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Effect of Fennel Aromatherapy (*Foeniculum Vulgare*) On Decreasing Menopause Symptom Levels in Menopausal Women in Tunjung Village Bangkalan Regency Indonesia

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ABSTRACT Menopause is a natural event in a woman's life cycle. Hormonal changes that occur during menopause cause more than 80% of women to experience symptoms both physical and psychological with various pressures and disorders, causing a decrease in the quality of life. One of the non-pharmacological treatments to reduce the level of menopausal symptoms is Fennel aromatherapy. This study aims to determine the effect of Fennel Aromatherapy on reducing the level of menopausal symptoms. This type of research is Quasy Experimental with Non-Equivalent Control Group Design. The population of postmenopausal women aged 45-55 years is 62 people. Samples were taken using the purposive sampling technique of 22 people per group. The instrument used is the MRS (Menopause Rating Scale) questionnaire. statistical test using Wilcoxon Matched Pairs Test with α 0.05. The results showed that most menopausal women (68.2%) from the control group and most menopausal women (72.7%) from the treatment group had severe menopausal symptoms. After being given the intervention, there was a decrease in the treatment group where half of menopausal women (50.0%) had moderate levels of menopausal symptoms. The results of the analysis obtained p-value 0.000058 or <α (0.05) which means that there is an influence of Fennel Aromatherapy (Foeniculum Vulgare) on decreasing the level of menopausal symptoms. This research can add alternative treatment for menopausal symptoms in the BATRA program at community health centers. It is hoped that postmenopausal women can use safe alternative therapies such as Fennel Aromatherapy to treat menopausal symptoms so that it can improve the quality of life of women during menopause without serious side effects.

INDEX TERMS Menopause; Symptom; Fennel Aromatherapy

I. INTRODUCTION

Aging is a natural event that inevitably occurs in life, which not only starts from a certain time, but occurs from the beginning of life and lasts continuously. The average Life Expectancy Globally in 2000 has shown a sharp increase from 66.8 years to 73.3 years in 2019 [1]. This explains that women entering menopausal age are also increasing. With the increase in women's life expectancy, Most women will experience a menopausal transition and spend many years of their lives in the menopause phase [2].

The number of menopausal women in the world is expected to increase from a total of 467 million to a total of 1200 million. By 2030, 76% of the projected number is likely to be in developing countries [3]. Based on Indonesia's Health Profile in 2020 [4], around 12.5% of the female population has entered menopause age (45-54 years). Data from the Center for Statistics (BPS) of East Java Province (2021) states that the number of women who reach menopause age in 2020 is 14.09% while in Bangkalan Regency alone there are 11.94% of women entering menopause age [5].

The World Health Organization defines menopause as the last menstrual bleeding, which usually occurs between the ages of 45 and 55. This spontaneous cessation of natural menstruation for at least 12 months is not a pathological condition [6]. A person can be said to have menopause if he does not have menstruation for a full 1 year and usually occurs at the age of 40 to 58 years and on average occurs at the age of 51.4 years [7].

Although menopause is a natural phase of the female life cycle that occurs as part of aging in women can increase the risk of health problems [8]. Transitions in menopause involve a myriad of physical, endocrine, and psychological changes influenced by ethnic, psychological, and socio-cultural factors [2]. Symptoms of menopause appear as a result of reduced secretion of estrogen from the ovaries, which leads to dysfunction of the autonomic nervous system, including hot flushes and sweating, emotional disturbances, insomnia, fatigue, headache, dizziness, palpitations [9]. Symptoms and signs of menopause affect about 80% of women and 20% of them are severe symptoms [10]. A preliminary study conducted on 10 menopausal women aged 45-55 years in the work area of the Burneh Health Center, Bangkalan Regency in January showed that all respendons felt more than 1 menopausal symptom, of which 20% felt mild symptoms and most (80%) had moderate to severe menopausal symptoms.

The symptoms of menopause and its severity vary from person to person due to the effects of role factors such as lifestyle, social status, body composition, and psychological status [11]. Since moderate to severe menopausal symptoms can negatively affect a woman's well-being and health expectations, treatment is indicated [10]. According Krebs in Chen, et al., [12] Efforts that can be made to reduce the symptoms of menopause are divided into two types of treatment, namely pharmacologically and non-pharmacologically. Pharmacological treatment, namely the administration of HRT (Hormone Replacement Theraphy), the use of HRT in the long term can cause serious side effects. Because of this in the last decade many women are looking for alternative therapies that are effective and also safer. Chien, et al., in Johnson, et al., [13] mentioned that, there are various methods of non-pharmacological therapy or complementary treatment and alternatives, one of which is aromatherapy.

