

significant effect on follicle numbers than previous exposure to chemotherapy. This data supports the inclusion of patients who have had non sterilizing treatment in ovarian tissue cryopreservation programs for children and young adults.

321 ABSTRACT WITHDRAWN

322 USE OF AROMATHERAPY AS A COMPLEMENTARY THERAPY IN ALLEVIATING CHEMOTHERAPY RELATED ADVERSE EFFECTS IN CANCER PATIENTS

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Purpose of study Use of aromatherapy in relieving anxiety and pain in different settings has been reported but its use in alleviating the side effects related to chemotherapy or radiation therapy in cancer patients is less clear. The purpose of this study was to investigate the effectiveness of aromatherapy in alleviating the adverse effects related to chemotherapy or procedures in cancer patients.

Methods used A literature review using online resources including Pubmed and Google Scholar with the keywords 'cancer aromatherapy' was performed. Only studies of adult

cancer patients with a control group published after 2005 were included in our analysis.

Summary of results Of the 20 articles, only 7 met our inclusion criteria (table 1 below). The primary reason for exclusion was the lack of a control group. The types of essential oils and length of aromatherapy treatment was variable among the studies. In 5/7 studies, aromatherapy showed improvement in symptoms, such as nausea, vomiting or pain but the beneficial effect on vital signs was less clear. In addition to the included studies, we searched for reports of side effects associated with aromatherapy. Allergic reactions were seen in minority of patients, and one study found an association between nosocomial outbreak of drug resistant *Pseudomonas* infections and use of inhalation aromatherapy.

Conclusions Our review suggests aromatherapy may have a role in alleviating some of the symptoms associated with chemo/radiation therapy in adult cancer patients. However, due to potential serious side effects, caution should be taken in the use of aromatherapy in cancer patients. Larger studies that control for the type of aromatherapy and other confounding variables are needed.

323 ONLINE HEPATOCELLULAR CARCINOMA PATIENT RESOURCES – MEANINGFUL IMPACT OR POOR 'DELIVERY'?

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Abstract 322 Table 1 Summary of studies on use of aromatherapy in cancer patients

1st Author; Year	Variable Studied	Aromatherapy (AR) Used	Patient's Type of Cancer	Length/Frequency of Treatment	Number of Control and Number of Aromatherapy (AR) Subjects	Results
Heydarirad; 2019	Quality of Sleep	Rosa Damascena (Inhalation)	Any Type of Cancer	2 weeks; AR treatment nightly	18 control 18 oil 5% 18 oil 10%	Duration and quality of sleep better in AR groups*
Nakayama; 2016	Salivary gland damage measured by scintigraphy	1.0 mL Citrus Limon and 0.5 mL Zingiber Officinal (Inhalation)	Thyroid Cancer	2 weeks inhalation; AR treatment 10 minutes before each meal	36 control 35 AR group	Higher rate of accumulation/secretion in parotid and submandibular glands in AR*
Iter; 2019	Vital signs, pain during port insertion	Diluted orange, chamomile, and lavender oil in 70 mL water (Inhalation)	Any Type of Cancer	AR inhalation treatment during procedure	30 control 30 AR group	- Significantly decreased pain experienced during the procedure* - Effect on vital signs not statistically significant
Tamaki; 2018	Quality of life, vital signs, & sleep quality	Aroma oils including ylang-ylang, orange, & lavender (Inhalation)	Breast Cancer	Aroma oil placed for inhalation for 9 hours prior to surgery	52 control 110 AR group	Results showed no effects of aromatherapy on quality of life, vital signs, or sleep quality
Wilkinson; 2007	Anxiety & depression	Choice of 20 essential oils (Topical - massage)	Any type of cancer	4 weeks; 1 hour weekly sessions of AR massage	144 control (usual care alone) 144 supportive care + AR massage	AR improves anxiety/depression for 2 weeks* but had no long-term benefits
Zorba; 2018	Nausea & vomiting	Essential oil mixture of peppermint, bergamot, and cardamon in almond carrier oil (Inhalation & Topical - massage)	Breast cancer	20 minute AR foot massage (massage group) & 3 minute inhalation aromatherapy (inhalation group) before each patient's chemotherapy cycles	25 control 25 massage AR 25 inhalation AR	Both inhalation and massage aromatherapy treatment before chemotherapy cycles showed to significantly decrease nausea compared to control*
Rostami; 2019	Peripheral Nephropathy	Topical Citrullus extract oil (Massage)	Breast Cancer	2 months; 2 massages to hands and feet per day	15 control 17 AR group	No significant difference in placebo and AR group

* p<0.05