



Primary Care Management of Nausea and Vomiting during Early Pregnancy

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Abstract: The most prevalent symptoms for women during pregnancy are nausea and vomiting. If left untreated may lead to multiple problems related to physical and psychological health. These problems ultimately call for an alternative treatment for nausea and vomiting during pregnancy. The purpose of the current study was to evaluate the effect of primary care management on nausea and vomiting during early pregnancy. Method: Design: a quasi-experimental design was utilized. Sample: A purposive sample of 202 pregnant women. Setting: The study was carried out at the Maternal and Child Health Center at Shebin El-Koom (Qebly), Menoufia Governorate. Instruments: three instruments were used throughout the course of this study (1) A structured interviewing questionnaire, (2) A Modified 24-hour Pregnancy-Unique Quantification of Emesis/Nausea Scoring Index questionnaire and (3) Primary care management for nausea and vomiting during early pregnancy questionnaire. The results revealed that primary care management has a positive effect on relieving severity of nausea and vomiting during early pregnancy. Conclusion: The current study findings supported the study hypotheses. It is concluded that, primary care management, dietary and lifestyle interventions have been shown to lower the severity of symptoms and enabled women to continue their everyday life and work with minimal disruption. Recommendation: Early treatment of nausea and vomiting during early pregnancy help to reduce the severity of symptoms, and leads to fetal and maternal well health.

Keywords: Early pregnancy, nausea, vomiting and primary care management.

Introduction

Sadler (2016), defined pregnancy is the state of a female after conception until the birth of the baby. Normal pregnancy is characterized by profound changes in almost every organ and system to accommodate the demands of fetoplacental unit (Ifukoret, Jacobs, Ifukor & Ewrhe, 2015). In the same content Basavantappa, (2016), reported that these changes can sometimes be uncomfortable, but most of the time they are normal. Nausea and vomiting are very common complaints during the early weeks of pregnancy

(Mitchell-Jones et al., 2017). Nausea and vomiting of pregnancy (NVP) is commonly referred to as morning sickness (although it can occur at any time of the day or night), and affects about 80-90% of pregnant women in varying degrees (Badell, Ramin & Smith, 2016). Most of these women will experience both nausea and vomiting, and some only nausea without vomiting or retching, but vomiting alone is rare (Grooten et al., 2017).

According to Jarvis & Nelson (2016), the symptoms of NVP usually appear at 4–9 weeks of gestation, reaching a peak at 7–12 weeks, and subsiding by week 16. About 15-30% of pregnant women's symptoms will persist beyond 20 weeks, or even up to the time of delivery. Lippincott (2015), stated that Hyperemesis gravidarum (HG) is severe and persistent vomiting during pregnancy, which can lead to dehydration, electrolyte disturbances and liver damage, possible fetal damage and in extreme cases, the death of the mother. Nausea and vomiting of pregnancy, if left untreated may lead to multiple problems related to physical and psychological health. Despite the availability of several anti-emetics, pregnant women usually hesitate to use conventional medicine due to side and possible teratogenicity effects (Bustos, Venkataramanan & Caritis, 2017).

According to the U.S' Global Role CSIS (2015), all women need health care and attention during pregnancy. This care helps pregnant women to be healthier and have fewer problems in birth. Prenatal care should come from the woman herself, family, community, and midwife. For many the symptoms can be controlled in primary care with dietary advice and medication. This should be diagnosed only when onset is in the first trimester and once the other causes of vomiting have been excluded (Briggs & Freeman, 2015).

So the present study was carried out to provide an evidence-based guideline to manage NVP. Early treatment with counseling is preferable, after appropriate history-taking and physical examinations have been done. These interventions included dietary/lifestyle interventions, vitamins such as vitamin B6 and vitamin B12, use of herbs (ginger), acupressure/acupuncture, aromatherapy, antiemetic drugs and IV fluids. Because of concern about pharmaceuticals in early pregnancy, non-pharmaceutical management is increasingly used to minimize nausea and vomiting in pregnancy (Pearce et al., 2017).

Significance of the study:

Nausea and vomiting of pregnancy (NVP) is commonly experienced in early pregnancy. About 7 to 8 out of every 10 pregnant women experience nausea and vomiting. Across the world, an average of 75% of pregnant women experience nausea and vomiting of pregnancy in the first trimester. This prevalence decreased to 40.1% at the beginning of the 2nd trimester of pregnancy (Wodi, Danborn, Sunday, & Eze, 2018). There is considerable variation of NVP among countries (35% to 84% of women) (Niemeijer et al., 2018). It affects up to 80% of pregnant women in North America and Canada (Van-Heuvel et al., 2017). The prevalence is about 43.7% among Nigerian women (Grooten et al., 2017). In Africa, the average rate is between (36% to 64%). Finally in Saudi Arabia and Egypt, the average rate is between (38.8% to 66.4%) (Yakassi, Ugwa, & Garba, 2017).

As mentioned in the literature that, symptoms of NVP cease by 10 weeks in 30% of women; by 12 weeks in 30%; and by 16 weeks in another 30%. Symptoms persist beyond 16 weeks in approximately 15–30% of women with NVP, but only a small proportion of women experience symptoms beyond 20 weeks or for the duration of the pregnancy. Persistent and severe nausea and vomiting may lead to malnutrition and the development of hyperemesis gravidarum (HG), a disorder that may cause the loss of >5 % of original body weight, dehydration, electrolyte imbalance, acidosis or ketosis during pregnancy.

According to the massive search that has been done by the researcher who found scanty of researches had been conducted on this issue and its nursing management in the Arab Region as well as especially in Egypt. This research is hopefully shed a light on the importance of understanding and providing nursing management of this vital problem among Egyptian pregnant women. Therefore, the researcher conducted this study to search in the literature for a systematic review of an evidence-based clinical practice guideline to manage NVP and evaluate the effectiveness of clinical practice guidelines on nausea and vomiting during early pregnancy.

Purpose of the Study: to evaluate the effect of primary care management on nausea and vomiting during early pregnancy.

Research Hypothesis:

1. Pregnant women who follow the primary care management have lower scores of the severity of nausea and vomiting during early pregnancy than those who do not follow the primary care management

Methods

Research design: A quasi- experimental study design (pre and post tests) was used to carry out the present study.

Setting:

The present study was conducted at the Maternal and Child Health Center at Shebin El-Koom (Qebly), Menoufia Governorate. It consists of several floors for providing different health services for the citizens. Antenatal clinic is located on the ground floor. Also its schedule is on Monday and Wednesday, Monday for those who come for the first visit and Wednesday for the return visits. This center was selected because of the high flow rate of pregnant women from the different surrounding cities and villages which are near to Shebin El Koom city. The average number of pregnant woman who attended to the clinic is between 25 to 35 women per day.

Sampling:

A purposive sample of 202 pregnant women who attended at the Maternal and Child Health (MCH) center (Qebly) at Shebin El-Koom city was enrolled in this study who met the inclusion criteria was pregnant women in the first 12 weeks of gestation, suffer from morning sickness, nausea and vomiting, and free from any medical or obstetric complications that may lead to occurrence of nausea and vomiting. Obstetric causes such as (acute disturbed ectopic pregnancy, vesicular mole, twins, twisted ovarian cycle and

red degeneration of fibroid) and medical causes such as (acute appendicitis, cholecystitis, gastroenteritis and pyelitis).