According Chien, et al., in Johnson, et al., [13] Aromatherapy is a therapy using essential oils, using aromatic essences extracted naturally from plants to treat various physiological and psychological imbalances. This is supported by Buckle in Lee, et al., [14] which states that, the phytoestrogen content in essential oils used in aromatherapy has shown a lot of potential in relieving menopausal symptoms. Herz in Malakouti, et al., [15] Mention that, some essential oils that can reduce climacteric symptoms such as hot flashes, sexual dysfunction and depression are such as fennel, angelica, sage and bergamot, lavender and geranium.

Badgujar, et al., in Banerjee, et al. [16] explained that, several studies have shown that fennel is effective for relaxing smooth muscles, improving memory, and enhancing antioxidant effects. It is said to be effective for exerting estrogenic activity and lowering dysmenorrhea. The research of Ghaffari, et al. [17] concluded that fennel seeds can significantly improve menopausal symptoms in postmenopausal women although their effects on estradiol levels and sexual desire are insignificant. This is reinforced by the research of Malakouti, et al., [15] showing that aromatherapy combination of lavender, fennel, geranium and rose shows a positive impact in improving sexual function without side effects in postmenopausal women. This is also supported by the research of Rahimi, et al., [18] showing that fennel can decrease menopausal symptoms and can improve the quality of life of menopausal women without any serious side effects.

The difference between this study and the previous study was in the composition of the aromatherapy used and also the research variables assessed. In this study, the aromatherapy used only contained fennel essential oil (not combined with other essential oils) and the variable assessed in this study was a decrease in the level of menopausal symptoms, where the indicator was the MRS (Menopause Rating Scale). This study aims to determine the effect of Aromatherapy Fennel (Foeniculum Vulgare) on the decrease in menopause symptom levels in urban villages Tunjung Working Area of Burneh Health Center, Bangkalan Regency. Symptoms that occur during menopause are physiological things that occur during menopause due to a decrease in hormones and a decrease in body functions with age, but if not responded to properly and left alone with a level of symptoms that are getting worse, it can certainly reduce a woman's quality of life during menopause and can also cause complications that can also be life-threatening. Therefore, it is necessary to have effective and safe non-faramacology therapy without side effects to overcome the symptoms that appear in menopause so that menopausal women can live their old age independently, safely, comfortably and productively.

II. METHODS

This research is an Experimental Quasy study with a Non Equivalent Control Group Design design. This research was carried out from March to April 2022 in Tunjung Village, Burneh Health Center Working Area, Bangkalan Regency.

The population in this study was menopausal women aged 45-55 years, a total of 62 people with samples taken using the Purposive Sampling technique and met the inclusion criteria of 44 people so that there were 22 people per each group. The criteria used as a study sample were women aged 45-55 years without severe disease, had stopped menstruating for at least 1 year in a row and had menopausal symptoms. While the exclusion criteria are women who do not have a husband, have asthma or other allergies, have flu or olfactory disorders, are consuming or getting estrogen and progesterone hormone therapy and women who have psychic disorders. The indepedent variables in this study were Aromatherapy Fennel (Foeniculum Vulgare) and the dependent variable was the Level of Menopause Symptoms.

In this study, the data used were primary data collected by making repeated measurements using the MRS (Menopause Rating Scale) questionnaire. Prior to the intervention in the treatment group, the level of menopausal symptoms of both groups (sample group and treatment group) was assessed first. Furthermore, fennel aromatherapy

intervention was given in the treatment group, namely as much as 2 times a day in the morning and before going to bed for 5 consecutive days using 3 drops of fennel essential oil dripped on a cotton swab and inhaled for 5 minutes. After the intervention was completed, on the 7th day each group (sample group and treatment group) was reassessed the level of menopausal symptoms using an MRS questionnaire.

