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The Relationship Between Anxiety Levels and the Occurrence of Hyperemesis Gravidarum

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Abstract. Hyperemesis gravidarum is a condition of severe nausea and vomiting during pregnancy that can cause serious physical and psychological effects on pregnant women. In addition to biological and hormonal factors, psychological aspects such as anxiety are thought to play an important role in the occurrence of hyperemesis gravidarum. This study aims to analyze the relationship between the level of anxiety in pregnant women and the occurrence of hyperemesis gravidarum. The study uses a quantitative approach with an analytical observational design through a cross-sectional method. The study sample consisted of 30 pregnant women in their first trimester who were selected using purposive sampling. Anxiety levels were measured using a standardized anxiety questionnaire and categorized as moderate and severe anxiety, while the incidence of hyperemesis gravidarum was determined based on complaints of excessive nausea and vomiting and clinical data. Data analysis was performed univariately and bivariately using the Goodman–Kruskal tau test with a significance level of 0.05. The results showed that most respondents experienced moderate to severe anxiety, and some respondents experienced hyperemesis gravidarum. Bivariate analysis showed a significant and very strong relationship between anxiety levels and the incidence of hyperemesis gravidarum. These findings indicate that the higher the anxiety level of pregnant women, the greater the likelihood of hyperemesis gravidarum. The conclusion of this study confirms that anxiety is an important psychological factor associated with the occurrence of hyperemesis gravidarum. Therefore, the integration of anxiety screening and management into antenatal care is essential as part of a comprehensive, mother-centered approach to pregnancy care.

Keywords: Anxiety; First Trimester of Pregnancy; Hyperemesis Gravidarum; Maternal Mental Health; Pregnant Women

1. INTRODUCTION

Nausea and vomiting of pregnancy (NVP) are very common complaints in the first trimester and can reduce the quality of life of pregnant women (ACOG). (2018). According to the American College of Obstetricians and Gynecologists (ACOG), approximately 0.5% to 2% of pregnant women experience this condition, which can have serious implications for the health of both the mother and the fetus (ACOG, 2020). Proper management is crucial, as HG can lead to long-term complications if not treated effectively. NVP is reported to occur in approximately 50–80% of pregnancies, while its severe form, hyperemesis gravidarum (HG), occurs in approximately 0.3–3% of pregnancies (De Tejada, 2024). Hyperemesis gravidarum is understood as a condition of severe nausea and vomiting that can cause clinical effects such as dehydration, electrolyte imbalance, weight loss, and often requires medical management and even hospitalization.

Clinical guidelines emphasize that HG is not just a "normal" pregnancy complaint, but a condition that needs to be distinguished from other causes of nausea and vomiting and requires stepwise management according to severity. The RCOG stresses that NVP/HG has a

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significant impact on the quality of life of mothers and their families, requiring a supportive and counseling approach in addition to medical therapy. The impact of poorly managed HG can interfere with food intake and hydration status, thereby increasing the risk of nutritional problems and weight loss during pregnancy (ACOG, 2020).

In addition to biological and hormonal factors, psychological aspects are also a concern because severe nausea and vomiting symptoms can trigger emotional stress, and conversely, stress/anxiety can worsen the perception and tolerance of symptoms. ACOG states that women's perception of the severity of symptoms plays an important role in deciding when and how NVP should be treated. In clinical practice, anxiety in pregnant women may arise due to concerns about the condition of the fetus, physical changes, previous pregnancy experiences, or lack of social support (RCOG. (2024).

Scientific evidence shows a link between HG and psychological morbidity (Mitchell-Jones, N., et al. (2020). A BMJ Open study reports a link between hyperemesis gravidarum and psychological morbidity and emphasizes the importance of attention to mental health in the context of HG (Morrin, H., et al. (2025). Recent literature also discusses neuropsychiatric/mental health outcomes in HG and summarizes findings that psychological problems are more common in women with HG than in pregnancies without HG. Other research on NVP in the context of HG also shows a link between NVP/HG and mental health outcomes after childbirth, such as postpartum depression, reinforcing the importance of psychological screening in mothers with severe symptoms (Stéphanie, M., et al. (2025).