Sampling Technique:

The cases were selected randomly by using a list of pregnant women who were interested to participate in the study. Then, the researcher assigned a number to each woman. Once the list has been compiled by all pregnant women who attended the Maternal and Child health Center, the process of selection began by putting all numbers in a hat and picking out (202) pregnant women to conduct the study.

Sample size:

According to the review of literature that examined the same outcomes and found that the prevalence of nausea and vomiting during early pregnancy was between 35% to 84%, a sample size has been calculated using the following equation:

$$n = (z^2 \times p(1-P)) / D^2.$$

n= Sample size.

d= error percentage = (0.05)

P= the proportion of the population

Z=the corresponding standard class of significance 95%= (1.96).

$$n = (1.96^2 \times 0.84(0.16)) / 0.05^2$$

$$n = (3.8 \times 0.84 \times 0.16) / 0.0025$$

$$n = 202$$

At power 80% and CI 95% the participants included 202 pregnant women who attended the Maternal and Child Health (MCH) center (Qebly) at Shebin El-Koom, Menoufia Governorate.

Instruments:

Instrument I: Structured Interviewing Questionnaire: This instrument was developed by the researcher, and consisted of the following parts: the first part contained questions related to the socio-demographic characteristics, the second part contained data related to the past medical history as lifestyle habits, health status and medication, the third part contained data related to psychosocial health: as depression status and social support, the fourth part contained data related to previous obstetric history, and the fifth part contained data related to the current pregnancy.

Instrument II: A Modified 24-hour Pregnancy-Unique Quantification of Emesis/Nausea (PUQE) Scoring Index Questionnaire: This instrument assessed the severity of nausea and vomiting of pregnancy. It was developed by Maltepe, Einarson & Koren (2008). The instrument consisted of the following parts:

Part 1: The average of feeling nausea or sick to stomach in a day.

Part 2: The average of vomiting or throwing up in a day.

Part 3: The average of times, in a day having retching or dry heaves without bringing anything up.

- This instrument was administered pre / post and follow- up for the severity of NVP.

Scoring of a Modified 24-hour Pregnancy-Unique Quantification of Emesis/Nausea (PUQE) Scoring Index Instrument: The PUQE Scoring Index assessed the severity of

nausea and vomiting of pregnancy and reprinted with permission from **Lacasse et.al (2008)**. The PUQE Index focused on the symptoms experienced during the previous 12 hours, then within 24 hours. The PUQE Index score can be used to determine if the nausea and vomiting of pregnancy is mild, moderate, and severe.

- Mild NVP = ≤ 6
- Moderate NVP = 7–12
- Severe NVP = ≥ 13

Instrument III: Primary Care Management of Nausea and Vomiting during Early Pregnancy Questionnaire: This instrument was concerned with primary care management of nausea and vomiting during early pregnancy. It was developed through:

- Conduct a systematic review of relevant studies on NVP.
- Identify and summarize studies investigating NVP.
- Analyze all available supported interventions to be included.
- Evaluate available studies on NVP.
- Appraising for the best-evidence available of primary care management of nausea and vomiting during early pregnancy

Based on the grade of evidence and recommendations (**American College of Obstetricians and Gynecologists, 2018**).The instrument consisted of the following parts:

Part 1: First-line intervention for mild-moderate nausea and vomiting in pregnancy: First-line interventions are usually initiated by women before seeking medical care and hence tend to be used in less severe NVP. First-line interventions include the following:

1. **Dietary/Lifestyle Changes as :- Dietary habits changes** before and during pregnancy by Using Food Frequency Questionnaire:- Foods were listed into these main categories:-
 - **(Food List 1)** → (milk and milk products, breads and cereals, biscuits, meats, fish, egg, vegetables, fruit, sweets (non-chocolate) and juice).
 - **(Food List 2)** → (fat, chocolate, coffee, teas, soft drinks with sugar, soft drinks sugar free).

The study pregnant women were asked to indicate which food items they had started to eat more of, less of, as before, never eaten before, or else stopped eating completely due to this pregnancy.

Lifestyle habits changes as: - Practicing regular exercise during first trimester, and caffeine intake consumption during first trimester.

2. Other Alternative or Complementary Treatments as:-

- 1.**Vitamins Intake as:** (vitamin B6 (pyridoxine), and vitamin B12 (cyanocobalamin)).
- 2.**Use of Herbs as:** Ginger provided in several preparations as powdered fresh root, tablets, capsules and syrup.
- 3.**Acupressure Sea-Bands** an acupressure towelling wrist band that stimulates the Pericardium P6 acupressure point.
- 4.**Acupuncture** involves the manipulation of thin needles inserted into acupuncture points in the skin.

5.Aromatherapy involves the use of plant materials, aromatic plant and essential oils to alter mood, cognitive, psychological or physical well-being as (Peppermint oil, Lemon acid oil and ginger oil).

Part 2: Second-line intervention for moderate-severe nausea and vomiting in pregnancy: - Second-line medical treatments are typically prescribed when a woman first presents to medical care, usually by her obstetric care provider, and include a range of antiemetic drugs as (Pyridoxine (vitamin B6) ,Metoclopramide ,Ondansetron (Zofran) and Doxylamine) ,as well as provision of intravenous fluid and electrolyte replacement for women who are dehydrated and ketotic.

Scoring of Primary Care Management of Nausea and Vomiting during Early Pregnancy Instrument:

This instrument measures 2 lines of intervention: first line and second line intervention. Scoring was done for the first line intervention as dietary/lifestyle interventions, other alternative treatments as vitamins, use of herbs, acupressure, acupuncture, and aromatherapy.

*** Instruments:**

1- Dietary habits changes were assessed by using Food Frequency Questionnaire, which assessed 16 food items, and were scored as follows:

According to the standardized 5- Point Likert Scale

Description	Interval
Before pregnancy	
Not eat or drink →	(1.00 - 1.79)
During pregnancy	
As before →	(1.80 - 2.59)
More of →	(2.60 - 3.39)
Less of →	(3. 40- 4.19)
Stopped →	(4. 2 0- 5.00)

2- Other alternative treatments such as vitamins, use of herbs, acupressure, acupuncture, and aromatherapy. Each part of the instrument was scored separately according to the number of correct answers. The total score was calculated using the summation of all parts. The total score ranged from (0- 6) and was categorized into three levels according to **Brown (2017)** as the following:

Low score =	Answer (0- 2 questions)
Moderate score =	Answer (3- 4 questions)
High score =	Answer (5- 6 questions)

Validity and reliability

For validity purposes, the researchers conducted an extensive literature review and developed the questionnaire from the previously used instruments and reviewing pertinent studies. Instrument 1 was designed by the researchers and validated by five experts (four experts in the field of maternal and newborn health nursing from the Faculty of nursing, Menoufia University and one expert from the Faculty of Medicine, Menoufia University) for content validity, while instruments II and III were adopted from the previous studies then modified by the researcher and validated by five experts (four

experts in the field of maternal and newborn health nursing from the Faculty of nursing, Menoufia University and one expert from the Faculty of Medicine, Menoufia University) for content validity. The questionnaires underwent some modifications according to the panel of judgment regarding the clarity of sentences and appropriateness of content. Test-retest reliability was used to estimate reliability.

