

Original Research

Differences Between Lemon Aromatherapy and Hypnobirthing in Reducing Nausea and Vomiting of Pregnant Women in the First Trimester

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ABSTRACT

Backgrounds: Nausea and vomiting are discomforts of pregnancy about which 50–90% of pregnant women complain in the first trimester. Hypnobirthing and lemon aromatherapy are complementary therapies that can relax so that endorphins are produced and will reduce nausea.

Methods: The study design is a pre-experimental research method. Research conducted in June–August 2022 at Puskesmas Klaten Selatan. A total of 50 pregnant women who suffered nausea and vomiting were recruited using accidental sampling. The data collection technique uses a PUQE-24 score. Data analysis used univariate and bivariate methods. Univariate performed the distribution frequency calculation. Bivariate data analysis using the Wilcoxon test because the data is not normally distributed. Differences in nausea and vomiting between the two groups using the Mann-Whitney test.

Results: Lemon aromatherapy effectively reduces nausea and vomiting (p -value < 0.05). Hypnobirthing can effectively reduce nausea and vomiting (p -value < 0.05). We found a significant difference between the score of nausea and vomiting for lemon aromatherapy and hypnobirthing (p -value < 0.05). Both post-tests were in the range of mild nausea and vomiting, but the post-test score of lemon aromatherapy was lower than hypnobirthing, where the average post-test score of lemon aromatherapy was 1.43, while the post-test mean score of hypnobirthing was 6.43.

Conclusion: Lemon aromatherapy and hypnobirthing relaxation can effectively reduce nausea and vomiting. There is a significant difference between nausea and vomiting scores in pregnant women who are given lemon aromatherapy and hypnobirthing.

ARTICLE HISTORY

Received: November 28th, 2022

Accepted: February 9th, 2023

KEYWORDS

aromatherapy, hypnobirthing, lemon, nausea, pregnant women, vomiting;

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Cite this as: Sari, L. P., & Nurrasyidah, R. (2023). Differences Between Lemon Aromatherapy and Hypnobirthing in Reducing Nausea and Vomiting of Pregnant Women in the First Trimester. *Jurnal Kebidanan Dan Kesehatan Tradisional*, 8(1), 1–9. <https://doi.org/10.37341/jkkt.v8i1.397>

INTRODUCTION

Pregnancy is the state of the embryo in the body after the union of the egg and spermatozoa. Conception and implantation (nidation) as the starting point of pregnancy

cause spiritual and physical changes followed by subjective changes such as feeling nauseated, wanting to vomit, having headaches, and having a decreased appetite. One of the complaints felt by pregnant women in the first trimester is nausea and vomiting.

Women in early pregnancy often seek the help of a health worker due to this discomfort. The etiology of emesis gravidarum is the increasing levels of progesterone and estrogen, which are produced by Human Chorionic Gonadotropin (HCG). The occurrence of emesis gravidarum is about 50–90% in pregnant women in the first trimester. Around 60–80% of primigravida are more likely to experience hyperemesis gravidarum, and the occurrence in multigravida is about 40–60% (Kemenkes RI., 2016).

Most pregnant women try their own ways to adapt to the symptoms of nausea and vomiting that they feel. However, some pregnant women are unable to handle it, causing pregnant women to fall into a state of hyperemesis, or what is often referred to as excessive nausea and vomiting. Hyperemesis gravidarum that can't be treated properly can cause side effects in infants such as malformations, premature birth, intrauterine growth retardation (IUGR), and low birth weight (Zainiyah, 2019).

Therapy that is done which is currently carried out by the majority of medical personnel is by giving pharmacological therapy, namely by giving vitamin B6. Vitamin B6 plays a role in body metabolisms such as the normal function of the nervous system, hormone regulation, tissue repair, and the formation of red blood cells, amino acids, and nucleic acids. A deficiency of vitamin B6 causes low serotonin levels so that the sensory nerves will be more sensitive, which causes the mother to easily vomit.

However, studies rarely give significant effects. In addition, the use of anti-emetic drugs during pregnancy can have adverse events such as fatigue, anxiety, stomach ulcers, dry mouth, and constipation. So many pregnant women are rarely willing to take drugs to deal with nausea and vomiting (Yue et al., 2022).

