**The Relationship Between Gravity and Nutritional Status with Hyperemesis Gravidarum**

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***ABSTRACT***

*Nausea and vomiting typically occur only in the first trimester, but 20% of women experience these symptoms throughout their entire pregnancy. Pregnant women with hyperemesis gravidarum can suffer from a deficiency in fat and carbohydrate reserves, which are essential for the body's energy needs. Due to incomplete fat oxidation, ketosis occurs, leading to the formation of acetoacetic acid. Dehydration happens as a result of fluid deficiency and excessive vomiting. The aim of this study is to determine the relationship between gravidity and nutritional status in pregnant women during the first trimester with the incidence of hyperemesis gravidarum at Pratama Niar Clinic, Medan City, in 2019. This research used an analytical survey with a cross-sectional design. The population of this study consisted of pregnant women who visited the ANC at Pratama Niar Clinic in June-July 2019. The sample included 46 respondents, selected using a probability sampling technique. The inclusion criteria were pregnant women with hyperemesis gravidarum and a gestational age of less than 20 weeks. Data analysis used the chi-square test, and the study found a significant relationship between gravidity with a p-value of 0.002 and poor nutritional status with the incidence of hyperemesis gravidarum with a p-value of 0.001. These significant results suggest that there is a relationship between gravidity and nutritional status with the incidence of hyperemesis gravidarum. Adequate and balanced nutrition can influence the occurrence of hyperemesis gravidarum in primiparous pregnant women.*

***Keywords:******hyperemesis gravidarum, nausea, vomiting, gravidity, nutritional status***

**PENDAHULUAN**

**Background**

Essentially, pregnancy is a normal, natural, and healthy process, leading to physical, mental, and social changes influenced by physical, psychological, environmental, socio-cultural, and economic factors. As midwives, we believe that the model of midwifery care that assists and protects the pregnancy process through delivery is the most appropriate for preventing complications during pregnancy (Pantiawati, 2017). According to the World Health Organization (WHO) in 2018, every day, 830 mothers globally (in Indonesia, 38 mothers, based on an MMR of 305) die from diseases/complications related to pregnancy and childbirth, with 99% of these maternal deaths occurring in developing countries. Between 1990 and 2015, the global maternal mortality rate decreased by 44%, or 303 per 100,000 live births. Most maternal deaths occur due to complications during and after pregnancy and childbirth, with many of these complications being preventable or treatable, and others occurring before pregnancy.

In achieving the targets of the Sustainable Development Goals (SDGs), from 2016-2030, the goal is to reduce the global maternal mortality rate to below 70 per 100,000 live births, necessitating efforts to improve and enhance the quality of healthcare services to achieve this target (SDGs, 2015). Data from the Association of South East Asian Nations (ASEAN) in 2015 indicated that the maternal mortality rate due to pregnancy and childbirth complications in Southeast Asia was 164 per 100,000 live births, with Singapore at 14 per 100,000 live births, Malaysia at 62 per 100,000 live births, Thailand at 110 per 100,000 live births, and Indonesia at 420 per 100,000 live births. According to the 2012 Indonesian Demographic and Health Survey (IDHS), the maternal mortality rate (MMR) reached 359 per 100,000 live births. This rate increased compared to 2007, when it was 227 per 100,000 live births. However, in 2015, the MMR

showed a decrease, reaching 305 per 100,000 live births.

In North Sumatra province, the coverage of K4 (the fourth antenatal care visit) in 2017 reached 261,803 pregnant women or 76.93%, compared to 2015 when the coverage was 75.50%. This indicates an increase in K4 coverage in North Sumatra in 2017 compared to 2015 (North Sumatra Health Profile, 2017).

In cases of severe vomiting, dehydration, acid-base and electrolyte imbalances, and ketosis can occur; this condition is known as hyperemesis gravidarum. According to the World Health Organization (WHO) in 2016, the incidence of hyperemesis gravidarum reached 12.5% of all pregnancies worldwide. The incidence of hyperemesis gravidarum in Indonesia in 2016 was 1.5-3% of all pregnant women (Indonesian Health Profile, 2017).

Nausea and vomiting during pregnancy are common experiences for 50%-90% of pregnant women. Nausea and vomiting usually occur only in the first trimester, but 20% of women experience these symptoms throughout pregnancy. Hyperemesis gravidarum is found in only 1-20 cases per 1,000 pregnancies. Although this condition is relatively rare, its clinical and social impact is significant (Dr. Sarma, 2017).

Pregnant women with hyperemesis gravidarum may experience a deficiency in fat and carbohydrate reserves, which are essential for their body's energy needs. Due to incomplete fat oxidation, ketosis occurs with the formation of acetoacetic acid. Dehydration occurs due to fluid deficiency and excessive vomiting. In addition to dehydration and electrolyte imbalances, tears in the esophageal and gastric mucosa (Mallory-Weiss syndrome) may occur, leading to gastrointestinal bleeding (Rukiyah, A.Y., 2011).

