

Risk Factors Linked with Preeclampsia: A Review

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Abstract

Preeclampsia is a condition that affects pregnant women and is characterized by high blood pressure, protein in the urine, and swelling in the hands, feet, and legs. There is a chance for mild to significant variances. Although it can happen earlier or immediately after delivery, it usually happens in the later stages of pregnancy. Indeed, search engines like Google, Microsoft Bing, and Baidu were used to search publications investigating the association between pre-eclampsia and risk factor. It was observed that if preeclampsia occurred during a prior pregnancy, a woman is seven times more likely to suffer it again. Primarily, initial pregnancies are affected. Preeclampsia is more likely to affect women with history of migraines, gestational diabetes, diabetes, rheumatoid arthritis, lupus, scleroderma, urinary tract infections, gum disease, polycystic ovarian syndrome, multiple sclerosis, and sickle cell disease. Additionally, it happens more commonly in pregnancies brought on by egg donation, in vitro fertilization, or donor insemination. It is recommended that high-risk pregnant women begin taking low-dose aspirin after 12 weeks to prevent preeclampsia. Preeclampsia is therefore x-rayed along with its signs and causes. There are several risk indicators that, alone or in combination, may help identify early pregnant women who are “high risk” for pre-eclampsia.

Keywords: *High blood pressure, Preeclampsia, Risk factors.*

Introduction

Preeclampsia is a complication of pregnancy. Preeclampsia can cause high blood pressure, proteinuria, which is a high level of protein in the urine and is a marker of kidney impairment, as well as other organ damage symptoms [1].

It was stated that preeclampsia, if untreated, can result in significant, potentially deadly problems for both the mother and the unborn child. A baby's early delivery is frequently advised [2]. The timing of delivery depends on how severe the preeclampsia is and how many weeks pregnant. Careful monitoring and drugs to decrease blood pressure and control problems are part of preeclampsia treatment before to delivery [3]. Indeed, preeclampsia may occur after delivery of a baby, a condition known as postpartum preeclampsia [4].

The defining feature of pre-eclampsia include elevated blood pressure, proteinuria, or other indicators of injury to the kidneys or other organs [5].

It was reported that pre-eclampsia's initial symptoms are frequently found during routine prenatal appointments with a healthcare professional [6, 7].

Preeclampsia signs and symptoms, in addition to elevated blood pressure, may include excess protein in urine (proteinuria) or other symptoms of renal dysfunction and decreased blood platelet levels (thrombocytopenia) [8, 9].

Indeed, it was reported that between 2 and 8% of pregnancies are complicated by preeclampsia, a pregnancy-related hypertension syndrome that continues to be the primary

cause of mother and fetal morbidity and mortality [10].

Although it can emerge at any point in the pregnancy, the third trimester is when it usually does. Numerous risk factors have been found, including family history, nulliparity, egg donation, diabetes, and obesity [9, 11].

As stated by [3] high blood pressure and abnormally high protein levels in the urine are both symptoms of preeclampsia in pregnant women (proteinuria). This syndrome often appears in the last few months of pregnancy and frequently requires an early delivery of the baby. However, this syndrome can also appear quickly following childbirth postpartum preeclampsia [10, 12].

According to [13] many women with mild preeclampsia don't exhibit any symptoms, and the condition is typically only identified through blood pressure and urine testing. In addition to hypertension and proteinuria, preeclampsia signs and symptoms can also include considerable swelling (edema) of the hands or face, as well as a weight gain of more than 3 to 5 pounds in a week due to fluid retention.

Affected women may have upper abdominal pain, headaches, dizziness, irritability, shortness of breath, a decrease in urine production, nausea, and/or vomiting, according to [14].

There could be temporary blindness or vision changes like flashing lights or dots, heightened light sensitivity (photophobia), or foggy vision. After the baby is born, preeclampsia symptoms frequently go away [11, 15].

However, in severe cases, preeclampsia can cause damage to the mother's internal organs, such as the heart, liver, and kidneys, with potentially deadly results. Extremely high blood pressure in the mother can result in brain hemorrhage.

Hypertensive encephalopathy, or the effects of high blood pressure on the brain, may also cause seizures. Seizures are thought to be a symptom that the condition has progressed to eclampsia, which can result in coma. About 1 in

200 women with untreated preeclampsia get eclampsia. Sometimes eclampsia might appear without any overt preeclampsia symptoms [8, 16].

It is reported by [10] that a further potentially deadly complication of severe preeclampsia is HELLP syndrome, which affects between 10 and 20 percent of affected women. Hemolysis, elevated liver enzyme levels, and low platelet counts, which are the three major symptoms of preeclampsia, are together referred to by the abbreviation HELLP.

Furthermore, it was reported that severe preeclampsia can limit blood and oxygen flow, which might result in growth problems or stillbirth, which can harm the fetus [13, 17]. In fact, preeclampsia-related preterm births can present difficulties for newborns, such as breathing problems due to underdeveloped lungs, according to [6, 18].

