% Rise in Palpit -ations	14% Rise Vaginal Discharge	17% Rise Vaginal Discharg e	9% Rise in Fluid Retent'n	1% Fall in Fluid Retent'n

There was a fall in the incidence of Headache during the after-treatment phase. Frequent Urination was also less during this time. Only three women reported any incidence of painful sexual intercourse during the trial (2 in each phase). They reported a higher incidence of pain in the non-treatment phase.

GROUP B	Headache Units	Headache Degree	Frequent Urination Units	Frequent Urination Degree	Painful Sexual Intercourse Units	Painful Sexual Intercourse Degree
During Treatment	15.44	33.77	15.88	34.77	0.88	2.33
After Treatment	7.89	16.89	14.33	33.33	1.33	3.33

% Change After Treatment	49% Less Headache	50% Less Headache	10% Less Frequent Urination	4% Less Frequent Urination	51% Rise Painful Sex Intercourse	43% Rise Painful Sex Intercourse

During the after-treatment phase the incidence of diarrhoea rose by 13% (units)and 22% (degree). During this time, there was a fall in the incidence of constipation of 11% (units) and 15% (degree). The incidence of Painful Defecation fell during the non-treatment phase.

GROUP B	Diarrhoea Units	Diarrhoea Degree	Constipation Units	Constipation Degree	Painful Defecation Units	Painful Defecation Degree
During Treatment	7.55	16.22	8.00	16.66	2.22	5.11
After Treatment	8.55	19.88	7.11	14.22	1.22	2.00
% Change After Treatment	13% Rise in Diarrhoea	22% Rise in Diarrhoea	11% Fall in Consti-pation	15% Fall in Consti-pation	45% Fall in Painful Defecation	61% Fall in Painful Defecation

Conclusions

A marked difference was seen in the results in Group A between pre-treatment and treatment phases (both 84 days). A much less marked difference was seen in Group B who had the treatment and then a follow-up period (also 84 days each). This appears to be because the effects of the treatment continue through the follow-up period, as was expected.

Physical and Psychological Results

Group A experienced an increase in pain free days of 59% during treatment. Group B experienced a 7% rise in pain-free days during the 84 days following treatment.

Group A experienced a reduction in abdominal pain during the treatment phase of 47% in units (days) and 47% in degree (severity). Group B's experience of abdominal pain fell during the follow-up phase by 51% units and 43% degree.

Group A experienced a reduction in pelvic pain units during the treatment phase of 38%, and a reduction of 45% in degree. Group B had a 3% fall in pelvic pain units during the follow-up phase, and a 3% rise in degree. Once the treatment had ceased there was seen to be a levelling out of benefit in terms of pelvic pain, compared to the on-going benefits to abdominal pain.

Group A experienced an 8% reduction in left ribcage pain units during treatment, and a 22% reduction in left ribcage pain degree. No member of the sample group B reported left ribcage pain, during or after treatment.

Group A experienced a 62% increase in feelings of well-being units during the treatment phase, and a 60% increase in feelings of well-being degree. Group B experienced a fall in feelings of well-being during the follow-up phase, of 6% in units and 9% in degree.

Group A experienced an increase of renewed vigour during the treatment phase, of 420% in units and 490% in degree. It is thought that this change is related to the finding above that aromatherapy treatment reduces the incidence of pain. Group B

experienced a fall in renewed vigour during the follow-up phase, of 16% in units and 61% in degree.

Group A experienced a reduction in depression during the treatment phase, of 64% in units and 61% in degree. Group B experienced a rise in depression during the follow-up phase, of 21% in units and 31% in degree. This was expected as the normal full treatment pattern could not be carried out with such a study.

Group A experienced a reduction in tiredness during the treatment phase, of 17% in units and 22% in degree. Group B experienced a fall in tiredness during the follow-up phase, of 15% in units and 12% in degree.

Group A experienced a reduction in hot flushes units of 40% during treatment, and a reduction of 23% in degree. Group B experienced a fall in hot flushes during the follow-up phase of 34% in units and 33% in degree.

Group A experienced a reduction in palpitations during the treatment phase of 71% in units and 86% in degree. Group B experienced no change in palpitations units during the follow-up phase, and a 50% rise in degree.

Group A experienced a reduction in vaginal discharge during treatment of 28% in units and 23% in degree. Group B experienced a 14% rise in vaginal discharge units during the follow-up phase, and a rise of 17% in degree.

Group A experienced a reduction of 43% in the units of fluid retention during the treatment phase, and a reduction of 46% in degree. Group B experienced a rise of 9% in units of fluid retention during the follow-up phase, but a 1% fall in degree.

Group A experienced a 4% reduction in headache units during the treatment phase and a 5% reduction in degree. Group B experienced less headaches during the follow-up phase, of 49% in units and 50% in degree.

Group A experienced a reduction in the frequency of urination during treatment of 30% in both units and degree. Group B experienced a fall in the frequency of urination during the follow-up phase, of 10% in units and 4% in degree.

Only one woman in Group A and two women in Group B reported any incidence of painful sexual intercourse. The results for this aspect cannot therefore be considered.

Group A experienced a 25% increase in diarrhoea units during the treatment phase, and a 10% increase in degree. Group B experienced a 13% rise in diarrhoea units during the follow-up phase and a 22% rise in degree. In all complementary therapies a degree of elimination is to be expected.

Group A experienced a reduction in constipation during the treatment phase of 34% in units and 20% in degree. Group B experienced a fall in constipation of 11% in units during the follow-up phase , and a fall of 15% in degree.

Group A experienced a reduction in painful defecation units of 65% during the treatment phase, and a 70% reduction in degree. Group B experienced a fall in the incidence of painful defecation during the follow-up phase of 45% in units and 61% in degree. It is thought that the reduction in the incidence of constipation was related to the reduction in the incidence of painful defecation.

Treatment Discussion

It was not known how much diluted oil was actually used by the different therapists as this trial was designed to evaluate 'aromatherapy as practised'. It can be estimated that between 20-25 mls diluted oil would be used, depending on the size of the woman. .

Many of the symptoms presented by endometriosis and the supposed method of proliferation (circulatory, lymphatic and hormonal) are thought to be affected by aromatherapy and essential oils, although there is little to prove this other than empirical evidence found by practising aromatherapists in their daily treatments. It is known that components of essential oils applied externally can have an effect on internal organs. As seen in the results of this trial, this would appear to be so. Other factors do have to be taken into consideration such as 'the therapeutic touch', on-going personal contact, interest and support, and the particular bodywork techniques employed.

Placebo Factors

No placebos were given. All essential oil preparation used in the trial were designed to have effects. However, placebo effects could be surmised from other factors, as mentioned in *Treatment Discussion* above.

Conclusion

Aromatherapy treatment has been shown to have a beneficial effect on women with endometriosis with respect to pain reduction and quality of life.

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