

LITERATURE REVIEW: USE OF ESSENTIAL OIL AROMATHERAPY TOWARDS PAIN REDUCTION IN CANCER PATIENTS

Syaneti Lopulalan¹, Antia^{2*}, Anita Sukarno³, Mira Asmirajanti⁴
^{1,2,3,4}Esa Unggul University, Jakarta, Indonesia
*E-mail : antia@esaunggul.ac.id

Abstract

Pain is one of the most common symptoms experienced by cancer patients, and as much as 68% of the causes of pain are experienced by cancer patients (primary tumors). Patients with pain should receive the treatment that can provide the greatest benefit in pain management. For this reason, this research was conducted with the aim of; The purpose of this study was to find out the effect of aromatherapy inhalation of essential oils on reducing pain in cancer patients. The method used in this study is to use "Literature review" with the PICO model. Namely, 14 research titles in the form of journals/articles following the topic of the problem in this study. Amount The total respondents who were put together from the 14 studies were 1,108 patients with pain disorders/complaints. 34.65% of them are male, 35.19% are female, are in the age limit of 1-60 years; 1-15 years = 37.72%, 16-26 years = 18.05%, 27-35 years = 5.65%, and 36-60 years old = 17.14%. The results of giving aromatherapy carried out in the 14 studies showed an effect obtained from the use of essential oil aromatherapy through inhalation techniques, where there was a change in the pain scale before and after the action of giving aromatherapy.

Keywords: Painful, Aromatherapy, Inhalation.

Introduction

According to the Big Indonesian Dictionary (KBBI), pain is pain (like being stabbed - a needle or like being pinched on the part of the body); a feeling of suffering. In other words, pain experienced by the patient will cause physical discomfort and can also affect the quality of sleep, which will impact the patient's treatment and healing process. Although pain sensations can be caused by various diseases and the pain experienced can affect all parts of a person's life, the pain experienced by each individual is different depending on the type of disease experienced, the severity of the disease, and the type of pain itself. (*American Cancer Society, 2020*).

Pain is one of the most common symptoms experienced by people with cancer, and the pain felt will also differ, depending on the type and stage of cancer itself. Although patients with advanced cancer are more likely to experience and feel pain, in general, pain due to cancer can be caused by a tumor pressing on nerves, bones, or organs. (*Physician Data Query 2020, American Cancer Society 2020*).

Director-General WHO, Tedros AG revealed that in almost every country, the incidence of cancer cases has increased over the last decade and will continue in the next 20 years, which is estimated to increase by 60% (WHO 2020). Cancer incidence is predicted to exceed 27 million new cases per year and will continue to increase from 2018, with around 18.1 million cancer cases. (*American Association for Cancer Research 2020*), of which 68% of the causes of pain are experienced by cancer patients (primary tumors), most of the pain felt by patients is in the form of somatic pain (PDQ *Supportive and Palliative Care Editorial Board, 2020*).

Patients with pain should receive the treatment that can provide the greatest benefit in pain management. Today, opioids (narcotics) are often used as an important part of dealing with pain, including non-opioid types. The thing to worry about from this phenomenon is that many irresponsible producers produce opioids illegally (*American Cancer Society 2020*). Of course, this will affect the healing process/pain management in patients who are often wrong in choosing how to handle their pain due to a lack of understanding and other factors.

Regarding the above phenomenon, opioids are not the first-line therapy for chronic pain, both for active cancer treatment, palliative care, and end-of-life care. Non-pharmacological therapy can also assist those who suffer from chronic pain, and one of them is a complementary therapy which can be said to be much safer. *Department of Health and Human Services* 2020).

Nowadays, one form of complementary therapy that is getting attention and is in great demand is therapy using essential oils. Through laboratory research (laboratory research) related to the effect of essential oils in treating cancer, scientists who researched this matter saw the benefits/role of essential oils on the side effects caused by cancer (K. Blowman., at all. 2018).

In a study explaining the perceived difference between the use of aromatherapy and the use of drugs to reduce pain; and also found results that the group that received the intervention using aromatherapy had a satisfaction rate of 90%, compared to other groups that did not receive the intervention using aromatherapy with a satisfaction level of 50% (Shaheen E. Lakhan., at all 2017).

On the other hand, Pharmacological management in the form of opioid and non-opioid drugs is possible to have risks that cause various kinds of side effects, including respiratory problems, nausea, pruritis, and bleeding (Jung T. Kim, MD., at all, 2017). Non-pharmacological methods such as aromatherapy are known to be often used for pain and anxiety management due to the small number of side effects such as oversedation, confusion, fatigue, and nausea that may arise from pharmacological management methods (Ezgi Mutluay Yayla, PhD., Leyla Ozdemir, Ph.D., 2017).

