



**THE EFFECT OF GINGER (*Zingiber officinale* var. *Rubrum*) ADMINISTRATION ON PREGNANT WOMEN WITH EMESIS GRAVIDARUM**

**Siti Syamsiah\*, Bunga Tiara Carolin, Meidy Regita Putri**

Faculty of Health Sciences, Universitas Nasional, Jl. Sawo Manila No.61, Pejaten Barat, Pasar Minggu, Jakarta Selatan, Jakarta 12520, Indonesia

\*[sitisyamsiah@civitas.unas.ac.id](mailto:sitisyamsiah@civitas.unas.ac.id)

**ABSTRACT**

Emesis gravidarum, a common complaint among pregnant women in the first trimester, affects 70-80% of pregnancies, often presenting as morning sickness. If untreated, it can escalate to hyperemesis gravidarum, posing risks to pregnancy. Ginger, a herbal remedy, has been traditionally used to alleviate nausea and vomiting. Objective to investigate the influence of ginger (*Zingiber officinale* var. *Rubrum*) administration on pregnant women experiencing emesis gravidarum at the Depok Clinic. This study employed a quasi-experimental research design, specifically the One Group Pretest-Posttest Design. The sample comprised 34 first-trimester pregnant women at the Depok Clinic, selected through total sampling. Data collection involved observation, with participants given 2.5 grams of sliced ginger brewed in 250 ml of hot water and sweetened with 10 grams of sugar, to be consumed twice daily for four days. Emesis gravidarum was assessed using Validity refers to whether an instrument (such as the PUQE-24) accurately measures the intended concept—in this case, the symptoms of emesis gravidarum. Validity assessment involves examining whether the data obtained from the instrument aligns with the true underlying phenomenon being studied. Data analysis included univariate and bivariate analyses using the Paired T-Test. Reliability can be observed by assessing how consistently the emesis scores obtained before and after the ginger intervention are. If the scores show consistent patterns or changes, it indicates good reliability. Before the ginger intervention, the average emesis score was 10.74, with the majority falling into the moderate nausea and vomiting category, constituting 76.5% of the sample. After the ginger intervention, the average emesis score decreased to 6.88, with the majority still experiencing moderate nausea and vomiting, comprising 52.9% of the participants. These findings suggest that administering ginger (*Zingiber officinale* var. *Rubrum*) to mothers with emesis gravidarum has a significant effect. The efficacy of ginger in reducing emesis gravidarum has been demonstrated.

Keywords: emesis gravidarum; ginger (*zingiber officinale* var. *rubrum*); pregnant women

<b>First Received</b> 01 March 2024	<b>Revised</b> 18 March 2024	<b>Accepted</b> 08 April 2024
<b>Final Proof Received</b> 09 April 2024		<b>Published</b> 01 June 2024
<b>How to cite (in APA style)</b> Syamsiah, S., Carolin, B. T., & Putri, M. R. (2024). The Effect of Ginger ( <i>Zingiber officinale</i> var. <i>Rubrum</i> ) Administration on Pregnant Women with Emesis Gravidarum. <i>Indonesian Journal of Global Health Research</i> , 6(3), 1321-1328. <a href="https://doi.org/10.37287/ijghr.v6i3.3204">https://doi.org/10.37287/ijghr.v6i3.3204</a> .		

**INTRODUCTION**

Pregnancy constitutes a transformative journey in a woman's life, precipitating a multitude of alterations encompassing physical, mental, psychological and hormonal changes within the maternal body. These changes often give rise to numerous discomforts, with nausea and vomiting—referred to as morning sickness—emerging as typical occurrences during the initial phases of pregnancy (Irianti, 2014). Nausea and vomiting encountered by pregnant women typically result from alterations in the endocrine system throughout pregnancy, characterized by significant fluctuations in HCG (*Human Chorionic Gonadotrophin*) levels. However, if these symptoms persist and escalate to *hyperemesis gravidarum*—an extreme form of vomiting-induced nausea—it can pose significant risks, as outlined by Yance (2010).