Non-pharmacological therapies that can be used to treat nausea and vomiting include acupuncture therapy, lemon aromatherapy inhalation, and consuming ginger. Based on research results obtained by Munjiah et al., (2015), they conducted a study comparing vitamin B6 and acupuncture in pregnant women who experienced nausea and vomiting in the first trimester. It was found that acupuncture therapy was more potent to treat nausea and vomiting than giving vitamin B6.

The novelty of the study compared to previous research is that researchers used complementary therapy to treat emesis gravidarum by comparing lemon aromatherapy and hypnobirthing relaxation. According to Maternity, Ariska, and Sari, (2017) Citrus lemon or lemon essential oil is a safe aromatherapy frequently used in pregnancy. Based on an earlier study, about 26.5% of the 40% of women who used lemon aromatherapy reported reduced symptoms.

Hypnobirthing relaxation is carried out to overcome psychological changes that occur in first-trimester pregnant women. Hypnobirthing is a natural treatment to deal with pregnancy, and childbirth comfortably and naturally by increasing positive suggestions in the subconscious mind (Kuswandi, 2011). Through positive suggestions to be able to accept her pregnancy and believing that all food and nutrients that enter are healthy and the body can accept them well, whatever we eat can be digested properly by the body. The effectiveness of relaxation to reduce emesis gravidarum in first-trimester pregnant women was investigated (Shakiba et al., 2019). The process of affirmation and suggestions are given to the subconscious mind will be recorded in the subconscious mind so that it really becomes a reality.

The objective of this study is to confirm the difference between lemon aromatherapy and hypnobirthing relaxation in reducing nausea and vomiting in first-trimester pregnant women at the Puskesmas Klaten Selatan. Based on a preliminary study of 10 pregnant women who experienced nausea and vomiting in the first trimester of pregnancy, it was found that as many as 5 (50%) pregnant women greatly reduced the frequency of nausea and vomiting after relaxation and about 4 (40%) pregnant women reduced nausea and vomiting after being given lemon aromatherapy, and the remaining 1 (10%) pregnant women did not feel any changes. Based on this background, it is necessary to investigate "The difference between hypnobirthing relaxation therapy and lemon aromatherapy to reduce nausea and vomiting in first-trimester pregnant women at the South Klaten Health Center".

MATERIALS AND METHOD

This research has gone through an ethical review by the health research ethics committee at the health polytechnic of Surakarta with the No. LB.02.02/1.1/6323/2022 on September 15, 2022. And before starting to collect research data, an explanation regarding informed consent was given to all respondents, both agreeing and not agreeing to become research respondents. These are pre- and post-experimental research methods (Notoatmodjo, 2012). First, we observed (pretested) the frequency of nausea and vomiting in pregnant women and then provided hypnobirthing relaxation therapy and lemon aromatherapy treatment, after which measurements (observations) or posttests were carried out.

The study involved 65 pregnant women who experienced nausea and vomiting at Puskesmas Klaten Selatan. The inclusion criteria were pregnant women who suffered nausea and vomiting with a frequency of >4 times per day, and the exclusion criteria in the study were not agreeing to be respondents and pregnant women whose gestational age was over 13 weeks. The sampling technique was carried out by accidental sampling among pregnant women who suffered nausea and vomiting > 4 times a day in May–August 2022 and was willing to become respondents, and 60 pregnant women were found in 2 intervention groups.

The instrument for measuring nausea and vomiting uses the PUQE-24 score (Pregnancy-Unique Quantification of Emesis). The PUQE scoring system is useful for measuring the severity of NVP (Nausea Vomiting Pregnancy) within 24 hours. This instrument figured out how many hours of feeling nauseated there were, the number of vomiting episodes, and how many incidents of dry vomiting there were in the last 24 hours. The PUQE-24 index has 3 assessment items with 5 Likert scales. The score ranges from 1 to 5, with 4-6 indicating light NVP, 7-12 indicating moderate NVP, and 13-15 indicating heavy NVP.

Data collection by the pre-test and post-test PUQE-24 instrument. Then, to determine which respondents were in the group that was given the lemon aromatherapy intervention or hypnobirthing relaxation, by randomizing using a lottery, an intervention was carried out according to the results obtained. Giving lemon aromatherapy by dripping 4 drops of diluted lemon essential oil into a tissue, then inhaling with 2-3 deep breaths for 5 minutes and doing this 4 times a day.

