Effect of Implementing Ottawa Nutritional Guidelines on the Course of Nausea and Vomiting During Pregnancy (A Randomized Control Trial)

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ABSTRACT

Background: Nausea and vomiting are the most common pregnancy symptoms that negatively affect many pregnant women. Severity varies from mild to severe vomiting.
Aim: to examine the impact of applying the Ottawa nutritional guidelines on the control of nausea and vomiting during pregnancy**.**
Design: A randomized controlled trial (single blind) was used in the current study.
Sample: A simple random sample of 60 pregnant women was equally divided into two groups (30 for each) through random selection of the subjects to the study, and control group.
Setting: Antenatal clinic at El Zahra Center.
Data Collection Tools: Three tools were utilized **1)** Structured interviewing questionnaire; **2) Ottawa** nutritional guidelines for controlling nausea and vomiting during pregnancy 3) Modified 24 hr pregnancy unique quantification of emesis (PUQE 24).

Results: revealed that, the severity and frequency of nausea and vomiting reduced significantly after starting the treatment to the study group compared to the control group. The present study demonstrates a significant difference between PUQE24 score (p 0.000) and quality of life (p 0.000) before and after the intervention related to nausea and vomiting in the study group. There is a significant association between the evidence-based measure used and the relief of nausea and vomiting.

Conclusion: Based on the study findings, it is concluded that Ottawa nutritional guideline for nausea and vomiting during pregnancy, has positive impact on nausea, vomiting, and health-related quality of life of pregnant women.

Recommendation: an educational guidelines about evidence-based measures for alleviating nausea and vomiting during pregnancy as a hospital protocol for guiding nurses in the application is strongly recommended.

Key words / nausea and vomiting during pregnancy; Ottawa nutritional guidelines for nausea and vomiting

DOINumber:10.48047/nq.2023.21.5.NQ222114 NeuroQuantology2023;21(5):1232-1247

Introduction

Nausea and vomiting in pregnancy (NVP) are commonly experienced symptoms in pregnancy, especially in early pregnancy, affecting up to 70–85% of all women during the first half of pregnancy. Symptoms usually start between 6 and 8 weeks of gestation, rise to a peak before the end of the first trimester, and, in the majority of women, resolve by 20 weeks (Ellilä, Laitinen, Nurmi, Rautava, Koivisto, & Polo-Kantola, 2018). There is a wide spectrum of severity in terms of the duration and acuity of symptoms throughout gestation, ranging from mild to severe hyperemesis gravidarum (HG), which is typically considered a severe form of NVP and is often characterized by the inability to tolerate oral fluids and/or food and is commonly associated with weight loss. HG has been reported to affect up to 10% of pregnancies and is associated with significant adverse maternal outcomes (Dean, Shemar, Ostrowski, & Painter, 2018).

Nausea and vomiting are physically morbid disease. Its severity significantly impacts a pregnant woman's life and her pregnancy experience, especially the quality of life and work function during early pregnancy. However, the management options that are based on the evidence for this problem are limited. Nausea and vomiting in early pregnancy are among the most common reasons for hospitalization. There was a highly significant negative correlation (r=-0.760-p<0.05) between the PUQE test mean score and activity. (Cengiz, & Özşahin, 2022). A qualitative study conducted by (Yargawa, Hill, & Fottrell, 2022) reported that vomiting was a normal part of pregnancy, unless a woman vomits after eating, has a poor appetite, is not well-nourished, cannot perform chores, is overwhelmed by it, or has to go to the hospital. In the survey, 35.4% (95% CI 26.5–45.5) of women reported any vomiting during their last pregnancies, and of these, only 21.1% said it had stopped entirely within the first trimester. Over half of women who reported vomiting did so at least three times per day most days, and 34.7% were vomiting five or more times per day during the most severe period. Care-seeking was reported by 61.5%. Both the qualitative and quantitative data found that vomiting impacted women in multiple ways, including nutritionally, physiologically, mentally, financially, and martially; 50.8% of women with any vomiting in the survey perceived the overall severity of the condition negatively.

Nausea and vomiting are physically morbid diseases; their severity significantly impacts a

pregnant woman's life and her pregnancy experience, especially the quality of life and work function during early pregnancy. (Hirose, Tamakoshi, Takahashi, Mizuno, Yamada, & Kato, 2020) and (Heitmann, Nordeng, Havnen, Solheimsnes, & Holst, 2017).

Nausea and vomiting were significantly associated with several characteristics, including daily life functioning, quality of life, and willingness to become pregnant again. The greater the negative impact, the more severe the symptoms, although considerable adverse effects were also seen among women with mild and moderate NVP symptoms. Over one-fourth of the women with severe NVP considered terminating the pregnancy due to NVP, and three in four considered not getting pregnant again. Severity of NVP remained significantly associated with reduced global quality of life when adjusting for maternal characteristics and illnesses with β (95% CI) = −10.9 (−16.9, −4.9) for severe versus mild NVP. (Heitmann, et al, 2017).

