THE EFFECT OF CONSUME GINGER AND HONEY BISCUITS ON THE FRECUENCY OF NAUSEA AND VOMITING IN TEENAGE PREGNANCY

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Abstract

The risk of complication that occur during pregnancy at a young age increasing maternal and infant mortality. Nausea and vomiting occur commonly during pregnancy but it will risk becoming more severe in teenage pregnancy, so it need to be prevented. Nonpharmacological therapy with ginger honey biscuits was used in this quantitative study to relieve nausea and vomiting in teenage pregnancy. Quasi-experiment design was used in this study with pre and post test of 32 respondents in control group and 32 respondents in intervention group. The respondent is teenage pregnancy 12-19 years old and experience nausea, vomiting. Pregnancy Unique Quantification of Emesis and Nausea (PUQE) Questionnaire used in this study to show the nausea and vomiting scores experienced by teenage pregnancy pre and post intervention ginger honey biscuits. This study conducted to identify the effect of consuming ginger biscuits and honey on the frequency of nausea and vomiting in teenage pregnancy. The results showed that there was a difference in the frequency of nausea and vomiting of teenage pregnancy before and after consume ginger honey biscuits. The recommendation of this research is the using of ginger honey biscuits as nursing intervention to relieve nausea and vomiting in teenage pregnancy.
Keywords: ginger honey biscuits; nausea and vomiting; teenage pregnancy.

INTRODUCTION

The maternal mortality rate (MMR) in developing countries in 2015 was 239 per 100,000 live births while in developed countries it was 12 per 100,000 live births (WHO, 2016). Indonesia as a developing country has a maternal mortality rate of 305 per 100,000 live births (Ministry of Health, Republic of Indonesia, 2016). The risk of complications that occur in teenage pregnancy have a role in increasing maternal and infant mortality rates (Fadlyana & Larasaty, 2009). The greatest risk of death occurs in teenage pregnancy under 15 years old, as well as the risk of babies born in a condition of death and neonatal death in the first week of life (Upadhyay, Priti et al., 2014).

Based on the Republic of Indonesia's Basic Health Research (2013), the proportion of teenage pregnancy under 15 years of age is 0.02%, especially in rural areas (0.03%). While the proportion of teenage pregnancy at the age of 15-19 years is 1.97%, in rural areas (2.71%) higher than in urban areas (1.28%). The results of research by Gitayanti, Sulistyorini, & Hardiani (2016)

in teenage pregnancy (under 20 years old) said that teenage tend to experience stress due to mental and psychological unpreparedness in accepting pregnancy. Nausea and vomiting that were normally normal for pregnant women to be an abnormal in teenage pregnancy (Hanum, 2015). Nausea and vomiting during pregnancy can be reduced by ginger without causing side effects to mother and the fetus (Wegrzyniak, Lindsey., Repke, John & Ural, Serdar., 2012).

Based on a review of 12 studies with meta-analysis approach of the use of ginger found that consuming ginger biscuits, ginger capsules, ginger extracts, and ginger syrup treat nausea and vomiting during pregnancy (Viljoen et al, 2014). Research conducted by Basirat et al (2007) found administering 500 mg of ginger powder in biscuits to pregnant women in five biscuits every day obtained that ginger was better than placebo in reducing nausea and vomiting at a dose of 1000 mg per day, during at least four days. This research combined ginger biscuits with honey. The essential oil content of ginger which is gingerol and pridoxin in honey works as an anti-chemoreceptor that block or stop the substances serotonin, dopamine, acetylcholine, histamine and neurokinin which stimulate the vomiting center (Dipiro et al., 2008). This research was conducted to identify the effect of consuming ginger biscuits and honey on the frequency of nausea and vomiting in teenage pregnancy.

METHODS

This research was a quantitative study using "Quasi-Experiment Pre-Post Test with Control Group Design". This design used to determine differences in the frequency of nausea and vomiting of teenage pregnancy before and after consuming of ginger and honey biscuits. The sampling method was a consecutive sampling method with criteria teenage pregnancy 12-19 years old and experiencing nausea and vomiting. The sample of this study was 64 respondents divided into 32 respondents in the intervention group located in the Sukamanah Health Center, Cibulan Health Center, and Cimanggis Health Center. The control group, 32 respondents located in the Parung Health Center and Sukmajaya Health Center.

