



## **Effect of Decreasing Degree of Severity of Nausea and Vomiting during Early Pregnancy on Women's Quality of Life.**

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**Abstract:** Nausea and vomiting of pregnancy is the most common condition that affects the health of the pregnant woman and her fetus. It can diminish the woman's quality of life and also contributes to health care costs and time lost from work. The purpose of the current study was to explore the effect of decreasing degree of severity of nausea and vomiting during early pregnancy on women's quality of life. 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: four 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, (3) A nausea and Vomiting in Pregnancy Health Related Quality of Life questionnaire and (4) Alternative Treatments for Nausea and Vomiting during Early Pregnancy. The results revealed that there was a negative relation between degree of severity of NVP and normal functioning quality of life of the study participants. Conclusion: The current study findings supported the study hypotheses. It is concluded that, nausea and vomiting during early pregnancy negatively impact physical and psychosocial health of the pregnant women, also severe degree of NVP decreases the quality of life of the pregnant women and should be monitored. 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 quality of life.

## Introduction

Nausea and vomiting of pregnancy is a common condition that affects the health of a pregnant woman and her fetus. It can diminish a woman's quality of life and also significantly contributes to health care costs and time lost from work (Piwko et al., 2016). Because morning sickness is common in early pregnancy, some women do not seek treatment because of concerns about the safety of medications (Matthews, Haas, O'Mathúna & Dowswell, 2016). Once nausea and vomiting of pregnancy progresses, it can become more difficult to control symptoms. (Ezberci et al., 2016).

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. Women with HG usually need to be hospitalized and it occurs in approximately 2% of pregnancies (Saber, Sadat, Abedzadeh & Taebi, 2015).

According to a recent study, up to 63% of women experience nausea and vomiting up to 24 weeks' gestation (Kramer, Bowen, Stewart & Muhajarine, 2016). Only 0.3% to 2% of these cases are considered severe (called hyperemesis gravidarum, leading to a loss of >5% of pre pregnancy body weight). All forms of pregnancy-related nausea can affect the quality of life (Lee & Saha, 2016).

Nausea and Vomiting of Pregnancy can have a significant impact on family life, the ability to perform usual daily activities, social functioning and development of stress situations. Apart from these findings, the presence and severity of NVP have been shown to influence the overall quality of life (QOL) of pregnant women (Lacasse, et al., 2016). Munch et al., (2015) added that women with NVP seem to have a lower QOL when compared with asymptomatic pregnant women

Some generic measures of health-related QOL are available, but the only existing NVP-specific QOL questionnaire is the "Health-Related Quality of Life for Nausea and Vomiting during Pregnancy" (NVPQOL). As Quality of life and work efficiency are adversely affected by NVP, developing a better understanding of how women manage these discomforts during pregnancy is a clear need as some women use home remedies that may have potential side effects for the mother and fetus (Bustos, Venkataramanan & Caritis, 2017). Also Obstetric nurse /midwife plays a crucial role in promoting an awareness of the public health issues for the pregnant women and her family, as well as helping for the pregnant women and her family, to recognize abnormal signs and symptoms of pregnancy, and where to seek medical assistance ( Richter ,2015).

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).

### **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, Danborno, , 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 explore the effect of decreasing degree of severity of nausea and vomiting during early pregnancy on women's quality of life.

### **Research Hypothesis:**

1. Pregnant women who follow the alternative treatments of nausea and vomiting have lower scores of the severity of nausea and vomiting during early pregnancy than those who do not follow these treatments.
2. Pregnant women who follow alternative treatments of nausea and vomiting during early pregnancy have higher scores of normal functioning quality of life than those who do not follow these treatments.

### **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                      =  $\leq 6$
- Moderate NVP              = 7–12
- Severe NVP                 =  $\geq 13$

**Instrument III: A Nausea and Vomiting in Pregnancy Health -Related Quality of Life (NVP HRQL) Questionnaire** This instrument tested the domains related to NVP HRQL. It was developed by **Magee, et.al (2002)** and modified by the researcher. The instrument consisted of the following parts:

**Part 1:** Physical symptoms: as nausea, feeling sick to stomach, fatigue, poor appetite, vomiting, not caring for self as you usual, sleeping poorly, sitting for most of the day, and excessive thirst.

