Nausea and vomiting are the most prevalent and probably the most unpleasant complications in pregnancy. It is reported by 50% to 80% of pregnant women (1). There is no known cause for this problem; however, hormonal changes as well as psychological factors may play a role in this condition (2). Approximately, a quarter of all pregnant women have to leave their work because of this problem (3). In less than 2% of cases, this problem escalates to severe nausea and vomiting (hyperemesis gravidarum), and that leads to an imbalance of water and electrolytes, malnutrition, and loss of 5% of body weight (4). This condition may result in the malfunction of different body systems and organs, including the kidneys, and an imbalance of water and electrolytes. In addition, it may also have adverse effects on the fetus (5). Nausea and vomiting in pregnancy (NVP) may lead to depression, feelings of incompetence, loss of work hours, hospitalization and termination of the pregnancy (6). For this reason, an effective treatment during pregnancy is recommended (7). Mothers who experience nausea and vomiting during their pregnancy are more likely to experience the same problem in their next pregnancy (8). Research results have shown that the incidence of NVP in Iran is between 16% to 21.7% (8, 9).

Antiemetic and non-pharmacological interventions such as acupressure or ginger, are effective in reducing the frequency of nausea and vomiting (2, 10). Ginger is a plant that has been used in traditional medicine for the treatment of all varieties of nausea and vomiting, including NVP (11). The root of the ginger is used to flavor food. In addition, it is used to alleviate gastric discomfort. This root is used in either fresh or dried powder form (12). There are no known causes for this problem; however, psychological factors may play a role in this condition (2). Approximately, a quarter of all pregnant women have to leave their work because of this problem (3). In less than 2% of cases, this problem escalates to severe nausea and vomiting (hyperemesis gravidarum), and that leads to an imbalance of water and electrolytes, malnutrition, and loss of 5% of body weight (4). This condition may result in the malfunction of different body systems and organs, including the kidneys, and an imbalance of water and electrolytes. In addition, it may also have adverse effects on the fetus (5). Nausea and vomiting in pregnancy (NVP) may lead to depression, feelings of incompetence, loss of work hours, hospitalization and termination of the pregnancy (6). For this reason, an effective treatment during pregnancy is recommended (7). Mothers who experience nausea and vomiting during their pregnancy are more likely to experience the same problem in their next pregnancy (8). Research results have shown that the incidence of NVP in Iran is between 16% to 21.7% (8, 9).

Reports from some studies have shown that ginger can reduce the frequency of NVP (1, 13, 15, 16), but there is no agreement about its dosage (1). While the recommended dose in Europe and North America is no higher than two grams per day, Chinese practitioners prescribe a divided dose of nine grams per day (although they rarely use this amount during pregnancy) (17). The results of a systematic study have mentioned that there are no high-quality studies to support the use of ginger during pregnancy (18). In
addition, the results of a study conducted by Lee have demonstrated that the use of ginger during pregnancy does not relieve acute nausea and vomiting (10). Betz et al. in a systematic study, also reported that the use of ginger does not decrease levels of nausea and vomiting following an operation (20).

2. Objectives

Due to the conflicting results in the previous studies and recommendations for further studies in this area, this study was conducted. The aim of our study was to assess the effect of ginger to relieve nausea and vomiting in pregnancy.

3. Patients and Methods

This clinical trial was approved by the Ethical Research Committee of Kashan University of Medical Sciences. The participants of this study were pregnant women who were referred to the Prenatal Care Unit of Naghavi Hospital Kashan, Iran. This clinic is the only center that provides prenatal care ten hours per day. The inclusion criterion were:

- being a volunteer,
- suffering from nausea and/or mild to moderate vomiting,
- gestational age less than 16 weeks,
- singleton pregnancy,
- reading and writing ability,
- no digestive disease,
- no history of treatment with other anti-vomiting drugs within the last three weeks, and
- residency in Kashan.

The exclusion criterion included: subjects who did not complete the forms, subjects that experienced side effects from consuming ginger capsules, subjects who were advised that the treatment was not effective and that they needed further treatment, and subjects who vomited more than five times per day.

