

Designed Self-Care Guidelines and Its Effect on Knowledge and Practices among Pregnant Women with Hyperemesis Gravidarum

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Abstract

Background: Hyperemesis Gravidarum (HG) is a severe form of nausea as well as vomiting during pregnancy that goes beyond typical morning sickness. Pregnant women with HG often experience extreme and persistent vomiting, leading to weight loss, dehydration, electrolyte imbalances, and nutritional deficiencies. Medical attention and supportive care are essential to manage symptoms and ensure the health and well-being of both the mother and the developing baby. **Aim of the study:** This study aimed to evaluate the effectiveness of designed self-care guidelines on knowledge and practices among pregnant women with hyperemesis gravidarum. **Research Design:** One group pre and post testing as part of a quasi-experimental study approach. **Setting:** Obstetrics and gynecology department of the Maternal & Child Minia University Hospital, high dependent unit (HDU1). **Sample:** A purposive sample of 90 pregnant women. **Tools:** Data was gathered using Four tools: A structured interview questionnaire, knowledge assessment tool, self-care practices questionnaire, and modified 24-hours Pregnancy-Unique Quantification of Emesis (PUQE) questionnaire. **Results:** The study revealed that, 76.2 % of the women had good knowledge, 82.2% of them had a satisfactory practice, and 5.6 % had sever on average, per day, how long do feel nauseous post-implementation of an educational program. **Conclusion:** The research concludes that implementing self-care guidelines lead to improve knowledge, as well as practices for pregnant women with hyperemesis gravidarum. **Recommendations:** Apply educational program to pregnant women with hyperemesis gravidarum to increases knowledge, and practices in another health care settings

KeyWords: Hyperemesis Gravidarum, Knowledge, Practices, Pregnant Women, Self-Care Guidelines

Introduction:

Pregnancy is a natural and transformative process in which a woman carries and nurtures a developing baby within her womb, usually lasting about forty weeks from the 1st day of the last menstruation. It is classified into three trimesters, every one of them marked by different phases of fetal growth and maternal alterations. During pregnancy, the body of a woman passes through different physical and hormonal adjustments to support the developing fetus. Common symptoms include fatigue, nausea, mood changes, and physical changes such as weight gain and a growing abdomen. Proper prenatal care is crucial to ensuring the well-being of both the woman and the baby,

supporting a safe and healthy pregnancy and delivery (Leanderz et al., 2025).

Hyperemesis gravidarum (HG) is a rare but severe consequence of pregnancy marked by severe and ongoing vomiting as well as nausea. It can lead to severe weight loss, dehydration, and electrolyte and nutritional imbalances, in contrast to ordinary morning sickness, potentially requiring hospitalization. The exact cause of HG is not fully understood, but it is thought to be linked to hormonal changes, especially high levels of Human Chorionic Gonadotropin (HCG) (Petherbridge et al., 2025).

The cause of hyperemesis gravidarum remains unclear, but it is believed to be associated

with a mix of hormonal, genetic, and environmental elements. One of the main suspected contributors is the rapid rise in HCG levels during early pregnancy, which may overstimulate places of the brain responsible for nausea as well as vomiting. Other potential factors include increased estrogen levels, gastrointestinal changes, and a heightened sensitivity to smells. Some studies also suggest a genetic link, as women with a family history of the condition are more like to experiencing it themselves (**Elder et al., 2025**).

The clinical presentation of HG typically includes severe, persistent nausea as well as vomiting that begins in the 1st trimester of pregnancy and can continue into later stages. Unlike typical morning sickness, the symptoms are intense and often lead to dehydration, significant weight loss, as well as electrolyte imbalances. Affected women may experience fatigue, dizziness, reduced urine output, and inability to keep food or fluids down. In severe cases, signs of malnutrition and ketosis may be present (**Fejzo, 2024**).

The HG is diagnosed depending on a mix of clinical symptoms, physical assessment, and laboratory investigations. Key indicators involve severe and ongoing vomiting as well as nausea, significant loss of weight (typically above five percent of pre-pregnancy weight of the body), dehydration, and disturbance of the electrolyte. Healthcare providers may assess the patient's hydration status, blood pressure, and heart rate, and order blood tests to evaluate electrolyte levels, kidney function, and signs of malnutrition. A urinalysis is often performed to detect ketones, which indicate fat breakdown due to inadequate nutrition. In some cases, an ultrasound may be used to rule out other conditions such as multiple pregnancies or gestational trophoblastic disease. Early and accurate diagnosis is essential for effective management and to control consequences for both the women as well as the developing fetus (**Zhi et al., 2024**).

Management of HG requires a mix of clinical and nursing interventions to effectively relieve symptoms and support maternal and fetal well-being. Medical treatment typically includes intravenous fluids to correct dehydration, electrolyte replacement, and antiemetic medications to control nausea and vomiting. In more severe cases, nutritional support such as vitamin supplementation or enteral/parenteral feeding may be necessary. Nursing care plays a vital role in observing the women's vital signs, fluid balance,

and nutritional status, as well as providing emotional support and education about the condition. Nurses also assist in ensuring adherence to treatment plans and help create a calm, supportive environment to reduce stress, which can worsen symptoms (**Auger et al., 2024**).