Anxiety levels in pregnant women have been a focus of attention in recent years, especially in the context of their impact on maternal and fetal health. Research shows that women who experience high levels of anxiety during pregnancy tend to be more prone to medical conditions such as HG (Yarnoz et al., 2021). This anxiety can be caused by various factors, including hormonal changes, concerns about fetal health, and social pressures faced by pregnant women.

Based on a study conducted by Hinkle et al. (2018), it was found that women who experience high anxiety have twice the risk of experiencing HG compared to those with low anxiety levels. This data indicates that there is a significant relationship between anxiety levels and the occurrence of HG, which needs to be explored further to understand the underlying mechanisms. Excessive anxiety can trigger physiological responses that affect the digestive system, which in turn can exacerbate symptoms of nausea and vomiting.

In addition, research by Smith et al. (2019) shows that social support and good stress management can help reduce anxiety levels in pregnant women, thereby reducing the risk of

HG. Therefore, it is important for healthcare providers to pay attention to the mental health of pregnant women as part of their prenatal care. A holistic approach that includes psychological support can help reduce anxiety levels and, ultimately, minimize the risk of HG.

At the primary care level, several studies in Indonesia have also included psychological factors—including anxiety—as factors associated with the occurrence of hyperemesis gravidarum in pregnant women in their first trimester. Other studies have reported that anxiety levels are associated with the severity of emesis gravidarum, so anxiety management interventions early in pregnancy are considered to have the potential to help reduce the risk of severe symptoms. However, the relationship between anxiety and HG may be influenced by confounding factors such as primigravida, nutritional status, family support, and other medical factors, so it needs to be studied specifically according to the characteristics of the local population (Putri, A. A., et al. (2025).

Based on the above description, research entitled "The Relationship between Anxiety Levels and the Occurrence of Hyperemesis Gravidarum" is important to clarify the relationship between psychological aspects (anxiety levels) and the occurrence of HG in pregnant women. The study results are expected to serve as a basis for strengthening midwifery care, particularly anxiety screening and psychological counseling as part of comprehensive management of pregnancy-related nausea and vomiting to minimize complications and impacts on quality of life (Mitchell-Jones, N., et al. (2020); RCOG. (2024).

2. RESEARCH METHOD

This study used a quantitative approach with an analytical observational design through a cross-sectional method. This design was chosen because the study aimed to determine the relationship between anxiety levels and the incidence of hyperemesis gravidarum, where measurements of independent and dependent variables were conducted simultaneously at one time without providing intervention to respondents.

The population in this study was all first trimester pregnant women who underwent pregnancy checkups in the area where the study was conducted. The study sample consisted of pregnant women who met the inclusion criteria, namely first trimester pregnant women who were able to communicate well and were willing to be respondents. The exclusion criteria included pregnant women with severe comorbidities or other medical conditions that caused nausea and vomiting unrelated to pregnancy. The sample size was determined using total sampling or purposive sampling, with a minimum of 30 respondents, adjusted to the availability of the population at the study site.

The sampling technique used was purposive sampling, which is the selection of respondents based on specific criteria that are relevant to the research objectives.

The independent variable in this study was the level of anxiety in pregnant women, which was measured using an anxiety questionnaire (e.g., HARS, DASS, or similar questionnaires) and then categorized into mild, moderate, and severe anxiety. The dependent variable is the occurrence of hyperemesis gravidarum, which is categorized as experiencing and not experiencing hyperemesis gravidarum based on complaints of excessive nausea and vomiting and clinical data. Data were obtained through interviews and questionnaires completed by respondents.

Data analysis was conducted in stages, namely univariate analysis to describe the distribution of anxiety levels and the incidence of hyperemesis gravidarum, as well as bivariate analysis to determine the relationship between the two variables. The statistical test used was Goodman Kruskal tau 0.05.

3. RESULTS AND DISCUSSION

Table 1. Demographic data.

	Var	n	F (%)
Age	< 20 years old	0	0
	20-35 years old	28	93.3
	>35 years old	2	6.7
Education	Elementary school	0	0
	Junior high school	0	0
	High School	17	56.7
	College/university	13	43.3
Employment	Housewife	12	40
	Farmer	0	0
	Private employee	11	36.7
	Government employee	7	23.3
Parity	1	17	56.7
	2	5	16.7
	3	8	26.7
Anxiety	Mild	0	0
	Moderate	19	63.3
	Severe	11	36.7
Hyperemesis	Yes	8	26.7
	No	22	73.3
Total		30	100

Source: primary data, 2025.