This intervention was carried out for at least 5 consecutive days and then evaluated for nausea and vomiting on day 5. For the group given the hypnobirthing relaxation intervention, respondents were trained to do basic relaxation and then enter positive suggestions about pregnancy and eating healthy, and they can feel comfortable

consuming all healthy foods. This relaxation and suggestion process was also continued to be carried out independently at each home for at least 5 days, and then the researchers evaluated the intensity of emesis on the 5th day.

Process of data analysis through the normality test of the data. Then, the statistical test used is to measure the difference in mean before and after being given lemon aromatherapy. The Wilcoxon is used because the data distribution is not normal. To measure the difference before and after being given the hypnobirthing intervention because the data distribution was normal, the statistical test was carried out with the paired T-Test. And to find out the difference in mean between the two groups after being given the interventions of lemon aromatherapy and hypnobirthing because the data distribution was not normal, the Mann-Whitney test was used.

RESULTS

Table 1 is explained frequency distribution of 60 characteristics subjects study.

Table 1. Characteristics of respondents

Background Characteristic Respondent	Criteria	Aromatheraphy lemon		Hypnobirthing	
		f	%	f	%
Age	20-35 years old	25	41.7	29	48.3
	> 35 years old	5	8.3	1	1.7
Education Level	Primary school	0	0.0	1	1.7
	Middle school	5	8.3	2	3.3
	High school	15	25	14	23.3
	Above High School	10	16.7	13	21.7
Working status	Working	12	20	16	26.7
	Not Working	18	30	14	23.3
Nutrition status (IMT)	Low	4	6.7	0	0.0
	Normal	23	38.3	26	43.3
	High	3	5	3	5
	Obesity	0	0	1	1.7
Parity	Primi	10	16.7	11	18.3
	Multi	20	33.3	18	30.0
	Grande	0	0.0	1	1.7

Based on table 1, the characteristics of age, education, occupation, BMI, and parity between the two groups are similar. This shows that the characteristics of the respondents in the two groups are evenly distributed and do not cause bias in the results of the study.

Table 2. The Result of Wilcoxon test Differences in nausea and vomiting (PUQE-24 score) before and after the lemon aromatherapy intervention

Variabel	n	Mean	Median	SD	Min - max	P
Pre-Test nausea and vomiting	30	10.23	10.00	1.431	7 - 12	0.000
Post-Test nausea and vomiting	30	1.43	1.00	0.504	1 - 2	

Table 2 shows a significant difference between the scores of nausea and vomiting before and after being given lemon aromatherapy (p-value <0.05). The average PUQE score before being given therapy is 10.23, and after being given aromatherapy, it is 1.43.

Table 3. The results of the Paired T-Test Difference between Nausea and Vomiting (PUQE-24 Score) before and after being given the hypnobirthing intervention

Variabel	n	Mean	Median	SD	Min-max	P
Pre-Test nausea and vomiting	30	10.47	11.00	1.57	7 - 13	0.000
Post-Test nausea and vomiting	30	6.43	6.00	2.208	3 - 10	

Table 3 shows a significant difference between nausea and vomiting scores before and after being given hypnobirthing (p-value <0.05). The average PUQE score before being given hypnobirthing was 10.47, and after being given hypnobirthing, it was 6.43.

Table 4. The results of the Mann-Whitney difference test on the difference in nausea and vomiting (PUQE-24 score) after being given the intervention of lemon aromatherapy and hypnobirthing

Variabel	n	Mean	Median	SD	Min - max	P
Post-Test Aromatherapy Lemon	30	1.43	1.00	0.504	1 - 2	0.000
Post-Test Hypnobirthing	30	6.43	6.00	2.208	3 - 10	

Table 4 shows a significant difference between the scores of nausea and vomiting given the lemon aromatherapy intervention and hypnobirthing. The mean of nausea and vomiting intensity after being given lemon aromatherapy was 1.43, while the mean of nausea and vomiting after being given hypnobirthing therapy was 6.43.

DISCUSSION

Based on the study, it is known that there's a significant difference between scores of nausea and vomiting before and after being given lemon aromatherapy. This result is in agreement with other studies. Nassif et al., (2021) found that aromatherapy, herbal medicine, and acupuncture are effective in treating nausea and vomiting during pregnancy.