Self-care guidelines play an essential role in improving the knowledge as well as practices of pregnant females with HG, empowering them to manage their symptoms more effectively. These guidelines typically include dietary modifications, such as eating little, frequent meals, preventing triggers like offensive odors or greasy diets, and remaining hydrated with sips of water throughout the day. Education on rest, stress reduction techniques, and the importance of medication adherence also form part of comprehensive self-care instructions. When pregnant women are provided with structured self-care education, their understanding of the condition improves, leading to better symptom management, reduced hospital visits, and enhanced overall well-being. Increased knowledge helps women feel more in control of their health, promotes early recognition of warning signs, and encourages timely medical consultation, ultimately contributing to safer pregnancies and better maternal outcomes (**Fan & Yin, 2024**).

Nurses act a vital role in promoting self-care guidelines and enhancing the knowledge as well as practices of pregnant females with HG through education and counselling, nurses help women understand the nature of the condition, its potential complications, and the importance of self-care in managing symptoms. They provide individualized guidance on nutrition, hydration, rest, and the proper use of prescribed medications. Nurses also assess the woman's understanding and adherence to self-care practices, reinforcing information as needed and addressing any concerns. By building a trusting relationship, nurses create a supportive environment that encourages women to actively participate in their care. This proactive nursing approach not only improves the patient's knowledge but also leads to more effective symptom control, reduced hospital admissions, and good maternal health results (**Jansen et al., 2023**).

Significance of the study:

Globally, HG impacts approximately 0.3% to 2% of pregnant women, making it a significant health concern despite being relatively rare. The condition is recognized worldwide as a leading cause of early pregnancy hospitalization due to its

severe and persistent symptoms. Although the prevalence varies by region, ethnicity, and access to healthcare, its impact on maternal health is universally profound. In low as well as moderate income countries, limited access to medical care can result in delayed diagnosis and treatment, increasing the risk of complications (Beyene et al., 2024). In Egypt, between 0.8 and 2.3 percent of pregnant women experience HG, a severe and uncontrollable type of nausea as well as vomiting. It is an exclusionary diagnosis that can lead to irregularities in levels of fluids, acid-base balance, and electrolytes, as well as loss of weight and nutritional deficits (Mohammed et al., 2024).

The applying of self-care guidelines has been shown to positively impact the quality of life for women with HG. Nurses play an essential role in guiding pregnant women with HG in adopting self-care practices to alleviate their symptoms and improve their overall health. By providing clear, tailored education on managing nausea and vomiting, hydration, nutrition, and medication use, nurses empower women to take an active role in their care. They also offer support in coping with the emotional and physical strain of the condition (Elarby et al., 2024).

Through regular assessments and follow-up, nurses can identify any barriers to adherence and adjust care plans accordingly. Additionally, nurses help women understand when to seek further medical attention, thus promoting timely interventions and preventing complications. This proactive nursing approach significantly enhances the knowledge as well as practices of pregnant women, leading to better symptom management, reduced hospitalizations, and improved maternal outcomes (Adane et al., 2023).

This research aimed to evaluate the impact of designed self-care guidelines on the knowledge as well as practices of pregnant women with HG. It focused on how these guidelines influence various aspects of care, such as symptom management, nutritional support, hydration, and medication adherence. Additionally, the study assessed the effect of these self-care practices on women's overall well-being, including their physical comfort, emotional resilience, and daily functioning. The findings are expected to provide valuable insights into improving the care strategies for women with HG, leading to enhanced maternal health outcomes and a better quality of life throughout pregnancy.

Aim of the study:

This study aimed to evaluate the effectiveness of designed self-care guidelines on knowledge and practices among pregnant women with hyperemesis gravidarum.

Research hypothesis

- **H1-** Pregnant women will show higher knowledge score regarding hyperemesis gravidarum post receiving self-care guidelines.
- **H2-** Pregnant women will show higher satisfactory level of healthy practices toward hyperemesis gravidarum post receiving self-care guidelines.
- **H3-** Pregnant women will show decrease severity of hyperemesis gravidarum post implementation of self-care guideline.

Subject and Methods:

Research Design:

To achieve the goal of the current research, a quasi-experimental research design (pre and post testing one group) was employed.

Setting:

This study was performed at Obstetrics and Gynecology Department at high dependent unit (HDU1) in Maternal and Child Minia university Hospital, it provides free as well as economical services to all patients involving cases of high-risk pregnancy.

Sample type: The purposive sampling type was utilized in this study from the above-mentioned research setting.

Sample size:

According to the flow rate of women with HG cases who attended the hospital in the previous year was (360), hence the determine sample size calculation was (90) based on sample size

equation: (<http://www.ifad.org/gender/tools/hfs/anthropometry>).

$$\frac{z^2 \times p(1-p)}{m^2}$$

S = sample size for infinite population

Z = Z score

P = population proportion (Assumed as 50% or 0.5)

M = Margin of error

Inclusion criteria:

- Pregnant Women at reproductive age.
- Pregnant women medically diagnosed with hyperemesis gravidarum by physician (Diagnostic of HG: vomiting three episodes in the day, loss of weight above five percent of weight prior to pregnancy; and/or ketones found in a urine test; and/or dehydration and/or an imbalance of the electrolyte).
- Women with HG who are pregnant and not suffering from any mental health conditions.