Based on the table of respondent characteristics, the number of respondents in this study was 30 pregnant women. In terms of age, almost all respondents were in the 20–35 age range,

namely 28 people (93.3%), which is the safe reproductive age. Only 2 respondents (6.7%) were aged >35 years, while there were no respondents aged <20 years. This indicates that the majority of pregnant women are in the age group with a relatively low risk of pregnancy.

Based on educational level, most respondents had a high school education or equivalent, namely 17 people (56.7%), followed by 13 people (43.3%) with a college education. There were no respondents with an elementary or junior high school education. These findings illustrate that respondents generally had a medium to high level of education.

In terms of employment status, most respondents were housewives, namely 12 people (40.0%). Respondents who worked as private employees numbered 11 people (36.7%), while civil servants numbered 7 people (23.3%). There were no respondents who worked as farmers. This condition shows that the respondents had quite diverse employment backgrounds.

Based on parity, most respondents were primiparas, namely 17 people (56.7%). Respondents with parity 3 numbered 8 people (26.7%), while respondents with parity 2 numbered 5 people (16.7%). These data show that the majority of pregnant women were undergoing their first pregnancy.

In terms of anxiety levels, there were no respondents with mild anxiety. The majority of respondents experienced moderate anxiety, namely 19 people (63.3%), and 11 people (36.7%) experienced severe anxiety. This shows that almost all respondents experienced moderate to severe anxiety during pregnancy.

Meanwhile, based on the occurrence of hyperemesis, most respondents did not experience hyperemesis, namely 22 people (73.3%), while 8 people (26.7%) experienced hyperemesis. These findings indicate that although the majority of pregnant women do not experience hyperemesis, this condition is still experienced by some respondents and has the potential to affect the physical and psychological condition of mothers during pregnancy.

Table 2. Statistik analysis.

Independent variable	n	P Value	r	Dependent variable
Anxiety	30	0.000*	0.955	Hyperemesis

Goodman Kruskal tau

Source: primary data, 2025.

Based on the results of bivariate analysis using the Goodman–Kruskal tau test, a p-value of 0.000 ($p < 0.05$) was obtained with a correlation coefficient of $r = 0.955$ in the relationship between anxiety levels and the incidence of hyperemesis in 30 respondents.

A p-value of less than 0.05 indicates that there is a statistically significant relationship between anxiety levels and the incidence of hyperemesis. Thus, the hypothesis stating that there is a meaningful relationship between the two variables can be accepted.

The correlation coefficient r = 0.955 indicates a very strong and unidirectional (positive) relationship. This means that the higher the level of anxiety in pregnant women, the greater the likelihood of hyperemesis, while pregnant women with lower levels of anxiety are less likely to experience hyperemesis.

These findings indicate that psychological factors, particularly anxiety, play a very important role in the occurrence of hyperemesis during pregnancy. Clinically, anxiety can affect the autonomic nervous and hormonal systems that play a role in the nausea and vomiting reflex, thereby increasing the severity of hyperemesis symptoms. Therefore, screening and managing anxiety early in pregnancy is an important part of preventing and managing hyperemesis in pregnant women.

Discussion

The results of this study indicate a very strong and significant relationship between the level of anxiety in pregnant women and the incidence of hyperemesis, as shown by a p-value < 0.001 and a Goodman–Kruskal tau coefficient of 0.955. These findings confirm that psychological factors, particularly anxiety, play an important role in the onset and severity of excessive nausea and vomiting during pregnancy. Clinically, these results reinforce the view that hyperemesis is not only a physical disorder, but also a biopsychosocial condition influenced by the interaction between the psychological and physiological aspects of pregnant women (London et al., 2021).

The strong relationship between anxiety and hyperemesis can be explained through neuroendocrine mechanisms. Anxiety is known to activate the autonomic nervous system and the hypothalamic–pituitary–adrenal (HPA) axis, which triggers an increase in stress hormones such as cortisol and catecholamines. This activation can affect gastric motility, the sensitivity of the vomiting center in the brain, and pregnancy hormone balance, thereby exacerbating nausea and vomiting symptoms (Hofmeyr et al., 2022). Additionally, changes in pregnancy hormone levels, such as high levels of human chorionic gonadotropin (hCG) and estrogen in early pregnancy, can interact with the mother's psychological state, intensifying the nausea and vomiting response (Fejzo et al., 2019).