The prevalence of *Emesis gravidarum* is widespread among pregnant women, encompassing both those experiencing their first pregnancy (primigravida) and those who have been pregnant previously (multigravida). It is reported that *Emesis Gravidarum* affects approximately 60-80% of primigravida and 40-60% of multigravida. Primigravidas often face challenges in adapting to hormonal changes, particularly with estrogen and *chorionic gonadotropin*, hence experiencing *Emesis gravidarum* more frequently. Conversely, multigravidas demonstrate a greater capacity to adjust to hormonal changes due to their prior pregnancy and childbirth experiences (Mariantari et al, 2014).

The majority of pregnant women, about 70-80%, encounter morning sickness during pregnancy, with approximately 1-2% facing severe forms of it. Persisting nausea and vomiting can lead to dehydration, weakness, and weight loss in pregnant women, which in turn can adversely affect fetal development due to inadequate nutritional intake (Manuaba, 2010). The management of *emesis gravidarum* involves both pharmacological and non-pharmacological approaches. Pharmacological interventions include the administration of vitamins (such as vitamin B complex and N6 mediamer for their anti-vomiting properties). Additionally, mild sedatives may be prescribed as part of this approach. Conversely, non-pharmacological interventions for *emesis gravidarum* include alternative measures like drinking hot tea and consuming beverages containing ginger (Setiawan, 2012).

Ginger proves highly efficient as an antiemetic agent, serving to deter *emesis gravidarum* during pregnancy, instances of food poisoning, chemotherapy sessions, gynecological surgeries, and episodes of motion sickness—where nausea and vomiting occur due to body movement, such as rotation, vibration, or travel (Runiari, 2010). Ginger comprises components beneficial to the body, notably gingerol, recognized as its primary compound with potent antiemetic properties proven to inhibit serotonin activity. Additionally, ginger contains essential oils like zingiberena (gingerone), zingiberol, bisabilena, curcumin, flandrena, as well as vitamin A and bitter resin, all contributing to the blockade of serotonin—a neurotransmitter synthesized in serotonergic neurons within the central nervous system and enterochromaffin cells in the digestive tract. This action is believed to instill a sense of stomach comfort, thereby alleviating nausea and vomiting (Ahmad, 2013). As reported in a review published by Obstetrics and Gynecology, ginger offers pregnant women relief from morning sickness without inducing any adverse effects that could harm the developing fetus (Runairi, Nengah, 2010).

Globally, ginger extract is beneficial in managing digestive diseases due to its aromatic properties, which promote flatulence and generate warmth in the body. The world claims that ginger extract is useful for treating digestive diseases because ginger is aromatic, stimulates flatulence and warms the body. The spicy flavor and scent of ginger are attributed to its gingerol content and volatile compounds (Wiraharja, et al 2011). Numerous research findings indicate that ginger serves as a therapeutic remedy for alleviating and diminishing nausea and vomiting. Additionally, ginger has proven efficacy in alleviating *emesis gravidarum* symptoms among pregnant women during the initial stages of pregnancy, as well as in reducing nausea and vomiting in multigravida pregnant women (Saswita, 2011).

According to research conducted by Indriyani, Burhan, and Widiyanti (2017), administering ginger for four days, with one glass in the morning and one glass in the afternoon, resulted in notable effects. Among pregnant women experiencing nausea and vomiting in the first trimester, classified mostly as mild *emesis* (80%), the average frequency of these symptoms decreased from 6.85 to 4.4 after ginger consumption, indicating a reduction of 2.45 in

frequency. Similarly, research by Rahmawati (2015) demonstrated an 86.67% reduction in nausea and vomiting frequency after utilizing 2.5 grams of sliced white or small yellow ginger, brewed with 250ml hot water and 10 grams of sugar, twice daily for four days. Additionally, findings from Rufaidah, Herien, and Mofa (2019) affirmed the effectiveness of ginger infusion in diminishing emesis gravidarum during the first trimester, while research by Ramadhani & Ayudia (2019) indicated a significant decrease in *emesis gravidarum* frequency following ginger consumption. Similarly, Alyamaniah and Mahmudah's study (2014) underscored the efficacy of ginger tea in reducing *emesis gravidarum*.