The aim of the study

The aim of the current study was to study the impact of applying the Ottawa nutritional guidelines on the progression of nausea and vomiting during pregnancy.

Subjects and Methods

The study was carried out at the antenatal clinic at the El Zahra Center, which is a nongovernmental obstetric centre affiliated with the Egyptian Ministry of Health. A total of 60 pregnant women who complained of mild to moderate nausea and vomiting (having a score of 7–12 on the (PUQE 24) were recruited for this study via simple random sampling. Subjects who met the inclusion criteria were randomly allocated to either intervention groups (N = 28) or control groups (N = 27), where two cases were excluded from the study group due to absence from a follow-up session in the study group, two cases were excluded due to absence from a follow-up session, and one case was excluded due to antiemetic administration in the control group. Using sealed envelopes, subjects were recruited according to the following inclusion criteria: 1) primigravida; 2) gestational age of 7-13 weeks; 3) singleton pregnancy; 4) having a score of 7-12 on the (PUQE 24); 5) can read and write; 6) Not receiving medications for reducing NVP, except for vitamin B6; 8) wanted pregnancy, and according to the following exclusion criteria Women who had obstetric complications during the study, such as hyperemesis gravidarum, had physical or mental disorders; women with oral or speech impairments

; women who get pregnant by assisted reproductive techniques for the present pregnancy; had two consecutive miscarriages before the current pregnancy; old primigravida, drinking narcotic or alcohol, and women who showed signs and symptoms of hyperemesis gravidarum during the study were excluded from the current study and referred to medical care.

The study was conducted during the period from January 2021 to September 2021. The research investigator attended the study setting to collect the required sample; women who met the eligibility criteria were numbered, and randomly recruited in the study in which odds number were selected A random allocation to the study groups through using closed envelopes containing card written on it P6 acupressure or control group was done.

Tools for Data collection

Three tools were used for data collection 1) Structred interview questionnaire Schedule; 2) Modified 24-hour Pregnancy-Unique Quantification of Emesis and nausea (PUQE 24) and 3) Ottawa nutritional guidelines.

<u>1-Structred interview questionnaire Schedule</u>

It was designed by the investigator and it included data related to a) socio-demographic characteristics of pregnant women, b) history of current pregnancy such as gestational age, gravidity, parity, obstetric code, c) data related to history of nausea and vomiting

during previous and current pregnancy. This tool was approved by panel experts in gynecology and maternity nursing.

2-**Modified 24-hour Pregnancy-Unique Quantification of Emesis and nausea (PUQE 24):** Quantification of Emesis/Nausea (PUQE 24) Index It is an objective and validated index adopted from (Ebrahimi et al., 2009) and used to measure the severity of symptoms of nausea and vomiting of pregnancy (NVP) in the previous 24 hours. This index contains three questions regarding the length of nausea per day in hours, the number of daily vomiting episodes, and the number of retching episodes. Each PUQE 24 question has a rating from one to five. The three (PUQE 24) questions each have a rating from 1–5, thus the composite sum (PUQE 24 score) ranged from 3–15. A score between 3–6 points was defined as mild NVP, 7–12 points as moderate NVP and scores 13 points was classified as severe NVP/HG.

3-Ottawa nutritional guidelines: to help control nausea and vomiting during pregnancy. This guideline aims to provide evidence-based instructions for the early treatment of NVP and suggests strategies for the early diagnosis and treatment of this conditional, Canada (2017)**.** This guideline was used as a guide for intervention and follow up for pregnant women. It includes recommendations about lifestyle modifications, nutritional therapies, complementary medicine, and acupressure.

Validity and reliability of the tools

Tools were submitted to 3 experts in the field of maternity nursing to test content validity, clarity of sentences and an appropriateness of the content; modifications was carried out according to the expert judgment while reliability of the study tools was tested using Cronbach's α (alpha= 0.92).

Pilot Study

Pilot study was carried out on 6 (10%) women who were not included in the main study sample to test the clarity, applicability, simplicity and feasibility of the developed tools, and the study. It also assisted in the estimation of the time needed to fill in the forms. Necessary modification was done according to the results of the pilot study.