This is proven in the results of a systematic review and synthesis. Kia et al., (2014) involved 100 pregnant women with nausea and vomiting. The study was carried out using the RCT method. It was found that the mean nausea and vomiting score decreased by 4 points by using lemon aromatherapy inhalation for 4 days.

Aromatherapy is one type of herb that is commonly used as a therapy for nausea because it uses essential oils, according to the complaint. Lemon aromatherapy can reduce the intensity of nausea, increase energy levels, and reduce fatigue during pregnancy (Safajou et al., 2020). Lemon consists of terpineol, linalool, linalyl acetate, citral, and limonene. Lemon plays a role in stabilizing the central nervous system.

This mechanism causes the mother to be happy and calm, have an increased appetite, and have smooth blood circulation. Inhaling lemons produces molecules that

are received by receptors in the nose. This stimulus is forwarded to the emotional and memory centers and then passed back to the circulatory system. This causes the mother to feel calm, relaxed, and comfortable (Maternity, Ariska, and Sari, 2017).

Aromatherapy is also very useful in palliative care. A study was conducted on 66 advanced cancer patients who received 222 applications of lemon aromatherapy with cotton. The study was conducted retrospectively. As many as 73% (149 applications) reported a decrease in symptoms, while 27% (53 applications) reported no reduction in symptoms, so pharmacological therapy had to be given (Kreye et al., 2022).

Other studies with meta-analytic methods provide evidence that lemon aromatherapy is effective in reducing the severity of nausea and vomiting. This is evident from three research articles. Other aromatherapy studies did not report significant results in treating nausea and vomiting during pregnancy, such as mentha (16 studies), peppermint aromatherapy (17 studies), and lavender aromatherapy (18 studies) in combination (Fattah A, Hesarinejad Z, Rajabi Gharaii N, 2019).

Based on this study, it was found that there was a significant difference in the score of nausea and vomiting before and after being given hypnobirthing (p-value <0.05). These results are in accordance with the research of Ozgunai et al., (2022) which was carried out using the RCT method. The study involved 18 people who received standard therapy with additional hypnosis therapy and 23 people who received standard therapy. The intervention was carried out by giving two hypnosis practice sessions, and then the patient was given instructions to practice this method every day.

The data analyzed included sociodemographic characteristics, frequency of vomiting, the severity of nausea and vomiting, nausea and vomiting drugs used, and length of stay. The results showed that the frequency of nausea and vomiting decreased in the hypnosis group. The length of stay in the hypnosis group was shorter than the control group. Thus, hypnotherapy has the potential to overcome hyperemesis gravidarum.

The application of chemotherapy is described in a case study of a 34-year-old woman. The patient was diagnosed with metastatic breast cancer. The primary tumor was removed, and then a biopsy of the sentinel node was performed. Postoperative care with chemotherapy assisted with antiemetic medication. On the second round of chemotherapy, the patient experienced severe nausea and vomiting.

After the chemotherapy is finished, these symptoms continue to be felt, especially when smelling food and the smell of the hospital. Hypnosis therapy began to be given to patients. After the first session, nausea and vomiting reduced significantly, the patient ate well, and she was also able to go to the hospital without feeling nauseated. Hypnosis CDs are given to patients to apply at home. Nausea and vomiting did not occur again after 3 months of receiving hypnosis therapy (Kravits, 2015).

Based on the main findings of this study, we found a significant difference between the nausea and vomiting scores of lemon aromatherapy and hypnobirthing. Where the average score of the lemon aromatherapy test post is 1.43 and the average score of the hypnobirthing test post is 6.43. Both test posts were in the range of mild nausea and vomiting, but the lemon aromatherapy post score was lower than hypnobirthing.

To the best of our knowledge, there are no studies comparing the two therapies to deal with nausea and vomiting during pregnancy. According to Milica, (2021) essential oils in aromatherapy are usually applied through inhalation. Inhalation works through the respiratory system or the olfactory nerves, which can optimize mood and benefit

stress-related depression, anxiety, and other physical illnesses related to immune system dysfunction.

Research on effective complementary therapies for nausea and vomiting continues. In an RCT study of 90 pregnant women with nausea and vomiting who were treated with lemon and ginger aromatherapy, it was found that lemon and ginger aromatherapy were equally effective in reducing emesis gravidarum (Kustriyanti and Putri, 2019). In another study, lemon aromatherapy was combined with acupressure. The results showed that acupressure and acupressure therapy combined with lemon aromatherapy were effective in reducing the emesis of gravidarum (Magfirah, Fatma, and Idwar, 2020).