Research methods

The writing method used in this study is the Literature review method, in which the researcher adopts the steps of preparing a literature review according to Siswanto 2010, including; identifying research questions, developing research protocols, establishing database locations, selecting relevant research results, selecting quality research results, extracting individual study data, synthesizing results, presenting results.

The literacy study was carried out using journals/articles obtained through a search through Google Scholar. After going through the selection process, I obtained as many as 14 journals/articles relevant to this study's objectives and followed the criteria set by the researcher. Among them; journals/articles that have been officially published/uploaded within the last five years, namely 2015 – 2020, journals/articles that raise topics related to aromatherapy in its use as pain relievers, journals/articles that examine or research topics, and or objects that contain actions pain management using aromatherapy, the type of aromatherapy used is essential oil aromatherapy, the technique of giving aromatherapy is the inhalation technique, in journals/articles you can find the characteristics, inclusion criteria and exclusion criteria of respondents. There are results and differences from giving inhaled aromatherapy essential oils: journals/unofficial articles or sources whose authenticity cannot be ascertained. E.g., searches found from random sites or Blogspot and journals/articles that do not display the researchers' entire research process. e.g., journals/articles that only display one chapter of the research or only display the conclusions of the research results will be excluded from the list of databases used as sources of study in this research.

The synthesis of the results in this study refers to the discussion topics that are appointed as the focal point of searching/collecting data, including;

1. Characteristics of respondents who received aromatherapy inhalation of essential oils.
2. The technique of Use/Giving inhalation of essential oil aromatherapy; time and amount.
3. The benefits of inhalation aromatherapy of essential/essential oils in the process of reducing pain are based on a comparison of the results before and after using aromatherapy.

Results

The journal search process found that many articles related to Aromatherapy or inhalation aromatherapy, pain, and cancer pain were successfully obtained. Still, after going through a more in-depth analysis or study of journals, the results were found that 14 journals were truly appropriate and met the inclusion criteria that had been set. And answer the specific objectives of this research. The study results based on the specific research objectives will be presented in the form of a study table with a total of 1,108 respondents, all of whom have gone through the research process carried out by each researcher until the end of the study. The results will be presented in detail by following the research objectives. The summary/summary of the results of this literacy study is presented in tabular form.

Table 1. Characteristics of Respondents based on gender, age, and status

Variable	Frequency (n=1.108)	Percentage (%)
Gender		
Male	384	34.65%
female	390	35.19%
Unknown	334	30.14%
age		
0-15	418	37.72%
16-26	200	18.05%
26-35	63	5.68%
36-60	190	17.14%
unknown	300	27.07%
Marital Status		
Single	238	21.48%
Married	252	22.74%
widow	8	0.72%
Unknown	618	0.55%

the total respondents, have age characteristics that are mostly in the age range 0-15 years, as many as 418 respondents (37.72%), 384 (34.65%) of whom are male, and 390 (35.19%) are female, with marital status; 238 (21.48%) respondents are married/married, 252 (22.74%) are single/unmarried, and 8 (0.72%) are widows/widowers

Data Extraction (Intervention and Outcome)

Table 2. Aromatherapy Intervention

Journal	Duration (Minutes)	Quantity (Drip)	Technique	Results
Yayla, Ezgy Mutluay PhD., Ozdemir, Leyla PhD				
<i>"Effect of Inhalation Aromatherapy On Procedural Pain and Anxiety After Needle Insertion Into an Implantable Central Venous Port Catheter: A Quasi-Randomized Controlled Pilot Study"</i>	3 minutes	Three drops	Breathe	2.37±1.62, 3.19±1.80, and 3.69±1.55
Ali Bikmoradi. et al				
<i>"Effect of inhalation aromatherapy with lavender essence on pain associated with intravenous catheter insertion in preschool children: A quasi-experimental study."</i>	20 minutes	Five drops	Breathe	7 → 2
Narges Sadeghi, et al				
<i>"The effect of inhalation aromatherapy with damask rose essence on the pain intensity and anxiety in burns patients: A single-blind randomized clinical trial."</i>	15 minutes	Six drops	Breathe	5.30 → 4.75
Ipek Arslan., et al				
<i>"Can lavender oil inhalation help to overcome dental anxiety and pain in children? A randomized clinical trial"</i>	3 minutes	Two drops	Breathe	4 → 0.57
Pei Lin Lua., et al				
<i>"Effects of inhaled ginger aromatherapy on chemotherapy-induced nausea and vomiting and health-related quality of life in women with breast cancer."</i>	2 minutes	2 drops	Breathe	F 1.82, → P = 0.183