**Part 2:** Environmental stimuli: as exposed to certain smells, being in a hot or stuffy room, not eaten for longer than she would like, feeling of nausea and bad vomiting in the morning, and the feeling of nausea and bad vomiting while brushing the teeth.

**Part 3:** Emotional functions: as fed up with being sick, frustrated, reassured that symptoms are part of normal pregnancy, everything is an effort, worried about health, can't enjoy pregnancy, afraid that she will vomit without warning or in public, worried about having nausea/vomiting in a future pregnancy, less concerned with physical appearance than usual, and guilty of not spending as much time with husband and family.

**Part 4:** Social domestic occupational functions: as difficulty preparing or cooking meals, taking longer to get things done than usual, relying on husband to do things would normally do for your family, difficulty performing work/other activities, difficulty maintaining normal social activities with family and friends, difficulty looking after the home, cutting down on the amount of time spent at work or other activities, difficulty shopping for food, difficulty maintaining interests and hobbies (like sports, arts and crafts), difficulty sitting with family during meals ,and husband feeling of helpless and inability to help.

N.B- This instrument was administered as pre / post and follow- up for NVP HRQL.

#### **Scoring of Nausea and Vomiting in Pregnancy Health- Related Quality of Life Instrument (NVP HRQL):**

The NVPQOL questionnaire was assessed through 4 domains: physical symptoms (9 questions), environmental stimuli (5 questions), emotional function (11 questions), and social domestic occupational function (11 questions). 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 (36 questions) and was categorized into three levels according to **Magee, et.al (2002)** as the following:-

- **Low QOL Level** → = Answer ( 24 - 36 points )
- **Moderate QOL Level** → = Answer ( 12- 23 points )
- **High QOL Level**→ = Answer ( < 12 points )

#### **Instrument IV: Alternative or Complementary Treatments for Nausea and Vomiting during Early Pregnancy Questionnaire:**

This instrument was concerned with alternative or complementary treatments for 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:

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).

### **Scoring of Alternative or Complementary Treatments for Nausea and Vomiting during Early Pregnancy Instrument:**

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 15<sup>th</sup> May 2018 and ended on 20<sup>th</sup> August 2018. The researcher applied the implementation phase according to the following steps:

**The 1<sup>st</sup> 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 2<sup>nd</sup> 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 (%)
<b>Age (years):</b>		
≤ 20	40	19.8
21 - 24	52	25.7
25 - 30	50	24.8
31-34	41	20.3
≥ 35	19	9.4
<b>Mean age</b> 27.36 ± 1.25		
<b>Residence:</b>		
Urban	127	62.9
Rural	75	37.1
<b>Level of education:</b>		
Illiterate	25	12.4
Read & Write	34	16.8
Secondary	81	40.1
University	62	30.7
<b>Occupation:</b>		
Working	87	43.1
Not working	115	56.9

Table (1) showed that the mean age of the study participants was  $27.36 \pm 1.25$  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						$\chi^2$ test	P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
<b>How long have you felt nauseated or sick to your stomach in a day?</b>							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		
<b>How many times, have you vomited or thrown up in a day?</b>							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		
<b>How many times have you felt vomiting or dry heaves without bringing anything up in a day?</b>							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		
<b>Score:</b>							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			
<b>Severity Level:</b>							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 Questionare

