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The Effectiveness of Ginger Oil Aromatherapy and Lemon Oil Aromatherapy on Reducing Emesis Gravidarum in Pregnant Women

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ABSTRACT

Emesis Gravidarum is caused by changes in liver glycogen and an increase in the hormone HCG. The purpose of this study was to determine the difference in the effectiveness of ginger oil aromatherapy and lemon oil aromatherapy on the reduction of emesis gravidarum in pregnant women. The design in this study is a quasi experiment with two groups of pretest posttest design with a sample size of 15 respondents per group. The sampling technique uses Simple Random Sampling while the data analysis test uses the Wilcoxon and Mann Whitney test. Before being given Ginger Oil aromatherapy as many as 9 respondents experienced moderate emesis. After being given ginger oil aromatherapy, 8 respondents did not experience emesis. Before being given Lemon Oil aromatherapy 9 respondents experienced mild emesis. After being given Lemon oil aromatherapy 12 respondents did not experience emesis. Analysis of the Wilcoxon test results there is an effect of giving Ginger Oil and Lemon Oil aromatherapy to reduce emesis gravidarum and the Mann Whitney test it is that Ginger Oil Aromatherapy is more effective in reducing nausea and vomiting compared to Aromatherapy Lemon Oil. Ginger oil contains essential oils that can be used to reduce nausea in pregnant women because the aroma produced is stronger.

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INTRODUCTION

Every pregnant woman will experience a process of body adjustment to pregnancy. One of them is nausea and vomiting (emesis gravidarum) which occurs in 60% - 80% of pregnancies (*Profil-Kesehatan-2021.Pdf*, n.d.). The impact of emesis gravidarum if not handled properly it will result in excessive emesis gravidarum (hyperemesis gravidarum) causing less body fluids so that the blood becomes thick (hemoconcentration), dehydration or electrolyte disturbances in the body, weight loss, lack of food intake that makes growth fetal development, liver disorders, fetal failure, gastric disorders, and the death of pregnant women (Frelestany, 2020).

According to the World Health Organization (WHO), the incidence of hyperemesis gravidarum reaches 12.5% of all pregnancies in the world. The incidence of emesis gravidarum in Indonesia, which was obtained from 2,203 pregnancies that can be completely observed, is 534 pregnant women who are affected by emesis gravidarum (Frelestanty, 2020). In East Java Province in 2014 data regarding the incidence of emesis gravidarum in pregnant women is 50-90 % while hyperemesis gravidarum 10-15% In Ponorogo Regency in 2021 there are 10,822 pregnant women with 62 cases of hyperemesis. And in the Sooko sub-district from January to March 2022 there were 153 pregnant women with an incidence of emesis gravidarum as many as 48 people.

Solutions to treat emesis gravidarum in pregnancy can be done by pharmacological and non-pharmacological methods. Pharmacological therapy is done by giving antiemetics, antihistamines, anti-cholinergics and corticosteroids. Non-pharmacological therapy is carried out by regulating diet, avoiding drinking water when eating, eating small but frequent portions, drinking 8 glasses of water, avoiding strong odors, emotional support, acupuncture and giving inhalation of ginger oil and lemon oil aromatherapy (Carolin, 2019).

Ginger (Ginger) is widely used to treat nausea, motion sickness, and even vertigo. Ginger smells good and has a spicy taste that warms the body so it can be used as a treatment prescription. Ginger which is processed into aromatherapy can help to reduce nausea and vomiting during pregnancy (Siregar et al., 2022). The advantage of ginger oil is that the essential oil content of ginger oil can be used to reduce nausea in pregnant women on the grounds that the aroma produced is stronger so that it is more effective in reducing nausea in pregnant women. According to a review published by the journal *Obstetrics & Gynecology*, ginger can help pregnant women cope with the pain of morning sickness without causing side effects that harm the fetus in the womb (Widiasari & Trapika, 2017). While Lemon (Citrus limon) essential oil is one of the most widely used herbal oils in pregnancy. Lemon aromatherapy can reduce complaints of hyperemesis gravidarum due to the presence of limonene which will inhibit the work of prostaglandins and reduce pain including nausea and vomiting.

Based on this background, researchers are interested in conducting a study with the title the effectiveness of ginger oil aromatherapy and lemon oil aromatherapy on reducing emesis gravidarum in pregnant women.

RESEARCH METHOD

This study design is a quasy experiment with a two group pretest posttest design approach. The population in this study were all pregnant women in the Sooko District area who experienced Emesis Gravidarum, namely 48 people with a sample of 15 respondents per group. The sampling technique used is Simple Random Sampling. The independent variables are Ginger Oil Aromatherapy and Lemon Oil Aromatherapy. While the Dependent Variable is Emesis Gravidarum. The instruments used are Standard Operating Procedures and PUQE questionnaires. Test data analysis using Wilcoxon and Mann Whitney test.