Approval Letter: A formal letter from Faculty of Nursing, Menoufia University was submitted to the director of MCH center at Shebin El-Koom(Qebli). An official permission was obtained to carry out the study from the directors of the above – mentioned settings.

Ethical Consideration:

An official approval from the Committee of Hearing and Ethics was obtained from Faculty of Nursing Menoufia University on 22/12/2015. Approaches to ensuring ethics were considered in the study regarding confidentiality and the informed consent. Confidentiality was achieved by the use of closed sheets with the names of the participating pregnant women replaced by numbers. All pregnant women were informed that the information they provided during the study would be kept confidential and used only for statistical purpose. After finishing the study, the findings would be presented as a group data with no personal participants' information remained.

Pilot study

Piloting was conducted to test the applicability of the instrument, the feasibility of the study and to estimate the time needed for data collection. It was conducted on 10% of the total sample (20 pregnant women). Based on piloting results; the researcher rephrased some questions and sentences then set the final fieldwork schedule. Hence, the pregnant women who shared in piloting were not included in the study participants.

Field work:

The present study was carried out in three consecutive phases, namely preparatory, implementation and evaluation phases.

1. The Preparatory Phase:

Meta-analysis of available studies was carried out to detect which one represents powerful evidence. The following steps were taken:

- Searching for literature and related studies
- Adopting a continuum to appraise the available research evidence
- Setting criteria for detecting the quality of intervention to be included according to selected evidence level
- Systematic reviewing of available studies
- Identifying Knowledge gaps in the reviewed studies
- Identifying the limitations of reviewed studies
- Designing the evidence-based program

After that, an extensive literature review related to the study area was done including electronic dissertations, available books, articles, doctoral dissertation, research and peer interaction, ideas from external sources and periodicals. A review of literature to

formulate knowledge base relevant to the study area was also done. An official permission was granted from the Maternal and Child health Center authorities.

The researcher's plan articulated the procedures for describing the purpose of the study to participants, the actual collection of data and recording information. A guiding booklet and pamphlets (1- physiological changes during pregnancy, 2- Effect of nausea and vomiting during pregnancy, 3- Management of nausea and vomiting during pregnancy by using clinical practice guidelines) were prepared by the researcher, and reviewed by a panel of jury.

2. The Implementation Phase:

Data Collection:

The data collection started on 15th May 2018 and ended on 20th August 2018. The researcher applied the implementation phase according to the following steps:

The 1st step: The implementation phase was divided into three sessions (pre, post, and follow-up). The researcher introduced herself to the selected participants, provided verbal explanation of the study and answered all related questions. They were interviewed to complete the sociodemographic data. Telephone numbers were taken to facilitate communication and follow-up, and then they were given the pre administration questionnaires and responded to them under the observation of the researcher. The illiterate women the researcher wrote, their answers and each woman took about 10- 13 minutes to respond to the questionnaire.

The 2nd step: The researcher went to the MCH center three days weekly (Monday, Wednesday and Thursday) from 9 am to 12.30 pm. The researcher started to give health education sessions according to the participants' needs that are derived from pre –test. A guiding booklet and pamphlets were used to facilitate explanation and to be a reference for them.

The nursing intervention included 2 main sessions as follows:-

- 1- Physiological changes during pregnancy and the effect of nausea and vomiting on the pregnant women during early pregnancy.
- 2- Primary care management of nausea and vomiting during early pregnancy to help relieve episodes of nausea and vomiting during early pregnancy.

The pregnant women were divided into 7 groups, (28-30 women). Each group received 2 sessions.

Teaching Methods

- Lecture (Simple Arabic)
- Group discussion

Teaching Aids

- Data show presentation, tablet, guiding booklet and pamphlet.

Session 1:

Time: 30 - 40 minutes.

Session Objectives

1 – Knowledge and understanding:

- Identify changes that occur during pregnancy.
- List the causes of nausea and vomiting during early pregnancy.
- Explain the health effects of nausea and vomiting during early pregnancy.

2– Intellectual skills:

- Evaluate the changes in the three phases of pregnancy and changes in the fetus.
- Differentiate between the different types of nausea and vomiting during early pregnancy.

3– Professional and practical skills:

- Describe the changes that occur to the mother and fetus during pregnancy for the participants.

4-General and Transferable Skills.

- Follow-up the participants for the health effects of nausea and vomiting during early pregnancy.

Session Outlines

- Definition of pregnancy
- Signs & symptoms of pregnancy
- Definition of nausea and vomiting during early pregnancy
- Causes of nausea and vomiting during early pregnancy
- Types of nausea and vomiting during early pregnancy
- Effect of nausea and vomiting during early pregnancy on pregnant women

Session 2:

Time: 40 - 45 minutes.

Session Objectives:

1 – Knowledge and understanding:

- Explain dietary/lifestyle interventions for management of nausea and vomiting during early pregnancy.
- List the types of foods that help to relieve nausea and vomiting during early pregnancy.
- Enumerate the types of drinks that help to relieve nausea and vomiting during early pregnancy.

2– Intellectual skills:

- Classify the lifestyle measures and other alternative measures that help to relieve nausea and vomiting during early pregnancy.

3– Professional and practical skills:

- Apply primary care management to the participants for the management of nausea and vomiting during early pregnancy.

4-General and Transferable Skills.

- Follow-up the participants regarding the effects of clinical practice guidelines for the management of nausea and vomiting during early pregnancy.

Session Outlines

- Dietary/lifestyle interventions for the management of nausea and vomiting during early pregnancy.
- Types of foods that help to relieve nausea and vomiting during early pregnancy.
- Types of drinks that help to relieve nausea and vomiting during early pregnancy.
- Other alternative measures that help to relieve nausea and vomiting during early pregnancy as:-
 - Vitamins Intake as: (vitamin B6, and vitamin B12).
 - Use of Herbs as: Ginger provided in several preparations as powdered fresh root, tablets, capsules and syrup.
 - Acupressure Sea-Bands that stimulate the Pericardium P6 acupressure point.
 - Acupuncture through the manipulation of thin needles inserted into acupuncture points in the skin.
 - Aromatherapy as the use of plant materials, aromatic plant and essential oils as (Peppermint oil, Lemon acid oil and ginger oil).

After the end of two sessions, the researcher gave the participants a summary of the 2 sessions.

3. The Evaluation Phase

The evaluation of the effectiveness of clinical practice guidelines on NVP was ensured at the end of first trimester (12 weeks). The women were given the post administrations of the 3 previous instruments (2, 3 and 4) and a month later (at the end of 16 w) they were administered again to evaluate effect of clinical practice guidelines on nausea and vomiting during early pregnancy.

Statistical Analysis:

Data analysis

The collected data were scored, tabulated and analyzed using (SPSS) version 22. Descriptive as well as nonparametric statistics were utilized to analyze the data pertinent to the study. The level of significance was set at $p < 0.05$. Chi square test, Mean, ANOVA test and Post Hoc Tests (Tukey) were used to analyze the data.

