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Pregnancy Preeclampsia in Patients with a History of Chronic Disease and Complications

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Abstract

A condition known as preeclampsia is a pregnancy-related problem that carries with it the risk of death. Those pregnant women who have a history of obstetric complications have a risk that is 1,275 times greater than those pregnant women who do not have such a history. This was shown by the fact that a correlation exists between the two different groups. The presence or absence of pregnancy in a woman may have an impact on whether or not she is at risk of getting diabetes. There has been a shift in the proportion of carbohydrates that are present in the body of the mother ever since it was discovered that she was expecting a child. Diabetes is a condition that may be harmful to a pregnancy regardless of whether it is present before birth or if it is acquired during pregnancy.

Introduction

The odds ratio (OR) for the relationship between pregnancy difficulties and maternal mortality is 12.189. This connection exists because there is a connection between pregnancy problems and maternal mortality (Daru et al., 2018). If the variables of childbirth complications and disease history are kept constant (controlled), mothers who experience pregnancy complications have a greater risk of death than mothers who do not experience pregnancy complications. This is because childbirth complications and disease history are both variables that can be controlled (Fardet & Rock, 2022; Zhu et al., 2020). This is due to the fact that both the problems of labor and the family history of sickness are factors that can be managed.

While this is going on, the chances ratio for maternal mortality due to complications during delivery is 9.94. There are a variety of complications that may arise during pregnancy, some of which can directly lead to the death of the mother. Some examples of these complications include bleeding, eclampsia, infection, and others. There is a connection between experiencing difficulties throughout pregnancy and having an increased likelihood of experiencing difficulties during the labor and delivery process. Women who do not have any troubles throughout their pregnancies have a reduced likelihood of experiencing any difficulties during giving birth.

It is estimated that preeclampsia and eclampsia are responsible for the death of mother's fourteen percent of the time annually. In addition, these diseases are linked to large rates of illness and death among newborns, as well as mortality and morbidity among mothers. In comparison, the incidence of preeclampsia in Australia varies from 10 to 25 percent, while the rate in the United Kingdom is 100 instances for every one million pregnancies. In pregnant women in the United States, preeclampsia is the largest cause of death, accounting for 17.6% of all deaths and 15% of all premature births. It is also the primary cause of preterm delivery.

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There are certain occurrences of maternal death that are directly attributable to complications arising during pregnancy (Hantoushzadeh et al., 2020). The health center that cared for the most women who experienced complications during pregnancy had a total of 710 patients in the following year, up from 651 the previous year. This health center also saw an increase in the number of women who experienced complications during pregnancy the following year (Sahin & Kabakci, 2021). The sort of hypertension that may develop during pregnancy known as preeclampsia is the one that is found most often among women who are pregnant in this part of the country (Singh et al., 2014). If preeclampsia is not treated quickly away, it may be a contributing factor in the mother's mortality and it can cause harm to the baby that the mother is carrying. Both of these outcomes are undesirable. As a direct consequence of this, it is essential to do further study on the subject.

Methods

This research is a quantitative inquiry that is conducted in the form of a case-control study and employs a backwards, retrospective approach to its methodology. The participants in this study were divided into two groups: the case group, which was comprised of women who developed preeclampsia during the course of their pregnancies, and the control group, which was comprised of mothers who did not develop preeclampsia during the course of their pregnancies. Both groups participated in this research. The data were evaluated by means of a technique known as bivariate analysis, the purpose of which was to identify the nature of the connection that exists between the occurrence of preeclampsia in pregnant women and the independent variable in question, which was pregnancy and health status (chronic disease, and pregnancy history). For the purpose of this investigation, the chi square test was used.

Results and Discussion

Occurrence Frequency

Table 1. Cases Occurrence on Preeclampsia

Category	Frequency (n)	Percentage (%)
Preeclampsia	40	33,3
Not Preeclampsia	80	66,7
Total	**120**	**100**

Forty pregnant women who were diagnosed with preeclampsia at some time throughout their pregnancies comprised the case group. In this study, the sample size of the control group, which consisted of women who did not have preeclampsia throughout their pregnancies and had a case-to-control ratio of 1:2, was 80 individuals, or 66.7% of the overall population.

Distribution of maternal characteristics in case and control groups

Table 2. Distribution of maternal characteristics in case and control groups

Category	Cases (Preeclampsia)	Control (not Preeclampsia)	Total
Pregnancy Complications			
Yes	21	35	56
No	19	45	64
Chronic Disease			
Diabetes mellitus			
Yes	5	9	14
No	35	71	106
Hypertension			
Yes	25	12	37
No	15	68	83

It is possible that a broad variety of causes were responsible for the difficulties experienced during pregnancy. The majority of the women in the case group, 52.5%, had had difficulties during prior pregnancies, but the mothers in the control group, 56.2%, did not have these kinds of experiences. The majority of people in both groups did not have a family history of diabetes mellitus; in fact, 87.5% of those in the case group and 88.8% of those in the control group did not have a history of diabetes mellitus in their families. The case group, which included 62.5% of the sample, was significantly more likely to have hypertension than the control group, which comprised 85% of the sample.

