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EFFECTIVENESS OF GINGER DRINK (ZINGIBER OFFICINALE VAR RUBRUM) ON REDUCING NAUSEA AND VOMITING IN TRIMESTER I PREGNANT WOMEN

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ABSTRACT
Nausea and Vomiting of Pregnancy (NVP) can become hyperemesis gravidarum thereby increasing the risk of pregnancy disorders. Ginger is an herbal plant that has long been known to prevent nausea and vomiting. The Aim study to determine the effectiveness of giving ginger drink (zingiber officinale var rubrum) to reduce nausea and vomiting in first trimester pregnant women. Quasi Experiment Research with the design used is One Group Pretest-Post Test Design. The sample in this study was the first trimester pregnant women at the Pratama Clinic Yardi Prima Tambun Bekasi as many as 33 mothers who were taken by purposive sampling. The intervention was carried out by giving 2.5 grams of white ginger sliced and brewed with 250 ml of warm water plus 10 grams of sugar (1 tablespoon) taken 2x1 a day for 4 days. Data were obtained by observing and measuring Nausea and Vomiting using the PUQE-24 instrument. Data analysis was univariate and bivariate with dependent T-test. The average Puqe-24 score before the ginger intervention was 9.79 and most of them were in the category of moderate nausea and vomiting as many as 23 (69.7%). The average emesis score after giving ginger was 6.64 and most of them were in the category of mild 14 (42.4%) and 2 (6.1%) not nausea and vomiting. There is an effect of giving ginger (zingiber officinale var rubrum) to mothers with NVP with P value (0.000) <α (0.05). Ginger is effective in reducing emesis gravidarum.

Keywords: emesis gravidarum; ginger; nausea and vomiting

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INTRODUCTION

Pregnancy affects woman physically and psychologically. Due to hormonal change, pregnancy causes various symptoms such as nausea, vomit, or morning sickness which commonly occur in the early period (Wiknjosastro, 2018). This causes various symptoms, including nausea, vomit, or morning sickness, commonly in early pregnancy (Irianto, 2015). Nausea and vomit of pregnancy, called emesis gravidarum, is due to increasing progesterone, estrogen, and chorionic gonadothorpin. Generally, NVP doesn't need in-ward treatment unless dehydration and disabilities to do daily activities occurs (Manuaba, 2017). According to WHO, incidence of hyperemesis gravidarum accounted to 12,5% of all pregnancy around the world. Nausea and vomit causes fluid imbalance in kidney and liver so that necrosis happens (Indrayani et al., 2018). In 2017, incidence of NVP varied 1-3% in region in Indonesia, while in Sweden, US, Norway, Canada, China and Pakistan consecutively were 0,3%; 0,5-2%; 0,9%; 0,8%; 0,8% and 2,2% (Khasanah, 2017).

NVP causes excessive stomach acid so that nausea and vomit occur. This condition can affect nutritional status (Wiknjosastro, 2018). Treatment includes pharmacology and non-pharmacology therapy based on severity of the disorder. Pharmacology therapy was done by giving antiemetic, antihistamine, anticholinergic, corticosteroid and vitamin B (Manuaba, 2017). Non pharmacology therapy may be diet, emotional support, acupuncture, consuming herbs such as ginger and aromatherapy (Akbar et al., 2022; Palupi et al., 2022; Rahayu & Sugita, 2018).Ginger contained 19 beneficial components for human body. One of them is yagingerol as primary compound that had been proven as antiemetic by blocking serotonin (Lete & Allué, 2016; Manuaba, 2017; Mao et al., 2019). Ginger also contains atsiri oil to freshen body and prevent gag reflex. Gingerol expedite blood circulation and nervous to work well (Indrayani et al., 2018; Lete & Allué, 2016; Mao et al., 2019; Shaukat et al., 2023).

A systematic review about non pharmacology intervention in pregnant woman stated ginger as alternative therapy is effective to decrease symptoms NVP (P<0,05). However, there haven't been standardized dose (Alhajri et al., 2017; Ozgoli & Naz, 2018; Viljoen et al., 2014). In Indonesia itself, a study about ginger as non-pharmacology in NVP had been done by (Ramadhani & Ayudia, 2019). A study by (Rufaridah et al., 2019) proved wedang jahe (ginger drink) decrease incidence of NVP in early trimester. Indrayani et al. showed difference of frequency nausea and vomiting before and after intervention (Indrayani et al., 2018). A study of (Oktaviani et al., 2021) stated difference before and after between ginger and mint (p<0,05) which means ginger is more effective than mint. According to early study in October 2021 at Pratama Yardi Prima Clinic, Tambun, Bekasi, it was recorded in medical record that 112 (90,32%) of 124 pregnant women experienced NVP. A survey conducted in January-July 2022, out of 10 pregnant women, 8 of them experienced higher frequency of nausea and vomit episode than the other two. Treatments were Ferrum (Fe) and Calcium (Ca) supplement. This study aims to describe correlation between consuming ginger beverage (zingiber officinale var rubrum) to incidence of NVP in early trimester pregnant women in Pratama Yardi Prima Clinic.