This study applies ethical principles and has obtained ethical approval at the Universitas Indonesia. The instrument in this study was Birkeland (2015) modified and translated to the Indonesian version. The instrument was valid (r = 0.698; r table 0.361). Characteristics respondent in this study were gestation age, education, parity, pregnancy planning, and age. The independent variable in this study was ginger honey biscuit. While the dependent variable was

the frequency of nausea and vomiting. There were confounding variable in this study including husband support and physical illness.

Respondents were interviewed by researchers using the Pregnancy Unique Quantification of Emesis and Nausea (PUQE) Questionnaire from Birkeland et al. (2015) to show the nausea and vomiting scores experienced in teenage pregnancy. The questionnaire has three questions related to how long the mother feels nausea in a day, how long the mother experiences vomiting in a day, and how many times a day she experiences vomiting or shortness of breath when not doing activities. Each question has five answer choices. This questionnaire used in pre and post intervention to show difference in the frequency of nausea and vomiting of teenage pregnancy before and after consuming of ginger and honey biscuits.

In the intervention group, 32 respondents was given twenty honey ginger biscuits that consume four biscuits per day for four days. Whereas the control group was not given it. Then given an observation sheet in the form of checklist per day which they must be filled out. Family or husband support is needed to remind respondents to consume as many as five biscuits in a day for four days. After four days, the observation sheet was filled in by researchers and then followed by the PUQE questionnaire to see the difference in the score of nausea and vomiting after the intervention.

After the data is collected, the next step was data processing and data analysis. Homogeneity test in this study applied to see the variance of data between the intervention group and the control group. Univariate analysis in this study was described in mean (median) or median, standard deviation (SD) and maximum minimum values for numerical data such as maternal age and frequency of nausea and vomiting. Categorical data explained using proportions and percentage such as the provision of honey ginger biscuits, gestational age, parity, education and pregnancy planning. Bivariate analysis conducted an independent t-test (unpaired t-test) and Chi Square test. The use of this test was because of the research design used a pre-post test with control group design with numerical and categorical data. Finally, multivariate analysis applied using multiple linear regression.

RESULTS

The following tables presented the study findings including homogenity test of characteristic respondent, difference frequency of nausea and vomiting in teenage pregnancy before and after consuming ginger honey biscuits in the intervention group, difference in mean frequency of nausea and vomiting between the intervention group and the control group, the difference in the frequency of nausea, vomiting before and after consuming ginger honey biscuits based on the characteristics of respondents in the intervention group, analysis of the relationship between confounding variables with the frequency of nausea and vomiting in teenage pregnancy after consume ginger honey biscuits in the intervention group, and results of the multivariate linear regression model.

Table 1. Homogeneity Test based on Gestation Age, Education, Intended Pregnancy, Parity in Intervention and Control Groups
(n = 64)

Characteristics	Control Group (n=32)		Intervention Group (n=32)		Total	P
	F	%	f	%		
Gestation Age						
Trimester 1	18	56,3	19	59,4	37	
Trimester 2	8	25	12	37,5	20	0,111
Trimester 3	6	18,7	1	3,1	7	
Education						
Elementary school	15	46,9	6	18,8	21	
Midlle school	7	21,8	15	46,8	22	0,033
High school	10	31,3	11	34,4	21	
Intended Pregnancy						
Yes	27	84,4	31	96,9	58	0,196
No	5	15,6	1	3,1	6	
Parity						
Primigravida	30	93,8	23	71,9	53	0,043
Multigravida	2	6,2	9	28,1	11	
	Mean	SD	Mean	SD		
Age	18,53	0,718	18,31	0,78	64	0,248

Table 1 showed that respondent characteristics based on education and parity were not homogeneous, while gestational age and pregnancy planning were homogeneous between the intervention group and the control group. The average age of respondents in the intervention and control groups was 18 years.

Table 2. Frequency of Nausea and Vomiting in Teenage Pregnancy Before and After Consuming Ginger Honey Biscuits in the Intervention Group (n=32)

	Frequency of Nausea and Vomiting			p
	Mean	SD	95% CI	
Before	7,59	2,241	2,142-3,421	0,001
After	4,81	1,958		

Table 2 showed that statistic test results found that there were differences in the frequency of nausea and vomiting in pregnant women before and after consuming of ginger honey biscuits in the intervention group.

