



THE EFFECTIVENESS OF LEMONGRASS AROMATHERAPY IN REDUCING NAUSEA AND VOMITING IN PREGNANT WOMEN

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ABSTRACT

Nausea and vomiting in pregnancy is a common symptom, but worsening of the condition due to hyperemesis gravidarum can often have a significant impact on a woman's quality of life, both personally and professionally, and cause emotional trauma. Various alternative non-pharmacological treatments have been developed to maintain the safety of the mother and fetus. One of them is lemongrass or lemongrass aromatherapy. The aim of this study was to analyze the effectiveness of lemongrass aromatherapy in reducing nausea and vomiting in pregnant women in the first trimester. This research is a type of intervention research with a quasi-experimental design in the intervention group and control group without randomization. The research was conducted in the Cimarga Community Health Center area in September 2023. The sample used was 32 pregnant women collecting by purposive sampling. The analysis was used Independent sample t-test. The results of the Independent sample t-test obtained p value of $0.021 < 0.05$, so it can be concluded that there is an effect of giving Lemongrass Aromatherapy on reducing nausea and vomiting in first trimester pregnant women. Lemongrass aromatherapy is effective in reducing the frequency of nausea and vomiting in first trimester pregnant women.

Keywords: aromatherapy; lemongrass; nausea; vomiting

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INTRODUCTION

Nausea and vomiting are symptoms experienced by most pregnant women, both primigravida and multigravida (Carolin, 2022). Emesis Gravidarum occurs in 60-80% primigravida and 40-60% multigravida (Carolin, 2022). This difference in prevalence occurs because in primigravida mothers the body is more likely to be unable to adapt to hormones *Estrogen* and *chorionic gonadotropin*, so emesis gravidarum is more common. While multigravida have adjusted to hormonal changes, they have already had the experience of pregnancy and childbirth (Ashebir, 2022). (Ahmed Shaheen, 2021) In a small percentage of pregnancies (0.2%-5%), persistent and excessive nausea and vomiting are commonly referred to *Hyperemesis gravidarum* can result in dehydration, electrolyte imbalance, and weight loss making it the main cause of a pregnant woman in the hospital during the first trimester (Ningsih, 2020). (Yeh, 2018)(Gabra, 2018).

Globally *World Health Organization* (WHO) in 2018 recorded the prevalence of events *Hyperemesis gravidarum* around 21.5% and in 2019 this prevalence increased even more sharply, reaching 22.9%. Data from the Indonesian Health Demographic Survey (IDHS) reported during 2018 the prevalence of (Ioannidou, 2019) *hyperemesis* reached 1,864 (5.31%)

from 21,581 pregnant women and in 2019 experienced an increase of 1,904 people (5.42%) from 25,234 pregnant women (Wahyuni, 2020). The data is certainly still far from the actual incident, because many pregnant women do not come or do not carry out examinations and treatment at health services.

In Banten province, based on data collected by various referral hospitals, it shows that there are an average of 250 pregnant women who are unable to undergo examination and treatment due to the diagnosis of hyperemesis gravidarum every year. In other words, every day there is at least 1 pregnant woman who experiences symptoms of hyperemesis so that she must undergo treatment at a referral hospital. (Indrayani, 2018) The worsening of the situation due to the condition of nausea vomiting often results in a decrease in the quality of life of a woman, both personally and professionally, and causes emotional trauma (Ramadhani, 2019). The exact cause of nausea and vomiting cannot always be clearly explained and may depend on several factors (Carolin, 2022). As for the prognosis of morning sickness can start preeclampsia when a twofold decrease of the components (*Renin angiotensin aldosterone system* /RAAS) lower. In normal pregnancy, (*angiotensin receptors* /AT1R) regulates reactive oxygen levels. In preeclampsia, AT1R complex with (Asi, 2021)*Bradykinin receptors* B2 to form a α -heterodimer that enhances the pressor effect of Ang II. Secondly, placental hypoxia contributes to the production of circulating antibodies against AT1R, which in turn increases vasoconstriction through activation (Popa, 2021)*endothelin-1*, increased sensitivity to circulating Ang II, and increased production of placental sFlt-1 and sEng.(Grand'Maison, 2017)

Various alternative treatments other than pharmacological drug administration or hospital treatment can be given in early prevention and treatment efforts, such as ginger drink extract which is used widely in history due to its many natural medicinal and antiemetic properties. Evidence has shown that Aromatherapy (Maesaroh, 2019)*Lemongrass* or lemongrass is an effective and inexpensive treatment for nausea and vomiting and safe (Indrayani, 2018). Aromatherapy *Lemongrass* or lemongrass, which is traditionally also easily found in Indonesia. The essential oil content in lemongrass can cause competitive antagonists in (Novidha, 2022)*ileus 5-HT* receptors that cause effects *Anti Emetic* (Aruan, 2022). Based on preliminary studies conducted by researchers on midwives in the Cimarga Health Center area, it was recorded that from January to July 2023 there were at least 63 reported cases of emesis gravidarum spread across midwife and village practices, but all patients had not routinely received non-pharmacological therapy. The aims of this research was to analyze "The Effectiveness of Lemongrass Aromatherapy in Reducing Nausea and Vomiting in 1st Trimester Pregnant Women in the Cimarga Community Health Center (PUSKESMAS) Area in 2023".