Mansoreh Yazdkhasti, Arezoo Pirak				8.33 → 6.33
<i>"The effect of aromatherapy with lavender essence on the severity of labor pain and duration of labor in primiparous women"</i>	3 minutes	Two drops	Breathe	
Alinda, A., et al				3.27 → 2.10
<i>"The Use of Aromatherapy to Improve Postoperative Perception of Pain"</i>	20 minutes	Five drops	Breathe	
Mojdeh Amirhosseini., et al				4.52 → 3.78
<i>"Effectiveness of Aromatherapy for Relief of Pain, Nausea, and Vomiting after Percutaneous Nephrolithotomy: A Randomized Controlled Trial"</i>	5 minutes	Three drops	Breathe	
Seham Eid Hashem Elhalafawy., et al				6.66 → 4.13
<i>"Effect of Cryotherapy versus Aromatherapy on Pain of Arteriovenous Fistula Puncture for Children Undergoing Hemodialysis"</i>	15 minutes	Two drops	Breathe	
Fatemeh Akbari. et al				2.95 → 2.32
<i>"Effect Of Peppermint Essence On The Pain And Anxiety Caused By Intravenous Catheterization In Cardiac Patients: A Randomized Controlled Trial"</i>	5 minutes	Three drops	Breathe	
Farideh Vaziri. et al				4.41 → 0.39
<i>"The Effect of Aromatherapy by Lavender Oil on Infant Vaccination Pain: a Double-Blind Randomized Controlled Trial"</i>	5 minutes	Five drops	Breathe	
Agus Prasetyo., Bejo Danang Saputra., and Kiki Yulistiana				3.12 → 2
<i>"The Effect of Foot Massage and Inhalation of Lavender Aromatherapy on Blood Pressure and Pain Post Elective Major Surgery"</i>	20 minutes	Five drops	Breathe	
Lisa Blackburn, MS, RN-BC, AOCNS				2.84 → 2.23
<i>"The Effect of Aromatherapy on Insomnia and Other Common Symptoms Among Patients With Acute Leukemia"</i>	8 minutes	Eight drops	Breathe	
Kailah Cathey. et al				2.52 → 2.18
<i>"A Feasibility Study of Lavender Aromatherapy in an Awake Craniotomy Environment"</i>	5 minutes	15 drops	Breathe	

Discussion

From the review process carried out on the 14 studies, the researchers summarized the study's results into one discussion. Which also includes three main points or the focus of this research. Characteristics of respondents who took part in the whole series of research, techniques/procedures for using aromatherapy, and results showing whether or not there was an effect obtained from using aromatherapy. This is judged by the difference in pain scale between before and after the auction, described in table 2.

Related to the topic of pain problems in cancer patients, several things can trigger and cause cancer pain, one of which is in cancer patients undergoing surgery. The postoperative phase that cancer patients pass through often experiences high pain levels. Generally, these symptoms are overcome by using opioids, which can often cause various side effects that can weaken the patient's condition (Adesuwa Ojo., 2019).

In addition to pain, several other symptoms generally occur in cancer patients, affecting the quality of life of cancer patients. The research journal Lisa Blackburn, MS, RNBC, AOCNS., et al. 2017 related to symptoms that arise in cancer patients, including; insomnia (sleep disturbances), fatigue, depression, and anxiety disorders. Symptoms that appear in cancer patients can be caused by several things, including; chemotherapy (Anna Evans, MSN, CPNP, CPHON., et al. 2018), postoperative (Adesuwa Ojo, 2019), phase of hospitalization/hospitalization (Lisa Blackburn, MS, RNBC, AOCNS., et al. 2017), and hemodialysis.

Related to the above phenomenon, non-pharmacological or complementary therapy has become the attention of several researchers to test the level of effectiveness in supporting the patient's healing process. Aromatherapy is one form of complementary therapy that is in great demand both in the community as an effort to help the healing process and also among researchers who prove the magnitude of the effect given by the method of using aromatherapy in the patient's healing process and the symptoms that arise during the treatment phase. (Mojdeh Amirhosseini., et al 2020)

Through research by Anna Evans. et al. 2018, which proves that the use of essential oil aromatherapy is effective in helping patients overcome the pain experienced during the treatment/healing process. For this reason, in line with this study, aromatherapy can be an option in pain management in cancer patients, which can also help reduce the demand for and use of opioids in patients. Furthermore, giving aromatherapy inhalation can also help relieve and improve the effects caused by the chemotherapy process that the patient undergoes; Pain, fatigue, and insomnia, as occurs in patients with acute leukemia (Lisa Blackburn. et al. 2017).