Exclusion criteria:

- Pregnant women with medically GIT disorders.
- Women who refused to share in the study.

Tools for data collection:

Data was gathered through the following four tools:

First tool: Interviewing Questionnaire: it consists of four parts

- **Part I: Socio-demographic data of pregnant women as:** name, age, residences, level of education, occupation, women income, BMI (Underweight = less 18.5, Normal weight = from 18.5 to 24.9, Overweight = from 25 to 29.9, Obesity = equal or more 30, and phone number, etc.....)
- **Part II: Obstetric history which includes:** Gravidity, parity, gestational age (trimester), last obstetric complications, present health condition...etc.).
- **Part III: Risk factors for Hyperemesis Gravidarum (HG) involve:** Nulliparity, multiple pregnancy, obesity, metabolic abnormalities, HG from a prior pregnancy history etc.)
- **Part IV: Negative consequences of HG on everyday tasks which involve:** (depression, anxiety, fear, and self-loss; decreased quality of life; suicidal thoughts or plans to terminate a pregnancy; contemplation of future pregnancy following HG pregnancy; general health and welfare); as well as psychological burden (doing household chores, interacting with others, forming relationships with partners, caring for children, and having the ability to work and learn).

Tool (II): Knowledge Assessment Tool:

Adopted from Sobhi et al., (2022) and alteration by the researcher to evaluate pregnant women's knowledge about HG. It composed of 22 questions of multi choice related to (Def., causes, risk factors, S&S, diagnosis, treatment, management, prevention and complications.... etc.)

Scoring system:

Assumed scores for knowledge questions were one and zero, signifying correct and incorrect, respectively. There were 22 total knowledge items with 22 scores. Percentage scores were created from these scores. If the percentage score was over 75% (≥ 17 grade), good knowledge was taken into consideration, while average knowledge scored 50- $<75\%$ (12- <17 grade) and low knowledge scored less 50% (0- ≤ 11 grade).

Tool III: Self -reported practices assessment questionnaire:

Adopted from (Kamal Ali et al., 2022) and modified by the researcher to assess the health practices reported by the women that might decrease the severity of HG during pregnancy. It consisted of 20 self-care practices related to (lifestyle changes, dietary changes, sleeping pattern).

Scoring system: -

Every item of healthy practice was taken a score (two) for response always practiced, as well as score (one) for response occasionally or sometimes, and finally a score (zero) for response never practiced. The total scores of practices were calculated by adding the item-by-item scores. Women's total practice scores from 0 to 40 and classified into unsatisfactory practice when women score from 0 to 23 (less than sixty percent) and satisfactory practice when women score from 24-40 (equal or above sixty percent).

Tool IV: Modified twenty-four hour Pregnancy-Unique Quantification of Emesis (PUQE) questionnaire: (pre as well as posttest):

It was modified from Koren et al. (2002) and Gupta et al. (2020). Pregnancy nausea as well as vomiting symptoms (NVP) can be measured with this reliable and objective assessment. Mother risk was the one who created the UQE scale. Women were divided into three groups regard the severity of their symptoms using the PUQE score, which was frequently used to evaluate and categorize the severity of NV. The overall duration of nausea in

hours, the total number of retching episodes, and the overall number of vomiting during the previous twenty-four hours make up its three points. A score ranging from 1 to 5 is assigned to each item. A PUQE score, which can vary from three to fifteen points, is calculated by adding the values. A score of ≥ 6 indicates mild NV, 7–12 indicates moderate, and ≥ 13 indicates severe.

II-Operational Item:

Preparatory phase:

Prepare the study tools based on related literature review and develop the study tool and test its content validity as well as reliability.

Validity:

Five obstetrics and gynecological staff professionals and nursing professors piloted the questionnaire to ensure its validity. They evaluated it for understanding, pertinence, comprehensiveness, comprehension, clarity, and ease of use.

Reliability:

Alpha Cronbach's was utilized to verify the stability of the instrument's internal consistency in order to establish reliability.

Pilot Study:

Pilot research was performed on (9 women) ten percent of antenatal women who suffer from HG at the previous mentioned place to evaluate the actual tools of the research for its understanding, truthful and time needed to be performed. Concerning the pilot results, all needed and crucial change was done and the mother who was tested in the research pilot was involved in a study sample.

Procedure:

1-Assessment phase:

After official letter was taken from the research ethical committee of faculty of Nursing, Participants women was recruited from maternal and child Minia University Hospital, Data included evaluation of the women knowledge, practices related HG to gather baseline information, at the starting of meeting the researchers welcome each woman, discussed the objective, duration, and tasks of the study and receive oral consent. Socio-demographic data, women's knowledge and practices regarding hyperemesis gravidarum was assessed, each interview with a woman consumed

about 20-30 minutes on average to complete the questionnaire.