METHOD

This research is a type of intervention research with experimental quasy design or pseudo-experiments. where researchers only intervene in the intervention group and control group without randomization. The location used for this research is in the working area of the Cimarga Health Center in September 2023. This study was conducted for 1 month, while the intervention will be carried out for 2 weeks for each research sample. The sample used in this study was 32 pregnant women divided into 16 respondents for the control group and 16 respondents for the intervention group. The intervention given is the administration of a 100 ml aromatherapy solution mixed with lemongrass essential oil / lemongrass as much as 20 drops. Turn on the diffuser for up to 30 minutes and do it every night at bedtime for 14 days. Assessment of the frequency of nausea and vomiting using the Nusea, Vomiting and Retching

Index (INVR). The bivariate analysis used in this study was an independent t test.

RESULTS

Univariate analysis will display the distribution of the mean frequency of nausea vomiting scores through the INVR questionnaire.

Table 1.
Distribution of the mean frequency of nausea vomiting scores at the beginning of data collection (Before Intervention)

	Control	Aromatherapy
Average (mean)	8	10
Standard Deviation	3.89	2.09
Minimum	1	5
Maximum	14	13

Based on table 1 it is known that there are differences in the average data before / *baseline* between groups. The intervention group had a higher average index of nausea and vomiting than the control group of 10 while the control group was 8. In addition, the minimum value in the intervention group was also much greater than the control group, namely 5 in the intervention group and 1 in the control group.

Table 2.
Distribution of the mean frequency of vomiting nausea scores in the second data collection (After Intervention)

	Control	Aromatherapy
Average (mean)	7.38	5.44
Standard Deviation	2.89	1.31
Minimum	1	3
Maximum	13	8

Table 2, it can be seen that the average INVR score in the control group after the intervention became much higher than the aromatherapy group, namely 7.38 for the control group and 5.44 for the aromatherapy group. The intervention group also had a much lower maximum value than the control group of 8 while the control group still had a maximum value of 13.

Bivariate Analysis

This bivariate analysis was used to see the effect of *lemongrass* aromatherapy on reducing nausea, vomiting.

Table 3.
Cross-tabulation of Categories of Nausea Vomiting After (Second Data Collection)

Group	Categories of nausea, vomiting after				Total	
	Mild nausea vomiting		Moderate nausea, vomiting		f	%
	f	%	f	%		
Control	8	25	8	25	16	50
Aromatherapy	13	40.6	3	13.7	16	50
Total	21	65.6	11	34.4	32	100

Based on the cross-tabulation attached, it is known that in the second data collection, 16 respondents in the control group experienced moderate and mild nausea, vomiting in the same number, namely 8 people (25% of the total respondents). While in the intervention group there were significant changes, respondents in this group almost all had experienced nausea vomiting in the mild category, namely 13 people (40.6%) and only 3 people who experienced nausea vomiting in moderate conditions or (13.7%).

Table 4.

Independent test analysis <i>T test</i>						
Result	<i>Independent T test</i>					P value
	t	Df	Mean Rank difference	95 Confidence Interval		
				Lower	Upper	
Control-Aromatherapy	2.44	32	1.94	0.31	3.56	0.021

Based on bivariate analysis that shows the results of the *Independent sample t-test* obtained Sig.2-tailed values of $0.021 < 0.05$, it can be concluded that there is an effect of Lemongrass Aromatherapy on reducing nausea vomiting in first trimester pregnant women.

DISCUSSION

Measurements after the intervention reported that the average INVR score in the control group was much higher than the aromatherapy group, which was 7.38 for the control group and 5.44 for the aromatherapy group. The intervention group also had a much lower maximum value than the control group of 8 while the control group still had a maximum value of 13. These results are in line with research conducted by (Marvia 2020) who reported that in the treatment group before doing the pretest who experienced mild morning sickness 15, moderate 4, severe 1 and after posttest to normal 20 respondents (100%). While in the control group before doing the pretest who experienced mild morning sickness 8, moderate 7, severe 5 and after the posttest became normal 14 respondents (70%), mild 6 respondents (30%).