Table 3. The difference in Mean of Nausea and Vomiting between the Intervention Group and the Control Group (n = 64)

	Difference in Mean Frequency of Nausea and Vomiting		p
	Mean	SD	
Intervention Group	2,781	1,773	0,001
Control Group	0,781	0,792	

Table 3 showed that the difference in mean frequency of nausea and vomiting before and after intervention in the control group and the intervention group was 2 points. Paired T test results showed that there was a significant difference in the difference in the frequency of nausea and vomiting between the control group and the intervention group after being given ginger honey biscuits with p = 0.001.

Table 4 below showed that variables that have a p value <0.25 are parity variables (p value = 0.043) and pregnancy planning variables (p value = 0.142). This means that there is a relationship between parity, pregnancy planning and the frequency of nausea, vomiting.

Table 4. The Difference in the Frequency of Nausea, Vomiting Before and After Consuming Ginger Honey Biscuits based on the Characteristics of Respondents in the Intervention Group (n=32)

Variable	Frequency of nausea and vomiting before intervention (n=32)			Frequency of nausea and vomiting after intervention (n=32)		
	Mean	SD	p	Mean	SD	p
Gestation Age						
Trimester 1	7,83	2,036	0,765	4,56	1,917	0,696
Trimester 2	7,13	1,356		5,25	1,982	
Trimester 3	7,50	3,728		5,00	2,280	
Education						
Elementary school	7,00	1,558	0,377	4,27	1,335	0,333
Midlle school	8,00	2,828		5,14	2,545	
High school	8,20	2,658		5,40	2,271	
Intended Pregnancy						
Yes	7,52	1,847	0,053	4,59	1,927	0,142
No	8,00	4,062		6,00	1,871	
Parity						
Primigravida	7,40	1,831	0,616	4,63	1,847	0,043
Multigravida	10,5	6,364		7,50	2,121	

Table 5. the Relationship between Confounding Variables with the Frequency of Nausea and Vomiting in Teenage Pregnancy after Consume Ginger Honey Biscuits in the Intervention Group (n=32)

Confounding Variable	Frekuency of nausea and vomiting		95%CI	p
	Mean	SD		
Husband Support				
Yes	4,75	2,066	-2,665-1,665	0,641
No	5,25	0,957		
Physical illness				
Yes	5,45	1,635	-0,999-2,098	0,474
No	4,90	2,211		

Table 5 showed that confounding variable has a value of p> 0.25. it is mean no relationship between husband support and physical illness with the frequency of nausea and vomiting.

Table 6. the Result of the Multivariate Linear Regression Final Model

Model	Variable	r	Adjusted R Square
1	Ginger honey biscuits Parity	0,793	0,630

In table 6, it can be seen that the coefficient of determination shows the value of 0.630 which means that the equation consisting of ginger honey biscuits and parity variables can affect the frequency of nausea and vomiting by 63%, and the remaining 37% is determined by other factors.

DISCUSSION

The results of this study showed that there are significant differences in the frequency of nausea and vomiting of pregnant women before and after consume ginger honey biscuits. The results of this study indicate a change in the average frequency of lower nausea and vomiting after consuming ginger honey biscuits. The results of this study are in line with previous studies conducted on 67 pregnant women who were given 250 mg of ginger powder in capsule form. The study showed that there was a decrease in nausea as much as 85% in nausea scores and decreased vomiting 50% in vomiting scores (Ozgoli, Goli, & Simbar, 2009). These results reinforce this study that ginger is effective in reducing nausea and vomiting in pregnancy.

Other research that is in line with this research is a study conducted on 143 pregnant women who experience nausea and vomiting with gestational age less than 16 weeks, the study divided respondent into three groups, namely the intervention group in 50 pregnant women given ginger capsules, the intervention group in 48 pregnant women who were given acupressure and control groups in 45 untreated pregnant women. The results of the study stated that ginger effectively reduced nausea and vomiting by 49%, while acupressure was able to reduce nausea

and vomiting 29% (Saberi, Sadat, Abedzadeh, Kalahroudi, & Taebi, 2013). The intervention group that was given ginger in the form of ginger honey biscuits experienced a decrease in nausea and vomiting compared to the control group who were not given ginger honey biscuits.