The body's physiological mechanism for the aromatherapy inhalation process is; The incoming aroma produced by aromatherapy (essential oils) will be processed in the limbic system. The limbic system is a structure inside the brain located under the cerebral cortex, which functions as a pain center, controlling sadness, pleasure, depression, and others. After entering the limbic system, the scientific components contained in aromatherapy will be processed and work to influence a person's emotions (the smell/aroma) that comes from aromatherapy earlier will be received by nasal receptors and sent to the spinal cord in the brain.

Characteristics of respondents

Characteristics of respondents are used to determine and determine the diversity of respondents who are adjusted to the characteristics of respondents found based on a study of the journals that became the research database, including; Gender, age, and marital status. From this, it is hoped that it will provide a fairly clear picture of the respondent's condition related to the data needed in this study.

This study targets patients with symptoms/pain disorders caused by the illness and treatment during the hospitalization process itself. The factors that influence pain are age, gender, a culture of the meaning of pain, attention, anxiety, previous experiences, coping styles, family, and social support (Ayu Supatmi, 2019). The age category that is characteristic of the respondents studied and collected in this study is in the age range of 0-60 years which is divided into several age groups, including; 0-15, 16-26, 26-35, and 36-60, where the total number of respondents included in the 14 journals in this study was 1,108 respondents/sample. Respondents belong to the study composed of men (384 respondents, 34.65%) and women (390 respondents, 35, 19%) who are aged 1-15 years old 418 (37.72%), 16-26 years old 200 (18.05%). , 26-35 years old 63 (5.68%), 36-60 years 190 (17.14%). For marital status, respondents who are not married are 238 (21.48%), 252 are married (22.74%), and are widowed eight respondents (0.72%). From this data, it can be concluded that aromatherapy can be applied to male and female patients in a vulnerable age ranging from toddlers to the elderly. However, in its application, the provision of aromatherapy must be adjusted to the level of patient needs based on the assessment data that has been obtained, including the characteristics of the respondents and the patient's criteria. 252 (22.74%) were married, and eight respondents (0.72%) were widowed. From this data, it can be concluded that aromatherapy can be applied to male and female patients in a vulnerable age ranging from toddlers to the elderly. However, in its application, the provision of aromatherapy must be adjusted to the level of patient needs based on the assessment data that has been obtained, including the characteristics of the respondents and the patient's criteria. 252 (22.74%) were married, and eight respondents (0.72%) were widowed. From this data, it can be concluded that aromatherapy can be applied to male and female patients in a vulnerable age ranging from toddlers to the elderly. However, in its application, the provision of aromatherapy must be adjusted to the level of patient needs based on the assessment data that has been obtained, including the characteristics of the respondents and the patient's criteria.

As was also done in a study by Farideh Vaziri. et al. 2019; the provision of aromatherapy that is carried out is adjusted to the level of needs of the respondent/patient, a patient in the age group of toddlers. The quantity/concentration of essential oils that will be used as aromas in aromatherapy is reduced to 0.5% from a full percentage of 100%; this is done so as not to cause a response in the form of side effects that can affect the condition of the patient, in this case, the patient under five who has a higher sensitivity level. Higher than the average adult. The calculation of the quantity of aromatherapy given to adults will be different, one of which is in a study by Ipek Arslan. At al 2020; The study was conducted on patients using 100% lavender essential oil aromatherapy, carried out for 3 minutes. The quantity of essential oil used is as much as three drops of essential oil for one use. From these two studies, it can be seen that the provision of aromatherapy will vary depending on the age group and the level of need for the amount of aromatherapy that will be given to the patient.

The provision of aromatherapy can be given to patients of all genders, both male and female. It can be seen in Table 4.1.2, which describes the characteristics of respondents who receive the intervention, which includes men or women and are at various age limits. This shows that the use of aromatherapy can be applied to all groups, in terms of gender/male or female and also in terms/aspects of age. In this case, aromatherapy can be given to toddlers, children, adults, and the elderly. Wherein its application, the aromatherapy given must be adjusted to the level of needs of the patient who will receive the action. This goes in line with the purpose of this research which is by studying the characteristics of the respondents receiving the action,