Quality antenatal care services are provided periodically during pregnancy according to established antenatal care guidelines to maintain maternal health during pregnancy by meeting nutritional needs, so that pregnant women can complete their pregnancies well and deliver healthy babies (Mufdillah, 2016).

Based on research conducted by Triana Indrayani in 2017 on factors associated with the incidence of hyperemesis gravidarum at Dr. Drajat Prawiranegara Regional Hospital in Serang Regency, analysis results showed that of 400 primigravida pregnant women who experienced hyperemesis gravidarum, 203 (87.1%) had hyperemesis gravidarum, while 30 (12.9%) did not. There is a significant relationship between gravidity and the incidence of hyperemesis gravidarum (Indrayani T, 2017).

Research conducted by Darniati in 2017 on the relationship between gravidity and nutritional status with hyperemesis gravidarum in pregnant women at Mawasangka Tengah Health Center, Southeast Sulawesi Province, from 2015 to 2016 found that of 34 pregnant women with hyperemesis gravidarum, 21 (61.8%) had poor nutritional status and 13 (38.2%) had good nutritional status. Among 34 pregnant women without hyperemesis gravidarum, 6 (17.6%) had poor nutritional status and 28 (82.4%) had good nutritional status. Pregnant women with poor nutritional status are 7.5 times more likely to experience hyperemesis gravidarum than those with good nutritional status.

Based on a preliminary survey at Pratama Niar Clinic, Medan City, from January to May 2019, of 230 pregnant women who visited the Antenatal Care Clinic, 118 were in their first trimester, and 54 experienced hyperemesis gravidarum.

**Methods**

This study is an analytical survey aiming to determine the relationship between gravidity and nutritional status with hyperemesis gravidarum in first and second-trimester pregnant women at Pratama Niar Clinic, Medan City, in 2019. The study design is cross-sectional, with data collection conducted simultaneously at one point in time. The population includes all pregnant women who visited the Antenatal Care Clinic at Pratama Niar Clinic in June-July, with an estimated gestational age of fewer than 20 weeks at the time of the study. This study used a probability sampling method, with accidental sampling as the sampling technique.

**RESULTS**

Based on the research conducted in June-July 2019 in the working area of Pratama Niar Clinic, Medan City, regarding the relationship between gravidity and nutritional status in first-trimester pregnant women and the occurrence of hyperemesis gravidarum, the following results were obtained:

**4.1.1 Univariate Analysis**  
**a. Sample Characteristics**  
The description of sample characteristics includes age, and the last education level presented in the following table:

**a. Respondents' Age**

|  |  |  |
| --- | --- | --- |
| Characteristics of Respondents | Frequency (n) | Percentage (%) |
| Age of Mother |  |  |
| 19-25 years old | 17 | 37% |
| 26-32 years old | 18 | 39.1% |
| 33-39 years old | 11 | 23.9% |
| Total | 46 | 100% |

Table 4.1: Distribution of Respondents' Characteristics by Age. In the table above, it can be seen that the majority of respondents are aged 26-32 years, with 18 people (39.1%), and the fewest are aged 33-39 years, with 11 people (23.9%). Among them, 17 people (37%) are aged 19-25 years.

**b. Education Level**

|  |  |  |
| --- | --- | --- |
| Characteristics of Respondents | Frequency (n) | Percentage (%) |
| Education Level |  |  |
| Primary School | 5 | 10.9% |
| Junior High School | 11 | 23.9% |
| High School | 20 | 43.5% |
| Higher Education | 7 | 15.2% |
| No Schooling | 3 | 6.5% |
| Total | 46 | 100% |

Table 4.2: Distribution of Respondents' Characteristics by Education Level.  
The table shows that the majority of respondents have a high school education, with 20 people (43.5%), followed by junior high school with 11 people (23.9%), higher education with 7 people (15.2%), primary school with 5 people (10.9%), and no schooling with 3 people (6.5%).

**4.1.3 Univariate Analysis**

Univariate analysis was conducted by analyzing each variable to obtain a description of each variable in the form of a frequency distribution. The variables analyzed in the univariate analysis are hyperemesis gravidarum, gravidity, and nutritional status. The results of the univariate analysis are as follows:

**a. Incidence of Hyperemesis Gravidarum at Pratama Niar Clinic, Medan City, in 2019**

|  |  |  |
| --- | --- | --- |
| Hyperemesis Gravidarum | Frequency (n) | Percentage (%) |
| Yes | 23 | 50% |
| No | 23 | 50% |
| Total | 46 | 100% |

Table 4.3: Frequency Distribution of Hyperemesis Gravidarum at Pratama Niar Clinic, Medan City, in June-July 2019.  
The research results show that out of 46 pregnant women, 23 (50%) experienced hyperemesis gravidarum, and 23 (50%) did not.