Preeclampsia Relation to Chronic Disease and Complication

Table 3. Chronic Disease and Complication relation to Preeclampsia

Category	Cases (Preeclampsia)	Control (Preeclampsia)	P Value	OR	95%CI
Chronic Disease					
Diabetes mellitus					
Yes	5	9			
No	35	71	0,841	1,127	0,351-3,616
Hypertension					
Yes	25	12	0,000	9,444	3,891-22,924
No	15	68			
Pregnancy Complications	21	35	0,365	1,421	0,663-3,044
Yes	19	45			
No					

The results of the chi-square test reveal that the risk of preeclampsia is about 0.365 times greater in women with a history of difficulties during pregnancy than in women without such a history of problems during pregnancy. Accordingly, there does not seem to be a strong correlation between the prevalence of past pregnancy complications and the onset of preeclampsia among the research participants (Mrema et al., 2018). This was the conclusion that the researchers reached. It has been determined that the optimal odds ratio value is 1.421. (0.663 - 3.044).

People who participated in the research were tested for a number of chronic illnesses, including hypertension and diabetes mellitus (Li et al., 2016). The odds ratio (OR) for diabetes mellitus is 1.127, and there is no statistically significant link between diabetes mellitus and the risk of preeclampsia (P = 0.841). This indicates that diabetes does not enhance the likelihood of preeclampsia. This implies that diabetes does not raise the likelihood that pregnant women may develop preeclampsia (0.351-3.616). A P value of 0.000 indicates that there is a significant relationship between the development of preeclampsia and a patient's family history of hypertension. This is the conclusion that may be derived from an examination of the correlation between the two variables. Compared to women without a history of hypertension, the likelihood of a mother having preeclampsia is 9.444 times greater among mothers with a history of hypertension. In the case that preeclampsia develops during pregnancy, there is a chance that the mother may suffer that result to death.

Mother Hypertension History in relation to Preeclampsia

The state of a woman's health both before and throughout pregnancy is a significant factor that determines the onset and progression of problems. A history of the condition running in one's family is one of the things that might put a woman at risk for developing preeclampsia (Tsigas, 2021). The medical condition known as hypertension is the root cause of a sizeable fraction of all deaths. Hypertension, also known as high blood illness, is a problem of the blood arteries

that restricts the distribution of oxygen and nutrients delivered by the blood to the parts of the body that need them. Other names for this condition are high blood pressure and high blood pressure disease. Hypertension is characterized by a lack of symptoms in the vast majority of cases. This occurs when there is an increase in the risk of cardiovascular disorders such as a stroke, renal failure, heart attack, and kidney damage brought on by high arterial blood pressure. Hypertension is often a symptomless condition in its early stages.

The majority of individuals in the case group, or 62.5% of them, were found to have hypertension, but the vast majority of people in the control group, or 85.0%, were not found to have the condition. The significance of the P value of 0.000 demonstrates the relevance of the relationship between hypertension and the prevalence of preeclampsia in the history of hypertension. This link has been proven to have a role in the development of hypertension. The odds ratio for hypertension is 9.444, which indicates that women who have a history of hypertension are 9,444 times more likely to develop preeclampsia than moms who do not have a history of hypertension. [Citation needed] Preeclampsia is a condition that may develop during pregnancy and has the potential to be deadly.

This study is supported by the findings of Farzaneh et al (2019) research, which indicates that there is a significant relationship between the incidence of preeclampsia and the incidence of mothers with a history of hypertension. These findings are based on the results of statistical test analysis using the chi-square test and the calculation of the OR value with a 95% confidence level. This study indicates that there is a significant relationship between the incidence of preeclampsia and the incidence of mothers (CI). These findings emerged as a consequence of a statistical analysis carried out on pregnant women that made use of the chi-square test (p=0.013). According to the odds ratio of 4.125 (confidence interval: 1.432-11.881), pregnant women who had hypertension previous to being pregnant had a 4.125-fold greater risk of developing preeclampsia in comparison to mothers who did not have hypertension prior to becoming pregnant. This was shown by comparing the two different groups using the odds ratio.

Because of the disruption of the placental blood arteries, the risk of preeclampsia and eclampsia in pregnant women who have persistently high blood pressure would rise. Preeclampsia is more likely to develop in pregnant women who have a history of persistent high blood pressure as well as a family member who has had either preeclampsia or eclampsia in the past. In the event that the mother has previously struggled with hypertension, the outcome of this situation will make her condition substantially worse. Women who have a history of hypertension and who are pregnant should be given information about the risk of developing preeclampsia so that they may get the highest quality prenatal treatment that is currently accessible to them. This is done to lower the risk of preeclampsia and to preserve the health of the mother and fetus during pregnancy, birth, the puerperium (days 0–42), and the neonates. Preeclampsia is a potentially fatal condition that may affect both the mother and the fetus (0-28 days). Additionally, it is feasible to identify risk factors, which enables prompt and suitable treatment as well as referrals at the earliest possible stage.