Ethical consideration

A primary approval to conduct the study was obtained from the ethical research committee of the faculty of nursing at Cairo University on (26\10\2020). Also, official permission was granted from the director of setting. The research investigator introduced herself to to the women who met the inclusion criteria and informed them about the aim of the study in order to obtain their acceptance. All women were informed that participation in this study is voluntary, and they can withdraw at any time during the study without giving reasons, and that their withdrawal will not affect the care they will receive. A written informed consent was obtained from study participants. The final approval was obtained after the completion of data collection from the research ethical committee of the faculty of nursing at Cairo University on (18\10\2021).

Procedure for data collection

Recruitment

All pregnant women who were admitted to the clinic complained of nausea and vomiting were invited to participate in the study. Those who met the inclusion criteria were asked for written informed consent, and then numbered, and every odd number was recruited in the study. A random assignment and allocation of the participants to each group either intervention (N=30) or control (N=30) through the use of closed envelopes containing cards labeled as P6 acupressure or control group. Randomization and allocation was done by the nurse in charge in the center. The subjects were allowed to withdraw from the study due to physical injury or interference of the intervention with health or treatment measures.

Assessment:

Each participant in both groups was interviewed face to face; each interview took 15 minutes. Data related to socio-demographic status, medical and obstetrical history was collected from both groups. The participants completed the (PUQE 24) next day according to their status around the day for one day, the participants delivered the questionnaires to the researcher in the following morning to establish baseline data regarding frequency and severity of nausea and vomiting using (PUQE 24).

Intervention:

Regarding the control group, follow up assessment and monitoring was done, for the study group the days of training sessions were scheduled. The Ottawa educational guideline was presented in two sessions of 40-minutes each (3-5 cases) in the form of a lecture, questions, answers, and group discussions (a 20-minutes lecture with a slide presentation, 20 min for questions, answers, and group discussion). The time interval between the sessions was two days. Meanwhile, subjects in the control group received the routine antenatal care, and equally followed up for the whole duration of the study except for the intervention. At the end of the second session, Arabic booklets were distributed to the intervention group to guide them at home. In addition, samples of the foods recommended by the guidelines were distributed to be shared by the participants during or after each session.

Follow up and evaluation

Three follow-up assessments for both the control and study group were performed two days apart between each; the first was through attendance at the clinic, followed by a phone call after two days, and then a final assessment after two days in the clinic. Weekly phone calls were done for additional explanation; the final evaluation of nausea and vomiting, as well as other complaints, were carried out throughout the two scheduled clinical visits. This study was registered at ClinicalTrials.gov (NCT05370170).

Statistical Analysis

Statistical Package for the Social Science (SPSS) version (20) was used for statistical analysis of data. Collected data were summarized and tabulated by using descriptive statistics. Inferential statistics (T-test and Chi-square) was used to examine the differences between the study groups. P value of 0.05 was considered as significant.

Results

Results of the study revealed that 73.3% of mothers in the study group and 73.3% in the control group were between the age range (25-29.9) years, with mean ages of (25.86±1.85 & 26.83±2.24) years in the study and control groups, respectively with no statistically significant differences between both groups (X^2 = 4.26, p = 0.11). In the study group, 16.7% of mothers, as compared to 3.3% in the control group, had secondary school education, while 83.3% and 96.7% of mothers had university education in the study and control groups, respectively. There were no statistically significant differences between both groups (p = 1.00). 63.3% and 73.3% of mothers in the study and control group, respectively, were housewives. There is homogeneity of the study sample. (Table1)

Table (2) shows that the range of the gestational age at the time of recruitment was 8–12 weeks of gestation with a mean of (9.76±1.25) weeks in the study group as compared with (10.33±1.18) weeks in the control group, with no statistical significance differences between both groups (t= -1.80, p=1.07).

In relation to signs of dehydration 23.3% of mothers in the study group had felt thirst in the third visit after guidelines application as compared with 70% of mothers in the control group, with highly statistically significant differences between the two groups (x^2 =13.12, p =.000). Three point three percent of mothers in the study group had dry skin, oral,

and mucus membrane compared with 43.3% of the control group with a highly statistically significant difference between both groups (x^2 =13.41 p=.000). No mothers in the study group had increased heart rate as compared with 30% of mothers in the control group with a highly statistically significant difference between both groups (x^2 =10.58 p=0.001).(Table 3)

More than half of the mothers in study group had mild nausea and vomiting compared to the mothers in the control group (53.3 % vs. 1 %), 46.7% of mothers in the study group had moderate nausea and vomiting compared to 76.7% of mothers in the control group, while non of the study group had severe vomiting compared to 20.0% of mothers in the control group, with a highly statistically significant difference between the two groups (X^2 =21.42, p=0.00). (Table4).