After the data collection is completed, the data is inputted and processed using the help of IBM SPSS Statistical software version 26. The data were analyzed using univariate and bivariate methods. Univariate analysis to explain the characteristics of the variables presented in the frequency and distribution tables including age, level of education and occupation of menopausal women. Meanwhile, the bivariate analysis carried out aims to determine the effect of fennel aromatherapy on reducing the level of menopausal symptoms. Bivariate analysis in this study was carried out using the Wilcoxon Matched Pairs statistical test with a significance level (α) of 0.05.

III. RESULTS

The results of the study included the characteristics of respondents consisting of age, education, and occupation. Meanwhile, the specific data consisted of menopausal symptom levels in both sample groups before and after being given Fennel Aromatherapy intervention (Foeniculum Vulgare) in the treatment group. More can be seen in the following table:

TABLE 1
Frequency Distribution of Menopausal Women's Characteristics in Tunjung Village, Bangkalan Regency in Maret-April 2022

Characteristics	Frequency (n)	Percentage (%)
Age		
45-49 Years	22	50.0
50-54 Years	14	31.8
55-59 Years	8	18.2
Total	44	100.0
Profession		
Doesn't Work	24	54.5
Working	20	45.5
Total	44	100.0
Education		
No school/no elementary school graduation	16	36.4
Primary Education	20	45.5
Secondary Education	8	18.2
Total	44	100.0

Based on the results of the study shown in TABLE 1, it was found that of the 44 menopausal women in Tunjung Village, Burneh Health Center Working Area, Bangkalan Regency, half of menopausal women (50%) were in the age range of 45-49 years, most (54.5%) were not working and almost half of menopausal women (45.5%) were at the Primary school education level. TABLE 2 showed that when the pretest was carried out on menopausal women in Tunjung Village, Burneh Health Center, Bangkalan Regency, it was found that the majority of menopausal women (68.2%) of the control group experiencing severe levels of menopausal symptoms. Similarly, menopausal women from the treatment group where most of menopausal women (72.7%) also experienced severe menopausal symptoms.

TABLE 2
Frequency distribution of menopausal symptoms before giving Fennel Aromatherapy intervention in Tunjung Village, Bangkalan Regency in Maret-April 2022

Symptom Level	Frequency (n)	Percentage (%)
Control Group		
Mild	1	4.5
Moderate	6	27.3
Severe	15	68.2
Total	22	100.0
Treatment Group		
Mild	1	4.5
Moderate	5	22.7
Severe	16	72.2
Total	22	100.0

TABLE 3
Frequency distribution of menopausal symptoms after being given Fennel Aromatherapy intervention in Tunjung Village, Bangkalan Regency in Maret-April 2022

Symptom Level	Frequency (n)	Percentage (%)
Control group		
Mild	1	4.5
Moderate	7	31.8
Severe	14	63.6
Total	22	100.0
Treatment Group		
No/Few Symptoms	2	9.1
Mild	7	31.8
Moderate	11	50.0
Severe	2	9.1
Total	22	100.0

TABLE 3 showed that after the posttest was carried out to both groups on the same day, on the 7th day after the pretest, it was found that most menopausal women (63.6%) from the control group still experienced severe menopausal symptoms. Meanwhile, in menopausal women from the treatment group who were given Fennel Aromatherapy, half of menopausal women (50.0%) experienced moderate levels of menopausal symptoms.

TABLE 4
Cross-tabulation Effect of Fennel (Foeniculum Vulgare) Aromatherapy on Reducing Menopause Symptoms Levels in the Control Group

Menopause Symptom Level	Before being given Fennel Aromatherapy		After being given Fennel Aromatherapy		Total	
	n	%	n	%	N	%
Mild	1	50.0	1	50.0	2	100.0
Moderate	6	46.15	7	53.85	13	100.0
Severe	15	51.72	14	48.23	29	100.0
Total	22	100.0	22	100.0	44	100.0

Based on cross TABLE 4 It can be seen that in the control group during the pretest, most of the respondents (51.72%) from the control group had severe menopausal symptoms, while at the posttest there was a slight decrease where only

almost half of the respondents (48.23%) still had severity of menopausal symptoms.

