

ISSN 2597- 6052DOI: <https://doi.org/10.56338/mppki.v7i11.6037>**MPPKI****Media Publikasi Promosi Kesehatan Indonesia**
*The Indonesian Journal of Health Promotion***Research Articles****Open Access****Analysis of Risk Factors for the Incidence of Hyperemesis Gravidarum at RSIA Fatimah and at RSUD Haji Makassar****Husnul Khatimah^{1*}, Rini Fitriani², Fhirastika Annisha Helvian³, Rista Suryaningsih⁴, Darsul S. Puyu⁵**¹Pendidikan Dokter FKIK UIN Alauddin, Makassar| email : khatimaahhhh@gmail.com²Pendidikan Dokter FKIK UIN Alauddin, Makassar| email : riny.fitriani8@gmail.com³Pendidikan Dokter FKIK UIN Alauddin, Makassar| email : fhirastika.annisha@uin-alauddin.ac.id⁴Pendidikan Dokter FKIK UIN Alauddin, Makassar| email : rista.suryaningsih@uin-alauddin.ac.id⁵Fakultas Syariah dan Hukum UIN Alauddin, Makassar| email : darsul.puyu@uin-alauddin.ac.id* Corresponding Author: khatimaahhhh@gmail.com**ABSTRACT**

Background: 32.26% of pregnant women in South Sulawesi in 2018 experienced disorders or complications during their pregnancy, 24.3% of them experienced disorders in the form of continuous vomiting / diarrhea. If nausea and vomiting occurs more than 5 times a day, it is called hyperemesis gravidarum. One of the risk factors for hyperemesis gravidarum is education. a person's education greatly affects the ability to think and the level of understanding and acceptance of something that is conveyed.

Objective: This study aims to analyze the risk factors for the occurrence of hyperemesis gravidarum in pregnant women at the Fatimah Mother and Child Hospital and at the Regional General Hospital Haji Makassar.

Method: This type of research is an observational analytic research with a case control approach. The population and sample used are all pregnant women who are recorded in the register book for 2020-2022 at RSIA Fatimah Makassar and RSUD Haji Makassar with a sample of 75 cases and controls that met the inclusion criteria.

Result: The results showed that the prevalence of hyperemesis gravidarum at RSIA Fatimah Makassar and RSU Haji Makassar 2020-2022 was 50% (n = 75). The results of statistical analysis were mother's age OR 0.389 (95% CI = 0.174-0.870), Parity OR 0.469 (95% CI = 0.244-0.901), Education OR 3.083 (95% CI = 1.536-6.190), Occupation OR 1.158 (CI 95% = 0.547-2.451), The results of bivariate analysis, namely maternal education OR 3.083 (95% CI = 1.536-6.190) is a risk factor for the occurrence of hyperemesis gravidarum.

Conclusion: Maternal education is a risk factor for hyperemesis gravidarum with an OR value of 3.083 > 1 and a p-value = 0.002 < 0.05

Keywords: Risk Factors; Hiperemesis Gravidarum; Maternal; Pregnancy

INTRODUCTION

Pregnancy is a normal process. The process of pregnancy starts from ovulation or the process of mature eggs will be released into the uterine space, then the egg will travel to the fallopian tube for fertilization by sperm which is commonly called conception, then nidation or embedding the fertilized egg in the endometrium, then the embryo will develop in the uterus until term. Women who are pregnant and women who are not pregnant have different biological conditions, in pregnant women there are psychological and physiological adjustments to the processes of pregnancy. (1)

A woman's pregnancy is counted from the first day of her last period. Normal gestational age is 36-42 weeks or 280 days or 9 months. Pregnancy is divided into 3 trimesters, the first trimester starts from conception until the age of three months, the second trimester when the gestational age is four months to six months, and the third trimester when the gestational age is seven months to nine months (Setiawati, 2020). Changes that occur in pregnant women will make them feel uncomfortable, so pregnant women are easily stressed, sensitive, depressed, insomnia. One of the changes commonly found in pregnant women is the incidence of nausea and vomiting or emesis gravidarum. (2)