Techniques/Procedures for Giving Aromatherapy

Aromatherapy as a body care technique by utilizing essential oils that have health benefits, given by inhalation, compressed, applied to the skin, sprayed, mixed with water is used to soak the whole body or body parts, which is more effectively accompanied by massage. Ministry of Health RI, No. 277 of 2014). The media used in the implementation of the act of giving aromatherapy inhalation of essential oils also vary, including; using cotton soaked with aromatherapy essential oils (Yayla, Ezgy Mutluay PhD., Ozdemir, Leyla Ph.D., 2019., Seham Eid Hashem Elhalafawy., et al. 2020., Fatemeh Akbari., et al. 2019), using Patch Med (Ipek Arslan ., Sema Aydinoglu., Nazife Begüm Karan, 2020), a necklace with a pendulum that has been filled with essential oils as a medium for patients to inhale aromatherapy individually. It can be said that this is a unique and rarely used method (Pei Lin Lua, Noor Salihah, and Nik Mazlan, 2015) and using a diffuser (Adesuwa Ojo, 2019., Agus Prasetyo., et al. 2020., Lisa Blackburn, MS, E) with the technique used, namely inhalation. The use of aromatherapy with this inhalation technique itself can react faster in affecting the condition of the body. As stated by Noviany N and Nurilawati V., 2017; Drug absorption by inhalation technique is faster than oral administration of drugs. And using a diffuser (Adesuwa Ojo, 2019., Agus Prasetyo. et al. 2020., Lisa Blackburn, MS, E) with the technique used, namely inhalation.

Inhalation provides rapid drug delivery across a wide surface of the airways and lung epithelium, which produces an effect almost the same as the effect produced by intravenous drug administration so that it only takes a few seconds to minutes because the drug is delivered directly to the site of action and the effect minimal systemic side. Meanwhile, the administration of drugs by oral technique requires a slower absorption time because the path for drug reactions to reach the tissue is more complicated. Some drugs are absorbed in the stomach; however, the duodenum more often serves as the main route of entry into the systemic circulation because of its larger absorptive surface, by which most drugs absorbed from the gastrointestinal tract enter the liver before being dispersed into the general circulation. Metabolism is the first step by the intestine or liver in limiting the efficacy of many drugs that enter the body by oral techniques. Taking/consuming drugs that are carried out simultaneously with eating activities can affect absorption. The presence of food in the stomach slows gastric emptying time so that drugs that are not resistant to acid will be damaged or even not absorbed.

In its application, the selection of the type of aromatherapy also takes part in influencing the response received by the patient, as stated by Anna Evans., at al 2018 in her research that the type of plant extract (essential oil) also affects the process of reducing pain in patients. The type of aroma that is most widely used in aromatherapy treatment based on the summary of the 14 journals is the type of lavender aromatherapy. Several journals that discuss the use of lavender aromatherapy in their research and how to use it include;

- a) Yayla, Ezgy Mutluay PhD., Ozdemir, Leyla Ph.D. 2019 entitled "Effect of Inhalation Aromatherapy On Procedural Pain and Anxiety After Needle Insertion Into an Implantable Central Venous Port Catheter: A Quasi-Randomized Controlled Pilot Study"; In this study, several types of aromatherapy were used, including lavender aromatherapy