Concerning quality of life, work, outdoor duties, and family relationship, NVP negatively affected 20 % of mothers in the study group and of mothers in the control group, with highly statistically significant differences between the two groups (X^2 = 20.4, p= 0.00). Performance of household duties was affected as follows: 16.6 %in the study group and 66.6 % in the control group, with highly statistically significant differences between the two groups (X^2 =27.7, p = 0.00). In relation to family and relationships 23.3 % of women in the study group were negatively affected compared with 60. % of mothers in the control group, with highly statistically significant differences between the two groups (X^2 =8.29, p = 0.004). In the study group, 23.3 % felt exhausted compared with 56.7 % in the control group, with highly statistically significant differences between the two groups (X^2 =6.94, p=.008). For the effect of NVP on activities of daily living, 43.3 % in the study group were negatively affected compared with 86.7 % in the control group, with highly statistically significant differences between the two groups (X^2 =*12. 3*, p= *0.00*). (table 5).

According to the score of questions about quality of life in the initial visit, 51.7 % of all study sample had low quality of life, 45 % had moderate quality of life, and 3.3 had high quality of life, as for the self rating of quality of life it showed 21.7 % of all study sample had low quality of life, 78.3 % had moderate quality of life, and 0 % had high quality of life with no statistically significant differences between the two measures (X^2 =*0.93*, p= *0.625*). in the first visit, 51.7 % of all study sample had low quality of life, 45 % had moderate quality of life, and 3.3 had high quality of life, compared with the self rating of quality of life it results revealed that 21.7 % of all study sample had low quality of life, 78.3 % had moderate quality of life, and non of them had high quality of life with no statistically significant differences between the two measures (X^2 =*0.573*, p= *0.751*). In the second visit, 38.3 % of all study sample had low quality of life, 15 % % had moderate quality of life, and 46.7 % had high quality of life, compared with the self rating of quality of life it showed 25. % of all study sample had low quality of life, 55 % had moderate quality of life, and 20 % had high quality of life with no statistically significant differences between the two measures (X^2 =*1.32*, p= *0.858*). In the second visit, 41.7 % of all study sample had low quality of life, 6.7 % % had moderate quality of life, and 51.7 % had high quality of life, compared with the self rating of quality of life it showed 21.7 % of all study sample had low quality of life, 36.7 % had moderate quality of life, and 41.7 % had high quality of life with no statistically significant differences between the two measures (X^2 =*13.9*, p= *0.088*).

Table (7) Illustrated that the relative risk of nausea and vomiting severity (RR) = (0.0769), which means that the risk to have severe nausea and vomiting in the study group was 0.0769 times less than in control group. Also,

the risk reduction was 1 times among the study group (RRR=1), the chance to protect from severe nausea and vomiting was 1 time among the study group. Also, as NNT were 5 which mean that 5 women needed to be treated with the designed protocol of care in order to prevent severe nausea and vomiting.

Table (8) Regarding the research hypotheses and secondary outcomes, which include hyperemesis gravidarum prevention and hospitalization prevention, no woman developed hyperemesis gravidarum in the study group, while in the control group 6 women (3.6 %) developed severe nausea and vomiting using the PUQE24, and of those 3 women (1.8 %), of them developed hyperemesis gravidarum and loss of more than 5 % of their weight, and one woman (0.6%) was hospitalized.

Figure (1) shows the difference between the percentages of women who felt thirst in the initial assessment and the initial assessment 23.3 % of the control group felt thirsty compared with 30% in the study group. The figure shows a significant increase in the percentage of the women in the control group to reach 70 % and a decrease in the percentage of the women in the study group to reach 23.3% during the third visit. During the initial assessment, 40 % of women in the control group had dry skin and mucus membrane compared with 33.3 % in the study group, and during the third visit there was a slight increase in the percentage of women in the control group to reach 43.3 % and 0 % of the women in the study group, which represents a significant decrease. Regarding the heart rate, 30 % of the women in the control group had an increased heart rate

Figure (2) shows the difference between the mean score of the PUQE24 between the control and the study group. During the initial visit, the mean score of PUQE24 for the control group was 8.23 and for the study group was 9.06, with no statistically significant difference between both groups. However, there was a significant statistical difference during the third visit, as the mean score of the study group increased to reach 9.66, but it was significantly decreased in the study group to reach 6.0. Regarding the mean score of the quality of life question during the initial visit, the mean score for the control group was 6 and 5.85 for the study group, with no statistically significant difference to show a decrease in the mean score for the control group to reach 54.6 during the third visit and a significant increase in the mean score of the study group to reach 7.70.

Table 1

Distribution of the sample according to personal background (n=60).