Nausea and vomiting in pregnant women is very disturbing for pregnant women, this is due to the increased production of estrogen and progesterone hormones. Nausea and vomiting in pregnant women is the most common complaint in young pregnant women, most pregnant women with complaints of nausea and vomiting can be treated with outpatient care and pharmacology according to patient complaints. However, a small percentage of pregnant women with complaints of nausea and vomiting cannot be overcome with outpatient treatment, resulting in electrolyte balance disorders. If this situation is not resolved immediately, it will endanger the mother and fetus (Astry Sinambela, 2020). Hyperemesis gravidarum that is not handled quickly will cause anemia in the mother, bleeding, and illness. Meanwhile, the fetus will result in abortion, stillbirth, neonatal death, congenital defects, anemia in infants, low birth weight. (3)

Globally, according to WHO in 2015, the total number of pregnancies worldwide related to hyperemesis gravidarum cases reached 12.5%. Hyperemesis gravidarum of pregnant women in the first trimester is found around 60-80% in primigravida and 40-60% in multigravida, the incidence of hyperemesis gravidarum can cause necrosis in the kidneys and liver due to an imbalance of fluids that will impact the kidneys and liver. (4)

Based on the 2018 Riskesdas data in South Sulawesi, 32.26% of pregnant women in South Sulawesi in 2018 experienced disorders or complications during their pregnancy, 24.3% of them experienced disorders in the form of continuous vomiting/diarrhea.(5) Data on hyperemesis gravidarum for 2016 pregnant women reached 2,203 with 543 cases of pregnant women diagnosed with hyperemesis gravidarum and there were 2 cases of death due to hyperemesis gravidarum.(6) In 2018 pregnant women reached 2,354 and 567 cases diagnosed with hyperemesis gravidarum, in 2019 with 2,487 pregnant women and 637 cases diagnosed with hyperemesis gravidarum. (7) in 2020 pregnant women were 2,417 and 657 cases diagnosed with hyperemesis gravidarum, and in 2021 pregnant women were 2,245 with 711 cases experiencing hyperemesis gravidarum. (8)

The results of a survey conducted by researchers from several hospitals in Makassar city for the last 3 years, Khadijah Mother and child hospital as many as 34 people who experienced hyperemesis gravidarum out of 820 pregnant women, Hajj Hospital as many as 77 people who experienced hyperemesis gravidarum out of 920 pregnant women, Fatimah mother and child hospital as many as 94 people who experienced hyperemesis gravidarum out of 982 pregnant women.

Based on the results of Siska's research (2019) entitled "Factors associated with Hyperemesis Gravidarum in Pregnant Women at RB Zakat Surabaya" found that gravida and multiple pregnancies have a significant relationship with hyperemesis gravidarum at RB Zakat Surabaya. Based on research conducted by Irviani (2021) entitled "Factors Associated with Hyperemesis Gravidarum in Pregnant Women at Sheikh Yusuf Hospital in 2019" found that the level of knowledge, attitudes, husband support, parity and diet of pregnant women had a significant relationship with hyperemesis gravidarum at Sheikh Yusuf Hospital in 2019. (9,10)

Based on research conducted by Widya (2022) entitled "Risk factors for the incidence of hyperemesis gravidarum: a population-based case-control study" the study found that the risk factors of maternal age, parity, gestational age, maternal employment, pregnancy distance, anaemia, and BMI status had a significant relationship with the incidence of HEG, but maternal education did not have a significant relationship with the incidence of HEG. By knowing the risk factors, it is hoped that health workers can pay attention to several factors to be able to carry out early detection and anticipate to minimize the severity when pregnant women are exposed to HEG.(11)

Hyperemesis gravidarum very rarely causes death but can cause complications. Regarding the danger of complications that will occur in mothers and children with the incidence of hyperemesis gravidarum that is not treated immediately. Therefore, it is necessary to explore the factors that have a relationship with Hyperemesis Gravidarum so that prevention can be carried out related to these cases. After knowing the consequences of hyperemesis gravidarum and the existing data related to hyperemesis gravidarum cases, the researcher is very interested in

conducting research on hyperemesis gravidarum with the title “Analysis of Risk Factors for Hyperemesis Gravidarum in Pregnant Women at Fatimah Mother and Child Hospital and at the Makassar Haji Regional General Hospital”.