Results

Table (1): Bio-Sociodemographic Characteristics of the Study Participants (n=202)

Variables	No. (n= 202)	Percent (%)
Age (years):		
≤ 20	40	19.8
21 - 24	52	25.7
25 - 30	50	24.8
31-34	41	20.3
≥ 35	19	9.4
Mean age 27.36 ± 1.25		
Residence:		
Urban	127	62.9
Rural	75	37.1
Level of education:		
Illiterate	25	12.4

Read & Write	34	16.8
Secondary	81	40.1
University	62	30.7
Occupation:		
Working	87	43.1
Not working	115	56.9

Table (1) showed that the mean age of the study participants was 27.36 ± 1.25 years old. Nearly two thirds of the participants were urban residents. Forty percent of them were secondary educated, while only 12.4 % were illiterate. As for occupation, 56.9% were not working.

Table (2): Differences among Pre, Post and Follow- up Assessments of Severity of NVP of the Study participants. (n=202)

Variables	Time of assessment						X ² test	P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
How long have you felt nauseated or sick to your stomach in a day?							638.14	<0.001 HS
Not at all	0	0.0	0	0.0	71	35.1		
1 hour or less	6	3.0	67	33.2	103	51.0		
2-3 hours	9	4.5	111	55.0	27	13.4		
4-6 hours	112	55.4	19	9.3	1	0.5		
> 6 hours	75	37.1	5	2.5	0	0.0		
How many times, have you vomited or thrown up in a day?							255.66	<0.001 HS
7+ times	15	7.4	2	1.0	0	0.0		
5-6 times	64	31.7	16	7.9	0	0.0		
3-4 times	85	42.1	80	39.6	28	13.9		
1-2 times	9	4.5	61	30.2	50	24.7		
Did not throw up	29	14.4	43	21.3	124	61.4		
How many times have you felt vomiting or dry heaves without bringing anything up in a day?							463.74	<0.001 HS
Not at all	0	0.0	35	17.3	146	72.3		
1-2	10	5.0	68	33.7	29	14.4		
3-4	45	22.3	70	34.7	24	11.9		
5-6	88	43.6	21	10.4	3	1.5		
7 or more	59	29.2	8	4.0	0	0.0		
Score:							604.23	<0.001 HS
Mean±SD	11.37±181		7.62±2.05		4.73±1.91			
Range	6.00–15.00		4.00–13.00		3.00–10.00			
Severity Level:							227.61	<0.001 HS
Mild (≤ 6)	11	5.4	95	47.0	159	78.7		
Moderate (7 – 12)	167	82.7	99	49.0	43	21.3		
Severe (≥ 13)	24	11.9	8	4.0	0	0.0		

***A Modified 24-hour PUQE Questionnaire Score HS = highly significant**

Table (2) revealed that there was a highly statistically significant improvement ($p < 0.001$) at the post and follow-up interventions when compared to the pre intervention for the assessment of severity of nausea and vomiting of pregnancy by using A Modified 24-hour PUQE Scale Questionnaire.

First-Line Treatments for Mild-Moderate Nausea and Vomiting of Pregnancy: (Dietary/lifestyle Interventions)

Table (3): Differences among Pre, Post and Follow-up Interventions regarding Dietary Changes due to Current Pregnancy by Using Food Frequency Questionnaire (n=202).

(Food List 1)

Variables	Time of assessment						X ² test	P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
Milk, diary products:								
- Not eat or drink before pregnancy	6	1.5	5	2.5	5	2.5	68.02	<0.001 HS
During Pregnancy:-								
- As before	80	41.1	65	32.2	41	20.3		
- More of	78	38.6	120	59.3	150	74.2		
- Less of	18	8.9	8	4.0	4	2.0		
- Stopped	20	9.9	4	2.0	2	1.0		
Bread and Cereals:								
- Not eat or drink before pregnancy	-	-	-	-	-	-	22.70	0.008 S
During Pregnancy:-								
- As before	112	55.4	91	45.0	83	41.1		
- More of	75	37.1	104	51.5	116	57.4		
- Less of	15	7.4	7	3.5	3	1.5		
- Stopped	0	0.0	0	0.0	0	0.0		
Biscuits:								
- Not eat before pregnancy	20	9.9	8	4.0	8	4.0	46.67	<0.001 HS
During Pregnancy:-								
- As before	108	53.5	92	45.5	86	42.6		
- More of	32	15.8	75	37.1	88	43.6		
- Less of	34	16.8	22	10.9	16	7.8		
- Stopped	8	4.0	5	2.5	4	2.0		
Meat:								
- Not eat before pregnancy	6	3.0	2	0.9	2	0.9	51.85	0.005 S
During Pregnancy:-								
- As before	126	62.4	99	49.1	89	44.0		
- More of	35	17.3	77	38.1	99	49.0		
- Less of	19	9.4	13	6.5	8	4.1		
- Stopped	16	7.9	11	5.4	4	2.0		
Fish:								
- Not eat or before pregnancy	6	3.0	4	2.0	4	2.0	112.10	<0.001 HS
During Pregnancy:-								
- As before	128	63.4	77	38.0	57	28.2		
- More of	34	16.8	105	52.0	135	66.8		
- Less of	19	9.4	10	5.0	4	2.0		
- Stopped	15	7.4	6	3.0	2	1.0		
Eggs:								
- Not eat before pregnancy	3	1.5	3	1.5	3	1.5	78.09	<0.001 HS
During Pregnancy:-								

- As before	138	68.3	97	48.0	89	44.0		
- More of	23	11.4	82	40.6	100	49.5		
- Less of	28	13.9	15	7.4	7	3.5		
- Stopped	10	5.0	5	2.5	3	1.5		
Vegetables:								
- Not eat before pregnancy	-	-	-	-	-	-	120.51	<0.001 HS
During Pregnancy:-								
- As before	121	59.9	66	32.7	31	15.3		
- More of	70	34.7	136	67.3	171	84.7		
- Less of	9	4.5	0	0.0	0	0.0		
- Stopped	2	1.0	0	0.0	0	0.0		
Fruits:								
- Not eat or drink before pregnancy	-	-	-	-	-	-	18.70	0.005 S
During Pregnancy:-								
- As before	67	33.1	55	27.2	42	20.8		
- More of	128	63.4	145	71.8	160	79.2		
- Less of	5	2.5	2	1.0	0	0.0		
- Stopped	2	1.0	0	0.0	0	0.0		
Juice:								
- Not drink before pregnancy	2	1.0	2	1.0	2	1.0		
During Pregnancy:-								
- As before	92	45.5	80	39.6	62	30.7	47.95	<0.001 HS
- More of	68	33.6	99	49.0	130	64.3		
- Less of	28	13.9	16	7.9	8	4.0		
- Stopped	12	6.0	5	2.5	0	0.0		
Other Sweets: (non-chocolate)								
- Not eat or drink before pregnancy	5	2.5	3	1.5	3	1.5	25.59	0.008 S
During Pregnancy:-								
- As before	90	44.6	80	39.6	63	31.2		
- More of	28	13.8	56	27.7	70	34.7		
- Less of	73	36.1	59	29.3	62	30.7		
- Stopped	6	3.0	4	1.9	4	1.9		
* Mean Score:								
Mean±SD	2.40 ± 0.26		2.73 ± 0.20		3.14 ± 0.19			<0.001 HS
Range	2.0– 4.4		2.20– 4.93		2.40– 5.54		65.08	