Items	Study group (n= 30)		Control group (n=30)		X^2	p-value
	No	%	No	%		
Age						
20-25	7	23.3 %	3	10 %	4.26	0.11
25-29.9	22	73.3 %	22	73.3 %		
≥ 30	1	3.3 %	5	16.7 %		
Mean± SD	25.86±1.85		26.83±2.24			
Education level						
-Secondary School	5	16.7 %	1	3.3 %	2.96	1.00
-University School	25	83.3 %	29	96.7 %		

Occupation						
House wife	19	63.3	22	73.3	0.69	0.40
Working	11	36.7	8	26.7		

Table 2

Distribution of the Study Sample according to the Mean Gestational Age at Recruitment

Variables	**Study group (n= 30)**		**ıtrol group (n= 30)**		***T***	**p-value**
	Mean	**SD**	**Mean**	**SD**		
GA (weeks)	9.76	1.25	10.33	1.18	1.80	1.07

Table 3

	Study group (n= 30)		**Control group (n=30)**		X^2	**p-value**
	No	**%**	**No**	**%**		
Third visit						
Feeling thirsty						
Yes	7	23.3%	21	70%	13.12	**0.00**
No	23	76.7%	9	30%		
Dry skin, oral, and mucus membrane						
Yes	1	3.3%	13	43.3%	13.41	**0.00**
No	29	96.7%	17	56.7%		
Increase Heart rate						
Yes	0	0%	9	30%	10.58	**0.001**
No	30	100%	21	70%		
Third visit	**Study group (n= 30)**		**Control group (n=30)**		X^2	**p-value**
	No	**%**	**No**	**%**		

Feeling thirsty						
Yes	7	23.3%	21	70%	13.12	**0.00**
No	23	76.7%	9	30%		
Dry skin, oral, and mucus membrane						
Yes	1	3.3%	13	43.3%	13.41	**0.00**
No	29	96.7%	17	56.7%		
Increase Heart rate						
Yes	0	0%	9	30%	10.58	**0.001**
No	30	100%	21	70%		

Distribution of the study sample according to signs of dehydration during the Third visit.

Third visit	**Study group (n= 30)**		**Control group (n=30)**		X^2	**p-value**
	No	**%**	**No**	**%**		
Affect work and outdoor duties?						
Yes	6	20 %	16	53.3 %	20.4	**0.000**
No	24	80 %	14	46.7 %		
Affect performance of household duties?						
Yes	5		20	66.6 %	27.7	**0.00**

		16.6 %				
No	25	83.3 %	10	33.3%		
Affect family and relationship?3ko3mnlk,						
Yes	7	23.3 %	18	60 %	8.29	**0.004**
No	23	6.7 %6	12	40 %		
Do you feel tired, exhausted and dependent?						
Yes	7	23.3 %	17	56.7 %	6.94	**.008**
No	23	6.7 %6	13	43.3 %		
Affect the activity of daily living						
Yes	13	43.3 %	26	86.7%	*12. 3*	***0.00***
No	17	56.7 %	4	13.3 %		

Table 4

Pregnancy Unique Quantification of Emesis **(PUQE24)** Classes during the **Third Visit.**

Third visit	**Study group (n= 30)**		**Control group (n=30)**		X^2	**p-value**
(PUQE24)	**No**	**%**	**No**	**%**		
Mild	16	53.3 %	1	3.3 %	21.42	**0.00**
Moderate	14	46.7%	23	76.7 %		
Sever	0	0%	6	20%		

Table 5

Description of the Women's Quality of Life Question at The Third Visit

	Score of Quality Questions			Self Rating of Quality of life			X^2	*P*
	Low	Moderate	High	Low	Moderate	High		
Initial Visit	31 51.7 %	27 45.0%	2 3.3%	13 21.7 %	47 78.3%	Zero	0.93	0.625
First Visit	31 51.7 %	27 45.0%	2 3.3%	13 21.7 %	47 78.3%	Zero	0.573	0.751
Second Visit	23 38.3 %	9 15 %	28 46.7 %	15 25 %	33 55 %	12 20 %	1.32	0.858
Third Visit	25 41.7%	4 6.7 %	31 51.7 %	13 21.7 %	22 36.7 %	25 41.7 %	13.9	0.088

Table 6

Description of the Difference between Women's in Self Rating Quality of Life through the Four Visits for study group.

eISSN1303-5150

Table 7

Relative Risk & Relative Risk Reduction & Absolute Risk Reduction and NNT Related To Nausea and Vomiting Severity among Study and Control Group.

	Risk in groups	RR	ARR	RRR	NNT
Items					
Study group (n= 30)	0.0	0.0769	0.2	1	5.167
Control group (n=30)	0.2				

Table 8

Distribution of the Cases According to the Secondary Outcomes in the control group.