Saberi et al (2014) conducted a study on 37 pregnant women with the intervention of consuming three capsules of ginger per day for four days with a composition of ginger 250 mg per capsule, 33 pregnant women in the control group without treatment. The results of the study stated that ginger effectively reduced nausea and vomiting in pregnant women by 48% in the intervention group. In line with this study, which provided interventions for four days, the findings showed there were differences in the frequency of nausea and vomiting before and after consume ginger honey biscuits in the intervention group.

In addition, a study in Indonesia conducted by Wahyudini (2009) in Aceh also related to nausea and vomiting in the first trimester of pregnancy using ginger candy intervention. This study found a significant effect of ginger on the decrease in the frequency of nausea and vomiting. The difference between this study and Wahyudini (2009) study was in the criteria sample including the first trimester of pregnancy, and age from 20 years to age 35 year. The intervention used ginger candy. The study was not analyzed the most influence factors of nausea of vomiting in pregnancy.

This study is similar to research in Iran which was conducted on 35 pregnant womens 19-35 years old with ginger biscuit interventions to overcome nausea and vomiting in pregnancy. The results showed there was an effect of consuming ginger biscuits to decrease nausea and vomiting compared to 30 pregnant women who were not given ginger biscuits (Zahra, Basirat., Ali, A., Mehrdad, Kashifard., Athens, Sarifi., 2007). Previous studies described the same goal of overcoming nausea and vomiting in pregnant women but the interventions weree different, in

this study the ginger was modified in the form of biscuits mixed with honey, the aim was to minimize the distinctive ginger odor and increase nutritional value in biscuits so that it can be accepted by teenage pregnancy.

The content of ginger in biscuits has a function as an antiemetic and antihistamine antagonist which inhibits gastric emptying. Ginger helps to reduce nausea and vomiting during pregnancy by stimulating the motility of the digestive tract and stimulating saliva, bile and gastric secretion (Lee, Noel., Saha, 2013). The first advantage of ginger is the content of essential oils that refresh and block the gag reflex. It can improve blood circulation so that the nerves work properly. As a result, tension can be diluted, nausea, vomiting can be overcome (Trisnari, A., Choiriyah, 2013). The addition of honey mix biscuits aims to add nutritional value to the biscuits because honey contains a lot of protein, essential and non-essential amino acids, carbohydrates, vitamins and minerals (Wulandari, 2015). The addition of honey also refers to previous research which provides a formulation of honey content of 35-50% in the manufacture of ginger nut biscuit with the composition of ginger and peanuts as the main ingredient (Filipcev et al, 2011). The content of ginger and honey in these biscuits has significant benefits for reducing nausea and vomiting in pregnancy. The essential oil content of ginger which is gingerol and pridoxin content in honey works as an anti-chemoreceptor that can block or stop the substances serotonin, dopamine, acetylcholine, histamine and neurokinin which can activate the vomiting center (Dipiro et al, 2008).

The factor that influence the frequency of nausea and vomiting in teenage pregnancy based on this study are honey ginger biscuits and parity in teenage pregnancy. Parity affects the frequency of nausea and vomiting in teenage pregnancy based on the results of this study. The majority of pregnant in this study were prim-gravidas. In line with the results of research

conducted by Mariantari, Yuni., Lestari, W., (2014) which shows there is a gravida relationship to the incidence of emesis gravidarum. This was also obtained from research by Lee & Saha (2011) which stated that in primigravida there was a high risk of nausea and vomiting, meaning that parity had a significant relationship with nausea and vomiting during pregnancy.

CONCLUSIONS

In conclusion, there are differences in the frequency of nausea and vomiting in teenage pregnancy before and after consume ginger and honey biscuits. The nausea and vomiting frequency of intervention group was lower than the control group in. It can be concluded that there were significant differences in the average frequency of nausea and vomiting between the control group and the intervention group after consume ginger and honey biscuits. The results of this study also showed that factors affecting the frequency of nausea and vomiting in teenage pregnancy were ginger and honey biscuits, parity and physical illness during pregnancy. The recommendation of this research is the using of ginger honey biscuits as nursing intervention to relieve nausea and vomiting in teenage pregnancy.

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