TABLE 5
Distribution of the frequency of decreasing Menopause Symptom Levels in the control group after being given Fennel Aromatherapy (Foeniculum Vulgare) intervention in the treatment group

Menopause Symptom Level		n	%
Before being given Fennel Aromatherapy	After being given Fennel Aromatherapy		
Symptoms Severe	Symptoms Severe	14	63.6
Symptoms Severe	Moderate Symptom Level	1	4.5
Moderate Symptom Level	Moderate Symptom Level	6	27.3
Mild Symptoms	Mild Symptoms	1	4.5
Total		22	100.0

Based on TABLE 5 show that in the control group after the posttest there was a decrease in the level of menopausal symptoms. One respondent (4.5%) with a severe level of menopausal symptoms dropped to a moderate level of menopausal symptoms. In the control group, most of the respondents (63.3%) had a level of severe menopausal symptoms that persisted from the pretest to the posttest.

TABLE 6
Cross tabulation of the Effect of Fennel (Foeniculum Vulgare) Aromatherapy on Reducing Menopause Symptom Levels in the Treatment Group

Menopause Symptom Level	Before being given Fennel Aromatherapy		After being given Fennel Aromatherapy		Total	
	N	%	N	%	N	%
No/Few Symptoms	0	0.0	2	100.0	2	100.0
Mild	1	12.5	7	87.5	8	100.0
Moderate	5	31.25	11	68.75	16	100.0
Severe	16	88.89	2	11.11	18	100.0
Total	22	100.0	22	100.0	44	100.0
Wilcoxon Signed Ranks Test p value 0.000058 < (0.05)α						

Based on cross TABLE 6 It can be seen that in the treatment group when the pretest was carried out, almost all respondents (88.88%) had severe menopausal symptoms, while after the intervention in the form of Fennel Aromatherapy and posttest there was a decrease where only a small part of the respondents left (11.11). %) who still had severe menopausal symptoms.

TABLE 7
Frequency distribution of decreased Menopause Symptoms Level in the treatment group after being given Fennel Aromatherapy (Foeniculum Vulgare)

Menopause Symptom Level		n	%
Before being given Fennel Aromatherapy	After being given Fennel Aromatherapy		
Symptoms Severe	Symptoms Severe	2	9.1
Symptoms Severe	Moderate Symptom Level	11	50.0
Symptoms Severe	Mild Symptoms	3	13.6
Moderate Symptom Level	Mild Symptoms	3	13.6
Moderate Symptom Level	No Symptoms / Few Symptoms	2	9.1
Mild Symptoms	Mild Symptoms	1	4.5
Total		22	100.0

Based on TABLE 7 it is known that in the treatment group the decrease in the level of menopausal symptoms was the most (50.0%) namely in respondents with severe menopausal symptoms during the pretest which decreased to moderate levels of menopausal symptoms. And there were three respondents (13.6%) who experienced a persistent level of menopausal symptoms during the pretest to posttest.

The results of statistical tests using the Wilcoxon Matched Pairs Test with a confidence level of 0.05 obtained p value = 0.000058 or p value < (0.05) then H0 was rejected, meaning that there was an effect of Fennel Aromatherapy (Foeniculum Vulgare) on decreasing the level of menopausal symptoms.

IV. DISCUSSION

The results of the study contained in TABLE 5 showed that the majority (68.2%) of menopausal women in Tunjung Village from the control group experienced severe menopausal symptom levels. Similarly, the treatment group where the vast majority (72.7%) of menopausal women also experienced severe menopausal symptom levels.

It is supported by Y. Li and J. C. Dreher [8] That states that, it is estimated that at least 80% of postmenopausal women have experienced at least one symptom of menopause in a lifetime. F. Seyyedi [19] also mentioned that more than 80% of women experience symptoms both physical and psychological in the run-up to menopause with various stresses and disorders in life thus causing a decrease in the quality of life.These findings are also in line with the research of M.Dabrowska, et al., [20] which mentions that of the perimenopausal women studied almost half (43.04%) experienced severe levels of menopausal symptoms. The research of Ratnayake, et.al., [11] also mentioned that 1 Menopause Symptoms occur in women 90.8% Premenopausal and 96.4% Postmenopausal. Frequently reported menopausal symptoms among premenopausal women were physical and mental fatigue (49.5%), joint and muscle discomfort (48.5%), and irritability (41.3%) of mild to moderate severity. In postmenopausal women, physical and mental fatigue (53%), irritability (48.2%), depressed mood (43.4%), and hot flushes (42.2%) of mild to moderate severity were observed. Severe symptoms are more prevalent in postmenopausal women compared to premenopausal women. Furthermore, 47.6% of postmenopausal women reported joint and muscle discomfort of severe to very severe intensity.