According to statistics gathered from the Bunda Medika Clinic between September and November 2019, out of 147 pregnant women, 53 (36%) were in their first trimester. Among these, it was observed that 34 (64.15%) experienced nausea during their pregnancy. These findings highlight a significant prevalence of emesis gravidarum during the first trimester, leading to discomfort for pregnant women throughout their pregnancy. This has prompted researchers to explore the potential benefits of ginger in alleviating nausea and vomiting during the first trimester of pregnancy. This interest stems from the community's limited awareness of the wide-ranging benefits ginger plants may offer to pregnant women. Typically, individuals still resort to using anti-nausea medication to mitigate these. The aim of this study is to investigate the influence of ginger (*Zingiber officinale* var. *Rubrum*) on mothers experiencing emesis gravidarum.

## METHOD

This study adopts a quasi-experimental design with a pre-post test control group, utilizing Validity refers to whether an instrument (such as the PUQE-24) accurately measures the intended concept—in this case, the symptoms of emesis gravidarum. Validity assessment involves examining whether the data obtained from the instrument aligns with the true underlying phenomenon being studied. Data analysis included univariate and bivariate analyses using the Paired T-Test. Reliability can be observed by assessing how consistently the emesis scores obtained before and after the ginger intervention are. If the scores show consistent patterns or changes, it indicates good reliability. It is conducted in Depok and focuses on first-trimester pregnant women experiencing emesis gravidarum.

The sampling method employed was simple total sampling, involving a total of 34 respondents in the intervention group. Participants in this group will receive 2.5 grams of sliced white ginger or emprit ginger, brewed in 250 ml of hot water and mixed with one tablespoon of sugar (10 grams), to be consumed twice daily for four consecutive days. The data analysis in this study encompasses both univariate and bivariate analyses. Univariate analysis was employed to examine the frequency of nausea and vomiting before and after administering the ginger drink. Bivariate analysis, on the other hand, was conducted to assess the impact of administering the ginger drink on the frequency of nausea and vomiting using statistical techniques such as independent t-tests and paired t-tests.

## RESULTS

Table 1.  
Distribution of emesis gravidarum before and after intervention among first-trimester pregnant women experiencing emesis gravidarum

PUQE Category	Pre Test		Post Test	
	f	%	f	%
Light	1	2.9	16	47.1
Medium	26	76.5	18	52.9
Heavy	7	20.6	0	0

According to the provided table, the emesis gravidarum scores based on PUQE-24 before and after the ginger intervention were classified into three categories. Before the ginger intervention, it was observed that 7 (20.6%) pregnant women experienced severe nausea and vomiting, 26 (76.5%) had moderate nausea and vomiting, and 1 (2.9%) reported mild nausea and vomiting. Following the ginger intervention, the results showed that 16 (47.1%) participants had mild nausea and 18 (52.9%) had moderate nausea.

Table 2.  
Differences Before and After Intervention among First Trimester Pregnant Women of Experiencing Emesis Gravidarum

Variables	Mean	Median	Sd. Dev	Minimum-Maximum
Pretest	10.74	10.50	1.88	6-14
Post Test	6.88	7	1.77	4-10

According to the provided table, the average Emesis Gravidarum score based on PUQE-24 before the ginger intervention (pre-test) was 10.74, with a median of 10.50 and a standard deviation of 1.88. Scores ranged from a minimum of 6 to a maximum of 14. Following the ginger intervention (post-test), the average Emesis Gravidarum score based on PUQE-24 was 6.88, with a median of 7 and a standard deviation of 1.77. The lowest score observed was 4, and the highest was 10.