- and eucalyptus aromatherapy. In its application, aromatherapy is given for 3 minutes, with the quantity of essential oil used as much as three drops, using cotton as a medium which is then inhaled on the patient at a distance of 10cm from the nose.
- b) Ali Bikmoradi, et al. 2017 entitled "Effect of inhalation aromatherapy with lavender essence on pain associated with intravenous catheter insertion in preschool children: A quasi-experimental study"; Lavender aromatherapy is given within 20 minutes with the quantity of lavender essential oil used is five drops in the percentage of essential oil concentration used is 2%. This is based on the characteristics of the respondents/patients in this study who are preschoolers, who also have different levels of sensitivity/sensitivity to aromatherapy from adults in general.
 - c) Ipek Arslan., Sema Aydinoglu., Nazife Begüm Karan 2020 entitled "Can lavender oil inhalation help to overcome dental anxiety and pain in children? A randomized clinical trial"; aromatherapy is given using the type of aroma from lavender (100%) within 3 minutes by utilizing PatchMed as a medium in which two drops of essential oil are given/inserted.
 - d) Manoreh Yazdkhasti, Arezoo Pirak 2016 entitled "The effect of aromatherapy with lavender essence on the severity of labor pain and duration of labor in primiparous women"; Aromatherapy lavender essential oil is given to the patient as much as two drops to inhale. Patients who became respondents in this study were women (pregnant women).
 - e) Adesuwa Ojo 2019 entitled "The Use of Aromatherapy to Improve Postoperative Perception of Pain"; Lavender essential oil aromatherapy was given using a medium in the form of a diffuser filled with five drops of essential oil within 20 minutes and repeated two days apart during the aromatherapy intervention.
 - f) Seham Eid Hashem Elhalafawy., Rahma Soliman Bahgat., Maher Ahmed Abd-Elhafez., and Nagafa Hafez Farag 2020 entitled "Effect of Cryotherapy versus Aromatherapy on Pain of Arteriovenous Fistula Puncture for Children Undergoing Hemodialysis"; The intervention of providing aromatherapy was carried out using 100% lavender essential oil with a quantity of 2 drops on cotton media. Given in a cotton swab with a 5cm nose, the patient is asked to breathe slowly while inhaling aromatherapy for 15 minutes while closing his eyes.
 - g) Farideh Vaziri. At al 2019 entitled "The Effect of Aromatherapy by Lavender Oil on Infant Vaccination Pain: a Double-Blind Randomized Controlled Trial,"; In this study, the concentration of essential oil used was 0.5% and was given in the quantity of the amount of essential oil that was five drops in the intervention process. This study also had children's respondents; therefore, the concentration level of the essential oil used in this study was adjusted to the needs and the level of sensitivity and sensitivity of children to lavender essential oil.
 - h) Agus Prasetyo., Bejo Danang Saputra., and Kiki Yulistiana 2020 entitled "The Effect of Foot Massage and Lavender Aromatherapy Inhalation on Blood Pressure and Pain Post Elective Major Surgery"; Lavender essential oil aromatherapy is given with the help of media in the form of a diffuser to produce steam from the lavender essence. The intervention process was carried out for 15-20 minutes.
 - i) Lisa Blackburn, MS, RN-BC, AOCNS 2017 entitled "The Effect of Aromatherapy on Insomnia and Other Common Symptoms Among Patients With Acute Leukemia"; In this study, there were three types of aromatherapy used, including lavender, peppermint, or chamomile aromatherapy. The media used is a diffuser in which each patient has their diffuser filled with eight drops of essential oil. Management was carried out for a round of 9 nights. When the essential oil in the diffuser dries, the diffuser will automatically turn off within 8 hours of use. During the implementation process, the door of the patient care room is closed, and the performer may enter and leave the room.
 - j) Kailah Cathey. et al. 2020 titled "A Feasibility Study of Lavender Aromatherapy in an Awake Craniotomy Environment"; The intervention of giving aromatherapy was done by giving inhalation of lavender aromatherapy as much as 15 drops within 5 minutes.

Aromatherapy Inhalation Against Cancer Pain

Quoted from Canadian Cancer Society, 2020; "Complementary therapies can be used to help with the pain. These methods draw the patient's attention away from the pain and release the muscle tension caused by the pain. Some may work by releasing natural opioids in the body, which can enhance the effects of painkillers and medical therapies."

For some cancer patients, the treatment period is a long and difficult phase to go through. This is why patients often seek out additional practices or products that can be used with cancer treatment to help manage cancer symptoms and treatment side effects. Such treatments are called complementary therapies. While many complementary therapies can help, essential oils seem to have gained significant attention for their assistance in providing relief for cancer patients during treatment (Arizona Oncology, 2018).

Essential oils themselves are fragrances with healing potential for the body, mind, and spirit. These scent molecules are very strong organic plant chemicals that keep the environment free from disease, bacteria, viruses, and fungi. The versatile properties of essential oils, namely antibacterial, antiviral, anti-inflammatory properties, and immune-boosting properties with hormonal, glandular, emotional, circulatory, calming, memory-enhancing, and alertness effects, are well documented by many scientists. Many studies have been carried out in humans to elucidate the properties and role of essential oils in disease and disorders. This oil is known for its specific energy character, as its potency does not

disappear with time and age. The stimulating properties of this oil lie in its structure which is very similar to the actual hormone. The penetration potential of this oil to reach the subcutaneous tissue is one of the important characteristics of this therapy (Babar Ali, at all 2015).

The effects of aromatherapy essential oils are complex and subtle because of their complex structure and chemical properties. Its mechanism of action involves the integration of essential oils into the biological signaling receptor cells in the nose when inhaled. Signals are transmitted to the limbic and hypothalamic parts of the brain via the olfactory bulb. These signals cause the brain to release neuro messengers like serotonin, endorphins, etc., to connect our nervous system and other body systems to ensure the desired changes and to provide a feeling of relief. Serotonin, endorphins, and noradrenaline are released from the sedative, euphoric, and stimulating oils, respectively, to provide the desired effect on the mind and body (Babar Ali, at all 2015).

The above is in line with the purpose of this study to examine the effect of the use of essential oil aromatherapy using inhalation techniques or, in other words, inhalation in helping to relieve, reduce, and overcome pain symptoms that arise in cancer patients and are at risk of affecting and worsening the healing process, which has been evidence is carried out through studies with results showing that the aromatherapy inhalation method of essential oils affects overcoming pain which is shown/displayed through the study table 4.1.3, from the study table it can be seen that there is a change in the pain score before and after the aromatherapy inhalation action is carried out. Essential oils that describe the effects of the use of aromatherapy.