2. Implementation phase:

In this phase the women were classified into small groups (2-3) women to provide educational sessions, this study was implemented through two sessions for each woman (the theoretical part and management practice regarding HG), each session different according to women response lasted for around 35 to 40 minutes. Different teaching methods were used as small group discussion, collaborative and experiential learning, motivation and reinforcement during a session were used to enhance women's learning.

The investigator used an Arabic booklet about hyperemesis gravidarum that include, definition, signs and symptoms, causes, risk factors, prevention, management, complications,etc. It was distributed to each woman at the end of session. Also, the investigator connected with women through telephone call for providing the instruction as well as reinforcement.

3-Evaluation phase:

The investigator was conducted twice of evaluation: the 1st time of evaluation (pre- test) done pre performing of the program utilizing tool (I, II, III, IV) to evaluate socio-demographic data, knowledge, self-care practices as well as severity of HG among pregnant women. The 2nd time of evaluation (post- test) done after 4 weeks of implementation of the program using post- test tool (II, III, IV) to evaluate women knowledge, self-care practices and the severity of HG. The effectiveness of designed self-care guidelines was assessed by comparing the two evaluations to assess women Knowledge, self-care practices and the severity of hyperemesis gravidarum.

Ethical consideration:

- The dean of the Faculty of Nursing and the director of the Maternal and Child Minia University Hospital provided formal approval and written consent prior to the implementation of the pilot study and the full study.
- The faculty of nursing's ethics committee gave its approval to the research idea.
- After describing the nature and goal of the study, women who were willing to participate gave their oral consent.
- Research participants were free to decline sharing or leave the research at any moment without providing a valid reason.

- Privacy of study participants was taken into consideration when data gathering. There were no health risks.
- To preserve their privacy, every mother was given a number rather than her name, and participants were reassured that all of their data would be kept all the privacy.

Statistical analysis

Using SPSS version 20, the data gathered was tallied, processed, examined, as well as condensed through descriptive statistical tests to test the study topics. When interpreting the results of tests of significance (*), a significance level of $P < 0.05$ was chosen. The findings of tests of significance were also interpreted using a highly significant threshold of $P < 0.01$ (**)

Results

Table (1): Distribution of the Women's Demographic traits (No.=90).

Item	No.	%
Women age		
18-23 yrs.	2	2.2
24-29 yrs.	7	7.8
30-35 yrs.	68	<u>75.5</u>
> 35 yrs.	13	14.4
Mean \pm SD	34.4 \pm 0.4 years	
Women's education levels		
Illiteracy	4	3.6
High school education	25	27.8
University education	61	<u>67.8</u>
Women's Job		
Working	71	<u>78.9</u>
Housewife	19	21.1
Place of Residence		
Rural	66	<u>73.3</u>
Urban	24	26.7
Women monthly income		
< 5 thousand	28	31.1
5 :10 thousand	59	<u>65.6</u>
> 10 thousand	3	3.3
Body mass index		
<18.5 mean Underweight	11	12.2
18.5-24.9 mean Normal weight	45	<u>50.0</u>
25-29.9 mean Overweight	15	16.7
> 30 mean Obesity	19	21.1

Table (1): clarifies that 75.5 % of sample, their age between 30-35 years and the mean age of them is 34.4 ± 0.4 years. Also, 67.8% of the women had university education level and 78.9 % of them are working. Additionally, 73.3% of the women from rural area and 65.6 % of them the monthly income is from 5 thousand to 10 thousand. Moreover 50.0 % of studied women's body mass index had normal weight between 18.5 to 24.9.

Table (2): Distribution of Women's Obstetric History (No. =90).

Item	No.	%
Number of pregnancies		
First pregnancy	13	14.4
Second pregnancy	54	<u>60.0</u>
Third pregnancy	23	25.6
Gestational age (trimester)		
The 1 st trimester	28	31.1
The 2 nd trimester	59	<u>65.6</u>
The 3 rd trimester	3	3.3
Number of children		
There is no	2	2.2
One child	7	7.8
Two children	68	<u>75.5</u>

Item	No.	%
Three or more	13	14.4
Complications from previous pregnancy		
Abortion	12	13.3
Premature birth	20	22.2
High blood pressure	13	14.4
Diabetes (gestational or pre-existing)	3	3.3
Low birth weight of the fetus	42	<u>46.8</u>
Current health status		
Difficulty in self-care	3	3.3
Pain/discomfort	8	8.9
Anxiety/depression	5	5.6
Weight loss	16	17.8
Fatigue	58	<u>64.4</u>

Table (2): displays that, 60.0% of the women in the second pregnancy, and 65.6 % of them in the second trimester of pregnancy. While 75.5 % of them had two children, 46.8 % had a low birth weight of the fetus as a complication of previous pregnancy and 64.4 % of them had fatigue as a current complaint.

Table (3): Total knowledge Score about Hyperemesis Gravidarum among Women Pre and Post Implementation an educational Program (No =90).