METHOD

This study is an observational analytic study using a case control research design. This study was conducted by researchers in the medical records section at Fatimah Mother and Child Hospital and at the Haji Makassar Regional General Hospital, which will be carried out on November 4, 2022 - January 7, 2023. This study aims to determine the risk factors as independent variables that cause the incidence of hyperemesis gravidarum as the dependent variable, carried out by comparing and identifying the case group of pregnant women (who experience hyperemesis gravidarum) with the control group (who do not experience hyperemesis gravidarum), to find out what are the risk factors for the research sample.

In this study, the population was all patients of pregnant women who experienced hyperemesis gravidarum while the control population was all pregnant women who did not experience hyperemesis gravidarum at Fatimah Mother and Child Hospital and at Haji Makassar Regional General Hospital. The population in this study was taken from November 4, 2020 to December 30, 2022 as many as 94 cases. In this study, the sample used for the case sample was pregnant women with hyperemesis gravidarum who met the inclusion criteria and exclusion criteria, while the control sample was mothers who did not experience hyperemesis gravidarum recorded in medical records at Fatimah Mother and Child Hospital and at the Makassar Hajj Regional General Hospital. For the sample size, the number of samples from the population was determined using the Isaac and Michael formula with an error rate of 5%.

From the calculation of the sample size which uses the Isaac and Michael formula in the case sample, a sample size of 75 samples is obtained. In this study using a 1: 1 ratio, namely case: control so that the control sample was also 75 samples. So, the total sample used in this study was 150 samples consisting of 75 samples each for the case sample and 75 for the control sample.

The variables in this study consisted of maternal age, parity, education history, work history and history of hyperemesis gravidarum. Maternal age was divided into age <20 or >35 years and age 20-35 years. Mother's Parity History was divided into parity <1 and parity ≥ 1 . Mother's education history was divided into elementary and secondary school and college. Maternal Employment History was divided into Not Working and Working. History of Hyperemis Gravidarum is divided into yes and no.

This study uses statistical analysis, where the statistical analysis used is the method of univariate analysis, bivariate analysis and Multivariate. Univariate analysis in this study was carried out to determine the frequency distribution and percentage of data obtained on variables based on research problems presented in tabular form. Bivariate analysis is an analysis used to see the relationship or correlation between the independent variable and the dependent variable. To prove the existence of a significant relationship between the independent variable and the dependent variable, the odds ratio (OR) statistical test was used to determine the risk factor comparison of each independent variable on the case sample and control sample using the table. OR >1 means that the independent variable is a risk factor for hyperemesis gravidarum, OR =1 means that the independent variable is not a risk factor for hyperemesis gravidarum, OR <1 means that the independent variable is a protective factor for hyperemesis gravidarum. Multivariate analysis aims to determine which independent variable is more closely related to the dependent variable with the statistical test used is logistic regression. The independent variable with the largest OR value will be determined as the most dominant risk factor.

This study was conducted using secondary data, namely medical record data from Fatimah Mother and Child Hospital and at the Haji Makassar Regional General Hospital as research data. Medical records are files that contain records and documents about patient identity, examination, treatment, actions and other services that have been provided to patients. This study has received permission from the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences UIN Alauddin Makassar with letter number B.342/KEPK/FKIK/XI/2022.