METHOD

This study was a quasi-experiment using One Group Pretest-Post Test Design. This study was conducted at Pratama Yardi Prima Clinic Tambun Bekasi in November-Desember 2021. Samples were 33 pregnant women in the first using purposive sampling method. Inclusion criteria were pregnant women who experienced NVP and agreed to study and didn't have ginger allergy. Exclusion criteria were history of dyspepsia or gastritis. Intervention was ginger beverage (2.5 gram of cut up ginger, 250 ml water and 10 grams sugar were added, consumed twice a day for 4 days). Incidence of NVP was noted in instrument PUQE-24 which was done twice, before and after intervention. Nausea and vomit were divided into four categories based on PUQE Score, (Score 3 = no nausea and vomit, score 4-6 = mild, score 7-12 = moderate, score 13-15 = severe). Data analysis was done using Dependent T-test.

RESULTS

Out of 33 participants (n= 25; 84,8%), most of them were in low-risk category (20-35 years old). Most of them were housewife (n=22; 66,7%). Mean of gestation age was 7,64 weeks (range = 4-12 weeks). Most of them were primigravida (n=18; 54,5%) and had consumed antiemesis (n=19; 57,6%) (table 1).

Tabel 1.
Demography data of pregnant women who experienced NVP in Pratama Yardi Prima Clinic

Variable	f	%

Age		
< 20 or > 35 years old	5	15,2
20-35 years old	25	84,8
Education		
Elementary and junior high	4	12,1
High school and college	29	87,9
Job		
Work	11	33,3
Housewife	22	66,7
Gestation Age (weeks)		
Mean	7,64	
SD	2.78	
Range	4-12	
Parity		
Primigravida	18	54,5
Multigravida	15	45,5
Pharmacology therapy on NVP		
Yes	19	57,6
No	14	42,4

Out of 33 respondents, 4 (12,1%) people experienced severe nausea-vomit, 23 people (69,7%) went through moderate nausea-vomit and 6 people (18,2%) got mild symptoms before intervention. We seek decrease percentage in Puqe-24 score after intervention. Seventeen (51,5%) people still experienced moderate symptoms, 14 people (42,4%) went through mild symptoms and 2 people (6,1%) didn't feel the symptoms at all (Tabel 2).

Tabel 2.
Frequency distribution incidence of NVP before and after intervention in early pregnancy in Pratama Yardi Prima Clinic, Tambun in 2021

NVP	f	%
Before		
▪ Mild nausea-vomit	6	18,2
▪ Moderate nausea-vomit	23	69,7
▪ Severe nausea-vomit	4	12,1
After		
▪ Mild nausea-vomit	2	6,1
▪ Moderate nausea-vomit	14	42,4
▪ Severe nausea-vomit	17	51,5

PUQE-24 score before intervention was 9,79 ±2,46 while after intervention was 6,64±1,90 (p value 0,0001; 95% CI=2,66-12,98). This means there was significant difference on consuming Ginger *(Zingiber Officinale Var Rubrum)* to treat NVP (Pvalue 0,000) (Table 3).

Table 3.
Correlation of Consuming Ginger Beverage *(Zingiber Officinale Var Rubrum)* to NVP in Pregnant Women

PUQE-24 Scores	Mean	Standar Deviasi	Mean Decrease	95% CI	P *value*
Before	9,79	2,46	3,15	2,66-12,98	0.000
After	6,64	1,90			

DISCUSSION

Average age of our participants was 25,45±5,14 (17-36) years old. Most of them (n= 28 people; 84,8%) included in low risk category (20-35 years old). This was in line to prior study

about effectivity of ginger beverage to frequency of nausea and vomit in pregnant women in early trimester in North Bengkulu. High risk age in pregnant women includes less than 20 or more than 35 years old due to psychology factor (Manuaba, 2017). Psychology factor depends on internal and external factor. Internal factor depends on personality and hormonal change. While external factor includes environment. Other prior study stated high risk pregnancy related complication, prenatal morbidity and mortality (Cunningham, 2015). NVP was caused by multifactorial, such as gonadotropin hormonal changes, age, knowledge, experiences, family support et cetera. Most of our (n=29; 87,9%) participant pursued high education. This was in line to a study in North Bengkulu about effectivity ginger beverage to reduce NVP symptom, where most of participants (70%) pursued high education (Indrayani et al., 2018). Education level influenced individual response when receiving new information. It is also affected obedience to go prenatal care (Merdikawati et al., 2022; Walyani & Purwoastuti, 2016). Hormonal changes included increasing estrogen, progesterone and appearances of chorionic gonadothorpin hormone.