Total knowledge	Pre-educational program		Post-educational program	
	N0.	%	N0.	%
Poor Knowledge	74	82.0	10	11.5
Average Knowledge	11	12.5	11	12.3
Good Knowledge	5	5.5	69	76.2
χ^2 (P-value)	12.527 (<0.0001)			

Table (3): Shows that, 82% of women have poor level, pre implementation of an educational program decreased to 11.5 % post implementation of an educational program. 5.5 % of women have good level, pre implementation of an educational program which improved and become 76.2 % post implementation of an educational program. Also, there are significant differences between total knowledge score pre and post implementation of an educational program (P- value= .001).

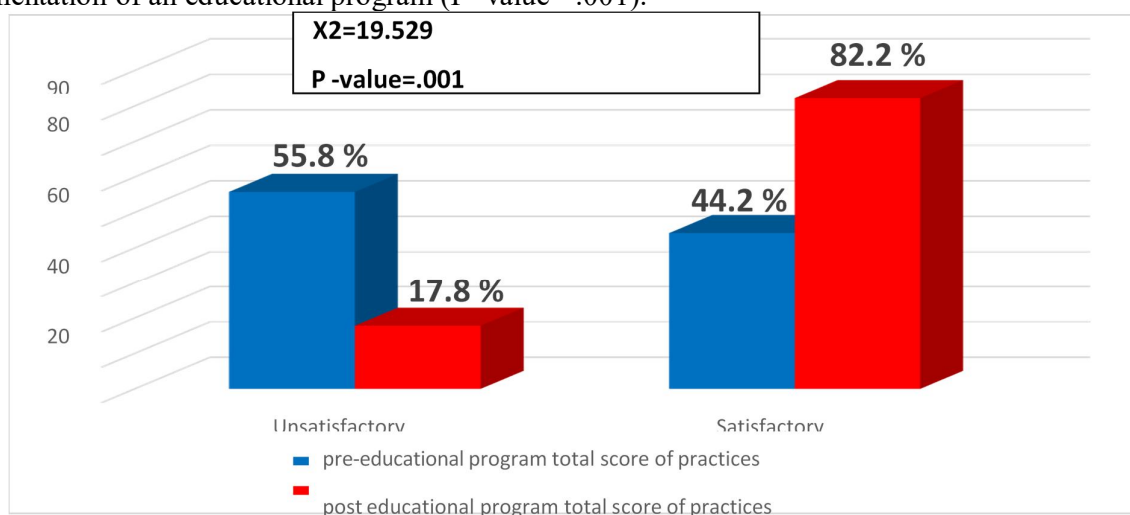


Figure (1): Total Practices Score Toward Hyperemesis Gravidarum among the Women Pre and Post Implementation of Educational Program (No=90).

Figure (1): Illustrates that, more than half (55.8 %) of women have unsatisfactory practice pre implementation of an educational program which improved to the majority (82.2 %) of them have satisfactory practice post implementation of an educational program. Also, there are significant differences between total practices score pre and post implementation of an educational program (P- value= .001).

Table (4): Association between Pre- and post-educational Program's Total Score of Knowledge with Studied Woman's Demographic Characteristics (No =90).

Items		Level of total Knowledge Pre program						Level of total Knowledge Post program					
		Poor (74)		Average (11)		Good (5)		Poor (10)		Average (11)		Good (69)	
		N	%	N	%	N	%	N	%	N	%	N	%
Age/(year)	18-23 years (2)	2	2.7	0	0.0	0	0.0	0	0.0	0	0.0	2	2.9
	24-29years (7)	5	6.8	2	18.2	0	0.0	5	50.0	2	18.2	0	0.0
	30-35years (68)	59	79.7	9	81.8	0	0.0	0	0.0	4	36.4	64	92.8
	>35 years (13)	8	10.8	0	0.0	5	100.0	5	50.0	5	45.4	3	4.3
x ² (P-value)		7.255 (0.000)						11.842 (0.001)					
Education levels	Illiteracy (4)	4	5.4	0	0.0	0	0.0	4	40.0	0	0.0	0	0.0
	High school education (25)	20	27.0	0	0.0	5	100.0	5	50.0	10	90.9	10	14.5
	University education (61)	50	67.6	11	100.0	0	0.0	1	10.0	1	9.1	59	85.5
x ² (P-value)		6.325 (0.002)						17.826 (0.002)					
Women's Job	Working (71)	61	82.4	5	45.5	5	100.0	8	80.0	6	54.5	57	82.6
	Housewife (19)	13	17.6	6	54.5	0	0.0	2	20.0	5	45.5	12	17.4
x ² (P-value)		6.321 (0.005)						17.826 (0.000)					
Place of Residence	Rural (66)	59	79.7	2	18.2	5	100.0	6	60.0	1	9.1	59	85.5
	Urban (24)	15	20.3	9	81.8	0	0.0	4	40.0	10	90.9	10	14.5
x ² (P-value)		5.214 (0.002)						17.826 (0.002)					
Women monthly income	Less than 5 thousand (28)	20	27.0	8	72.7	0	0.0	10	100.0	5	45.5	13	18.8
	5 thousand - 10 thousand (59)	54	73.0	0	0.0	5	100.0	0	0.0	6	54.5	53	76.9
	More than 10 thousand (3)	0	0.0	3	27.3	0	0.0	0	0.0	0	0.0	3	4.3
x ² (P-value)		6.325 (0.002)						10.826 (0.002)					
Body mass index	Underweight=<18.5(11)	5	6.8	6	54.5	0	0.0	5	50.0	6	54.5	0	0.0
	Normal weight = 18.5-24.9 (45)	40	54.1	5	45.5	0	0.0	4	40.0	5	45.5	36	52.2
	Overweight=25-29.9(15)	10	13.5	0	0.0	5	100.0	1	10.0	0	0.0	14	20.3
	Obesity>=30 (19)	19	25.7	0	0.0	0	0.0	0	0.0	0	0.0	19	27.5
x ² (P-value)		3.025 (0.002)						17.826 (0.001)					