Menopause is a period of aging in a woman's life cycle that is natural and unavoidable which is the end of reproductive life through ovarian malfunction, accompanied by a decrease in the production of estrogen and progestins in the peripheral and brain [21]. Menopausal symptoms are believed to be the result of a decrease in estrogen levels as women approach menopause. They may also be related to metabolic changes and comorbidities that occur in some middle-aged women or psychosocial behaviors and general health factors of women [22]. Typical symptoms

experienced during transitional menopause can be classified as somatic, psychological, or urogenital (for example, hot flashes, night sweats, irregular menstruation) cycles, sleep disturbances, vaginal dryness, sexual dysfunction, depressed mood). However, the prevalence of symptoms and the severity of their symptoms also vary on the Menopause Rating Scale (MRS) [23]. The most common symptoms associated with menopause are hot flushes, genitourinary problems, sexual problems, mood changes, heart and bone problems [3].

Complaints and the level of symptoms that appear in each menopausal woman vary according to individual and community characteristics [24]. Many factors can affect the level of menopause symptoms. The types of groups of symptoms that are most widely manifested can vary by race and ethnicity, as well as by factors, such as level of education, socioeconomic status, health factors, stress, and marital status [6]. For many women, menopause relieves them of anxiety about bearing a child, and from the pain or discomfort associated with their reproductive organs. Some women may view menopause negatively, attributing it to aging, which in most Western cultures has significant negative connotations [25].

All respondents in the study experienced more than one symptom during menopause from both the control group and the treatment group in which most experienced severe levels of menopausal symptoms. This is likely due to factors such as the respondent's employment and education level. R. Thapa and Y. Yang [22] mentioned that, the prevalence and severity of menopause symptoms differed according to respondents' age, marital status, race/ethnicity, geographical location, the presence of chronic diseases, the level and amount and type of physical activity, parity (greater with high parity), self-perception of health (greater with poor/sufficient), and menopausal status.

According to TABLE 1 Most respondents are not working. Menopausal women who are not working are likely to feel the symptoms of menopause experienced more severely this is because menopausal women who do not work tend to stay quiet more so that there is no distraction from the symptoms that arise and the menopausal women will feel the symptoms more often. Unlike menopausal women who work or have activities, of course the symptoms that arise are likely not to feel heavy because they tend to be more focused on their activities or work so that the changes experienced during menopause are not so felt because they are distracted from their busy work.

The research of M.Dabrowska, et al., [20] explains that physical activity is associated with menopausal symptoms. This is also supported by the research of A. El Hajj et al., [26] that Physical activity can play a protective role in weakening climacteric symptoms and therefore improving a woman's quality of life during middle age.

TABLE 1 also shows that nearly half of the respondents were at the primary and no school/no primary school graduation levels. A person with a low educational background tends to have lower knowledge so that the possibility of maternal understanding of menopause is also low. Menopausal women who do not go to school tend not to be able to read and may not have the ability to search for various kinds of information so this causes the menopausal women chances of obtaining information about changes in menopause are also limited. Menopausal women who do not understand the physiological changes that occur during menopause and how they are handled usually make menopausal women feel confused and anxious so that it will make Menopausal women feel the symptoms of menopause as a severe problem. Good knowledge and understanding will support menopausal women in dealing with the changes that occur in menopause.

Having the right information about menopause can help women to have more realistic expectations about the menopause period and to make better choices between treatment options to overcome menopausal symptoms [24]. M.Dabrowska, et al., [20] mentions that, higher education is usually associated with greater knowledge of health and higher incomes. These women have better access to health care services, gyms, and medical consultations, which can lead to increased levels of physical activity and better levels of health. This is in line with the research of S. Nazarpour, et al., [27] that a positive correlation was found between the level of education (between women and their partners) and the total QoL (Quality of life) score of postmenopausal women. In addition, the research of El Hajj et al., [26] also mentioned that Menopausal status, level of education, density and body mass index, marital status, smoking and alcohol intake are among the factors significantly related to the frequency and severity of symptoms associated with menopause.