The average pain scale measurement in each journal uses the "Visual Analog Scale" VAS measurement. The VAS or visual analog scale is a vertical line with a length of 10 cm and a range of 0-10 written on it; on this scale, 0 indicates no pain, and 10 indicates the worst pain imaginable (Narges Sadeghi. et al. 2020). Measurements were carried out in two stages: the measurement before the inhalation action and the second after the inhalation action. After all, actions have been carried out; you will see a change in the pain scale/score which indicates whether or not there is an effect from the implementation of the action, in this case, namely the provision of aromatherapy inhalation of essential oils in overcoming the pain symptoms that arise and are felt by the patient during the treatment and treatment phase.

Conclusion

Patients battling cancer do not only come from one age or gender group. It is not uncommon for patients with cancer to experience pain symptoms/sensations caused by various things ranging from the treatment/treatment process to pain caused by cancer itself. Therefore, offering therapy/treatment in the form of essential oil aromatherapy through inhalation techniques can be used as an effort that can be made to help reduce, reduce, and even eliminate the pain felt by patients where these symptoms can affect the quality of life of a patient with cancer. For example, the pain felt can have an impact on activity patterns, sleep quality, to the patient's sense of comfort, some of which are aspects of basic human needs. Aromatherapy, which is a form of complementary therapy, can be used as an alternative in dealing with pain symptoms experienced by patients with few side effects if used in the right way and with the right dose according to the patient's own needs.

In contrast to pain management, which has more side effects than aromatherapy. The application of this therapy can also help suppress the use of opioid drugs. However, the use/demand for opioids is still increasing due to many patients with pain who do not know about other therapies besides therapy.

opioids to treat pain. Therefore, In contrast to pain management, which has more side effects than aromatherapy. The application of this therapy can also help in suppressing the amount of use opioid drugs; which is a study by Alinda et al. 2020 also stated that the level of use/demand for opioids is still increasing due to the large number of patients with pain who do not know about other therapies besides therapy. Opioids to treat pain. Therefore, In contrast to pain management, which has more side effects than aromatherapy. The application of this therapy can also help in suppressing the amount of use opioid drugs; which is a study by Alinda et al. 2020 also stated that the level of use/demand for opioids is still increasing due to the large number of patients with pain who do not know about other therapies besides therapy. Opioids to treat pain. Therefore, opioids treat pain. Therefore, opioids treat pain. Therefore,

Acknowledgment

Through this opportunity, with all my heart and gratitude, I would like to express my deepest respect and gratitude to the teams have taken the time and contributed thoughts that greatly impacted the process of writing this report in guiding, directing, and always providing input so that this final project can be completed.