Table (4): illustrates the association between pre as well as post-educational program's total score of knowledge with woman's demographic characteristics. It shows that there is a statistically significant relation between total score of knowledge and woman age, woman's residence, woman's education level, women monthly income, and BMI where p-value are (.000, .002, .002, .002, .002) respectively of the studied women in pre educational program and there is no statistically significant relation between total score of knowledge and occupation of the studied women while in post educational program there are statistically significant connections between total score of knowledge and woman age, educational level, job, and place of residence, women monthly income, and BMI about hyperemesis gravidarum where p-value are (.001, .002, .000, .002) respectively.

Table (5): Association between Pre- and Post-educational Program's Total Score of Practices with Studied Woman's Demographic Characteristics (No =90).

Items		Level of total practices Pre program				Level of total practices Post program			
		Unsatisfactory (50)		Satisfactory (40)		Unsatisfactory (16)		Satisfactory (74)	
		N	%	N	%	N	%	N	%
Age/ (year)	18-23 years (2)	2	4.0	0	0.0	0	0.0	2	2.7
	24-29 years (7)	3	6.0	4	10.0	5	31.3	2	2.7
	30-35years (68)	36	72.0	32	80.0	10	62.5	58	78.4
	>35years (13)	9	18.0	4	10.0	1	6.2	12	16.2
x ² (P-value)		8.811 (0.001)				10.842 (0.001)			

Items		Level of total practices Pre program				Level of total practices Post program			
		Unsatisfactory (50)		Satisfactory (40)		Unsatisfactory (16)		Satisfactory (74)	
		N	%	N	%	N	%	N	%
Education levels	Illiteracy (4)	4	8.0	0	0.0	0	0.0	4	5.4
	High school education (25)	20	40.0	5	12.5	10	62.5	15	20.3
	University education (61)	26	52.0	35	87.5	6	37.5	55	74.3
χ^2 (P-value)		9.600 (0.001)				13.628 (0.001)			
Women's Job	Working (71)	40	80.0	31	77.5	10	62.5	61	82.4
	Housewife (19)	10	20.0	9	22.5	6	37.5	13	17.6
χ^2 (P-value)		9.800 (0.002)				17.826 (0.001)			
Place of Residence	Rural (66)	30	60.0	36	90.0	6	37.5	60	81.1
	Urban (24)	20	40.0	4	10.0	10	62.5	14	18.9
χ^2 (P-value)		9.826 (0.002)				17.826 (0.005)			
Women monthly income	Less than 5 thousand (28)	20	40.0	8	20.0	5	31.3	23	31.1
	5 thousand - 10 thousand (59)	29	58.0	30.0	75.0	10	62.5	49	66.2
	More than 10 thousand (3)	1	2.0	2	5.0	1	6.2	2	2.7
χ^2 (P-value)		7.987 (0.002)				10.826 (0.002)			
Body mass index	Underweight = <18.5 (11)	6	12.0	5	12.0	2	12.5	9	12.2
	Normal weight = 18.5-24.9 (45)	10	20.0	35	87.0	10	62.5	35	47.3
	Overweight = 25-29.9 (15)	15	30.0	0	0.0	4	25.0	11	14.9
	Obesity= \geq 30 (19)	19	38.0	0	0.0	0	0.0	19	25.6
χ^2 (P-value)		15.38 (9.826)				17.826 (0.005)			

Table (5) illustrates the association between pre as well as post-educational program's total score of practices with woman's demographic data. It shows that there is a statistically significant relation between total score of practices and woman age, woman's residence, woman's education level, occupation and women monthly income where p-value are (.001, .002, .001, .002, .002) respectively; and there is no statistically significant relation between total score of practices and BMI of the studied women in pre implementation of an educational program. While in the post implementation of an educational program there are statistically significant relations between total score of practices and woman age, educational level, job, and place of residence about hyperemesis gravidarum where p-value are (.001, .001, .001, .005) respectively in post educational program; and there is no statistically significant connection between total score of practices and place of residence and BMI.

Table (6): Correlation between Total Knowledge and Total Practices of Studied Women Pre & Post Implementation an Educational Program (N= 90).