**Table (3): 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						$\chi^2$ test	P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
<b>Vitamins</b> Vitamin B6 (pyridoxine)	0	0.0	196	97.0	202	100	580.17	<0.001 HS
Yes	202	100	4	3.0	0	0.0		
No								
Vitamin B12(cyanocobalamin)	0	100	198	98.0	202	100	588.53	<0.001 HS
Yes	202	0.0	2	2.0	0	0.0		
No								
<b>Use of Herbs:( Ginger)</b>	30	14.9	176	87.1	145	71.8	240.37	<0.001 HS
Yes	172	85.1	26	12.9	57	28.2		
No								
<b>If ,yes</b>	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		
<b>Acupressure</b>							231.09	<0.001 HS
Yes	0	0.0	145	71.8	108	53.5		
No	202	100	57	28.2	94	46.5		
<b>Acupuncture</b>							6.21	0.08 NS
Yes	0	0.0	8	4.0	0	0.0		
No	202	100	194	96.0	202	100		
<b>Aromatherapy</b>							121.28	<0.001 HS
Yes	10	5.0	88	43.6	110	54.5		
No	192	95.0	114	56.4	92	45.5		
<b>Mean Score:</b>							618.00	<0.001 HS
Mean±SD	0.2 ± 0.41		3.79 ± 0.86		4.01± 0.74			
Range	0.0- 2.0		2.0- 5.0		2.0- 5.0			
<b>Score Level:</b>	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 (3) 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.

# Impact of NVP on Normal Functioning Quality of Life

**Table (4): Differences among Pre, Post and Follow- up Interventions regarding the Physical Symptoms of the Study Participants (n=202).**

Items as Modified from (Magee et al., 2002)*	Time of assessment						$\chi^2$ test	*P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
<b>Nausea:</b>								
Yes	202	100	202	100	131	64.9	160.48	<0.001 HS
No	0	0.0	0	0.	71	35.1		
<b>Feeling sick to your stomach:</b>								
Yes	202	100	43	21.3	37	18.3	348.49	<0.001 HS
No	0	0.0	159	78.7	165	81.7		
<b>Fatigue:</b>								
Yes	192	95.0	60	29.7	42	20.8	265.89	<0.001 HS
No	10	5.0	142	70.3	160	79.2		
<b>Poor appetite:</b>								
Yes	180	89.1	44	21.8	30	14.9	279.19	<0.001 HS
No	22	10.9	158	78.2	172	85.1		
<b>Vomiting:</b>								
Yes	162	80.2	162	80.2	78	38.6	104.28	<0.001 HS
No	40	19.8	40	19.8	124	61.4		
<b>Not caring for yourself as you usually do:</b>								
Yes	179	88.6	32	15.8	23	11.4	320.42	<0.001 HS
No	23	11.4	170	84.2	179	88.6		
<b>Sleeping poorly:</b>								
Yes	120	59.4	36	17.8	24	11.9	129.73	<0.001 HS
No	82	40.6	166	82.2	178	88.1		
<b>Sitting for most of the day:</b>								
Yes	198	98.0	54	26.7	34	16.8	318.04	<0.001 HS
No	4	2.0	148	73.3	168	83.2		
<b>Excessive thirst</b>								
Yes	189	93.6	23	11.4	9	4.5	428.42	<0.001 HS
No	13	6.4	179	88.6	193	95.5		

\* P value: NS= non-significant S = significant HS= highly significant \* Source : Magee et .al (2002), p186.

Table (4) represented that there was a highly statistically significant difference ( $p<0.001$ ) among pre, post and follow-up interventions regarding all parameters.

**Table (5): Differences among Pre, Post and Follow- up Intervention regarding the Environmental Stimuli of the Study Participants (n=202).**

Items as Modified from (Magee et al., 2002)	Time of assessment						* $\chi^2$ test	*P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
<b>Beening exposed to certain smells:</b>								
Yes	198	98.0	98	48.5	67	33.2	193.19	<0.001
No	4	2.0	104	51.5	135	66.8		HS
<b>Beening in a hot or stuffy room:</b>								
Yes	189	93.6	88	43.6	70	34.7	166.45	<0.001
No	13	6.4	114	56.4	132	65.3		HS
<b>Not eaten for longer than you would like:</b>								
Yes	189	93.6	67	33.2	33	16.3	266.57	<0.001
No	13	6.4	135	66.8	169	83.7		HS
<b>Feeling of nausea and bad vomiting in the morning:</b>								
Yes	190	94.1	39	19.3	15	7.4	370.49	<0.001
No	12	5.9	163	80.7	187	92.6		HS
<b>Feeling of nausea and bad vomiting while brushing the teeth:</b>								
Yes	164	81.2	90	44.6	50	24.8	132.49	<0.001
No	38	18.8	112	55.4	152	75.2		HS

\* P value: NS= non-significant S = significant HS= highly significant \* Source : Magee et .al (2002), p186.