RESULTS

Based on the research that has been done, the following data is obtained:

Table 1 Distribution of Samples

| | Variables | Frequency (n) | Percentage (%) |
|--------------------------|---------------------------------|---------------|----------------|
| Age | <20 or >35 Years | 34 | 22.7 |
| | 20-35 Years | 116 | 77.3 |
| Parity History | <1 | 72 | 48.0 |
| | ≥ 1 | 78 | 52.0 |
| Education History | Elementary and Secondary School | 95 | 63.3 |
| | College | 55 | 36.7 |

| | | | |
|-----------------------------|-------------|-----|------|
| Employment History | Not Working | 114 | 76.0 |
| | Employed | 36 | 24.0 |
| Hyperemis Gravidarum | Yes | 75 | 50.0 |
| | No | 75 | 50.0 |

Table 1 explains that the number of respondents was 150 consisting of 75 respondents in the case group and 75 respondents in the control group. There are five variables in this study. The distribution of mothers with age <20 years or >35 years was 34 people with a percentage of 22.7% and the distribution of mothers with age 20-35 years was 116 people with a percentage of 77.3%. In the distribution of maternal parity with primiparous or <1 parity as many as 72 people with a percentage of 48.0% and the distribution of maternal parity with multiparous or ≥1 parity as many as 78 people with a percentage of 52.0%. In the distribution of maternal education with elementary and secondary school or elementary / junior high school / high school / vocational school as many as 95 people with a percentage of 63.3% and the distribution of maternal education with college school or D3 / S1 / S2 / S3 as many as 55 people with a percentage of 36.7. In the distribution of maternal employment with those who work as many as 36 people with a percentage of 24.0% and the distribution of maternal employment with those who do not work as many as 114 people with a percentage of 76.0%. And finally, the distribution of those who experienced cases of hyperemesis gravidarum was 75 people with a percentage of 50.0% and the distribution of those who did not experience cases of hyperemesis gravidarum was 75 people with a percentage of 50.0%.

Table 2. Risk factors for maternal age on the incidence of hyperemesis gravidarum in pregnant women.

| Age | Hyperemis Gravidarum | | Total | p-value | OR | 95% CI |
|------------------|-----------------------------|---------------|----------------|----------------|-----------|---------------|
| | Yes (%) | No (%) | | | | |
| <20 or >35 Years | 11 (7.3%) | 23 (15.3%) | 34 (22.7%) | 0.032 | 0.389 | 0.174-0.870 |
| 20-35 Years | 64 (42.7%) | 52 (34.7%) | 116 (77.3%) | | | |
| Total | 75 (50.0%) | 75 (50.0%) | 150 (100%) | | | |

Table 2 explains that mothers with high risk <20 years and >35 years are more common in the control group as many as 23 people with a percentage of 15.3% compared to the case group as many as 11 people with a percentage of 7.3%. Based on the results of the analysis, the P-value is 0.032 ($p < 0.05$), which means that maternal age has a significant relationship with the incidence of hyperemesis gravidarum. Based on the Odds Ratio (OR) value of 0.389, the OR value <1 is considered that maternal age is a protective factor from the incidence of hyperemesis gravidarum.

Table 1. Risk factors of parity on the incidence of hyperemesis gravidarum in pregnant women.

| Parity History | Hyperemis Gravidarum | | Total | p-value | OR | 95% CI |
|-----------------------|-----------------------------|---------------|---------------|----------------|-----------|---------------|
| | Yes (%) | No (%) | | | | |
| <1 | 29 (19.3%) | 43 (28.7%) | 72 (48.0%) | 0.034 | 0.469 | 0.244-0.901 |
| >1 | 46 (30.7%) | 32 (21.3%) | 78 (52.0%) | | | |
| Total | 75 (50.0%) | 75 (50.0%) | 150 (100%) | | | |

Table 3 explains that mothers with primiparous high-risk parity or <1 parity are more common in the control group as many as 43 people with a percentage of 28.7% compared to the case group as many as 29 people with a percentage of 19.3%. Based on the results of the analysis, the P-value is 0.034 ($p < 0.05$), which means that maternal parity has a significant relationship with the incidence of hyperemesis gravidarum. Based on the Odds Ratio (OR) value of 0.469, the OR value <1 is considered that maternal parity is a protective factor from the incidence of hyperemesis gravidarum.