Item	Total practices			
	Pre-program		Post-program	
	R	P value	R	P value
Total Knowledge	- 0.025	0.671	0.298	0.000**

(**) for high statistically significant

Table (6): Shows that, there was positive correlation between studied women total knowledge regarding hyperemesis gravidarum and their total practices. Moreover, there was highly significant improvement in studied women total knowledge and total practices after implementation of educational program (p value= 0.000)

Discussion:

The HG is a severe form of nausea as well as vomiting during pregnancy that significantly impacts the physical and emotional well-being of affected women. In contrast to the usual morning sickness, HG includes persistent vomiting, underweight, and dehydration, as well as nutritional deficiencies, often requiring medical intervention, the condition can disrupt daily life, making it difficult to maintain work, relationships, and self-care (*Fauziah, 2023*).

Self-care guidelines can have a profound impact on improving knowledge and practices of women with HG. Educational interventions tailored to their needs empower women to understand the condition, recognize triggers, and adopt coping strategies that alleviate symptoms. (*Gupta et al., 2020*). These interventions also foster a positive attitude, helping women feel more in control of their health and reducing feelings of helplessness or anxiety. Improved knowledge promotes better adherence to medical recommendations, while supportive practices can reduce symptom severity (*Elder et al., 2024*).

Regarding the demographic data of the sample, the finding of the current study revealed that mean \pm SD of women was 34.4 ± 0.4 years, and this finding was similar to *Elarby et al. (2024)* who conducted study at Egypt under the title "The Relation of Maternal Elements to the Severity of HG and reported that the mean \pm SD of the studied subjects was 35.2 ± 1.1 . **From a researcher point of view**, women in their early-to-mid 30s may have heightened hormonal responses to pregnancy, such as increased levels of HCG and estrogen, which are strongly connected with HG.

It was in agreement with *Beyene et al. (2024)* they reported that 68.8% of studied subjects had university education. **From researcher awareness**, this might be due to economic pressures, and the need for dual-income households also encouraged women to seek higher education.

Regarding women's jobs, over three quarter of women had work, and this finding was in agreement with *Roshdi et al. (2023)* who reported that 73.3 % of studied subjects had work. **From a researcher point view**, many women worked to support their families, especially in low-income households or during economic downturns.

The actual study finding illustrated that, place of residence, above three quarter of studied women lived in rural area, and it disagreed with *Saad et al. (2023)* who reported that 74.6% of the

studied subjects lived in urban area. **From a researcher perspective**, many families have lived in rural areas for generations, maintaining cultural traditions tied to the land. People may choose to stay in or return to rural areas to be close to family or care for elderly relatives.

Regarding women's monthly income, under two-thirds of the studied women were 5 thousand - 10 thousand, and this finding in agreement with *El-Skaan et al. (2024)*; they reported that 64.1% of the studied subjects were 5 thousand - 10 thousand. **From researcher view**, in areas with a moderate cost of living, salaries in this range may represent the average income for many working women.

Concerning women's body mass index, half of women were normal weight equal from 18.5 to 24.9. It in contrast with *Solomon et al., (2023)* they reported that 66.2 % of studied subjects were obese ≥ 30 . **From a researcher's point**, HG can affect women across all BMI categories. However, its prevalence is not necessarily tied to BMI; it is more related to hormonal and physiological factors of pregnancy.

Regarding the obstetric history of women, the actual study findings clarified that under two thirds of the studied women in the second trimester of pregnancy. The result is parallel with *Abd Elrahim et al. (2022)* they found that 64.9% of the sample studied in the second trimester of pregnancy. **From the researcher's perception**, some women may be more sensitive to the hormonal changes during pregnancy, making them more prone to experiencing severe nausea and vomiting even when hormone levels are no longer peaking. This heightened sensitivity can cause HG to last longer than usual.

The actual study findings showed that, lower than two thirds of the studied women current health status was fatigue. The result is supported by *Kassim, (2021)* who found that 61.9 % of the sample studied were fatigued. **From the researcher's point view**, HCG, which is produced early in pregnancy, is involved in maintaining pregnancy and can also contribute to feelings of tiredness and nausea, especially in the first trimester, and under two thirds of women's gestational ages (trimesters) were in the second trimester of pregnancy.

Furthermore, this study showed that below two thirds of women were in the second pregnancy. This result is approved by *Dahab et al. (2022)* they found that 62.7% of sample studied were in their second pregnancy. **From the researcher point**

view, women who had HG in their first pregnancy may experience stress or anxiety about the possibility of having it again, which could exacerbate symptoms in their second pregnancy. Additionally, the body's physical resilience may change with each pregnancy.

Concerning complications from previous pregnancies, less than half of the studied women had low birth weight fetus and this finding confirmed by **Alharbi et al. (2024)** they reported that 45.2% of subjects had low birth weight fetus. **From the researcher point of view**, the presence of hyperemesis gravidarum and inadequate nutrition during pregnancy, particularly a lack of essential nutrients like folic acid, iron, protein, and vitamins, can restrict fetal growth, leading to low birth weight.

Regarding the total knowledge score about HG, over three quarters of women have a good level of knowledge post applying an educational program and this finding verified by **Roshdi et al. (2023)** who reported that 77.31 % of subjects have a good level of knowledge post implementation of an educational program. **From the researcher point of view**, the program likely provided clear, structured, and accessible information that enhanced their understanding. Interactive learning methods, discussions, and practical examples may have helped women retain the information better.