	Number	Percentage
Weight loss ≥ 5 % of pre pregnancy weight	3	1.8 %
Severe nausea and vomiting	6	3.6 %
Clinical diagnosis of hyper emesis gravidarum	3	1.8 %
Hospitalization	1	0.6 %

Figure (1) *Comparison between the Study and Control Group follow up in Relation to Signs of Dehydration*

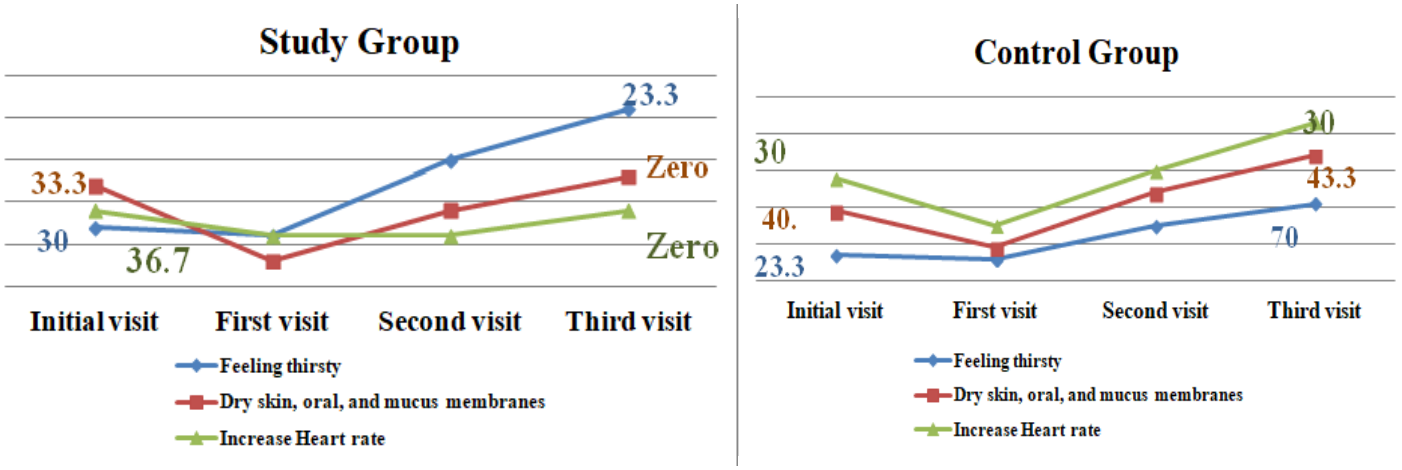
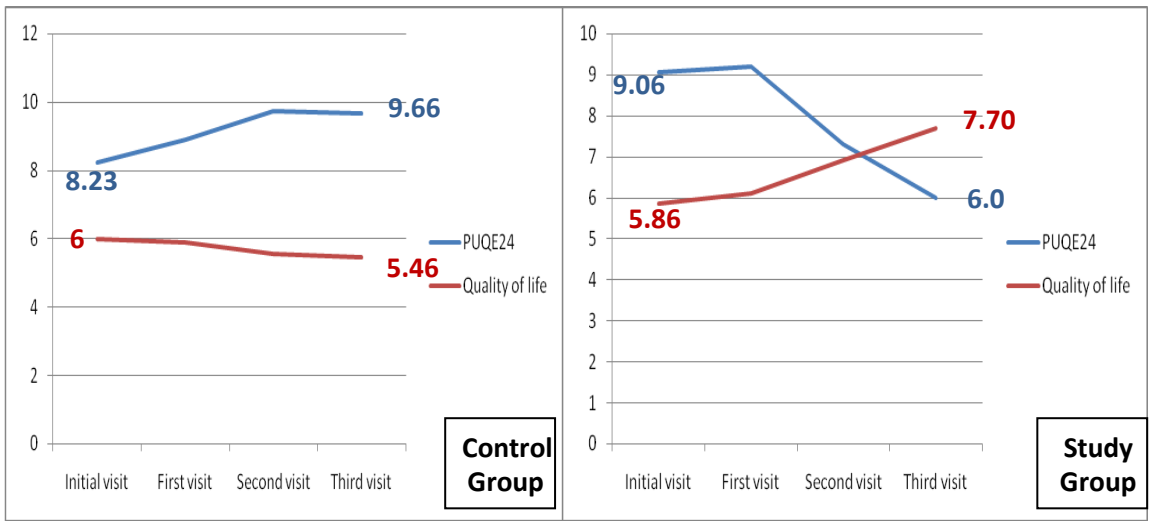


Figure (2) *shows Comparison between the Mean Score of the PUQE24 and the Quality of life question Between the Study and Control Group before and after the Guidelines Were Applied*



Discussion

The results of the present study revealed no significant statistical difference in the socio demographic characteristics between the study and control groups as regard to age, education, occupation, and that indicating homogeneity of the sample. No significant difference between two groups In relation to weight loss, quality of life, and the frequency of nausea and vomiting, Physical symptoms and life at recruitment.