**Normality test**

The purpose of the normality test is to ascertain whether the data follows a normal distribution. Following the normality test conducted using skewness and kurtosis tests, the results revealed a skewness of -1.079 for the pre-intervention data and 0.295 for the post-intervention data. The kurtosis was found to be 0.559 for the pre-intervention data and -1.324 for the post-intervention data. These values do not exceed  $\pm 3$ , indicating that the data is normally distributed. Therefore, a parametric test, specifically the paired T-test, was employed for the analysis.

Table 3.  
The Effect of Ginger (*Zingiber Officinale Var Rubrum*) Administration on Pregnant Women with Emesis Gravidarum

Variable	Pretest		Posttest		T Value	P Value
	M	SD	M	SD		
Ginger Administration	10.74	1.88	6.68	1.77	15.62	0.000

M = Mean, SD = Standard Deviation

Based on the findings presented in Table 4.4, the analysis revealed that the average emesis score prior to ginger intervention was 10.74, while it decreased to 6.68 after intervention. The results of the paired T-test yielded a p-value of 0.000, which is less than the significance level ( $\alpha$ ) of 0.05. Therefore, the null hypothesis (Ho) was rejected, indicating a significant difference in emesis scores before and after the administration of ginger. Consequently, it can be concluded that the administration of Ginger (*Zingiber officinale var. Rubrum*) influences pregnant women with Emesis Gravidarum at the Bunda Medika Clinic in Bojongsari, Depok.

**DISCUSSION**

**Overview of Emesis Gravidarum Before Intervention (PreTest)**

Based on the gathered data, the mean emesis gravidarum score prior to the ginger intervention is 10.74, with a median of 10.50 and a standard deviation of 1.88. The scores ranged from a minimum of 6 to a maximum of 14. Among the 34 respondents before receiving the ginger intervention, 7 (20.6%) experienced severe nausea and vomiting, 26 (76.5%) reported

moderate nausea and vomiting, and 1 (2.9%) had mild symptoms. These findings are consistent with a study conducted by Rufaidah, Herien, and Mofa (2019) on the Influence of *Zingiber Officinale* (Ginger) Infusion on the Reduction of *Emesis Gravidarum*, which revealed that the average frequency of emesis gravidarum before ginger infusion was 3.38 times a day, with a standard deviation of 0.549, indicating moderate nausea and vomiting. Similarly, a study by Ramadhani and Ayudhian on the Effect of Ginger Drink (*Zingiber Officinale* Var. *Rubrum*) on the Reduction of First Trimester Emesis Gravidarum showed that the average frequency of nausea and vomiting among pregnant women before consuming ginger drinks was 3.65 times a day, also falling within the category of moderate nausea and vomiting.

Nausea and vomiting, known as emesis gravidarum, commonly manifest in early pregnancies. This phenomenon arises due to hormonal shifts triggered by pregnancy, including elevated levels of *estrogen*, *progesterone*, and the release of *chorionic gonadotropin hormone*. Persistent nausea and vomiting in pregnant women can lead to adverse effects such as dehydration, weakness, and weight loss, and have detrimental effects on fetal development due to inadequate nutritional intake (Manuaba, 2010). Nausea and vomiting sensations commonly arise during the first trimester of pregnancy, typically manifesting around the second or eighth week following fertilization. These symptoms are attributed to elevated levels of the estrogen hormone (Rahmasari, 2012).

The combined influence of estrogen and progesterone results in the excessive secretion of gastric acid, particularly notable during morning hours (Rukiyah, 2010). Under normal circumstances, Emesis Gravidarum does not pose significant risks to pregnancy or fetal well-being. However, if this condition persists and escalates into hyperemesis gravidarum, it can elevate the likelihood of pregnancy complications. Pregnant women experiencing severe symptoms of Emesis Gravidarum are at an increased risk of dehydration (Wiknjastro, 2016). In this study, the occurrence of emesis gravidarum in first-trimester pregnant women exhibited variability, influenced by various factors. Nausea and vomiting represent a multifaceted interplay involving endocrine, digestive, vestibular, olfactory, genetic, and psychological factors.