Regarding the total practices score of studied women with HG, more than half of the women had unsatisfactory practice before the implementation of an educational program, and this finding in agreement with **Punitha et al. (2024)** they reported that 52.3% of subjects had unsatisfactory practice before the implementation of an educational program. **From the researcher point of view**, many women might not have received guidance from healthcare providers about how to handle HG symptoms effectively. Routine antenatal care might not always include detailed guidance on HG management, leaving gaps in women's knowledge and practices.

Concerning the total practice score about HG, over three quarters of women had satisfactory practice post implementation of an educational program, and this finding is supported by **El-Sharkawy et al. (2024)** who reported that, 87.3 % of subjects had satisfactory practice post implementation of an educational program. **From the researcher point of view**, encouraging proactive behavior like regular weight monitoring

and seeking medical support. Assessing sustained practices and health outcomes over time can further validate the program's effectiveness.

Regarding the association between the pre-educational program's total score of knowledge with woman's demographic characteristics, it reveals that there was a statistically significant connection between total score of knowledge and woman's age, woman's residence, woman's education level, woman's monthly income, and BMI. This finding is in the same line with **Farg & Hassan (2019)**. They reported that, there was a statistically significant relation between total score of knowledge and woman's age, woman's residence, woman's education level, women's monthly income, and BMI before implementation of an educational program. **From a researcher point of view**, age may influence knowledge, as older women might have accumulated more life experience and knowledge over time. Younger women, on the other hand, might have more recent access to educational resources, including health information.

Concerning the association between the post-educational program's total score of knowledge with woman's demographic characteristics, it shows that there were statistically significant connections between the total score of knowledge and the woman age, educational level, job, and place of residence, women monthly income, and BMI about HG. This finding agreed with **Farg & Kamali et al., (2018)** they reported that there were statistically significant connections between total score of knowledge and the woman's age, educational level, job, place of residence, monthly income, and BMI about HG. **From a researcher point of view**, it suggests that older women might have a better understanding of HG because they have been exposed to it through personal experience or the experiences of others.

Regarding the association between the pre-educational program's total score of practices with woman's demographic characteristics, it reveals that there were no statistically significant connections between the total score of practices and the BMI of the women. This finding in agreement with **MacGibbon et al., (2021)** they reported that there was no statistically significant relation between the total score of practices and BMI before the implementation of an educational program. **From a researcher point of view**, while BMI can influence certain health outcomes, it may not necessarily determine a person's daily practices or

behaviors. For example, a woman may practice certain behaviors (like following dietary guidelines or taking medications) regardless of her BMI. Factors such as education, personal health beliefs, access to healthcare, and social support could be more influential in determining practices than BMI.

Concerning the association between the post-educational program's total score of practices with the studied woman's demographic characteristics, it shows that there were statistically significant connections between the total score of knowledge and the woman age, educational level, job, and place of residence. This finding is in agreement with **Koren & Cohen, (2021)** who reported that there were statistically significant connections between the total score of knowledge and the woman's age, educational level, job, and place of resident. **From a researcher point of view**, older women may have had more time to accumulate knowledge through life experiences, such as personal health issues, pregnancies, or exposure to healthcare systems. As women age, they might gain more opportunities for learning and better understanding of health-related topics, either through firsthand experience or through conversations with peers, family, or healthcare providers.

Concerning the correlation between women's total knowledge regarding hyperemesis gravidarum and their practices, there was highly significant improvement in women's total knowledge as well as practices after educational program implementation. This finding was supported by **Koren & Cohen (2021)** who reported that there was a highly significant improvement in women's total knowledge as well as practices post educational program implementation. **From a researcher point of view**, knowledge about medical treatments and lifestyle modifications (such as dietary changes, rest, and hydration) can empower women to adopt these practices in their daily lives. When women are aware of strategies that can help reduce nausea and vomiting, they are more likely to implement them effectively.

Conclusion:

The present research concluded that there was a highly statistically significant difference between total knowledge, total practices, and the severity of HG, $P < 0.001$ before and after the implementation of educational guidelines. Also, there was a positive correlation between studied sample's knowledge about HG and self-care

practice in pretest and posttest with statistically significant differences. So, application of designed guidelines has a good impact on improving knowledge and practices of pregnant women with HG.

Recommendations

- Providing self-care guidelines at the obstetric department to help expectant mothers deal with the difficulties brought on by hyperemesis gravidarum.
- Creating discharge instructions that include advice on warning signs of dehydration, weight loss, electrolyte imbalances, and nutritional deficiencies is given to all pregnant women who have hyperemesis gravidarum.
- Conduct educational seminars or initiatives to increase pregnant women's understanding of self-care techniques and their significance in enhancing their understanding and use during treatments for hyperemesis gravidarum.
- Involve medical professionals, including nutritionists, psychologists, nurses, and fertility experts, to give comprehensive assistance and handle various aspects of care.
- Perform more research to examine the long-term effects of self-care recommendations and their suitability for treating hyperemesis gravidarum in a variety of demographics.

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