Table 4 Educational risk factors for the incidence of hyperemesis gravidarum in pregnant.

| Education History | Hyperemis Gravidarum | | Total | p-value | OR | 95% CI |
|---------------------------------|-----------------------------|---------------|---------------|----------------|-----------|---------------|
| | Yes (%) | No (%) | | | | |
| Elementary and Secondary School | 57 (38.0%) | 38 (25.3%) | 95 (63.3%) | 0.002 | 3.083 | 1.536-6.190 |

| | | | |
|---------|---------------|---------------|---------------|
| College | 18 (12.0%) | 37 (24.7%) | 55 (36.7%) |
| Total | 75 (50.0%) | 75 (50.0%) | 150 (100%) |

Table 4 explains that mothers with high-risk education, namely primary and secondary education or elementary / junior high / high school, are more common in the case group as many as 57 people with a percentage of 38.0% compared to the control group of 38 people with a percentage of 25.3%. Based on the results of the analysis obtained a P-value of 0.002 ($p < 0.05$) which means that maternal education has a significant relationship with the incidence of hyperemesis gravidarum.

Based on the results of the analysis, the Odds Ratio (OR) value was 3.083, $OR > 1$, which means that maternal education is a risk factor for the incidence of hyperemesis gravidarum. So, it can be concluded that mothers who have primary and secondary school education or elementary / junior high / high school have a 3.083 times greater risk of experiencing hyperemesis gravidarum. So that this is considered statistically significant or maternal education is a risk factor for the incidence of hyperemesis gravidarum in pregnant women.

Table 5. Occupational risk factors for the incidence of hyperemesis gravidarum in pregnant women

| Employment History | Hyperemis Gravidarum | | Total | p-value | OR | 95% CI |
|--------------------|----------------------|---------------|----------------|---------|-------|-------------|
| | Yes (%) | No (%) | | | | |
| Not Working | 58 (38.7%) | 56 (37.3%) | 114 (76.0%) | 0.848 | 1.158 | 0.547-2.451 |
| Employed | 17 (11.3%) | 19 (12.7) | 36 (24.0%) | | | |
| Total | 75 (50.0%) | 75 (50.0%) | 150 (100%) | | | |

Table 5 explains that mothers with high-risk jobs or mothers who do not work are more common in the case group as many as 58 people with a percentage of 38.7% compared to the control group of 56 people with a percentage of 37.3%. Based on the results of the analysis, the p value is $0.848 > 0.05$, which means that there is no relationship between maternal employment and the incidence of hyperemesis gravidarum. While the Odds Ratio (OR) value is $1.158 > 1$, which means that the mother's work is a risk factor with 1,158 times greater to experience hyperemesis gravidarum. The lower limit (LL) and upper limit (UL) values include the number 1 with a 95% confidence level, so the value of 1,158 is not considered statistically significant or maternal work is not a risk factor for the incidence of hyperemesis gravidarum in pregnant women.

Table 6. Results of Bivariate Analysis Independent Variables included in Multivariate analysis

| Variabel | P Value | OR | CI 95% |
|-------------------|---------|--------|---------------|
| Age | 0,005 | 0,272 | 0,111 – 0,668 |
| Parity History | 0,004 | 0,336 | 0,161 – 0,701 |
| Education History | 0,002 | 3,5353 | 1,593 – 7,843 |

Table 6 shows the results of multivariate analysis using the logistic multiple regression test which shows that the 3 variables included in the logistic multiple regression test, it was found that the variable that had the most influence on hyperemesis gravidarum in pregnant women at Fatimah Maternal and Child Hospital Makassar and at Hajj Hospital Makassar was the educational history of pregnant women with a p value of 0.002 < 0.25 and an OR value of 3.5353 (95% CI 1.593 - 7.843).

DISCUSSION

In this study, maternal age is the age of the mother at the time of pregnancy and hyperemesis gravidarum. Based on the results of the study, it was found that maternal age was not a risk factor but a protective factor for the incidence of hyperemesis gravidarum in pregnant women. The results of this study are in line with research conducted by Nurhikmah (2017) at the Bhayangkara Makassar hospital with a sample size of 59 people and obtained statistical test results with chi square p value = $0.681 > 0.05$ which means that maternal age is not a risk factor for the incidence of hyperemesis gravidarum. (12) The results of this study are not in line with research conducted by Wisnu Hidayat