S = significant HS= highly significant

*According to the standardized 5- Point Likert Scale

Description	Interval
before pregnancy	→ (1.00 -1.79)
As before	→ (1.80 -2.59) → (Mean score pre-test located between this interval)
More of	→ (2.60 - 3.39) → (Mean score post and follow- up test located between this interval)
Less of	→ (3.40 - 4.19)
Stopped	→ (4.20 - 5.00)

Continued Table (3) (Food List 2)

Variables	Time of assessment (n=202)						χ^2 test	P value
	Pre-test		Post test		Follow up			
	No.	%	No.	%	No.	%		

Fat : - Not eat or drink before pregnancy During Pregnancy:-	9	4.5	9	4.5	9	4.5		
- As before	130	64.4	58	28.7	32	15.7	119.33	<0.001 HS
- More of	9	4.5	8	4.0	10	5.0		
- Less of	50	24.8	102	50.4	123	60.9		
- Stopped	4	2.0	25	12.4	28	13.9		
Chocolate: - Not eat or drink before pregnancy During Pregnancy:-	3	1.5	3	1.5	3	1.5	12.39	<0.001 HS
- As before	80	39.6	73	36.1	70	34.6		
- More of	34	16.8	55	27.2	60	29.7		
- Less of	70	34.7	62	30.7	62	30.7		
- Stopped	15	7.4	9	4.5	7	3.5		
Coffee: - Not r drink before pregnancy During Pregnancy:-	21	10.4	21	10.4	21	10.4	63.19	<0.001 HS
- As before	92	45.5	47	23.3	39	19.3		
- More of	28	13.9	17	8.4	11	5.4		
- Less of	38	18.8	77	38.1	83	41.1		
- Stopped	23	11.4	40	19.8	48	23.8		
Tea : - Not drink before pregnancy During Pregnancy:-	15	7.3	15	7.4	15	7.4	92.36	<0.001 HS
- As before	67	33.2	34	16.8	27	13.4		
- More of	60	29.7	23	11.4	16	7.9		
- Less of	30	14.9	75	37.1	80	39.6		
- Stopped	30	14.9	55	27.3	64	31.7		
Soft drinks with sugar: - Not drink before pregnancy During Pregnancy:-	29	14.4	29	14.4	29	14.4	65.18	<0.001 HS
- As before	69	34.2	32	15.8	18	8.9		
- More of	17	8.4	9	4.5	7	3.5		
- Less of	71	35.1	92	45.5	102	50.5		
- Stopped	16	7.9	40	19.8	46	22.7		
Soft drinks sugar free : - Not drink before pregnancy During Pregnancy:-	9	4.5	9	4.5	9	4.5	28.71	<0.001 HS
- As before	80	39.6	69	34.2	60	29.7		
- More of	40	19.8	23	11.4	17	8.4		
- Less of	55	27.2	90	44.6	99	49.0		
- Stopped	18	8.9	11	5.4	17	8.4		
* Mean Score: Mean±SD Range	2.96 ± 0.43 1.50– 4.46		3.52 ± 0.52 1.50– 5.02		3.87 ± 0.64 1.50– 5.37		155.59	<0.001 HS

S = significant HS= highly significant

According to the standardized 5- Point Likert Scale

Description	Interval
before pregnancy →	(1.00 -1.79)
As before	→ (1.80 -2.59)
More of	→ (2.60 - 3.39) → (Mean score pre-test located between this interval)
Less of	→ (3.40 - 4.19) → (Mean score post and follow- up test located between this interval)
Stopped	→ (4.20 - 5.00)

Based on the results of the previous table, there was a highly statistically significant differences ($p < 0.001$) in the post and follow -up intervention related to dietary changes

before and during pregnancy due to the effects of clinical practice guidelines on nausea and vomiting during early pregnancy.

Figure (2): Relationship between Lifestyle Habits Changes and the Severity of NVP of the Study Participants, Post Intervention (n=202).

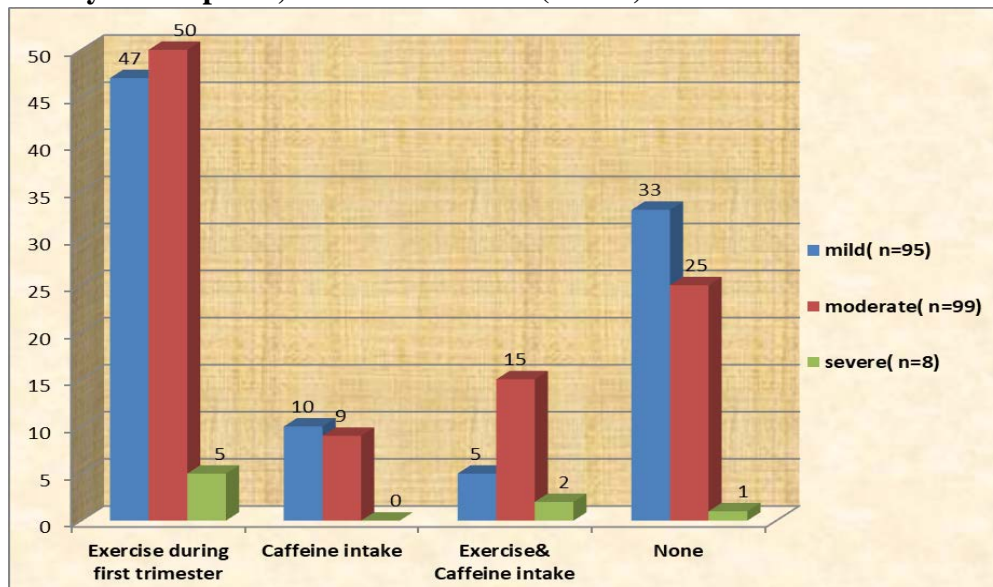


Figure (1) illustrate

d that there was a statistically significant difference in the post intervention between lifestyle habits changes and the severity of NVP of the study participants.

Figure (2): Relationship between the Psychosocial Health and the Severity of NVP of the Study Participants, Post Intervention (n=202).