We found 66,7% (n=22 people) of our respondents worked as housewife. This result had similarity (Indrayani et al., 2018) study where 70% of their participants were housewife (Wiknjosastro, 2018).concluded psychological factor affected pregnancy. These included losing job, heavy workload, inadequate family support thus worsened nausea and vomit. Rush journey to workplace also induced nausea and vomit as hypoglycemia occurred. Average gestation age of our respondents were 7,64 weeks (4-12 weeks). This result aligned to study of (Wijaya, 2017) that showed predominantly gestation age were prone NVP was 8 weeks, accounted to 23 participants (28,0%) and 12 weeks, accounted to 40 participants (48,8%). NVP (Nausea and Vomiting of Pregnancy) commonly begin at 2-4 weeks gestation age, reach peak in 9-16 weeks gestation age, and reduce at 22 weeks gestation age (Bustos et al., 2017; Liu et al., 2022). Nausea and vomiting of pregnancy were influenced by high fluctuation of hormonal changes in early trimester. We found NVP mostly affect pregnant women in early trimester. This result was caused by multifactorial because mechanism of nausea and vomit involved complex interaction of endocrine, gastrointestinal, vestibular, rhinology organs combined to genetic and psychological factor (Wijaya, 2017).

Primigravida was found in 18 participants (54,5%) and in line to Wijaya's study that concluded women who were put in high risk NVP were 34 participants (87,2%) while multigravida women were 16 participants (37,2%) (Wijaya, 2017). NVP affected both primigravida and multigravida. NVP was experienced by 60-80% of primigravida pregnancy and 40-60% of multigravida pregnancy. Primigravida women usually couldn't handle and adapt estrogen and chorionic gonadotropin changing while in multigravida women have experiences to adapt the adjustment (Mariantari1 et al., 2014; T et al., 2023).The study found significant gravida status and incidence of NVP. NVP normally doesn't cause negative effect on pregnancy unless it happens continually. Severe NVP (hyperemesis gravidarum) results increasing risk on dehydration, weight loss, and even Mallary-Weiss syndrome which disrupt gastrointestinal function and causes nutritional problems on the fetus(Manuaba, 2017; Wiknjosastro, 2018). Most of our participants (n=19 people; 57,6%) had consumed pharmacology therapy to overcome the symptoms. We didn't intervene treatment given by midwifes and doctor to avoid disruption on the pregnancy condition. There were some women who didn't get pharmacology therapy as they accepted it as consequences of pregnancy. Treatment of NVP consist of pharmacology and non-pharmacology therapy. Vitamin B can be used as antiemetic to treat NVP. Mild sedative could also be used as pharmacology treatment (Manuaba, 2017).

This study showed consuming ginger beverage (2,5 grams Zingiber Officinale Var Rubrum plus 10 grams (1 tablespoon of sugar) twice a day for 4 days reduce frequency of nausea and/or vomit in early trimester pregnant women. T-dependent test showed significant difference average Puqe-24 score between before and after intervention (9,79±2,46 vs 6,64±1,90; p<0,0001). Study of (Ramadhani & Ayudia, 2019; Rufaridah et al., 2019) also showed significant difference of frequency nausea and/or vomit after intervention of ginger beverage in NVP in early trimester. Other study described significant (Wilcoxon test, P = 0,004) decreasing of nausea and/or vomit frequency after consuming ginger and pandan leaves (Jamila & Cahaya, 2018). Indrayani also found difference PUQE-24 score in nausea and vomiting before and after intervention (9,30 vs 4,5; p<0,0001) (Indrayani et al., 2018). Ginger (zingiber officinale rose) consisted nineteen components that's beneficial to human body. One of them is gingerol which has antiemetic activity by block serotonin hormone, a neurotransmitter in central nervous system, and entercomafin cell in gastrointestinal system by blocking HCG induction to stomach (Arcusa et al., 2022; Gawel et al., 2021; Indrayani et al., 2018; Manuaba, 2017; Mao et al., 2019). Atsiri oil contained in ginger give refreshing effect thanks to its scent and inhibit gag reflex. Other compound contained in ginger called oleoresis, shogaol, zingeron, zingiberol and paradol also contribute to antiemetic effect (Hernani & Winarti, 2013).

Progesterone decrease tonus and motility of smooth muscle in gastrointestinal system. This results oesophageal regurgitation and increase emptying period of stomach which induces nausea and vomit (Al-Shboul et al., 2019; Wijaya, 2017). Ginger and its compounding stimulate motility and saliva secretions which constrain nausea and vomit mechanism (Akbar et al., 2022; Alhajri et al., 2017; Alyamaniyah & Mahmudah, 2014; Claudya et al., 2023; Rufaridah et al., 2019).

CONCLUSION

We found consuming ginger (zingiber officinale var rubrum) reduced severity NVP in early trimester pregnant women. We recommend healthcare worker to also share the information in order to decrease NVP symptoms. It is hoped that health workers can provide information to pregnant women who experience nausea and vomiting that they can consume ginger at the right dose and in the correct way to reduce nausea and vomiting.

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