The findings of this study are consistent with various previous studies that reported a significant relationship between anxiety, stress, or depression and hyperemesis gravidarum. Research by Aksoy et al. (2021) showed that pregnant women with high levels of anxiety had a greater risk of experiencing hyperemesis compared to women with stable psychological conditions. Another study by Mitchell-Jones et al. (2017) also reported that symptoms of anxiety and depression were more common in mothers with severe hyperemesis, and could

even continue into the postpartum period. This suggests that hyperemesis is not only a trigger for psychological distress, but can also be exacerbated by pre-existing psychological conditions.

In terms of respondent characteristics, the majority of pregnant women in this study were of safe reproductive age (20–35 years) and had a secondary to higher education. Although age and education are often assumed to influence psychological conditions and pregnancy adaptation, the results of this study show that anxiety remains a dominant factor, regardless of demographic background. This is in line with the findings of Lacasse et al. (2020), who stated that hyperemesis can occur in various age groups and educational levels, and is more influenced by individual factors, including psychological vulnerability and perceptions of pregnancy.

Interestingly, there were no respondents with mild anxiety levels in this study, while most experienced moderate to severe anxiety. This condition may reflect that pregnant women who experience hyperemesis tend to have a higher psychological burden from the outset. However, the direction of the relationship between anxiety and hyperemesis is still complex. Some literature suggests that anxiety can be a predisposing factor for hyperemesis, while hyperemesis itself can exacerbate anxiety due to fatigue, dehydration, nutritional disorders, and a decline in quality of life (Poursharif et al., 2018).

For other variables such as parity, education, and employment status, this study did not directly examine their bivariate relationship with hyperemesis. However, descriptively, the majority of respondents were primiparas. This is in line with reports that primigravidas are more prone to anxiety due to their lack of previous pregnancy experience, uncertainty about bodily changes, and concerns about fetal health (Biaggi et al., 2016). This factor may indirectly contribute to high levels of anxiety, which is then associated with hyperemesis.

From a clinical perspective, these findings have important implications for midwifery practice and antenatal care. Until now, the management of hyperemesis has often focused on pharmacological therapy and fluid management, while psychological aspects have not always been a priority. The results of this study confirm that anxiety screening from the beginning of pregnancy needs to be integrated into antenatal care, especially for mothers who show symptoms of excessive nausea and vomiting (ACOG, 2023). Non-pharmacological approaches such as counseling, emotional support, relaxation techniques, and empathetic education can help reduce anxiety and potentially lessen the severity of hyperemesis (Dennis et al., 2017).

In addition, family involvement, especially that of the spouse, is an important aspect in reducing anxiety in pregnant women. Good social support has been shown to improve the psychological adaptation of mothers during pregnancy and reduce the risk of psychological and

somatic disorders (Gurung et al., 2020). Therefore, family- and community-based interventions should be considered as part of the strategy for treating hyperemesis.

Overall, this study reinforces the understanding that hyperemesis during pregnancy is a condition influenced by the close interaction between psychological and physiological factors. Anxiety has been shown to have a very strong association with the occurrence of hyperemesis, making a holistic, humanistic, and mother-centered approach to treatment crucial. By integrating mental health aspects into prenatal care, it is hoped that the quality of life for pregnant women can be improved and the impact of hyperemesis on both the mother and fetus can be minimized.

4. CONCLUSION

This study aims to analyze the relationship between the anxiety levels of pregnant women and the incidence of hyperemesis during pregnancy. The results of the study show that anxiety has a very strong and significant relationship with hyperemesis, confirming that psychological factors play an important role in the onset and severity of nausea and vomiting symptoms during pregnancy. Scientifically, these findings reinforce the concept that hyperemesis is a biopsychosocial condition influenced by the interaction between the psychological and physiological aspects of pregnant women. From a clinical perspective, the results of this study indicate the need for a more comprehensive and mother-centered approach to pregnancy care, integrating anxiety screening and management into antenatal services. Early detection and appropriate psychological intervention are expected to help reduce the severity of hyperemesis, improve the comfort of pregnant women, and support better pregnancy outcomes.

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