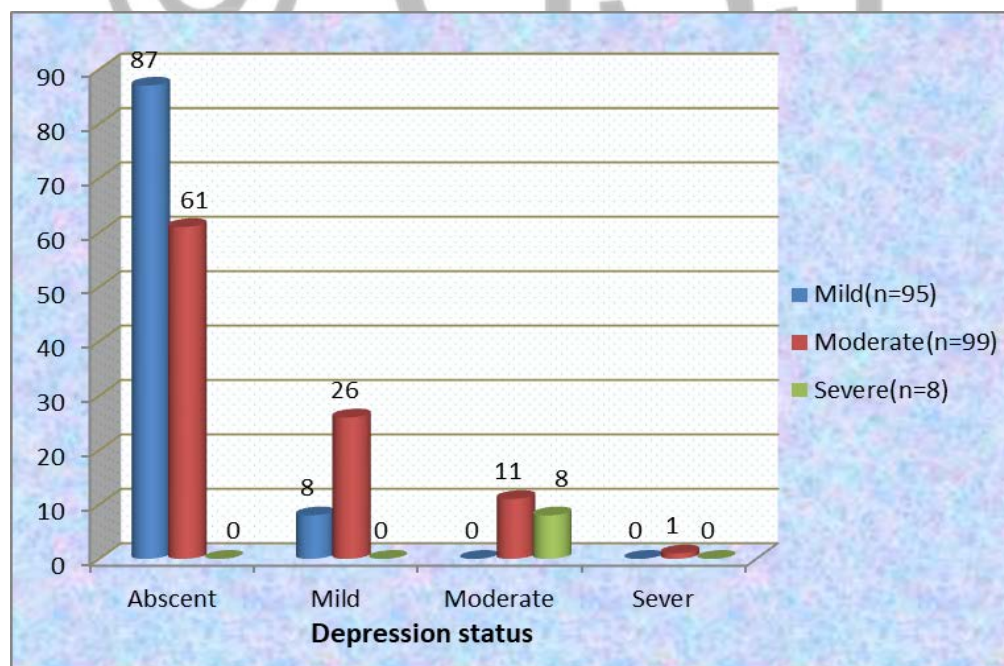


Figure (2) showed that there was a statistically significant difference in the post intervention between the psychosocial health and the severity of NVP of the study participants.

Table (4): Differences among Pre, Post and Follow-up Interventions regarding the Grade of Evidence of Clinical Practice Guidelines for NVP of the Study Participants (n=202).

Variables	Time of assessment						χ ² test	P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
Vitamins Vitamin B6 (pyridoxine)								
Yes	0	0.0	196	97.0	202	100	580.17	<0.001 HS
No	202	100	4	3.0	0	0.0		
Vitamin B12(cyanocobalamin)							588.53	<0.001 HS
Yes	0	100	198	98.0	202	100		
No	202	0.0	2	2.0	0	0.0		
Use of Herbs:(Ginger)								
Yes	30	14.9	176	87.1	145	71.8	240.37	<0.001 HS
No	172	85.1	26	12.9	57	28.2		
If ,yes	n=30		n=176		n=145		2.09	0.72 NS
Tablets, capsules	0	0.0	5	2.8	2	1.4		
Syrup	30	100	168	95.5	141	97.2		
Biscuits	0	0.0	3	1.7	2	1.4		
Acupressure								
Yes	0	0.0	145	71.8	108	53.5	231.09	<0.001 HS
No	202	100	57	28.2	94	46.5		
Acupuncture								
Yes	0	0.0	8	4.0	0	0.0	6.21	0.08 NS
No	202	100	194	96.0	202	100		
Aromatherapy								
Yes	10	5.0	88	43.6	110	54.5	121.28	<0.001 HS
No	192	95.0	114	56.4	92	45.5		
Mean Score:								
Mean±SD	0.2 ± 0.41		3.79 ± 0.86		4.01± 0.74		618.00	<0.001 HS
Range	0.0- 2.0		2.0- 5.0		2.0- 5.0			
Score Level:	No	%	No	%	No	%	515.00	<0.001 HS
*Low	202	100	18	8.9	5	2.5		
** Moderate	-	-	137	67.8	144	71.3		
*** High	-	-	47	23.3	53	26.2		

(Vitamins Intake, Use of Herbs (Ginger), Acupressure, Acupuncture, & Aromatherapy)

* Low score = Answer (0- 2 questions) ** Moderate score = Answer (3- 4 questions)

*** High score = Answer (5- 6 questions)

Table (4) revealed that there was a highly statistically significant difference between vitamins intake and severity of NVP of the study participants. Another grade of evidence was the use of herbs (Ginger). The results also revealed a statistically significant improvement related to the severity NVP of the study participants. In addition there were a statistically significant improvements related to the use of acupressure and aromatherapy and severity NVP of the study participants. There was no a statistically significant improvement related to the use of acupuncture and severity NVP of the study participants.

Second-Line Treatments for Moderate-Severe Nausea and Vomiting of Pregnancy

Table (5): Differences among Pre, Post and Follow-up Interventions regarding the use of Antiemetic Drugs & Intravenous fluids for moderate-severe nausea and vomiting in pregnancy of the Study Participants (n=202).

Variables	Time of assessment						χ ² test	P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
Antiemetic drugs								
Yes	53	26.2	14	6.9	5	2.5	61.34	<0.001 HS
No	149	73.8	188	93.1	197	97.5		
If, yes, Take of the following:	n=53		n=14		n=5		23.51	0.003 S
Pyridoxine (vitamin B6)	13	24.5	10	71.4	3	60.0		
Metoclopramide (Maxolon)	17	32.1	0	0.0	0	0.0		
Ondansetron (Zofran)	6	11.4	4	28.6	2	40.0		
Doxylamine	4	7.5	0	0.0	0	0.0		
Pyridoxine& Doxylamine	13	24.5	0	0.0	0	0.0		
Intravenous fluids								
Yes	8	4.0	0	0.0	0	0.0	6.21	0.08 NS
No	194	96.0	202	100	202	100		

* **P value:** NS= non-significant S = significant HS= highly significant

Table (5) revealed that there were highly statistically significant differences among the use of antiemetic drugs of the study participants during pre, post and follow-up intervention ($p < 0.001$). Also, there was a statistically significant difference between the different types of antiemetic drugs ($p < 0.003$). On the other hand, there was no statistically significant difference related between the use of intravenous fluids for moderate-severe nausea and vomiting of pregnancy of the study participants at ($p < 0.08$).

Discussion

The findings of the current study revealed that the research hypothesis was supported. The findings are discussed in the following sequence: 1-general findings “Bio-Socio-demographic data” 2-findings related to assessment of severity of NVP using A Modified 24-hour PUQE Score 3- findings related to primary care management of nausea and vomiting during early pregnancy.

The mean age of the study participants was twenty seven years. This may be rationalized as; this age is the peak of fertility, associated with an increased risk of NVP and with elevated age of mother decreased episode number of vomiting. This finding was supported by a systematic review revealed by Gadsby& Barnie (2016) of the clinical information about nausea and vomiting of pregnancy, its relation to the various aspects of women’s personal and obstetric histories and other significant factors related to nausea and vomiting of pregnancy. They reported that nausea and vomiting of pregnancy is more prevalent among the younger women of average age 27.7 years. In addition, younger women experienced more severe episodes of NVP, and 35 years and elderly were associated with decreased nausea and vomiting of pregnancy (Crystal, Bowen & Bernstein, 2016).

On the other hand, this finding was contradicted with four studies that have specifically explored the validation of the nausea and vomiting of pregnancy specific health related quality of life questionnaire at Canada. First, Lacasse & Bérard (2014) studied 288 pregnant women with NVP during the 1st trimester with a mean age (32 ± 4.6) years. They revealed that there was no relationship between age and the severity of NVP. Second, Svetlana, Caroline & Gideon (2013) investigating the leading concerns of American women with nausea and vomiting of 167 pregnant women. They revealed that the participants' mean age was (31.69 ± 5.98) years.

Nearly two thirds of the study participants were urban residents and not working whereas less than half had secondary education. There were no significant relationships among these factors and the severity of NVP symptoms. This may be rationalized as good antenatal care during pregnancy was enhanced by women who lived in urban areas with high education. This finding is consistent with Kristine et.al (2017) who studied the burden of nausea and vomiting during pregnancy: severe impacts on quality of life, daily life functioning and willingness to become pregnant. Their findings indicated that nearly two thirds of the study participants were urban residents and less than half were secondary educated and not working. Also it is reported that there was no statistically significant relationship between these sociodemographic characteristics and the duration of NVP symptoms.