Relationship history of pregnancy complications to Preeclampsia

The history of pregnancy complications may take many different forms. The majority of the women in the case group, which was 52.5%, had a history of problems, in contrast to the moms in the control group, who made up 56.2% of the sample and had no history of pregnancy-related difficulties. The hypothesis that was being tested was assigned a probability value of 0.365 based on the results of the chi square test. As a result, there does not seem to be a significant link between the history of pregnancy issues and the development of preeclampsia among the individuals who participated in this research. A value of 1.421 was obtained to represent the OR (0.663-3.044). The findings of the official study that was carried out in 2013 lend credence

to this assertion. The results of statistical tests using the chi square test show that the p value is greater than or equal to 0.05, which indicates that there is no significant relationship between Bad Obstetric History and the incidence of preeclampsia with an Odds Ratio value of 1.275, which indicates that the mother has a 1.275 times greater chance of developing preeclampsia than the average woman does. When compared to pregnant women who do not have a problematic obstetric history, those who do have a problematic obstetric history have a risk of preeclampsia that is 1,275 times higher than those who do not have a problematic obstetric history. Preeclampsia is a potentially fatal complication that can occur during pregnancy.

In the meanwhile, the proportion of respondents who had never had preeclampsia before and did not suffer from severe preeclampsia was 94.0%, but the percentage of respondents who had severe preeclampsia was 64.0%. [Citation needed] This illustrates that a pregnant woman who has a history of preeclampsia is at an elevated risk of developing severe preeclampsia during her pregnancy. This risk is enhanced when compared to the danger faced by pregnant women who do not have a history of preeclampsia. The results of the chi square test suggested that there was a significant connection ($p = 0.001$) between mothers who had a history of preeclampsia and the incidence of severe preeclampsia. This was shown by the fact that the test found that there was a relationship between the two groups. This was shown by the existence of a correlation between the two groups, which was a key piece of evidence. When the OR value is taken into account, it is possible to reach the conclusion that women who have a history of preeclampsia have an 8.81 times increased risk of getting severe preeclampsia when compared to pregnant women who do not have a history of preeclampsia. This is the conclusion that can be drawn when comparing women who do not have a history of preeclampsia to pregnant women who do have a history of preëclampsia.

Relationship to History of Diabetes Mellitus

Insulin is a hormone that is created by the pancreas. Insulin is responsible for transporting glucose from the blood into the cells of the body. This ensures that the cells are able to carry out their normal functions. Diabetes is a condition in which either the body is unable to create enough amounts of insulin or, alternatively, the body is unable to make the best use of insulin that it does produce (even though the amount of insulin is sufficient). The pancreas is responsible for the production of the hormone known as insulin. for the purpose of providing energy for the body in certain instances, a person's susceptibility to developing diabetes may be affected by whether or not they are pregnant. Since the mother discovered she was pregnant, there has been a change in the amount of carbohydrates that are found in her body.

This is due to the fact that the body needs a greater quantity of energy to support the developing needs of the kid than it would under normal circumstances. On the other hand, there is some evidence that ingesting a bigger quantity of carbs than usual might cause the body to create less insulin. The breakdown of carbohydrates results in the production of glucose, which then has to be regulated in the blood. This hormone's duty is to accomplish just that. This results in a build-up of sugar, which, in turn, leads to an increase in the quantity of sugar that is discovered in the blood. This is a direct consequence of the problem. Diabetes, whether it is present at birth or is acquired during pregnancy, may be hazardous to a pregnancy and may raise the possibility of preeclampsia developing. Diabetes may also increase the risk of other complications during pregnancy, such as gestational hypertension.

The history of chronic illness in the mother, such as diabetes mellitus, showed that the majority of people in both groups did not have diabetes mellitus; 87.5% of people in the case group and 88.8% of people in the control group did not have diabetes mellitus. This was determined by comparing the histories of the mothers in both groups. All of the people who took part in this study had a medical history that included at least one chronic illness, such as hypertension or diabetes. The P value for diabetes mellitus is known to be 0.841, which suggests that diabetes

mellitus does not have a significant relationship with the incidence of preeclampsia. This is because the P value for diabetes mellitus is lower than the value for preeclampsia. Additionally, the odds ratio (OR) for diabetes mellitus is 1.127, and the 95% confidence interval for this figure runs from 0.351 to 3.616.

Conclusion

It is abundantly clear from the findings of this study that there is a significant relationship between a history of hypertension and the incidence of preeclampsia (P value = 0.000; OR = 9.444; 95% CI = 3.891-22.924), whereas there is no significant relationship between a history of diabetes mellitus and the incidence of diabetes mellitus. The findings of this study were published in the journal Pregnancy and Childbirth. We came to this conclusion by first computing the odds ratio (OR), and then determining the confidence interval (CI). preeclampsia (P value = 0.841; OR = 1.127; 95% CI = 0.351-3.616), and there was no significant relationship between a previous history of pregnancy difficulties and the incidence of preeclampsia (P value = 0.365; OR = 1.421; 95% CI = 0.663-3.044) preeclampsia. There was no significant relationship between a previous history of pregnancy difficulties and the incidence of preëclampsia.

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