Morning sickness Nausea or vomiting occurs when systemic vascular resistance increases and afterload, and cardiac output and intravascular volume decrease. Various factors contribute to these changes such as decreased arterial ability, activation of the renin-angiotensin-aldosterone system (Renin angiotensin aldosterone system /RAAS), levels renin, angiotensin II (Ang II), and aldosterone lower compared to normal pregnancy (although still higher than in non-pregnant individuals), and sensitivity to Ang II and norepinephrine is increased .(Ives, 2020) The cause of nausea and vomiting is considered a multi-factoral problem. Related theories are hormonal factors, vestibular system, digestive, psychological, hyperolfaction, genetic and evolutionary factors . Based on a prospective study in 9000 pregnant women who experienced nausea vomiting, the risk of nausea vomiting increased in primigravida, women who were poorly educated, smoked, overweight or obese, had a history of nausea vomiting in previous pregnancies. Emesis gravidarum (morning sickness) is associated with hCG levels. hCG stimulates estrogen production in the ovaries. Esterogen is known to increase nausea and vomiting. An increase in estrogen can provoke an increase in stomach acidity that makes the mother feel nauseous.(Nurmi, 2018)(Austin, 2019)(Hariadini, 2022)

Another theory says that placental cells (Villi kariolis) attached to the uterine wall is initially rejected by the body because it is considered a foreign body. This immunological reaction is what triggers the nausea reaction. Changes in liver glycogen metabolism due to pregnancy are also thought to be a cause of nausea and vomiting. There are some researchers who say the cause of nausea vomiting is caused by psychological factors, such as unplanned, uncomfortable or unwanted pregnancy, workload will cause inner suffering and conflict. Feelings of guilt, anger, fear, and anxiety can add to the severity of nausea and vomiting.(Abriyani, 2020) The use of a combination of spices to overcome nausea and vomiting in pregnant women who say that the combination of ginger extract with pyridoxine can relieve nausea and vomiting better than just using pyridoxine alone consumption of lemongrass ginger is most effective in overcoming morning sickness in pregnant women. The compounds that make up lemongrass essential oil are known to have anti-fungal, anti-insect, antiseptic, and anti-inflammatory properties. Lemongrass

((Sari, 2022) lemongrass) Able to prevent the growth of some bacteria and fungi and has antioxidant properties.(Vieira, 2018)

Based on bivariate analysis that shows the results of the Independent sample t-test obtained Sig.2-tailed values of $0.021 < 0.05$, it can be concluded that there is an effect of Lemongrass Aromatherapy on reducing nausea vomiting in first trimester pregnant women. This result is in line with research conducted by which states that the results of the average difference are obtained (Nasution, 2023) Morning Sickness before and after the intervention of lemongrass and ginger leaf consumption tested by test T Paired sample's Test P value or Sig (2-tailed) of 0.000. In theory, lemongrass has many uses for health, with lemongrass content, which is the essential oil used to treat nausea and vomiting. Lemongrass or lemongrass, which is traditionally also easily found in Indonesia. The essential oil content in lemongrass can cause competitive antagonists in ileus 5-HT receptors that cause anti-emetic effects (Anggraini, 2022)(Paramita, 2018).

Lemongrass or Lemongrass (*Cymbopogon citratus*) that contains a lot of oil is the leaves. Kitchen lemongrass leaf essential oil has the main constituent components, namely geranial (citral α) by 42.11%, neral (citral β) by 34.78%, and mirsen by 13.71%. The presence of geranial (citral α), neral (citral β) and mirsen constituent components, the essential oil of citronella leaves has the potential as an anti-amoeba, anti-bacterial, anti-diarrheal, and anti-fungal. Kitchen lemongrass essential oil is sterilized by filtering using a sterile 0.22 μm (Millex-Gv) filter. The results of lemongrass oil filtration are accommodated in a 4 ml sterile dark bottle, which is then stored in a refrigerator at 4°C until used in experiments.(Rufaidah, 2023)(Rihiantoro, 2018)(Paramita, 2018) Lemongrass has many uses for health, with the content of lemongrass is essential oil, the use of lemongrass combined with ginger to overcome nausea and vomiting has never been done before, but has researched about giving ginger and vitamin B6 against vomiting maul in pregnant women with the results of ginger more effective to reduce nausea and vomiting during pregnancy. (Yulviana, 2019).

CONCLUSION

There is an effect of giving Lemongrass Aromatherapy on reducing nausea and vomiting in pregnant women in the first trimester. The results of the table also show a correlation value of 2.44. This indicates that giving lemongrass aromatherapy can influence reducing nausea and vomiting to the mild category by 2.4 times compared to if pregnant women in the first trimester did not given lemongrass aromatherapy intervention. This research can be a source of information in utilizing nearby medicinal sources such as ginger, lemongrass and lemon as alternative treatments to reduce emesis gravidarum in pregnancy before using antimetic drugs, and can process other variants of lemongrass which can be used to reduce the frequency of nausea. vomiting is expected.

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