### **Overview of Emesis Gravidarum After Intervention (Post Test)**

The study revealed that following the ginger intervention (post-test), the average emesis gravidarum score was 6.88, with a median of 7 and a standard deviation of 1.77. The scores ranged from a minimum of 4 to a maximum of 10. Among the 34 respondents who received the ginger intervention, 16 (47.1%) reported experiencing mild nausea, while 18 (52.9%) experienced moderate nausea after receiving the ginger intervention. These findings align with the study conducted by Rufaidah, Herien, and Mofa (2019) on the Influence of Ginger Infusion (*Zingiber Officinale*) on the Reduction of Emesis Gravidarum, which reported an average emesis gravidarum frequency of 2.19 times per day, with a standard deviation of 0.401, categorizing it as mild nausea and vomiting. Similarly, research by Ramadhani and Ayudhian on the Effect of Ginger Drink (*Zingiber Officinale* Var. *Rubrum*) on the Reduction of First Trimester Emesis Gravidarum showed that the average frequency of nausea and vomiting in pregnant women decreased to 2.18 times per day, categorized as mild.

Ginger comprises 19 components beneficial to the body, notably *gingerol*, recognized as a key compound recognized for its potent antiemetic (anti-vomiting) properties by inhibiting *serotonin*, as established by Manuaba (2010). The essential oils present in ginger offer initial advantages, providing a refreshing sensation and blocking the vomiting reflex. Gingerol,

meanwhile, facilitates improved blood circulation and nerve function, leading to tension relief, a refreshed mind, and the alleviation of nausea and vomiting. The aromatic fragrance emanating from ginger is attributed to its essential oils, while its oleoresins induces a warming, spicy taste that induces sweating. Ginger's efficacy in preventing nausea and vomiting stems from its ability to obstruct serotonin, a chemical compound responsible for stomach contractions leading to nausea. Ginger comprises substances such as gingerol, *shogaol*, *zingeron*, *zingiberol*, and *paradol*, which effectively counteract metoclopramide, a compound triggering nausea and vomiting (Hernani, 2013).

### **The Influence of Ginger (*Zingiber Officinale Var Rubrum*) Administration on Mothers with Emesis Gravidarum**

The analysis revealed that the mean emesis score before ginger intervention was 10.74, which decreased to 6.68 after the intervention. The results of the Dependent T-test yielded a p-value of 0.000, which is less than the significance level of  $\alpha$  (0.05). Therefore, the null hypothesis (Ho) was rejected, indicating that there was a significant effect of administering ginger (*Zingiber Officinale Var Rubrum*) to mothers experiencing emesis gravidarum at Bunda Medika Clinic, Bojongsari-Depok. These results are in line with research by Ramadhani & Ayudia (2019), which emonstrated a notable disparity in the frequency of emesis gravidarum before and after administering a ginger drink comprising 2.5 grams of sliced ginger brewed with 250 ml of warm water and sweetened with 10 grams of sugar (one teaspoon), consumed twice daily for four consecutive days.

According to Wiharja et al. (2011), administering ginger leads to a reduction in the frequency of nausea and vomiting. This effect is attributed to the presence of gingerol, a compound found in ginger that inhibits serotonin, a chemical substance responsible for inducing nausea and vomiting. Additionally, an increase in progesterone during pregnancy results in decreased smooth muscle tone and motility, leading to symptoms like esophageal regurgitation, delayed gastric emptying, and reverse peristalsis. Ginger aids in stimulating gastrointestinal tract motility and promoting the secretion of saliva and bile in alternative forms. Moreover, ginger relaxes and weakens the muscles of the digestive tract after initially enhancing their motility, a mechanism that helps alleviate symptoms of nausea and vomiting in the stomach, facilitated by the gingerol content in ginger.