Table (5) illustrated that there was a highly statistically significant difference ( $p < 0.001$ ) among pre, post and follow-up interventions regarding all parameters.

**Table (6): Differences among Pre, Post and Follow-up Interventions regarding the Emotional Function of the Study Participants (n=202).**

Items as Modified from (Magee et al., 2002)	Time of assessment						* $\chi^2$ test	*P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
<b>Fed up with being sick:</b>								
Yes	180	89.1	40	19.8	10	5.0	346.17	<0.001 HS
No	22	10.9	162	80.2	192	95.0		
<b>Frustrated:</b>								
Yes	85	42.1	54	26.7	10	5.0	75.84	<0.001 HS
No	117	57.9	148	73.3	192	95.0		
<b>Reassured that your symptoms are part of normal pregnancy:</b>								
Yes	60	29.7	167	82.7	202	100	262.07	<0.001 HS
No	142	70.3	35	17.3	0	0.0		
<b>Less interested in gender of fetus:</b>								
Yes	80	39.6	70	34.7	70	34.7	1.43	0.49 NS
No	122	60.4	132	65.3	132	65.3		
<b>Everything is an effort:</b>								
Yes	192	95.0	60	29.7	42	20.8	265.89	<0.001 HS
No	10	5.0	142	70.3	160	79.2		
<b>Worried about your heath:</b>								
Yes	202	100	38	18.8	10	5.0	439.47	<0.001 HS
No	0	0.0	164	81.2	192	95.0		
<b>Cannot enjoy your pregnancy:</b>								
Yes	196	97.0	43	21.3	16	7.9	382.79	<0.001 HS
No	6	3.0	159	78.7	186	92.1		
<b>Afraid that you will vomit without warning or in public:</b>								
Yes	162	80.2	39	19.3	0	0.0	319.31	<0.001 HS
No	40	19.8	163	80.7	202	100		
<b>Worried about having nausea/vomiting in a future pregnancy:</b>								
Yes	181	89.6	92	45.5	64	31.7	149.70	<0.001 HS
No	21	10.4	110	54.5	138	68.3		
<b>Less concerned about your physical appearance than usual:</b>								
Yes	179	88.6	35	17.3	24	11.9	310.54	<0.001 HS
No	23	11.4	167	82.7	178	88.1		
<b>Guilty of not spending as much time with your husband and your family:</b>								
Yes	170	84.2	73	36.1	37	18.3	188.50	<0.001 HS
No	32	15.8	129	63.9	165	81.7		

Table (6) indicated that there was a highly statistically significant difference at ( $p < 0.001$ ) among the pre, post and follow -up interventions regarding all parameters.

**Table (7): Differences among Pre, Post and Follow- up Interventions regarding the Social, Domestic & Occupational Function of the Study Participants (n=202).**