The results of the present study reported that the majority of the study participants had a moderated level of severity (6.0–15.0 points) at pre-intervention. Furthermore, the results indicated that there was a highly statistically significant improvement found at the follow up intervention with (3.0–10.0 points) for the assessment of severity of nausea and vomiting of pregnancy by using A Modified 24-hour PUQE Score. This may be clarified as early treatment of NVP as dietary, lifestyle intervention and other alternative treatments had a greater effect on reducing severity of nausea and vomiting during early pregnancy.

This finding was consistent with a study done by Marie & Radka (2014) who studied quality of women's life with nausea and vomiting during pregnancy of a sample size 179 pregnant women, showed that nearly two thirds of the women had moderate symptoms of NVP (7–12 points) and there was a statistically significant difference in the QOL between women with no or mild symptoms and those with moderate or severe symptoms. Another study conducted by Svetlana, Caroline & Gideon (2013) who studied the leading concerns of American women with nausea and vomiting of pregnancy calling Motherisk NVP helpline of a sample size 167 pregnant women, showed that the severity of NVP symptoms among the callers, using the validated PUQE-24 scores, showed that most callers suffered from moderate-to-severe conditions, probably leading them to seek advice to try to improve their condition.

Regarding lifestyle habits (practicing regular exercise and caffeine consumption) of the study participants, the present study pointed to a statistically significant difference revealed at post and follow up intervention of the relationship between lifestyle habits changes and severity of NVP. This can be rationalized as; regular exercise and caffeine consumption during early pregnancy were associated with improved physical health and

reduced severity of NVP. This finding was in accordance with findings of a study carried out by Lacasse & Bérard (2014) on nausea and vomiting of pregnancy: what about quality of life at Canada, who stated that exercise is associated with a better physical QOL and mental health in which, health benefits of exercise during pregnancy have been well documented. In addition, the previous author suggested that caffeine consumption in the first trimester of pregnancy was associated with a better physical QOL.

The present study indicated that there was a statistically significant difference found at post and follow up intervention of the relationship between psychosocial health and severity of NVP. It showed also that less than half of the study participants were experiencing different levels of depression and that was related to more severe symptoms of NVP. This may be clarified as most of pregnant women expressed that the feelings of nausea are worse than the actual vomiting. This feeling was like nothing else they have experienced, relentless, and leads to sickness of the stomach. Also women reported that they cannot cope with preparing food as food odors make symptoms worse. All of these factors related to feeling of loneliness affecting psychological health and lead to experiencing different levels of depression.

This finding is supported by a study conducted at Iran by Bazarganipour, Mahmoodi, Shamsaei & Taghavi, (2015) who studied the frequency and severity of nausea and vomiting during pregnancy and its association with psychosocial health of a sample size of 200 pregnant women and found that the prevalence of depression was estimated at 41% in this study, and showed that the higher level of depression was related to more severe symptoms of NVP. Also, women with severe or moderate nausea reported higher levels of depression, compared to those with mild nausea. These findings were consistent also with the results reported by Swallow, Lindow, Masson & Hay (2014) who indicated that pregnant women with frequent nausea and vomiting experience more depression; this may be related to the feeling of loneliness and loss of control.

As regard dietary habits changes, the present study showed there was a greater dietary change related to NVP that revealed during the pre-intervention in which the majority of the participants were eating less than the food recommended when compared with the post and follow-up interventions. Those representing the highest proportion 'eating more' for the following food items (milk and milk products, breads and cereals, biscuits, meats, fish, egg, vegetables, fruit, chocolate, sweets (non-chocolate) and juice) also the highest proportion 'reduced eating or stopped' for the following food items (fat, coffee, teas, , soft drinks with sugar and soft drinks sugar free). This may be explained as food cravings, food aversions during pregnancy and effect of NVP had a greater effect on dietary habits changes which improved after relieving of these symptoms.

This finding was agreed upon by Chortatos et al., (2014) who studied dietary changes during first trimester pregnancy for women with nausea and vomiting in the Norwegian Mother and Child Cohort Study and divided the study sample into two groups, reflecting answers concerning experiences of nausea and vomiting: having both nausea and vomiting (NVP) or symptom-free (SF), who found that NVP women had the greater dietary change compared to the SF women, representing the lowest proportion 'eating as before' for all food items, as well as representing the highest proportion both 'eating more' and with 'reduced eating' for most food items. Also they found that carbohydrate-

rich foods such as breads and cereals, sugared soft-drinks, and biscuits were foods the NVP women had high odds of eating more of. That woman suffering from NVP increase their intake of bread, biscuits, and sweet sugar-containing foods during pregnancy, as well as total carbohydrates, has been observed by others. The only exception amongst all food items surveyed was chocolate; where the SF (symptoms free) women had the highest proportion 'eating more', possibly obtaining some protection from NVP symptoms through this food.

At the present study, the researcher found that carbohydrate-rich foods such as breads and cereals, sugared soft-drinks, and biscuits were foods for the women who had high odds of eating more of. That women suffering from NVP increase their intake of bread, biscuits, and sweet sugar-containing foods during pregnancy, as well as total carbohydrates, that has been observed by others (Latva, Isolauri & Laitinen, 2016) & (Weigel et al., 2014). The list also includes protein-rich foods such as meat, milk, cheese, and eggs which were 'eaten less' at the beginning of the study. This peculiarity has also been reported in other studies (Nyaruhucha, 2015) & (Patil, Abrams, Steinmetz & Young, 2016).

Regarding vitamins intake, the results of the present study pointed out to a highly statistically significant difference revealed between to vitamin intake and severity of NVP in which vitamins intake (vit B6 & vit b12) during early pregnancy were helped lower the scoring of severity of nausea and vomiting during pregnancy. This may be interpreted as vitamins B6&B12 during pregnancy have an essential role for alleviating nausea and vomiting which are the very worst early side effects of pregnancy. Also during pregnancy level of zinc is lowered and copper levels risen which caused vitamin B6 deficiencies. Zinc is necessary for the transport of vitamin B6 across cell membranes into the cell. So nutrimental supplementation with vitamins (B6 & B12) during pregnancy is essential and helped lower the scoring of severity of nausea and vomiting during pregnancy.

These findings were supported by Matthews et.al (2016) who conducted a systematic review for interventions of nausea and vomiting in early pregnancy and identified two studies comparing vitamin B6 (10-25 mg 6h) with placebo. Results favored vitamin B6 for reduction of nausea after 3 days but provided no evidence that vitamin B6 reduced vomiting. Also a systematic review about clinical management guidelines for NVP conducted by Goodwin (2016) who evaluated pyridoxine (vitamin B6) for treatment of varying degrees of severity of nausea and vomiting of pregnancy and found a significant reduction in severe vomiting but minimal effect on mild vomiting and should be considered first-line pharmacotherapy. Also vitamin B12 was found to improve vomiting for many pregnant women, and there has been no sign of harm to the fetus with vitamin B12 use during pregnancy.