Researchers believe that ginger infusion can effectively reduce the frequency of emesis gravidarum in pregnant women. This assertion is supported by field research findings where all participants experienced a reduction in emesis gravidarum frequency after receiving 2.5 grams of sliced white ginger brewed in 250 ml of warm water, along with 10 grams of sugar (equivalent to one tablespoon) for four consecutive days, twice daily. Participants reported feeling a ense of warmth after consuming the ginger infusion. The addition of sugar not only enhances the taste of the ginger infusion but also helps in reducing dehydration in pregnant women experiencing emesis gravidarum.

### **CONCLUSION**

The average result of emesis before the ginger intervention was 10.74, with the majority falling into the moderate nausea and vomiting category, accounting for 76.5% of the cases. After the ginger intervention, the average emesis score decreased to 6.88, with the majority still categorized as moderate nausea and vomiting, comprising 52.9% of the cases. Administering ginger (*Zingiber officinale var. Rubrum*) to mothers experiencing emesis gravidarum has a noticeable effect.

## REFERENCES

- Ahmad, J. (2011). *Aneka manfaat ampuh rimpang jahe untuk pengobatan*. Yogyakarta: Dandra Pustaka Indonesia.
- Alyamaniah, U. H., & Mahmudah. (2014). Efektivitas Pemberian Wedang Jahe (*Zingiber Officinale* Var. *Rubrum*) Terhadap Penurunan Emesis Gravidarum Pada Trimester Pertama. *Jurnal Biometrika dan Kependudukan*, 3(1), 81–87.
- Badan Penelitian dan Pengembangan Pertanian. (2007). *Prospek dan Arah Pengembangan Agribisnis Tanaman Obat* (Edisi Kedua). Jakarta: Departemen Pertanian.
- Bustos, M., Venkataramanan, R., & Caritis, S. (2016). Nausea and vomiting of pregnancy - what's new? *Auton Neurosci Basic Clin*, [Internet]. Retrieved from <http://dx.doi.org/10.1016/j.autneu.2016.05.002>
- Ebrahimi, N., Maltepe, C., Bournissen, F. G., & Koren, G. (2009). Nausea and vomiting of pregnancy: Using the 24-hour Pregnancy-Unique Quantification of Emesis (PUQE-24) Scale. *J Obstet Gynaecol Can*, 803–807.
- Hani, R. (2010). *Asuhan Kebidanan pada Kehamilan Fisiologis*. Jakarta: Salemba Medika.
- Hasanah. (2014). Efektivitas Pemberian Wedang Jahe (*Zingiber Officinale* Var *Rubrum*) terhadap Penurunan Emesis Gravidarum pada Trimester Pertama. *Jurnal Biometrika dan Kependudukan*, 3.
- Hernani, & Winarti, C. (2013). *Kandungan Bahan Aktif Jahe dan Pemanfaatannya dalam Bidang Kesehatan*. Bogor: Balai Besar Penelitian dan Pengembangan Pascapanen Pertanian.
- Indriyani, B., & Widiyanti. (2017). Efektivitas pemberian wedang jahe terhadap frekuensi mual dan muntah pada ibu hamil trimester I di Kabupaten Bengkulu Utara. *Jurnal Ilmu dan Teknologi Kesehatan*, 5(2).
- Irianti, B. (2014). *Asuhan Kehamilan Berbasis Bukti*. Jakarta: Sagung Seto.
- Kriebs, J. N., & Gegor, R. L. (2010). *Buku Saku Asuhan Kebidanan Verney*. Jakarta: EGC.
- Kusmana, Y. H., Latifah, L., & Susilowati, I. (2012). Pengaruh hipnoterapi terhadap mual dan muntah pada ibu hamil trimester pertama di Puskesmas Baturaden 2. Skripsi. Universitas Jenderal Soedirman, Purwokerto.
- Manuaba. (2010). *Ilmu Kebidanan Penyakit Kandungan dan Keluarga Berencana*. Jakarta: EGC.
- Mariantari, Y., Lestari, W., & Arneliwati. (2014). Hubungan dukungan suami, usia ibu, dan gravida terhadap kejadian emesis gravidarum. *Jurnal Program Studi Ilmu Keperawatan Universitas Riau*.
- Maya, A. (2010). *Buku Pintar Kehamilan*. Jakarta: EGC.