**b. Gravidity of Pregnant Women at Pratama Niar Clinic, Medan City, in 2019**  
Gravidity in this research refers to the number of children the respondents have. Gravidity is divided into four categories.

|  |  |  |
| --- | --- | --- |
| Gravidity | Frequency (n) | Percentage (%) |
| Primigravida | 19 | 41.3% |
| Secundigravida | 10 | 21.7% |
| Multigravida | 12 | 26.1% |
| Grandmultigravida | 5 | 10.9% |
| Total | 46 | 100% |

Table 4.4: Frequency Distribution of Gravidity of Pregnant Women at Pratama Niar Clinic, Medan City, in 2019. The results show that the gravidity of pregnant women in the primigravida category is 19 people (41.3%), secundigravida is 10 people (21.7%), multigravida is 12 people (26.1%), and grandmultigravida is 5 people (10.9%). Thus, it can be categorized that most of the gravidity of pregnant women at Pratama Niar Clinic, Medan City, who visited the Ante Natal Care clinic in June-June 2019, falls into the primigravida category.

**c. Nutritional Status of Pregnant Women at Pratama Niar Clinic, Medan City, Who Visited in 2019**

Nutritional status refers to the state of pregnant women suffering from malnutrition due to an imbalance between intake for meeting needs and energy expenditure, measured using the Mid-Upper Arm Circumference (MUAC) tape in accordance with the nutritional status of the mother.

|  |  |  |
| --- | --- | --- |
| Nutritional Status | Frequency (n) | Percentage (%) |
| Malnourished | 29 | 63% |
| Well-Nourished | 17 | 37% |
| Total | 46 | 100% |

Table 4.5: Frequency Distribution of Nutritional Status of First and Second Trimester Pregnant Women at Pratama Niar Clinic in June-July 2019. After research and data processing, it was found that out of 46 pregnant women, 29 (63%) were malnourished, and 13 (37%) were well-nourished. The conclusion is that most of the first and second-trimester pregnant women at Pratama Niar Clinic, Medan City, in June-July 2019 were in the malnourished category.

**4.1.4 Bivariate Analysis**

Bivariate analysis was conducted to analyze the relationship between two variables. The bivariate analysis aims to determine whether there is a relationship between the independent variable and the dependent variable. The test used is the Chi-Square test. The bivariate analysis in this study is the relationship between gravidity and nutritional status with the incidence of hyperemesis gravidarum in first and second-trimester pregnant women at Pratama Niar Clinic, Medan City, in 2019.

a. Relationship between Gravidity and the Incidence of Hyperemesis Gravidarum in First and Second Trimester Pregnant Women at Pratama Niar Clinic, Medan City, in 2019

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Gravidity | Hyperemesis Gravidarum | | | | X2  (p-value) |
| Yes | | No | |
| N | % | n | % |
| Primi Gravida | 16 | 69,6 | 3 | 13,1 | (0,002) |
| Sekundi Gravida | 3 | 13,0 | 7 | 30,4 |
| Multi Gravida | 3 | 13,1 | 9 | 39,1 |
| Grande Multi Gravida | 1 | 4,3 | 4 | 17,4 |
| Total | 23 | 100 % | 23 | 100 % |  |

Table 4.6: Frequency Distribution of Gravidity and the Incidence of Hyperemesis Gravidarum in First and Second Trimester Pregnant Women at Pratama Niar Clinic, Medan City, in 2019.

In Table 4.6 above, it can be seen that among 23 pregnant women with hyperemesis gravidarum, 16 (69.6%) were primigravida, 3 (13.0%) were secundigravida, 3 (13.1%) were multigravida, and 1 (4.3%) was grandmultigravida. Based on the p-value and Chi-Square results, it was found that there is a relationship between gravidity and the incidence of hyperemesis gravidarum in pregnant women at Pratama Niar Clinic, Medan City, in 2019 (p=0.002; X2=15.29).

b. Relationship between Nutritional Status and the Incidence of Hyperemesis Gravidarum in First and Second Trimester Pregnant Women at Pratama Niar Clinic, Medan City, in 2019

Table 4.7: Relationship between Nutritional Status and the Incidence of Hyperemesis Gravidarum in First and Second Trimester Pregnant Women at Pratama Niar Clinic, Medan City, in 2019.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Nutritional Status | Hyperemesis Gravidarum | | | | X2  (p-value) |
| Yes | | No | |
| n | % | N | % |
| Malnutrition | 20 | 87 | 9 | 31 | (0,001) |
| Good nutritional status | 3 | 13 | 14 | 60,9 |
| Total | 23 | 100 % | 23 | 100 % |  |

In Table 4.7, it can be seen that among 23 pregnant women with hyperemesis gravidarum, 20 (87%) were malnourished, and 3 (13%) were well-nourished. Based on the p-value and Chi-Square results, it was found that there is a significant relationship between the nutritional status of pregnant women and the incidence of hyperemesis gravidarum in first and second-trimester pregnant women at Pratama Niar Clinic, Medan City, in 2019 (p=0.001; X2=11.290). Pregnant women with malnutrition are 10.3

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