From December 10, 2008 to July 15, 2009, a total of 120 pregnant women that met the inclusion criterion, were selected from 431 patients referring to the prenatal care center. After obtaining verbal informed consent, a routine pregnancy checkup was completed. Then the participants were divided into three groups (ginger, placebo and control) by using block randomization. All the subjects completed a questionnaire containing demographic information such as; age, age of marriage, gestational age, occupation, parity, wanted or unwanted pregnancy, and education level. They were asked to avoid any kind of medication except for the one prescribed by the researcher. The participants were on this regimen for seven days. They were recommended to increase the number of meals with less volume, reduce high fat and high carbohydrate foods, avoid foods that trigger nausea and vomiting, and to start eating before they felt very hungry. In addition, the participants were asked to avoid smoking, have a piece of dried bread when they woke up, refuse fried, odorous and spicy foods, avoid gas forming drinks, and maintain a suitable position.

No intervention was made during the first three days and then both placebo and ginger groups received four days treatment. The ginger group received ginger capsules and the placebo group received lactose capsules with a similar shape. They were instructed to seek other treatment if this treatment failed or the frequency of vomiting exceeded five times a day. Every participant received 14 copies of the Rhodes Index form. They also received instructions to complete the form every 12 hours, and to record the intensity of the signs (nausea, vomiting, and retching). This form included eight items that described the signs using a Likert scale ranging from mild (zero) to very severe (four) with a maximum total score of 32. The patient evaluated the syndrome every 12 hours on a 5-point scale (21). This instrument has been used previously in several researches in Iran (8, 22), and in other countries (23, 24). In Iran, its validity was confirmed by content validity method and its reliability was calculated and confirmed by a Cronbach’s alpha (α = 0.898) (23). In addition, its reliability was acceptable in other countries (with Cronbach’s alphas of 0.77 in the United Kingdom, 0.897 in the USA, and 0.929 in China) (25-27).

Every participant in the ginger group received twelve 250 mg ginger capsules produced by Gol Daro Co. (Zintoma trade mark). They were instructed to take three capsules per day, for four days. Similar instructions were given to the placebo group. The researcher contacted every participant twice during the study. Once on the fourth day to answer the women’s questions in the three groups and to ask them to start the recommended method. Then again on the seventh day to thank the participants for their participation in the study and to request that they return the Rhodes Index forms for evaluation of their responses to the treatment. NVP was evaluated using the Rhodes Index scores.

The hypothesis tested was whether ginger resulted in a reduction of nausea, vomiting and retching symptoms. These were indicated by a mean reduction of Rhodes Index scores.

3.1. Ethical Considerations

Eligible women consented to participate in this study. The benefits, risks and effectiveness of the new intervention were described for the women. The privacy of the women and their personal information were protected during the study. The women were asked to start a medication if the advised treatment failed, or vomiting was more than five times per day. The women were informed about the results at the end of the study.

3.2. Data Analysis

Results were calculated by the mean Rhodes Index scores in the pre-intervention (three days before the intervention), minus the mean Rhodes Index scores in the post intervention (four days after the intervention), and then compared in the three groups by an ANOVA test. We checked the normal distribution of variables. The ANOVA and Kruskal-Wallis tests were used for normal and non-normal variables respectively. A Chi-square test was performed for the qualitative variables. An ANCOVA test was used to control for
Effect of Ginger on Relieving Nausea and Vomiting in Pregnancy: A Randomized, Placebo-Controlled Trial - Nursing and Midwifery Studies - Kashan U...
In conclusion, ginger is effective in reducing NVP in mild to moderate symptomatic pregnant women before 16 weeks gestation. Since this study was performed on mild to moderate nausea and vomiting, the results are not generalized to severe nausea and vomiting. The effectiveness of ginger and other non-pharmacological therapies such as acupressure in relieving severe NVP could be investigated in future clinical trials.

Acknowledgments

This study registered was in the Iranian Registry of Clinical Trials with the number: 201103192699N4. It was funded and supported by the Deputy of Research, Kashan University of Medical Sciences (KAUMS), No 8614. We would like to thank them for their cooperation, as well as all the women who made this study possible.

Footnotes

Implication for health policy/practice/research/medical education: Ginger is effective in reducing nausea and vomiting in mild to moderate symptomatic pregnant women before 16 weeks gestation. Therefore, obstetricians and midwives may recommend the use of ginger for the relief of this condition in pregnancy.

Authors' Contribution: Farzaneh Saberi was responsible for the study concept and design, she also made critical revisions to the paper on important intellectual content and data collection, Zohreh Sadat prepared the manuscript draft, Masoumeh Abedzadeh-Kalatshroud contributed in data collection and preparation of the first draft of the paper, and Mahboobeh Taebi collected the data and supervised the study.

Financial Disclosure: There is no financial disclosure.

Funding/Support: This study was part of a research project supported by the Deputy of Research, Kashan University of Medical Sciences (Grant No: 8614).

References