The mechanism of hypnosis consists of relaxation and response. Relaxation works to reduce the sympathetic nervous system and reduce the state of sympathetic hyperstimulation. The second component is the response to hypnotic suggestions for symptom relief. The response to these suggestions is independent of the sympathetic or parasympathetic system and often does not depend on their awareness or memory of them, but it is necessary to dispel any myths or doubts that patients have about hypnosis treatment (Blake, 1897).

Hypnosis, mindfulness-based cognitive therapy, progressive muscle relaxation, and behavioral therapy were investigated in a systematic review. The sample involved six clinical trials, which were measured using the Oxford Quality Rating System or the Jadad Scale. Based on this systematic review, the current evidence is of low quality regarding the effectiveness of psychosomatic treatments. Behavior therapy and hypnosis rarely involve a control group, and the sample used is small, resulting in research bias.

In the case of mothers with depression, it can interfere with interventions, thereby reducing the effectiveness of those interventions. Psychological intervention plans must also consider side effects, intervention costs, treatment costs, the possibility of psychological disorders, and other therapies used. The need to improve the quality of research is needed to increase study evidence (Emami-Sahebi et al., 2018).

The process of the hypnobirthing mechanism is to reduce nausea and vomiting by teaching the patient to do deep relaxation and positive affirmations about all foods that are healthy and comfortable to eat, and then the patient is asked to do self-hypnosis routinely twice a day according to a time that is convenient for the mother. With the process of relaxation and planting positive suggestions, all the foods eaten that are comfortable and healthy are recorded in the subconscious and become realities.

CONCLUSION AND SUGGESTION

Lemon aromatherapy is effective in relieving nausea and vomiting in pregnant women based on the differences in the results of pre and post-bivariate tests of lemon aromatherapy (p -value < 0.05). Hypnobirthing is effective in alleviating nausea and vomiting in pregnant women based on the difference in the results of the pre-and post-bivariate test of hypnobirthing (p -value < 0.05). There is a significant difference between the nausea and vomiting scores of lemon aromatherapy and hypnobirthing, where both test posts are in the range of mild nausea and vomiting, but the lemon aromatherapy post score is lower than hypnobirthing.

The suggestion is that both interventions, lemon aromatherapy, and hypnobirthing, can be applied to cases of emesis gravidarum. This research is the basis for further research. It is necessary to improve the quality of methods and more samples to increase research evidence.