Based on TABLE 3, it can be seen that after the intervention was given in the treatment group and posttested in both groups on the same day it was found that most (63.6%) of menopausal women from the control group continued to experience severe levels of menopausal symptoms while in the treatment group after being given Fennel Aromatherapy intervention, half (50.0%) of menopausal women experienced moderate menopausal symptom levels and there was a small part (9.1%) menopausal women become asymptomatic or only mildly symptomatic of menopause. Based on TABLE 7, it was seen that in the treatment group, the highest reduction in the level of menopausal symptoms (50.0%) was in respondents with severe symptom levels when pretest dropped to moderate symptom levels. And there were three menopausal women (13.6%) who experienced a persistent level of symptoms during the pretest until the time of posttest where this is likely influenced by the high level of stressors from respondents, it can also be caused when the menopausal women is carrying out aromatherapy the menopausal women is in a state of inexperience so that the benefits of fennel aromatherapy are not felt. This can likely also be caused by many factors that can affect the level of menopause symptoms experienced by each woman.

Based on TABLE 5, it can be seen that in the control group there was one respondent who experienced a decrease in the level of menopausal symptoms from severe to moderate menopausal symptom levels. This may be due to occupational factors where respondents from this control group had more activity during the fasting month. So that when the menopausal women is more working or doing activities, the menopausal women tends not to feel the complaints that exist because she is focused on her work.

Treatment or management to overcome menopausal symptoms consists of two methods, namely pharmacologically using HRT and also non-pharmacologically. It has been proven that the use of hormone therapy (HT) relieves the symptoms of menopause. But many women are looking for different alternative methods to reduce the severity of menopausal symptoms [20].

According to Johnson, et al., [13], non-pharmacological treatment methods to overcome menopausal symptoms are complementary and alternative treatments that have been categorized into psycho-somatic therapy (for example, hypnosis, CBT (Cognitive Behavioral Therapy), relaxation, biofeedback, meditation, aromatherapy), natural products (for example, herbs, vitamins, minerals, dietary supplements), and a system-wide approach (for example, traditional Chinese medicine, reflexology, acupuncture and homeopathy).

According Chien, et al., in Johnson, et al., [13] Aromatherapy is a therapy using essential oils, using aromatic essences extracted naturally from plants to treat various physiological and psychological imbalances. Aromatherapy is being used for the treatment and management of chronic pain, insomnia, neurological disorders and psychiatry [28].

Phytoestrogens are plant compounds that have properties or chemical structures similar to estrogen in the body [29]. Phytoestrogens have the potential to affect all processes regulated by estrogen including induction sex hormone binding globulin and aromatase inhibition. Estrogen receptors are present in different tissues – the central nervous system (including the hypothalamic-pituitary axis), the gonads, the reproductive tract, the placenta, the mammary glands, bones, the gastrointestinal tract, the lungs. This suggests that phytoestrogens can exert tissue-specific hormone effects [30]. Gesper in Lee, et al., [14] mentioned that, the content of phytoestrogens in essential oils used in aromatherapy has shown many benefits in relieving menopausal symptoms.

The research of Chen, et al., [29] implies that phytoestrogens can reduce the frequency of hot flushes in menopausal women, without serious side effects. Bedell, et al., in Yaralizadeh, et al., [31] also mentioned that, phytoestrogens can reduce the severity of menopausal symptoms, such as vasomotor problems, vaginal atrophy, sleep quality, and bone tissue metabolism. Buckle in Lee, et al. [14] mention that, the phytoestrogen content in essential oils used in aromatherapy has shown a lot of potential in relieving menopausal symptoms.

The results of the Wilcoxon Matched Pairs Test using a confidence level of α 0.05 obtained a p value = 0.000058 with a p value of < 0.05 which means that there is an influence of Aromatherapy Fennel (Foeniculum vulgare) on decreasing the level of menopause symptoms.

The results of this study are in line with the results of Ghaffari, et al., [17] which concluded that fennel seeds can significantly improve menopausal symptoms in postmenopausal women although their effects on estradiol levels and sexual desire are insignificant. In addition, the research by Malakouti, et al., [15] also showed that aromatherapy combination of lavender, fennel, geranium and rose shows a positive impact in improving sexual function without side effects in postmenopausal women. This is also reinforced by the research of Rahimi, et al., [18] suggests that fennel can lower menopausal symptoms and can improve the quality of life of menopausal women without serious side effects.