(2019) at Aceh Tamiang Regional Hospital with a total sample of 188 consisting of 94 case samples and 94 control samples which state that maternal age is a risk factor for the incidence of hyperemesis gravidarum with $p = 0.000 < 0.05$ and an OR value of 3.451 (95% CI = 1.827 - 6.385) which indicates that the age of high-risk mothers, namely <20 and >35 years, has a greater risk of experiencing hyperemesis gravidarum than mothers aged 20-35 years. (13)

In this study, maternal age was not a risk factor for hyperemesis gravidarum, so the results of this study are not in accordance with the theory that 20-35 years of age is a mature age in terms of physical and physiological in terms of reproduction. However, ages <20 and ≥ 35 are prone to causing the incidence of hyperemesis gravidarum because it is considered in reproductive theory that mothers aged less than 20 years still tend to be unstable, have emotions that are not optimal, and mentally are still not strong so that at this age it can result in a lack of attention to themselves. (14) At the age of ≥ 35 years all systems that run in the body begin to experience a decrease in function such as in muscles, nerves, endocrine, other organs including reproductive organs experience a decrease, for example in the birth canal will experience a decrease in flexibility so that the risk of having a partus stuck. In addition to decreased organ function, at the age of ≥ 35 years it is prone to diseases such as diabetes mellitus, anemia, heart disease which if someone is pregnant at that age will have an impact on their pregnancy. (15)

The results of this study indicate that maternal age <20 and >35 years is not a risk factor but statistically a protective factor for the occurrence of hyperemesis gravidarum. Statistically, it is said to be a protective factor if the OR result is <1 , in this study it was found that age <20 and >35 years were protective factors. (16) According to the researcher, this can occur because mothers with a high risk age of >35 years have sufficient knowledge about their pregnancy. According to Yopi Yulandari in his research, it is stated that at the age of >35 years, they have sufficient knowledge so that they have a better attitude or behavior and are more careful in responding to things related to their pregnancy. Thus, pregnant women with high risk can prepare themselves during pregnancy regarding signs and dangers due to pregnancy and take early prevention such as maintaining a diet, consuming nutritious foods, routinely taking blood supplement tablets according to the dose given by health workers. (17) Therefore, in this study, maternal age <20 and >35 years is not a risk factor but a statistically protective factor. However, this study has different results from other studies because many factors play a role, one of which is hormonal factors as described in Arfina S. S's book entitled hyperemesis gravidarum and in this study provides results that in patients experiencing hyperemesis gravidarum at Fatimah Hospital Makassar and Hajj Hospital Makassar, maternal age is not the dominant factor causing the disease.

In this study, maternal parity history is the number of children born by the mother until the occurrence of hyperemesis gravidarum. Based on the results of the study, maternal age is not a risk factor but a protective factor for the incidence of hyperemesis gravidarum. This research is in line with research conducted by Monifa Putri (2020) with the title research on the relationship between parity and the incidence of hyperemesis gravidarum in pregnant women at Indrasari Rengat Hospital. In his research, the number of samples was 142 so the results of the chi-square statistical test obtained a value of $P > 0.05$ ($P = 0.517$) and from these results, it can be obtained that there is no significant relationship between parity and the incidence of hyperemesis gravidarum. The results of this study are not in line with research conducted by Leny (2020) at Budi Mulia Medika Clinic with the title of research on the relationship between age and parity with the incidence of hyperemesis gravidarum in pregnant women, in her research the number of samples was 118 and the research method was an analytical survey using a cross sectional approach so that where the p value = 0.001 was smaller than so it could be obtained that there was a relationship between parity and the incidence of hyperemesis gravidarum.