REFERENCES

- Adam, J., & Umboh, J. (2015). Hubungan Antara Umur, Parietas dan Pendampingan Suami Dengan Intensitas Nyeri Persalinan Kala 1 Fase Aktif Deselarasi di Ruang Bersalin RSUD Prof. Dr. H. Aloei Saboe Kota Gorontalo. *Jikmu*, 5(2a), 361–374
- Blake, J. F. (1897). Treatment of hyperemesis gravidarum. *British Medical Journal*, 2(1923), 1375. <https://doi.org/10.1136/bmj.2.1923.1375>
- Emami-Sahebi, A., Elyasi, F., Yazdani-Charati, J., & Shahhosseini, Z. (2018). Psychological interventions for nausea and vomiting of pregnancy: A systematic review. *Taiwanese Journal of Obstetrics and Gynecology*, 57(5), 644–649. <https://doi.org/10.1016/j.tjog.2018.08.005>
- Fattah A, Hesarinejad Z, Rajabi Gharaii N, N. M. (2019). The Effect of Aromatherapy on Nausea and Vomiting durring Pregnancy: A Systematic Review and Meta – Analysis. *Int J Pediatr*, 7(3), 9061–9070. <https://doi.org/10.22038/ijp.2018.34857.3068>.
- Kemenkes RI. (2016). *Profil Kesehatan Indo-nesia*.
- Kia, P. Y., Safajou, F., Shahnazi, M., & Nazemiyeh, H. (2014). The effect of lemon inhalation aromatherapy on nausea and vomiting of pregnancy: A double-blinded, randomized, controlled clinical trial. *Iranian Red Crescent Medical Journal*, 16(3). <https://doi.org/10.5812/ircmj.14360>
- Kravits, MA, RN, K. G. (2015). Hypnosis for the Management of Anticipatory Nausea and Vomiting. *Journal of the Advanced Practitioner in Oncology*, 6(3), 225–229. <https://doi.org/10.6004/jadpro.2015.6.3.4>
- Kreye, G., Wasl, M., Dietz, A., Klaffel, D., Groselji-Strele, A., Eberhard, K., & Glechner, A. (2022). Aromatherapy in Palliative Care: A Single-Institute Retrospective Analysis Evaluating the Effect of Lemon Oil Pads against Nausea and Vomiting in Advanced Cancer Patients. *Cancers*, 14(9), 1–11. <https://doi.org/10.3390/cancers14092131>
- Kustriyanti, D., & Putri, A. A. (2019). Ginger and Lemon Aromatherapy To Relieve Nausea and Vomiting in Pregnancy. *Jurnal Keperawatan Soedirman*, 14(1), 15. <https://doi.org/10.20884/1.jks.2019.14.1.868>
- Kuswandi, L. (2011). *Keajaiban Hypnobirthing*. Jakarta: Pustaka Bunda.
- Magfirah, M., Fatma, S., & Idwar, I. (2020). The effectiveness of acupressure therapy and aromatherapy of lemon on the ability of coping and emesis gravidarum in trimester i pregnant women at langsa city community health centre, aceh, indonesia. *Open Access Macedonian Journal of Medical Sciences*, 8(E), 188–192. <https://doi.org/10.3889/oamjms.2020.4008>
- Maternity, D., Ariska, P., & Sari, D. Y. (2017). Air Rebusan Cengkeh Mengurangi Mual Muntah Pada Ibu Hamil Trimester Satu. *Jurnal Kebidanan*, 2(3), 115–120.
- Milica. (2021). Essential Oils : Inhalation Aromatherapy. *Journal of Agronomy*,

- Munjiah, I., Madjid, T. H., Herman, H., Husin, F., Akbar, I. B., & Rizal, A. (2015). Perbedaan Pengaruh Akupunktur dan Vitamin B6 terhadap Penurunan Intensitas Mual Muntah pada Emesis Gravidarum Berat. *Jurnal Pendidikan Dan Pelayanan Kebidanan Indonesia*, 2(2), 1–6.
- Nassif, M., Costa, I., Moura, C. de C., & Ribeiro, P. (2021). Integrative and Complementary Practices to Control Nausea and Vomiting in Pregnant Women: A Systematic Review Protocol. *Jqwh.Org*, 1–13.
- Notoatmodjo, S. (2012). *Metodologi Penelitian Kesehatan (2nd ed.)*. Jakarta: PT Rineka Cipta.
- Ozgunai, et. al. (2022). Adjuvant Hypnotherapy for Hyperemesis Gravidarum: A Randomized Pilot Study. *International Journal of Clinical and Experimental Hypnosis*, 70(3), 277–185.
- Safajou, F., Soltani, N., Taghizadeh, M., Amouzesi, Z., & Sandrous, M. (2020). The effect of combined inhalation aromatherapy with lemon and peppermint on nausea and vomiting of pregnancy: A double-blind, randomized clinical trial. *Iranian Journal of Nursing and Midwifery Research*, 25(5), 401–406. <https://doi.org/10.4103/ijnmr.IJNMR-11-19>
- Shakiba, M., Parsi, H., Pahlavani Shikhi, Z., & Navidian, A. (2019). The Effect of Psycho-Education Intervention Based on Relaxation Methods and Guided Imagery on Nausea and Vomiting of Pregnant Women. *Journal of Family & Reproductive Health*, 13(1), 47–55. <https://doi.org/10.18502/jfrh.v13i1.1612>
- Yue, S. W., Huang, Y. Y., Huang, C. R., Huang, W. P., & Ouyang, Y. Q. (2022). Effect of auriculotherapy on nausea and vomiting during pregnancy: A systematic review. *European Journal of Integrative Medicine*, 53(February), 102130. <https://doi.org/10.1016/j.eujim.2022.102130>
- Zainiyah, Z. (2019). Article Effect of the Aroma of Sweet Orange Peel (*Citrus Aurantium*) on Emesis Gravidarum in First Trimester Pregnant Women (Study at Health Centre Pasean Pamekasan). *Jurnal Ilmiah Obsgin*, 11(2).