- Oktavia, L. (2016). Kejadian hiperemesis gravidarum ditinjau dari jarak kehamilan dan paritas. *Jurnal Ilmu Kesehatan Aisyah*, 1(2).
- Prawirohardjo, S. (2013). *Ilmu Kebidanan*. Jakarta: PT. Bina Pustaka.
- Purwaningsih. (2010). *Asuhan Keperawatan Maternitas*. Yogyakarta: Nuha Medika.
- Putri, A. D., Andriani, D., Haniarti, & Usman. (2017). Efektivitas Pemberian Jahe Hangat dalam Mengurangi Frekuensi Mual Muntah pada Ibu Hamil Trimester I. Naskah Publikasi. Fakultas Ilmu Kesehatan, Universitas Muhammadiyah Parepare.
- Ramadhani, I. P., & Ayudia, F. (2019). Pengaruh Pemberian Minuman Jahe (*Zingiber Officinale* Var. *Rubrum*) Terhadap Penurunan Emesis Gravidarum Trimester Pertama. *JIK (Jurnal Ilmu Kesehatan)*, 3(2).
- Rahmawati, E. (2015). *Ilmu Praktis Kebidanan*. Surabaya: Victory Inti Cipta.
- Reeder, S. J., Martin, L. L., & Griffin, D. K. (2011). *Keperawatan Maternitas: Kesehatan Wanita, Bayi dan Keluarga*. Jakarta: EGC.
- Rufaidah, A., Herien, Y., & Mofa, E. (2019). Pengaruh Seduhan *Zingiber Officinale* (Jahe) Terhadap Penurunan Emesis Gravidarum. *Jurnal Endur*.
- Rukiyah, A. Y., Yulianti, L., & Liana, M. (2009). *Asuhan Kebidanan* (Edisi 1). Jakarta: Trans Info Media.
- Sastroasmoro, S., & Sofyan, I. (2014). *Dasar-Dasar Metodologi Penelitian Klinis* (Edisi ke-5). Jakarta: CV. Sagung Seto.
- Saswita, Dewi, Yulia Irvani, & Bayhakki. (2011). Efektivitas Minum Jahe dalam Mengurangi Emesis Gravidarum pada Ibu Hamil Trimester I. *Jurnal Ners Indonesia*, 1.
- Setiawan. (2012). *Panduan Terapi Aman Selama Kehamilan*. Surabaya: PT. ISFI Penerbitan.
- Syarifah. (2012). Faktor-faktor yang berhubungan dengan kejadian hiperemesis gravidarum pada ibu hamil yang dirawat di rumah sakit Gumawang Belitang OKU Timur Tahun 2012. *Jurnal Kesehatan*, 2(12).
- Umboh, H. S., & Mamuya, T. (2014). Faktor-faktor yang berhubungan dengan kejadian hiperemesis gravidarum di puskesmas Tompaso Kabupaten Minahasa. Skripsi. Universitas Hasanudin, Makassar.
- Walyani, E. S. (2015). *Asuhan Kebidanan pada Kehamilan*. Yogyakarta: Pustaka Baru Press.
- Wijaya, C. (2017). Hubungan Antara Status Gravida dan Umur Ibu Hamil dengan Kejadian Emesis Gravidaru di Rumah Sakit Gotong Royong Surabaya. Skripsi. Program Studi Kedokteran Fakultas Kedokteran. Universitas Widya Mandala Surabaya.
- Yance. (2010). *1001 tentang Kehamilan* (Cetakan ke-9). Bandung: PT Triexs Media.