In this study, parity history is not a risk factor for the incidence of hyperemesis gravidarum, so the results of this study are not in accordance with the theory that the psychological factors of pregnant women with primiparous and multigravida are different. Pregnant women in primigravida still do not have enough experience or readiness for their pregnancy and still have to adjust to the new circumstances they experience (Prawirohardjo, Obstetrics, 2020). Meanwhile, pregnant women with multiparity already have experience from previous pregnancies about the symptoms of hyperemesis so that they can overcome the symptoms, besides that they already have the knowledge to overcome hyperemesis gravidarum. (3)

The results of this study indicate that maternal parity history is not a risk factor but statistically a protective factor for the occurrence of hyperemesis gravidarum. Statistically, it is said to be a protective factor if the OR result is <1 , in this study it was found that maternal parity <1 was a protective factor. (16) According to the researcher, the results of this study are not meaningful, it is possible that mothers with high risk already have experience from their surroundings so that the experience they gain helps mothers with high risk avoid the incidence of hyperemesis gravidarum. In the book ethics and health behavior, it is explained that the experience gained will change one's attitude in responding to something. A person's attitude is influenced by several factors such as internal factors or factors from within themselves and external factors or factors from outside. In the condition of pregnant women with parity <1 it is important to always be given information related to care in pregnancy and childbirth and what can cause danger to the mother and fetus, so that in addition to internal factors such as knowledge and personal

experience, external factors such as family and environmental encouragement can also influence. External factors can influence a person to shape or change a person's attitude. As in pregnant women with high risk, they already know the complications of hyperemesis gravidarum from their environment or see other people's experiences and make it part of the benchmark to immediately prevent as early as possible things that can cause complications. Therefore, in this study, mothers with parity <1 are not risk factors but protective factors or factors that are a process of individuals being able to survive the risk of hyperemesis gravidarum. (18)

In this study, the mother's education history is the school or college attended by the mother until the occurrence of hyperemesis gravidarum. Based on the results of the study, it was found that mothers with primary and secondary school education or elementary / junior high / high school had a 3.083 times greater risk of experiencing hyperemesis gravidarum. The results of this study are in line with research conducted by Anik Sulistiyanti (2021) at Karangayar Hospital with the title of research on the characteristics of the incidence of hyperemesis gravidarum in pregnant women in trimester 1 at Karangayar Hospital with a sample size of 86 people and the results of 54.7% of basic education from the descriptive results of the frequency distribution of the characteristics of the incidence of hyperemesis can be obtained that there is a relationship between education and the incidence of hyperemesis gravidarum. (19) The results of this study are not in line with research conducted by Bina Aquari (2017) at the Palembang social health center in 2017 with the title of factors influencing the incidence of hyperemesis gravidarum at the Palembang social health center in 2017 with a total sample of 75 and obtained the results of the chi-square test obtained $p = \text{value } 0.286 < \alpha (0.05)$ which from these results obtained that there is no significant relationship between education and the incidence of hyperemesis gravidarum. (20)

In this study, maternal education is a risk factor for the incidence of hyperemesis gravidarum, so the results of this study are in accordance with theory. Education is a learning process related to knowledge and skills which is the basis or foundation of a person in obtaining a good life.(21) The higher a person's education, the easier it will be to capture and obtain information so that with various considerations, especially in the health sector, it will prioritize health, and vice versa with someone with a low education, it will be more difficult to accept the messages conveyed so that it will have an impact on his life.(22) Through education, it can update knowledge and skills that are still relevant to general knowledge. The length of time a person attends school will cause a person to be exposed to many complex things and will lead to cognitive improvement so that this will be felt into his own life. In contrast, someone who has low education will have less access to information so that their knowledge is limited and will lack motivation for healthy living behavior. (23)

The results of this study indicate that education history is statistically a risk factor for the occurrence of hyperemesis gravidarum. According to the researcher, this is because pregnant women who have low education have low thinking due to the lack of information obtained, besides that pregnant women with low education will be very difficult to advise and do not capture the information they are told. This has been explained in Rini Damayanti's research related to the characteristics of pregnant women with hyperemesis gravidarum that a person's education greatly affects the ability to think and the level of understanding and acceptance of something that is conveyed. Whereas pregnant women with higher education have broad knowledge compared to those with low education. A person's higher education will change the individual's perspective on something. (24) In addition, highly educated pregnant women can consider everything and will be more concerned with their health. Pregnant women with good education will also automatically seek information related to their pregnancy both from other people and from social media. For example, mothers who have heard about signs and dangers during pregnancy will feel curious about this and will look for information anywhere to get the information so that mothers can avoid these things in order to protect themselves and their future babies.(25) Therefore, in this study pregnant women with low education are a risk factor for the incidence of hyperemesis gravidarum.