Items as Modified from (Magee et al., 2002)	Time of assessment						$\chi^2$ test	P value
	Pre-test (n=202)		Post test (n=202)		Follow up (n=202)			
	No.	%	No.	%	No.	%		
<b>Difficulty preparing or cooking meals:</b> Yes No	195 7	96.5 3.5	59 143	29.2 70.8	46 156	22.8 77.2	269.76	<0.001 HS
<b>Taking longer to get things done than usual:</b> Yes No	194 8	96.0 4.0	77 125	38.1 61.9	44 158	21.8 78.2	246.44	<0.001 HS
<b>Relying on your husband to do things you would normally do for your family:</b> Yes No	121 81	59.9 40.1	45 157	22.3 77.7	26 176	12.9 87.1	115.59	<0.001 HS
<b>'Difficulty performing work/other activities:</b> Yes No	193 9	95.5 4.5	51 151	25.2 74.8	32 170	15.8 84.2	309.02	<0.001 HS
<b>Difficulty maintaining your normal social activities with family and friends:</b> Yes No	170 32	84.2 15.8	71 131	35.1 64.9	50 152	24.8 75.2	162.91	<0.001 HS
<b>Difficulty looking after the home:</b> Yes No	190 12	94.1 5.9	67 135	33.2 66.8	39 163	19.3 80.7	255.67	<0.001 HS
<b>Cuting down on the amount of time you spent at work or other activities:</b> Yes No	180 22	89.1 10.9	59 143	29.2 70.8	40 162	19.8 80.2	229.83	<0.001 HS
<b>Difficulty shopping for food:</b> Yes No	192 10	95.0 5.0	63 139	31.2 68.8	52 150	25.7 74.3	240.05	<0.001 HS
<b>Difficulty maintaining interests and hobbies (like sports, arts and crafts):</b> Yes No	194 8	96.0 4.0	55 147	27.2 72.8	46 156	22.8 77.2	274.26	<0.001 HS
<b>Difficulty sitting with your family during meals:</b> Yes No	196 6	97.0 3.0	57 145	28.2 71.8	47 155	23.3 76.7	274.76	<0.001 HS
<b>Your partner feeling helpless, unable to help you:</b> Yes No	182 20	90.1 9.9	61 141	30.2 69.8	10 192	5.0 95.0	317.73	<0.001 HS

\* P value: NS= non-significant S = significant HS= highly significant \* Source : Magee et .al (2002), p186.

Table (17) demonstrated that there was a highly statistically significant difference at ( $p < 0.001$ ) among pre, post and follow-up interventions regarding all parameters. statistically significant differences ( $p < 0.001$ ) at pre test, post test and follow -up intervention regarding to all parameters.

**Figure (1): Impact of NVP on Normal Functioning Quality of Life of the Study Participants in the Pre, Post and Follow-Up Interventions (n=202).**