Pastore, et al. in Yaralizadeh, et al. [31] mention that, Fennel (Foeniculum vulgare) or Fennel is an annual plant belonging to the family Umbelliferae (Apiaceae). Fennel is a popular medicinal plant that has various pharmacological actions that have been mentioned in traditional Iranian medicine and modern phytotherapy which has shown properties as antioxidant, estrogenic, hypotensive as well as memory enhancement [31]. This plant has a long history of herbal use. Traditionally, fennel seeds are used as an anti-inflammatory, analgesic, carminative, diuretic and antispasmodic agent [32].

Salama, et al., and Saxena, et al., in Abbas, et al., [28] explains that Essensial Oil Fennel has been found effective in disorders of the gastrointestinal tract as a carminative and anti-colic. Its antioxidant potential has found its use as an anxiolytic. Moreover, fennel seeds are used as an analgesic, anti-inflammatory, antispasmodic, diuretic, galactagogue, hepatoprotective, secretomotor and eye lotion in the European and Mediterranean regions. Symptoms of menopause, nausea, obesity and kidney stones are also treated with fennel seeds. It is supported by Herz in Malakouti, et al., [15] which mentions that, some essential oils that can reduce climacteric symptoms such as hot flashes, sexual dysfunction and depression are such as fennel, angelica, sage and bergamot, lavender and geranium.

Essential oils derived from fennel seeds contain the main ingredients in the form of Trans-Anethole (80.63%) which are phytoestrogens, L-Fenchone (11.57%), Estragole (3.67%) and Limonene (2.68%) [33]. Loho, in Malakouti, et al. [15] Phytoestrogens act as estrogen agonists and can cause effects similar to estrogen. According Rahimi and Arkedani in Hafizi, et al. [18] Phytoestrogenics in fennel play a role in improving the symptoms of menopause symptoms, sexual activity and vaginal atrophy.

According Herz in Malakouti, et al. [15] Fennel is one of the aromatic herbal essences that contains phytoestrogens in aromas which can reduce climacteric symptoms such as

hot flushes, sexual dysfunction and depression by activating neurons in the olfactory center that affect human emotions by releasing various neurotransmitters (endorphins, noradrenaline and serotonin). It is believed that any factors that cause the secretion of serotonin and endorphins, and the reduction of neurepinepherin also decrease hot flushing [34].

Singh, et al., in Bhadra and Sagarika [35] explains that, Fennel is very aromatic due to the presence of an anethole. Other active constituents are -pinene, -myrcene, -pinene, fenchone, camphene, estragole, fenchone, limonene, p-cymen, and safrole. Anise oil is often used in aromatherapy and provides a calming relaxing effect on the body. Essential oils extracted from its seeds are used for constipation, colds, coughing and nausea. Further, use in diuretic and relaxation of muscle cramps, breath fresheners and carminatives is also noted.