In this study, maternal work is an activity carried out by the mother to earn wages until the occurrence of hyperemesis gravidarum. Based on the results of the study, it was found that there was no relationship between maternal employment and the incidence of hyperemesis gravidarum and maternal employment was not a risk factor for the incidence of hyperemesis gravidarum. The results of this study are in line with research conducted by Rindasari Munir (2022) with the title of research on factors affecting hyperemesis gravidarum in pregnant women with a total sample of 167 samples and obtained statistical test results obtained $p \text{ value} = 0.515$ which from these results obtained there is no relationship between work and the incidence of hyperemesis gravidarum. (26) The results of this study are not in line with research conducted by Yulida Effendi Nasution (2021) at the clinic dina karya medan with the title research on the relationship between husband support, work, and attitudes in pregnant women with hyperemesis gravidarum at the clinic dina karya medan in 2020 and with a total sample of 32 and obtained the results of the chi-square statistical test $p = 0.018 < \text{sig } \alpha = 0.05$ which and from these results obtained a relationship between work and the incidence of hyperemesis gravidarum. (27)

In this study, maternal employment is not a risk factor for the incidence of hyperemesis gravidarum, so the results of this study are not in accordance with theory. Work is a risk factor for hyperemesis gravidarum, this is

because pregnant women who do work will easily experience stress and fatigue. Stress is a feeling due to pressure due to the environment, this affects the mother's psychological condition and the mother's hormonal system. Stress can increase the increase in the HCG hormone so that it can cause mothers to experience nausea and vomiting. (28) In pregnancy conditions, women who are working are strongly discouraged because in pregnancy, in addition to an increase in the HCG hormone, there is also an increase in the hormones estrogen and progesterone in the brain. Mothers with heavy work will affect the release of these hormones. (1)

The results of this study indicate that maternal employment is not significantly significant to the incidence of hyperemesis gravidarum, so maternal employment is not a risk factor for hyperemesis gravidarum. According to the researcher's assumption, housewives who in this study experienced more hyperemesis gravidarum could also be due to the stress that arose due to their limited activities because they did not work. As stated by Alnisa Min Fadillah in her research on coping with stress in housewives, housewives have a narrow social circle, as a result, if the mother has a burden of thought, there is no friend to share experiences so the information received is also small. Meanwhile, pregnant women who work will feel motivated because what they do will be worth money pregnant women will have good time management so that their work can also be completed without affecting their personal and fetal conditions pregnant women who manage time between work time, rest time, and time to pay attention to their personal development and pregnancy. Therefore, in this study, working pregnant women were not a risk factor for hyperemesis gravidarum. (27)

In this study, maternal education history is the risk factor that most influences the occurrence of hyperemesis gravidarum. this is because pregnant women who have low education have low thinking due to the lack of information obtained, besides that pregnant women with low education will be very difficult to advise and do not capture the information they are told. (25) The higher a person's education, the easier it is to receive information so the more knowledge they have. (20) Highly educated women will easily absorb information so that the knowledge they have is higher, but on the other hand, parents with low education will experience obstacles in absorbing information so that the knowledge they have is also lower which has an impact on their lives. (24)

CONCLUSION

Based on the results of data analysis of research conducted on the analysis of risk factors for the incidence of hyperemesis gravidarum in pregnant women at the Fatimah Makassar Mother and Child Hospital and the Makassar Hajj Regional General Hospital, it can be concluded that maternal age, parity and maternal education have a significant relationship with the incidence of hyperemesis gravidarum. age and parity are protective factors against hyperemesis gravidarum. whereas, maternal education is a risk factor for hyperemesis gravidarum. The most influential risk factor for the incidence of hyperemesis gravidarum at Fatimah Mother and Child Hospital Makassar and at Hajj Hospital Makassar is educational history. Therefore, based on the research findings, it is important to educate pregnant women regarding hyperemia gravidarum so that the knowledge of pregnant women can increase.

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