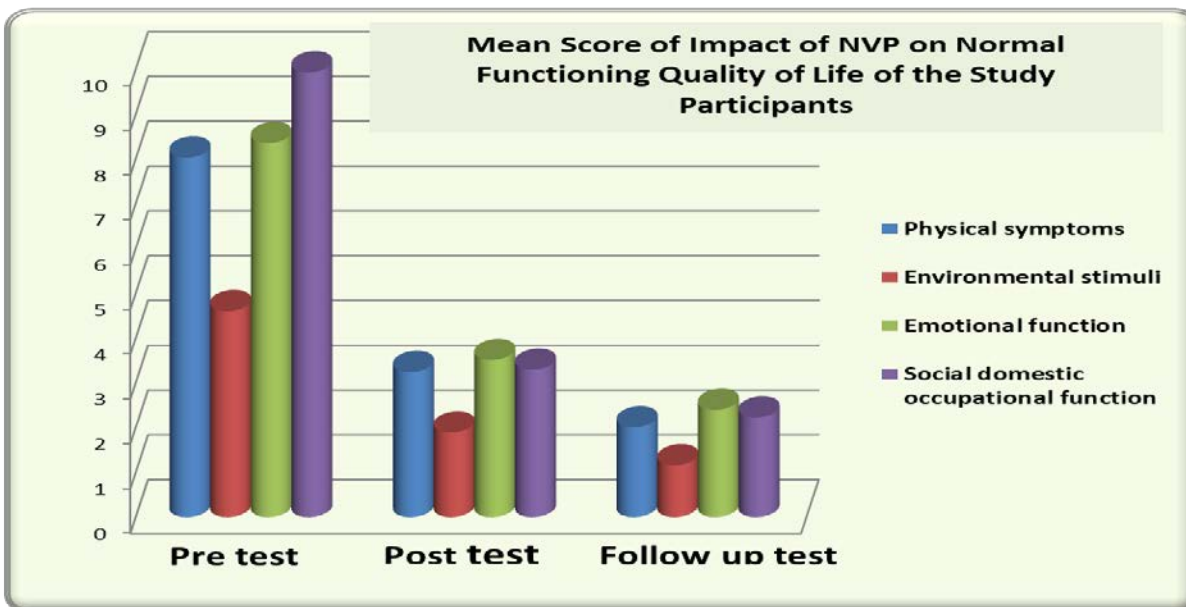


Figure (1) represented 4 domains (physical, environmental, emotional and social domestic occupational function). The results declared that, there was a highly statistically significant improvement at ( $p < 0.001$ ) in the post and follow-up interventions when compared to the pre intervention for all the variables and determining the effect of NVP on the normal functioning quality of life.

## Discussion

The findings of the current study revealed that the research hypotheses were 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 alternative treatments of nausea and vomiting during early pregnancy 4- findings related to impact of NVP on women’s quality of life.

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 ( $32 \pm 4.6$ ) 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 ( $31.69 \pm 5.98$ ) years. The contradiction is seen to be due to the difference of the age range of the selected pregnant women in these studies.

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 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 normal functioning quality of life, four domains are concerned with the NVPQOL. Areas of quality of life impairment included NVP symptoms, as physical symptoms, environmental stimuli, emotional function, and social domestic occupational function. Each domain measures a specific area affecting the QOL.

The physical symptoms as: (nausea, feeling sick to stomach, fatigue, poor appetite, vomiting, not caring for self as before, sleeping poorly, sitting for most of the day, and excessive thirst) was assessed during pre, post- intervention and then follow up sessions to determine effect of NVP on physical symptoms. According to results represented from the present study there were a highly statistically significant differences were found at the post and follow-up intervention regarding to all parameters. This may be clarified as NVP has a major impact on physical symptoms which affected on women's health during pregnancy.

As for nausea and vomiting, all of the study participants experienced nausea and the majority were experienced vomiting. This may be rationalized as nausea and vomiting during pregnancy is commonly experienced in early pregnancy and affects about 80-90% of pregnant women in varying degrees. This finding was consistent with Smith, Crowther, Beilby & Dandeaux (2015) who studied the impact of nausea and vomiting on

women during pregnancy and revealed that nausea was the most common symptom experienced, vomiting was frequently experienced but did not cause as much distress. Clearly nausea would be the most troublesome symptom experienced by women in terms of its duration and intensity, with the day to day constancy becoming wearisome.

Other factors contributing to nausea and vomiting were fatigue, feeling sick to stomach and poor appetite which had affected on the majority of the study participants. This may be interpreted as NVP has a major impact on physical health which may lead to feeling of fatigue, sick to stomach and in ability to eat well. Chao et.al (2013) studied how psychosocial factors influence NVP, vomiting, and fatigue in early pregnancy and claimed that NVP is affected by fatigue. This was explained by the fact that an important trigger of nausea is stress. The most important source of stress is fatigue. Another study conducted by Dilorio & Van (2013) on nausea and vomiting in pregnancy and management of pain, fatigue and nausea and reported that the major factors which interfere with the ability to use relief measures for NVP were feeling sick to stomach and loss of appetite.

The environmental stimuli was one of the main factors which making NVP worse. Such factors were as; exposure to certain smells, being in a hot or stuffy room, feeling of nausea and vomiting especially in the morning, not eaten as before and feeling of nausea and vomiting with brushing teeth. The results of the present study revealed that the majority of the study participants had worse NVP symptoms related to exposure to the previous stimuli which were observed at the pre- intervention. Also the present study pointed out to a statistically significant difference was found between post and follow -up intervention regarding to impact of the environmental stimuli on severity of NVP. This may be clarified as, NVP related symptoms relieved after adequate controlling and management of inappropriate environmental conditions.