The aromatic essential oil Foeniculum vulgare has been successfully used for the management of depression. Anethole, a compound found in Foeniculum vulgare has shown anti-inflammatory and antioxidant potential. Exhibits Anethole antioxidant effects by inhibiting lipid peroxidation and free radical antidote. In addition, it also has an inhibitory action on monoamine oxidase B, therefore, prevents the breakdown of monoamines and the decrease in oxidative stress. Furthermore, kamferol and coumarin, found in Foeniculum vulgare also inhibit monoamine enzyme oxidase A and B, thus generating anti-inflammatory and antioxidant actionThe aromatic essential oil Foeniculum vulgare has been successfully used for the management of depression. Anethole, a compound found in Foeniculum vulgare has shown anti-inflammatory and antioxidant potential. Exhibits Anethole antioxidant effects by inhibiting lipid peroxidation and free radical antidote. In addition, it also has an inhibitory action on monoamine oxidase B, therefore, prevents the breakdown of monoamines and the decrease in oxidative stress. Furthermore, kamferol and coumarin, found in Foeniculum vulgare also inhibit monoamine enzyme oxidase A and B, thus generating anti-inflammatory and antioxidant action [28]. Badgujar, et al., in Banerjee, et al., [16] explained that, several studies have shown that fennel is effective for relaxing smooth muscles, improving memory, and enhancing antioxidant effects. It is said to be effective for exerting estrogenic activity and lowering dysmenorrhea. This is also in line with the research of Abbas, et al., [28] which concludes that foeniculum vulgare seeds have antiamnesic and antidepressant action. Foeniculum vulgare seed administration has been shown to improve memory and provide antidepressant action in swiss albino rats and wistar rats. Song, et al., and Zhang, et al., in Alvarado, et al., [36] mentioning another compound present in this essesntial oil of fennel is limonene, in which the evidence reports its anxiolytic effects are similar to diazepam, indeed, this monoterpene can regulate the DAergic and GABAergic neuronal pathways through modulating the activity of A2A receptors, generating anti-anxiety activity. In addition, the literature shows that limonene exhibits antidepressant effects associated with modulating monoaminergic systems. The research of Alvarado, et al.,[36] also that concluded that essential oils extracted from Foeniculum vulgare seeds showed moderate changes for anxiety and minor changes for depression. Aromatic Essens from Fennel Aromatherapy which contains phytoestrogen compounds can help lower menopausal symptoms due to estrogen deficit. Fennel's inhaled aromatherapy enters through the nose and its aromatic molecules enter through the membrane of the nasal cavity then into the olfactory nerve that lies in the upper part of the nose. The olfactory nerve then carries the implus from the nasal sense of smell to the brain control center that controls the entire system. After implus reaches the brain then the endocrine system will be stimulated and secrete hormones into the bloodstream. So it can help overcome menopausal symptoms such as hot flushes, vaginal atrophy, dyspareunia, decreased memory after bone and joint problems. Soothing aromatherapy of fennel, will be able to relax the nerve veins. Its soft warmth will help relax smooth muscles and improve blood circulation, can reduce pain can also help overcome psychological complaints such as irritability, anxiety, mood changes and can also help overcome sleep disorders during menopause. The influence of Aromatherapy Fennel (Foeniculum Vulgare) on reducing the level of menopausal symptoms is also likely to be inseparable from the compliance of respondents from the treatment group in carrying out the intervention given. This can be seen from the attitude of respondents who are enthusiastic in being part of the research. In addition, the cheklist sheet for the implementation of aromatherapy given to respondents was fully filled and essential oil along with the cotton wool given to carry out Fennel Aromatherapy (Foeniculum Vulgare) has been used up so that the research proceeds optimally and the expected results from the administration of Fennel Aromatherapy (Foeniculum Vulgare) are achieved.

Based on the results of the study, fennel aromatherapy is a non-pharmacological therapy that can be given to treat symptoms during menopause. The existence of effective and safe non-pharmacological therapy without side effects is needed to improve the quality of life of women during menopause so that menopausal women can live their old age independently, safely, comfortably and productively.

The limitations in this study are that there is a time span of intervention that is not too long and there is no examination of estrogen levels in the blood. In this study, the variables examined, namely the level of menopausal symptoms did not focus on one of the signs and symptoms and the sample in this study was taken in one of the villages in Bangkalan Regency, it is possible that there could be differences in the results of the study if done in different themes. However, despite these limitations, the results of this study can add alternative non-pharmacological treatment in the BATRA program at the center of public health in dealing with menopausal symptoms.

V. CONCLUSION

This study aims to determine the effect of Aromatherapy Fennel (Foeniculum Vulgare) on reducing the level of menopause symptoms in Tunjung Village, Burneh Health Center Working Area, Bangkalan Regency.

The results showed that the level of menopause symptoms in most menopausal women before being given fennel aromatherapy (foeniculum vulgare) is the level of severe menopause symptoms, the level of menopause symptoms in most menopausal women after being given Fennel Aromatherapy (Foeniculum Vulgare) is the level of moderate menopause symptoms. There is an effect of Fennel Aromatherapy (Foeniculum Vulgare) on decreasing the level of menopausal symptoms.

It is hoped that this research can be an input for subsequent researchers so that they get better research results and can examine other benefits of Fennel Aromatherapy (Foeniculum Vulgare), especially in obstetrics. Further research is expected to increase the sample and extend the research time and check the level of estrogen hormone in the blood may also be needed so that the research results become more accurate.

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