RESULTS AND DISCUSSIONS

Cross tabulation of emesis gravidarum before and after being given ginger oil aromatherapy to pregnant women in the Working Area of Sooko Health Center, Ponorogo Regency

Table 1. Cross tabulation of emesis gravidarum before and after being given ginger oil aromatherapy to pregnant women in the Working Area of Sooko Health Center, Ponorogo Regency

Emesis Gravidarum	No Emesis Gravidarum		Posttest		Total	
	Σ	%	Σ	%	Σ	%
Pretest						
Mild (4-6x/hari)	6	40	0	0	6	40

Medium (7-12x/hari)	2	13.3	7	46.7	9	60
Total	8	53.3	7	46.7	15	100

Table 1 shows that almost half of the respondents before being given ginger oil aromatherapy experienced emesis gravidarum in the moderate category, after being given ginger oil aromatherapy experienced emesis gravidarum in the mild category, namely 7 people (46.7%).

Cross tabulation of emesis gravidarum before and after being given lemon oil aromatherapy to pregnant women in the Working Area of Sooko Health Center, Ponorogo Regency

Table 2. Cross tabulation of emesis gravidarum before and after being given lemon oil aromatherapy to pregnant women in the Working Area of Sooko Health Center, Ponorogo Regency

Emesis Gravidarum	No Emesis Gravidarum		Posttest			
	Σ	%	Mild	Medium	Total	
Pretest	Σ	%	Σ	%	Σ	%
Mild (4-6x/hari)	9	60	0	0	0	0
Medium (7-12x/hari)	3	20	2	13.3	1	6.7
Total	12	80	2	13.3	1	6.7

Table 2 shows that most of the respondents before being given lemon oil aromatherapy experienced emesis gravidarum in the mild category, after being given lemon oil aromatherapy they did not experience emesis gravidarum, namely 9 people (60%).

Statistical Test Results

Table 3. Wilcoxon Test Results The Effectiveness of Ginger Oil and Lemon Oil on Reduction of Emesis Gravidarum in Pregnant Women in the Work Area of Sooko Health Center, Sooko District, Ponorogo Regency

	Test Statistic ^a	
	PObstest CO - Pretest CO	PObstest LO - Pretest LO
Z	-3,690 ^b	-3,494 ^b
Asymp. Sig. (2-tailed)	.000	.000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Based on the Wilcoxon test, a significant value of 0.000 was obtained, meaning that there was an effect of giving Ginger Oil aromatherapy to the incidence of emesis gravidarum in pregnant women at the Sooko Health Center, Ponorogo Regency. And also obtained a significant value of 0.000 meaning that there is an effect of giving Lemon Oil aromatherapy on the incidence of emesis gravidarum in pregnant women at the Sooko Health Center, Ponorogo Regency.

Table 4. Mann Whitney Test Results to Assess The Effectiveness of Ginger Oil and Lemon Oil on The Reduction of Emesis Gravidarum in Pregnant Women in The Working Area of The Sooko Health Center, Sooko District, Ponorogo Regency

Group	N	Ranks		P value
		Mean Rank	Sum of Ranks	
Ginger Oil	15	17.27	259.00	.002
Lemon Oil	15	13.73	206.00	.005
Total	30			

Based on the mann whitney test, a significant value was obtained in the ginger oil group of 0.002, meaning that there was an effect of giving ginger oil aromatherapy to emesis gravidarum while the sig value in the lemon oil group was 0.005. sum rank obtained results of 259.00 in the

ginger oil group and 206,00 in the lemon oil group, meaning that ginger oil is more effective in reducing emesis gravidarum compared to lemon oil.

Emesis gravidarum before being given ginger oil aromatherapy to pregnant women at Sooko Health Center, Ponorogo Regency

Characteristics of respondents in the Working Area of Sooko Health Center, Ponorogo Regency in 2022, based on Emesis Gravidarum before being given Ginger Oil aromatherapy to pregnant women, it was found that most of the ginger oil group respondents experienced moderate Emesis Gravidarum before being given Ginger Oil aromatherapy to pregnant women as many as 9 respondents (60%).

Nausea and vomiting in early pregnancy (morning sickness), can occur at any time, can be night, day or any time. Morning sickness usually starts around 8 weeks and lasts up to 12 weeks. Every pregnant woman will have a different level of nausea, some do not really feel anything, but there are also those who feel nauseous and some even feel very nauseous and vomit all the time, so they need treatment (Jarineshin et al., 2022).