This finding was agreed upon by O'Brien & Zhou (2015) who studied variables related to nausea and vomiting during pregnancy and reported that the following items women stated help precipitate NVP as smell of food, cooking, smell of fatty foods, tea, coffee, and smoking. Another study conducted by Caddick et.al 2015 about guidelines for the management of nausea and vomiting in pregnancy who reported that foods' appearance, texture and smell especially food, cooking smells and smell of coffee pots or perfume make NVP worse. Isbir & Mete (2013) studied experiences with nausea and vomiting during pregnancy on Turkish women based on Roy adaptation model and revealed that inappropriate environmental conditions such as noise, hot air, an airless and dirty environment precipitate NVP symptoms.

The third domain which had a major impact on women health was the emotional function. It showed that NVP had affected on women's emotional health and the majority of the study participants felt frustrated, can't enjoy pregnancy and worried about health. Also other variables related to emotional health had affected. So the results of the present study pointed out to the presence of statistically significant difference was found at post and follow-up intervention related to emotional function based on severity of NVP. This may be explained as, general and physical health of the pregnant women was improved after appropriate management of women's emotional health.

Many previous studies have found an association between anxiety and depression and NVP especially in the early months. More recent studies, such as that by Simpson et.al (2014) provided a likely explanation that the psychological and emotional symptoms associated with NVP may be due to the stress and debilitating physical symptoms are experienced by women affected with NVP. Another study conducted by Munch et. al (2015) about health-related quality of life in women with nausea and vomiting of pregnancy at California of a sample size 93 pregnant women who reported that emotional symptoms as depression was a contributor to the effect on physical symptoms and general health domains which lead to poor quality of life.

Regarding social, domestic and occupational function, the results of the present study indicated that the majority of the study participants reported that NVP had a major impact on their domestic, social and occupational functioning and family planning as (difficulty preparing or cooking meals, took longer to get things done than usual, relying on partner to do things, difficulty performing work, difficulty maintaining normal social activities, difficulty shopping for food, and difficulty sitting with family during meals). These results proved at the pre-intervention, however; the results pointed out to the presence of statistically significant difference found at post and follow -up intervention related to social function based on severity of NVP. This may be rationalized as, improving general health and relieving NVP related symptoms have a major impact on the social domestic occupational function.

Consistent with a previous study done by Heitmann et. al (2016) who studied the burden of nausea and vomiting during pregnancy: severe impacts on quality of life, daily life functioning and willingness to become pregnant again at Norway of a sample size 712 pregnant women, it showed that the majority of the pregnant women reported that the NVP had major adverse effects on the ability to care for their children, also on the relationship with their partner, reflecting substantial effects on family life functioning. In total 94% reported major impact on their work capacity and over 90% had been on sick leave due to NVP, illustrating that occupational functioning is affected for most women with severe NVP. This was in line with other studies describing that even mild NVP affected important part of the women's daily lives, such as caring for children, relationship with partner, work productivity and intent to become pregnant again (Clark, Hughes & McDonald , 2013).

The aforementioned findings revealed NVP has an impact on daily life functioning and willingness to become pregnant again. Also there was a highly statistically significant improvement of the general symptoms regarding (physical, environmental emotional and social function) by comparing the pre, post and follow-up intervention mean scores. Additionally, the mean score for each part of the domains questionnaire was significantly different while comparing the results of the three measurements and determine the effect of clinical practice guidelines on NVP QOL.

**Conclusion:-** The present study findings supported the study hypotheses and concluded that using of alternative treatments 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 alternative treatments of nausea and vomiting have lower scores of the severity of nausea and vomiting during

early pregnancy than those who do not follow these treatments. There was also an improvement of normal functioning quality of life of the pregnant women after using alternative treatments post intervention. This supported the research hypothesis (2) which was, pregnant women who follow alternative treatments of nausea and vomiting during early pregnancy have higher scores of normal functioning quality of life than those who do not follow these treatments.

### **Recommendations**

According to the findings of the current study, the following recommendations are proposed:- early guidance with alternative treatments 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 alternative treatments of NVP to be used as a routine care for nausea and vomiting during early pregnancy.
- Translation of alternative treatments of NVP 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 alternative treatments of NVP.
- 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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