Another grade of evidence as use of herbs (Ginger) also revealed a statistically significant improvement during early pregnancy and was helped lower the scoring of severity of nausea and vomiting during early pregnancy. This may be rationalized as ginger is a common folk treatment for upset stomach and nausea. Also ginger seems to aid digestion and saliva flow. The main ginger constituents are starch (up to 50%), lipids (6 to 8%), proteins, and inorganic compounds. So its consumption is safe and acts directly on the

digestive tract and is not associated with the central nervous system (CNS) side effects that are common to centrally acting antiemetic drugs. These findings were also supported by Navin & Sandhiya (2015) who conducted a study implementing standardized Rhodes Index to measure the efficacy of ginger extract in pregnancy induced nausea and vomiting at India of a sample size 30 pregnant women suffering from nausea and vomiting were included in this study (n=30). Subjects were given ginger extract 250 mg, 3 times a day half an hour before food for 1 week. Severity of vomiting was assessed by Rhodes Index of Nausea and Vomiting. The results revealed that ginger extract helps in reducing severity, frequency of pregnancy induced nausea and vomiting.

As regard acupressure the results of the present study pointed out that there was a highly statistically significant difference between to use of acupressure and severity of NVP which helped lowering the scoring of severity of nausea and vomiting during early pregnancy. This might be interpreted as when acupressure, pressure is applied to specific places on the body, these places are called acupoints. Pressing these points can help release muscle tension and promote blood circulation. Regarding nausea and vomiting, pressure point P-6 is located on inner arm near wrist, doing acupressure on this point with elastic bands can help relieve nausea and vomiting. This finding was in agreement with a study conducted in Egypt on effect of nurses using for P6 acupressure on nausea, vomiting and retching during pregnancy by Mansour et.al (2015) of a sample size 120 pregnant women divided randomly in P6 acupressure and conventional therapy group, who showed that using of P6-acupressure has an effective role in reducing nausea, vomiting and retching episodes in women with NVP during pregnancy.

The results of the present study revealed that there was no statistically significant improvement occurred with use of acupuncture and NVP of the studied participants. This may be rationalized as the small number of the study participants were used acupuncture. It involved the manipulation of thin needles inserted into acupuncture points in the skin. So this number was insufficient to determine its effectiveness on lowering severity of NVP. In contrast with these results a study titled acupuncture to treat nausea and vomiting in early pregnancy by Smith, Crowther, & Beilby (2012) to evaluate whether acupuncture reduced nausea, dry reaching and vomiting and improved woman's quality of life. The results revealed that there was no evidence of any adverse effects arising from acupuncture treatment on the mother and baby and provided a good evidence for considering the use of acupuncture for the treatment of nausea and dry retching in early pregnancy.

As for aromatherapy the present study pointed out that to a highly statistically significance difference was found between use of aromatherapy and severity of NVP which helped lowering the scoring of severity of nausea and vomiting during early pregnancy. This could be clarified as the use of plant materials, aromatic plant and essential oils as (Peppermint oil, Lemon acid oil and ginger oil) may help to alter mood, cognitive, psychological or physical well-being and relieve of nausea and vomiting during pregnancy. This finding was in agreement with Abdel -Ghani & Ibrahim (2013) who studied the effect of aromatherapy inhalation on nausea and vomiting in early pregnancy of one hundred one pregnant women. They were asked to use the predefined essential oils twice a day, prior napping or sleeping for three days. The results revealed

nausea and vomiting episodes were decreased at third day essential oils inhalation compared with baseline assessment among pregnant women in the study group. Moreover, women felt energetic after essential oils inhalation.

Regarding the use of antiemetic drugs as (Pyridoxine (vitamin B6), Metoclopramide , Ondansetron (Zofran) & Doxylamine) the results of the present study showed a highly statistically significant difference between the use of antiemetic drugs and severity of nausea and vomiting of the studied participants. This may be rationalized as the three primary pathophysiologic pathways are involved in the stimulation of the physiologic vomiting center in the medulla that directly mediates nausea and vomiting. The uses of antiemetic drugs are implicated in these pathways to lower nausea and vomiting. This is ascertained by a recent study conducted by McParlin et.al (2017) on a systematic review for treatments for nausea and vomiting during pregnancy and reviewed three randomized clinical trials compared pyridoxine-doxylamine combinations with either placebo or ondansetron. Koren, Clark, & Hankins (2010) (n=280) compared pyridoxine 10mg plus doxylamine 10mg, slow release preparation, with placebo over 14 days. Symptoms improved in both groups, but the improvement in the pyridoxine-doxylamine group was greater.

Moreover, Oliveira et al., (2014) (n=36) compared pyridoxine-doxylamine with ondansetron. Symptom improvement occurred in both groups but was greater in the ondansetron group; Maltepe & Koren, (2015) (n=60) compared pre-emptive treatment with pyridoxine-doxylamine to treatment once symptoms started. Moderate-severe symptoms were reduced in the pre-emptive group (15.4 %) compared to the post-symptom group; Tan, Khine, Vallikkannu & Omar, (2015) (n=159) compared metoclopramide 10mg to promethazine 25mg given intravenously (IV) three times over 24 hours. Symptoms improved in both treatment groups, with no difference between groups, and Abas et al., (2014) (n=160) compared ondansetron 4mg IV with metoclopramide 10mg IV. Symptom improvement was seen in both groups with no evidence of difference between groups at 24 hours. So antiemetic drugs associated with symptoms improvements for moderate-severe nausea and vomiting of pregnancy.

As for intravenous fluids the results of the present study found that there was no statistically significant difference between the use of intravenous fluids for moderate-severe nausea and vomiting of pregnancy of the studied participants. This may be explained as the small number of the study participants was administered IV fluids to treat the consequences of NVP related to degree of severity of NVP. In contrast with these results Thomson, Corbin & Leung, (2016) compared different compositions of IV solutions. The intervention group received IV dextrose saline with anti-emetics, while the comparator group received normal saline with antiemetics. Repeated measures analysis of variance of nausea score found greater improvements in the dextrose saline group relative to the saline group but no difference in vomiting was reported. So dextrose saline may be associated with better improvements than normal saline in moderate-severe cases.

Conclusions

The present study findings supported the study hypothesis and concluded that using of primary care management had a greater effect on reducing severity of nausea and vomiting during early pregnancy post intervention. This supported the research

hypothesis (1) which was, pregnant women who follow the primary care management will have lower scores of the severity of nausea and vomiting during early pregnancy than those who do not follow the primary care management.

Recommendations

According to the findings of the current study, the following recommendations are proposed:- early guidance with primary care management during early pregnancy helped reduce degree of severity of nausea and vomiting and leads to fetal and maternal well health. Nausea and vomiting during early pregnancy negatively impact the normal functioning quality of life of the pregnant woman. So she needs support to be able to cope with the pregnancy problems.

Implications for Future Research

- Increasing awareness about primary care management to be used as a routine care for nausea and vomiting during early pregnancy.
- Translation of primary care management in simple instruction booklet and to be freely distributed to the MCH centers.
- Expanding follow up duration of the pregnant women to measure susceptibility of adherence to primary care management.
- Replication of the research study by using qualitative studies should be determined. It would be beneficial to focus on specific factors influencing NVP or improving the QOL.

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