Nausea and vomiting occur in 60-80% of primigravida and 40-60% of multigravida. One in 1000 pregnancies these symptoms become more severe this feeling of nausea is caused by increased levels of the hormone estrogen HCG in serum. If a pregnant woman feels nauseated every time she sees, smells, or tastes food that may potentially affect the fetus, it will cause the woman to experience nausea, vomiting so that the food and drink is expelled again. The impact of nausea and vomiting is very high risk of causing discomfort to the mother and fetus, so proper management is needed to deal with nausea and vomiting in pregnant women.

Emesis gravidarum after being given ginger oil aromatherapy to pregnant women at Sooko Health Center, Ponorogo Regency

Characteristics of respondents in the Working Area of Sooko Health Center, Ponorogo Regency in 2022 based on Emesis Gravidarum after being given Ginger Oil aromatherapy to pregnant women, it was found that most respondents did not experience Emesis Gravidarum after being given Ginger Oil aromatherapy to pregnant women as many as 8 respondents (53.3%)

Efforts to overcome morning sickness can be done in a non-pharmacological way, one of which is by giving aromatherapy. Aromatherapy is a therapeutic action using essential oils that are useful for improving physical and psychological conditions for the better. Aromatherapy provides various effects for the inhaled, such as calmness, freshness, and can even help pregnant women overcome nausea. When essential oils are inhaled, the molecules enter the nasal cavity and stimulate the limbic system in the brain. The limbic system is an area that affects emotions and memory and is directly related to the adrenals, pituitary gland, hypothalamus, body parts that regulate heart rate, blood pressure, stress, memory, hormone balance, and breathing (Nassif et al., 2022).

Ginger is an aromatherapy that can be used to treat nausea and vomiting. Pharmacologically ginger (ginger) has benefits, one of which is antiemetic (anti-vomiting). Ginger is also a strong aromatic stimulant, in addition to controlling vomiting by increasing intestinal peristalsis. The main product of the ginger plant (ginger) is ginger rhizome which produces essential oils (Rahmawati et al., 2018). Essential ginger oil contains many substances and compounds. Gingerol and shogaol are two compounds that produce a stronger aroma so that they are effective in reducing the frequency of nausea and vomiting in pregnant women with morning sickness (Masrurōh et al., 2020). The mechanism of ginger has a direct effect or influence on the digestive tract by increasing gastric movement, as well as the absorption of toxins and acids. Ginger is believed to give a feeling of comfort in the stomach so that it can overcome nausea and vomiting because of the essential oil content of zingiberena (zingirona), zingiberol, bisabilena, kurkuman, gingerol and flandrena. The content of these substances can block serotonin, a neurotransmitter in the central nervous system and enterochromaffin cells in the digestive tract by inhibiting the

induction of Human Chorionic Gonadotrophin (HCG) into the stomach so that nausea and vomiting are reduced (Carolin & Putri, 2022). This is supported by (Harahap et al., 2020) research on the effect of blended peppermint and ginger oil aromatherapy on nausea in first trimester pregnant women at the Rengel Health Center, Tuban Regency. The results showed that there was an effect of giving aromatherapy a mixture of peppermint and ginger oil with a value of $p = 0.0001$ ($p < 0.05$.)

Emesis gravidarum before being given lemon oil aromatherapy to pregnant women at the Sooko Health Center, Ponorogo Regency

Characteristics of respondents in the Working Area of the Sooko Health Center, Ponorogo Regency in 2022 based on Emesis Gravidarum before being given lemon oil aromatherapy to pregnant women, it was found that most of the respondents in the lemon oil group experienced Mild Emesis Gravidarum before being given Lemon Oil aromatherapy to pregnant women as many as 9 respondents (60%).

This is in line with the research of (Chollifah & Nuriyanah, 2018), which stated that the majority of respondents before being given the lemon essential oil aromatherapy intervention to reduce the frequency of vomiting in TM I pregnant women with hyperemesis gravidarum in the severe vomiting scale range because before being given aromatherapy the respondents felt stressed and did not Controlling hormones, one of which is HCG.

According to Frelestanty (2020), hyperemesis gravidarum is a complaint of severe nausea and vomiting more than 10 times a day during pregnancy which can cause fluid deficiency, weight loss, or electrolyte disturbances, thus interfering with daily activities and endangering the fetus in the womb. According to (Mumisah et al., 2022), nausea and vomiting in pregnancy is influenced by hormonal changes in the endocrine system that occur during pregnancy, mainly due to high fluctuations in HCG (human chorionic gonadotrophin) levels.