- Primary outcomes

- **Severity of Nausea and vomiting**

The current study showed that the mean score for PUQE24 at the third visit for the study group was (6.0±2.30) as compared to (9.66±3.39) in the control group, with a highly statistically significant differences between the groups (t = -4.89, p = 0.00). While the mean score for the quality of life for the study group was (7.60 ±.72), and (5.60 ±.89) for the control group there was statistically significant differences between groups (t = 9.52 p=0.00), no statistical significant differences between both groups was found in weight loss (t= -464 p =.658). These results in same line with (Mohd, Chieng, Zainuddin, Chew, Kalok, , & Nur 2022). Who conducted a randomized controlled trial to study the effect of acupressure at p6 on nausea and vomiting in pregnancy. The primary outcome was differences in modified PUQE scores among the groups (p = 0.001). And another quasi-experimental (pre/post-test) study was conducted at the antenatal clinics at Ain Shams University Maternity Hospital; all women received the evidence-based intervention which includes lifestyle modification. Besides, one of the following: herbal therapy, acupressure, and aromatherapy. The study shows a highly statistically significant difference between the mean score of nausea and vomiting before and after intervention (p-value 0.000), and demonstrates a highly statistically significant association between measures used and the relief of nausea and vomiting at the fourth week of intervention at a p-value 0.01 (Marak, El-Sheikh, & Ahmed, 2021).

Results of the current study are consistent with the results of a single-blind clinical trial conducted by (Golmakani, Soltani, Ghayour & Mazloum, 2017). To determine the impact on pregnant women who experience nausea and vomiting of an educational intervention based on the Ottawa nutritional guideline. After the trial, there was a significant difference in the mean NVPQOL score between the intervention and control groups (P=0.001). This matching of results may be related to the utilization of the same guidelines (Ottawa guidelines).

A cross-sectional study by Samarakoon, Mohamed, Wijerathna, and Kisokanth (2020) found that education and self-management can decrease the severity of nausea and vomiting during pregnancy. The findings of the current study corroborated these findings. The results of the current study are consistent with those of (El-Sharkawy, and Araby, 2020), who conducted a study to evaluate the efficacy of self-instructional modules on knowledge and remedial practices regarding a few minor ailments among primi gravida and show a statistically significant difference between the occurrence of minor ailments at the post-intervention phase compared to the pre-intervention phase in favor of post-intervention regarding (morning sickness, heartburn), this effect may be related to the inclusion criteria as primi gravida women as they have high compliance and interest for pregnancy related education. In addition to another study done by (Alageswari and Dash, 2019) agreed with the present study and concluded that teaching about minor ailments of pregnancy and its management helped the women to manage these discomforts at home by themselves effectively.

Another study examined the impact of nutritional guidelines on the health status of pregnant women with hyperemesis gravidarum. Pre- and post-test quasi-experimental research design. It revealed a statistically significant difference in the number of meals consumed daily between pregnant women in the first and second weeks (p V=0.001). Weight gain (p V= 0.001) Vomiting frequency (p V= 0.120) per day. (Hassan, Mostafa, & Fouly, 2019).

These findings are supported by Ozgoli, & Naz (2018), who carried out a systematic review in Iran to evaluate the efficacy and safety of several non-pharmacological methods for treating NVP, such as ginger, P6, and acupressure. From 2000 to 2015, randomized controlled trials were employed in this systematic review. Additionally, it contained 31 clinical trials, six of which were related to pericardium 6 (P6) acupressure. The majority of research has shown a beneficial effect in lowering NVP, although no adverse effects were noted. The majority of methods employed were effective in reducing the incidence of NVP, among which ginger and P6 acupressure can be recommended with more reliability. The effect may be related to the combination of different intervention methods.

The results of the current study are consistent with those of (Sheikhi, 2017), who investigated the effects of acupressure on pregnancy nausea and vomiting in Iranian pregnant women. He found that the P6, KID21, and K-K9 acupressure points have a "positive impact in the reduction of nausea and vomiting in pregnancy.

The present study findings were also supported by (AbdElhaliem, AbdElhady, & Mohamed, 2018), who conducted a study at antenatal clinic at Benha University Hospital on two hundred and eighty primipara women to evaluate the effect of a self-care practice guideline on relieving minor discomfort among pregnant women and revealed that self care practice guidelines improved knowledge and self-care reported practice regarding relieving minor discomfort. These similarities with previous studies and present findings are due to the effectiveness of evidence-based measures that were designed to suit the need of pregnant minor discomforts of nausea and vomiting this effect may be related to the inclusion criteria as primi gravida women as they have high compliance and interest for pregnancy related education

On the other hand, Ngo, Truong, Wright, & Nordeng, (2022), conducted a randomized controlled research to examine the effects of a mobile app for monitoring symptoms of morning sickness and quality of life. They said that there were no differences between the

groups in terms of PUQE score changes. Study was slightly underpowered due to lack of human interaction, due to a higher dropout rate than expected.