- Indonesia, KBB (nd). Meaning of the word market - Big Indonesian Dictionary. KBBI Online. Retrieved from <http://kbbi.web.id/Pasar>
- King, SA (2016). CDC guidelines for prescribing opioids for chronic pain. *Psychiatric Times* (Vol. 33). Retrieved from <https://www.cdc.gov/>
- Lakhan, SE, Sheafer, H., & Tepper, D. (2016). The Effectiveness of Aromatherapy in Reducing Pain: A Systematic Review and Meta-Analysis. *Pain Research and Treatment*, 2016. <https://doi.org/10.1155/2016/8158693>
- Mackey, SC (2017). National Pain Strategy - A Comprehensive Population Health-Level Strategy for Pain. Retrieved from https://iprcc.nih.gov/sites/default/files/HHSNational_Pain_Strategy_508C.pdf
- Manchikanti, L., Kaye, AM, Knezevic, NN, McAnally, H., Trescot, AM, Blank, S., ... Hirsch, JA (2017). Responsible, safe, and effective prescription of opioids for chronic non-cancer pain: American Society of interventional pain physicians (ASIPP) guidelines. *Pain Physician*, 20(2), S3–S92. <https://doi.org/10.36076/ppj.2017.s92>
- Marks, J. (2019). All You Need to Know About Essential Oils and Cancer | Everyday Health.
- Moran Garrett, Ph.D., Knudsen, Ph.D., Snyder Carolline, MP. (2019). Psychosocial Supports In Medication-Assisted Treatment: Site Visit Findings And Conclusions. Westat An Employee-Owned Research Corporation® 1600 Research Boulevard Rockville, Maryland 20850-3129 (301) 251-1500, (August).
- Murphy JD, Paskaradevan J, Eisler LL, Ouanes JP, Tomas VA, Freck EA, Wu CL. Analgesic efficacy of continuous intravenous magnesium infusion as an adjuvant to morphine for postoperative analgesia: a systematic review and meta-analysis. *Middle East J Anesthesiol*. 2013;22(1):11-20.
- Nalini Vadivelu MDa., Richard D. Urman MD, MBA., Roberta L. Hines MD (2011) "Essentials of Pain Management." Springer;2011th Edition-March 3. Print.
- Nandar, S. (2015). General Pain (General Pain). *Public Health*, (July), 1–53.
- NIH National Cancer Institute. (2020). Cancer Facts & Figures 2020. CA: A Cancer Journal for Clinicians, 1–76. Retrieved from <https://www.cancer.org/cancer/bladder-cancer/detection-diagnosis-staging/survival-rates.html>
- PDQ® Supportive and Palliative Care Editorial Board. (2020). PDQ Cancer Pain. Bethesda, MD: National Cancer Institute. [https://doi.org/\[PMID: 26389322\]](https://doi.org/[PMID: 26389322])
- Pilleron, S., Soto-Perez-de-Celis, E., Vignat, J., Ferlay, J., Soerjomataram, I., Bray, F., & Sarfati, D. (2020). Estimated global cancer incidence in the oldest adults in 2018 and projections to 2050. *International Journal of Cancer*. <https://doi.org/10.1002/ijc.33232>
- Potter, PA & Perry, AG (2010). *Fundamentals of Nursing_2*. Jakarta: Salemba Medika
- Pramudaningsih, icca narayani, & Afriani, E. (2019). Effect of Steam Inhalation Therapy With Eucalyptus Aromatherapy By Reducing Shortness Of Breath In Bronchial Asthma Patients In Dersalam Village, Bae Kudus District. *Journal of the Nursing Profession (JPK)*, 6(1), 16–29. Retrieved from <http://jurnal.akperkridahusada.ac.id/index.php/jpk/article/view/60>
- Prankash E and Gupta D (2013). Cytotoxic Activity of Ethanolic Extract of Myristica Fragens Houtt. Against Seven Human Cancer Cell Lines. *Univers J Food Nutr Sci*.2013;1(1):1-3.
- Purba, JS., 2010. Pathophysiology and Pain Management. Faculty of Medicine, University of Indonesia.
- Registry, PC (2019). Global Cancer Observatory. Malaysia Cancer Statistics. Retrieved from <http://gco.iarc.fr/today/data/factsheets/populations/458-malaysia-fact-sheets.pdf>

- SS Bambang; Meliala Lucas; Sudadi. (2017). Pain textbooks. Indonesian Pain Society
- Sadeghi, N., Azizi, A., Asgari, S., & Mohammadi, Y. (2020). The effect of inhalation aromatherapy with damask rose essence on pain intensity and anxiety in burned patients: A single-blind randomized clinical trial. *Burns*, 1–9. <https://doi.org/10.1016/j.burns.2020.05.006>
- Sonoma Press. (2014). *Essential Oils & Aromatherapy, An Introductory Guide: More Than 300 Recipes for Health, Home and Beauty* (pp. 23–24). 2014 Arcas Publishing.
- US Department of Health and Human Services Agencies (HHS), 2020. ASPE, Office of The Assistant Secretary for Planning and Evaluation: Pain Research. [Online] Available at: <https://aspe.hhs.gov/basic-search/Pain>
- Vaziri, F., Khosropoor, M., Hidari, M., Pourahmad, S., Morshed Behbahani, B., & Saki, F. (2019). The Effect of Aromatherapy by Lavender Oil on Infant Vaccination Pain: a Double-Blind Randomized Controlled Trial. *Journal of Caring Sciences*, 8(1), 17–21. <https://doi.org/10.15171/jcs.2019.003>
- WHO. (2020). *Who Report on Cancer* (electronic). Switzerland: Who.int. Retrieved from <https://apps.who.int/iris/rest/bitstreams/1267643/retrieve>
- Widayani, W. (2017). Lavender Aromatherapy can Reduce the Intensity of Perineal Pain in Post Partum Mothers. *Journal of Indonesian Nurses and Midwifery*, 4, 123. [https://doi.org/10.21927/jnki.2016.4\(3\).123-128](https://doi.org/10.21927/jnki.2016.4(3).123-128)
- Yayla, EM, & Ozdemir, L. (2019). Inhalation Aromatherapy on Procedural Pain and Anxiety after Needle Insertion into an Implantable Central Venous Port Catheter: A Quasi-Randomized Controlled Pilot Study. *Cancer Nursing*, 42(1), 35–41. <https://doi.org/10.1097/NCC.0000000000000551>