Emesis gravidarum after being given lemon oil aromatherapy to pregnant women at the Sooko Health Center, Ponorogo Regency

Characteristics of respondents in the Sooko Health Center Working Area, Ponorogo Regency in 2022 based on Emesis Gravidarum after being given Lemon Oil aromatherapy to pregnant women, it was found that most respondents did not experience Emesis Gravidarum after being given lemon oil aromatherapy to pregnant women as many as 12 respondents (80%).

This means that after the intervention of giving lemon essential oil aromatherapy there was a decrease in the vomiting scale in pregnant women with hyperemesis gravidarum. This is due to the aromatherapy of lemon (citrus lemon) and the feeling of comfort and relaxation that you get. Lemon aromatherapy contains ingredients that can neutralize unpleasant odors, and produce anti-anxiety, anti-depressant, anti-stress effects, which are the cause of nausea, vomiting or hyperemesis gravidarum in first trimester pregnant women (Carolin et al., 2020).

This is in line with the research (Jarineshin et al., 2022), of which states that the majority of respondents' vomiting scale before the intervention was in the severe vomiting scale range because before the intervention the mother's body did not feel relaxed, emotionally unstable, stress and an increase in pregnancy hormones such as HCG and estrogen which is one of the causes of nausea and vomiting in pregnant women.

The effectiveness of ginger oil and lemon oil on reduction of emesis gravidarum in pregnant women in the Work Area of Sooko Health Center, Sooko District, Ponorogo Regency

Based on the Mann Whitney test, a significant value was obtained in the Ginger Oil group of 0.002, meaning that there was an effect of giving Ginger Oil aromatherapy to Emesis Gravidarum while the sig value in the Lemon Oil group was 0.003. Sum rank obtained results of 259.00 in the Ginger oil group and 206.00 in the Lemon Oil group, meaning that Ginger Oil is more influential in reducing emesis gravidarum compared to Lemon Oil.

According to research Rofiah et al. (2019) lemon (citrus lemon) essential oil is one of the most widely used herbal oils in pregnancy and is considered a safe drug in pregnancy. According to one study in this study 40% of women had used the scent of lemon to relieve nausea and vomiting, and 26.5% of them had admitted that citrus lemon aromatherapy was an effective way to control symptoms of nausea and vomiting. Lemon contains limonene which will inhibit the work of prostaglandins so that it can reduce pain and prevent prostaglandin activity and reduce nausea and vomiting. The Linalil Acetate content in lemon aromatherapy functions to normalize emotional states and unbalanced body conditions and has properties as a sedative and tonic, especially in the nervous system (Oktavia et al., 2018).

Ginger is an aromatherapy that can be used to treat nausea and vomiting. Pharmacologically ginger (ginger) has benefits, one of which is antiemetic (anti-vomiting). Ginger is also a strong aromatic stimulant, in addition to controlling vomiting by increasing intestinal peristalsis. The main product of the ginger plant (ginger) is ginger rhizome which produces essential oils (Siregar et al., 2022). Essential ginger oil contains many substances and compounds. Gingerol and shogaol are two compounds that produce a stronger aroma so that they are effective in reducing the frequency of nausea and vomiting in pregnant women with morning sickness. The mechanism of ginger has a direct effect or influence on the digestive tract by increasing gastric movement, as well as the absorption of toxins and acids. Ginger is believed to give a feeling of comfort in the stomach so that it can overcome nausea and vomiting because of the essential oil content of zingiberena (zingirona): zingiberol, bisabilena, kurkuman, gingerol and flandrena. The content of these substances can block serotonin, a neurotransmitter in the central nervous system and enterochromaffin cells in the digestive tract by inhibiting the induction of Human Chorionic Gonadotrophin (HCG) into the stomach so that nausea and vomiting are reduced (Harahap et al., 2020).

In these results there is a decrease in nausea and vomiting before giving aromatherapy and after giving aromatherapy. So there is a significant decrease where ginger oil aromatherapy can reduce nausea and vomiting, because after inhaling ginger oil aromatherapy respondents feel the comfort and nausea they previously experienced are now reduced. The decrease in the average frequency of nausea and vomiting is due to aromatherapy being able to reduce the score for the frequency of nausea and vomiting in pregnancy because it smells fresh and helps improve or maintain health, raises enthusiasm, passion, refreshes and calms the soul, and stimulates the healing process.

CONCLUSION

Giving ginger oil and lemon oil aromatherapy is proven to reduce the frequency of nausea and vomiting in pregnant women and ginger oil aromatherapy is proven to be more effective in reducing emesis gravidarum in pregnant women. This study is useful for pregnant women who are not willing to use pharmacological therapy so they use complementary therapy.

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