An observational, single-center prospective cohort study employing validated survey tools on pregnant women between 9 and 16 weeks gestation contradicts the findings of the current study. Comparison of persons with and without NVP in terms of quality of life as determined by the Short-Form Health Survey (SF-12). The study discovered low treatment utilization, correlating NVP severity levels with quality of life scores, work patterns, and medicine taken (Tan, Lowe, & Henry, 2018). It might be because of the study's observational design and small number of participants in each therapy.

The present study findings were inconsistent with (Adane, Seyoum, Alamneh, Abie, Desta, & Sisay, 2020), who conducted eight studies in Ethiopia to assess the use of herbal medicine and its predictors among pregnant women attending antenatal care. The study showed that half of the women attending antenatal care preferred herbal medicine, which was relatively high. The most consumed herbal medicine during pregnancy was ginger. It may be due to the utilization of one method only.

Due to the variety of treatment strategies the present study, it can explain its effects on various aspects of health-related quality of life in women with NVP.

Quality of life

The symptoms of nausea and vomiting may cause emotional distress and interfere with a woman's ability to maintain her daily routines and responsibilities, including familial commitments, work and social obligations. From the results of the present study, it can be observed that, a large proportion of women from both groups who had nausea and vomiting reported that they were unable to perform their daily activities related to domestic life as cooking and cleaning. This is because nausea and vomiting have a negative impact on daily life functioning. The current study showed that the mean score for the quality of life question for the study group is (7.60 ±.72), and (5.60 ±.89) for the control group there is a highly statistically significant differences between both groups (t = 9.52 p=0.00), and the mean body weight for the study group (67.4±5.76) and (68.1±6.93) with no statistical significant differences between both groups (t= -464 p =.658). The results are in accordance with Heitmann et al., 2017 who demonstrated that NVP had adverse effects on women's daily lives, such as caring for children, relationship with partner and work productivity. A study was conducted by Vakilian et al., 2019 about the relationship between nausea and vomiting with general and psychological health of pregnant women reported that high intensity of nausea and vomiting caused more problems on the physical function of women and more restrictions on daily activities.

, On the other hand, Ngo, et al, 2022). Reported that, quality of life .The adjusted primary analysis showed that the changes in NVPQOL scores from baseline to Q2 were not significantly different between the intervention and control groups. Study was slightly underpowered, due to a higher dropout rate than expected.

Strengths and Limitations

The main strength of this study is combined application of educational guidelines and acupressure. An important strength of this study was the use of the randomized controlled trial design, which is considered the gold standard in evidence-based medicine (Hairton, & Locascio (2018). Another strength of this study included small group interaction. The main benefit of small group interaction is the open discussion, clarifications, continuous feedback, and experience exchange. In addition, the PUQE24 may have provided an

advantage over other nausea and vomiting in pregnancy scales because the PUQE24 is more specific. The current study represented differences and progression within each group.

The major limitation of this study was that the small number of participants, which was 60 women. Furthermore, short follow up duration. In addition the difficult follow up through phone call.

Future Research

Apply a comparative study between primigravida and multigravida women about the effectiveness of evidence-based guidelines on alleviating nausea and vomiting during pregnancy. Comparing the effects of different acupoints in reducing nausea and vomiting during pregnancy. A future study should include an assessment of the alleviating and aggravating factors related to NVp. in addition to qualitative research regarding the lived experience of women with severe nausea and vomiting during pregnancy.

Conclusion Based on the study findings, it is concluded that Ottawa nutritional guideline for nausea and vomiting during pregnancy, has positive impact on nausea, vomiting, and health-related quality of life of pregnant women. Therefore, it is recommended to teach the proposed guidelines to pregnant women in order to improve their experience with nausea and vomiting.

Recommendations

In the light of the findings of this study, the following recommendations are suggested: - Illustrative educational programs should be developed to increase the awareness of pregnant women and their husbands about evidence-based measures for alleviating nausea and vomiting during the first trimester of pregnancy. - Inclusion of leaflet or]]booklet about evidence-based measures for alleviating nausea and vomiting during pregnancy as a hospital protocol for guiding the nurses in the application. It is recommended that acupressure can be taught to maternity care personnel as refreshment courses and be presented to patients complaining from nausea and vomiting in the form of pamphlets and health magazines.

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