Compared to women in the general population, a woman with preeclampsia has a lifelong risk of heart disease and stroke that is nearly twice as high. According to [19], preeclampsia, heart disease, and stroke may all have comparable risk factors. Women with prior medical conditions such as obesity, hypertension, heart disease, diabetes, or kidney illness are more prone to develop preeclampsia [4]. Preeclampsia is more common in the first pregnancy, although it can occur in subsequent pregnancies as well, particularly in women with severe health conditions [5, 20].

Methods

Search Strategy

The search on risk of preeclampsia was done using search engine like Google Microsoft, Bing as well as Baidu and it was restricted to publications in English with abstracts available from 2000 to June 2022.

The identified publications investigating the association between pre-eclampsia and at least one risk factor in a previous pregnancy or in the current pregnancy were used.

Results

Preeclampsia affects 5 to 8% of pregnancies worldwide, making it a prevalent illness. Compared to women of European heritage, women of African or Hispanic descent experience it more frequently [7,21]

It has been noted that preeclampsia occurs seven times more frequently in developing countries than in industrialized ones (2.8% of live births).

Causes or Preeclampsia

What particularly causes preeclampsia is unknown. To support the growing fetus, the mother's physiology must adapt to the increased blood volume that happens naturally during pregnancy. When a woman's body does not react to the fluid changes of pregnancy as it should, preeclampsia symptoms and signs develop. Women may exhibit these unusual responses to pregnancy-related changes for a variety of causes, depending on the stage of pregnancy at which the condition develops [22].

The placenta, which transports the mother's blood supply to the fetus, may be experiencing problems. If there is an insufficient connection between the placenta and the arteries of the uterus, the placenta does not receive enough blood. The placenta responds by releasing a variety of chemicals, some of which influence the lining of the blood vessels (the vascular endothelium). As a result of abnormal blood vessel constriction brought on by unidentified processes, the mother suffers hypertension [6, 23].

It was reported that these narrowed blood vessels influence other organs, which results in the preeclampsia signs and symptoms [2]. Proteins are improperly excreted in the urine because of constricted blood vessels in the kidneys [24].

It was posited that variations in genes involved in fluid balance, vascular endothelium function, or placental development affect the likelihood or severity of preeclampsia. Preeclampsia risk has also been connected to

additional genes with unidentified fetal roles [25].

Numerous other factors combine with genetic factors to increase the likelihood of acquiring preeclampsia. Some of these risk factors according to [2] include having twins or more than one pregnancy, being older than 35 or younger than 20, and having preexisting medical conditions. The risk of developing preeclampsia has also been associated with socioeconomic status and ethnicity in Imo State Nigeria [6].

It has been hypothesized that dietary practices and other environmental factors may affect this change. Recent increases in older women, the frequency of obesity and hypertension, and multiple births have all been linked to a 30% increase in preeclampsia cases [1].

Obesity and age, particularly for women over 40, are other factors that can raise a woman's risk [10].

Additionally, African Americans are more likely to develop preeclampsia due to their ethnicity and multiple pregnancies (carrying more than one fetus) [8].

Similarly, among those who have once experienced preeclampsia, non-white women are more likely than white women to have the illness again during a second pregnancy [3].

Indeed, another risk factor of preeclampsia is Inheritance. Women who have never had a family member suffer from preeclampsia are regularly diagnosed with it, and these cases don't seem to be hereditary. In certain families, the disorder has a strong familial history, however it is unclear how the disorder is handed along. Preeclampsia risk may be influenced by genetic variations carried by either parent, or genetic variations carried by the fetus may also be significant [8].

Specifically, the following may increase the chance of a high-risk pregnancy: Maternal age in her prime. Women over 35 have an increased likelihood of becoming pregnant [6]. However, choice of lifestyle is a strong factor. Pregnancy

risk factors include consuming illegal substances, drinking alcohol, and smoking cigarettes [3].

Indeed, obstetrical health issues contribute to risk of preeclampsia. Pregnancy risks can be raised by conditions such as high blood pressure, obesity, diabetes, epilepsy, thyroid disease, blood or heart conditions, poorly controlled asthma, and infections [1].

It was noted [2] hazards associated with several pregnancy problems. Examples include an abnormal placental position, fetal growth that is less than the 10th percentile for gestational age (fetal growth restriction), and rhesus (Rh) sensitization, a potentially dangerous condition that can develop when blood type is Rh negative and unborn child's blood type is Rh positive.

Several pregnancies Women bearing multiple fetuses have increased pregnancy risks as well as past pregnancies. Preeclampsia and other hypertensive disorders associated with pregnancy enhance the likelihood of developing this condition in a subsequent pregnancy [9, 26].

Application

The chance to cure preeclampsia was improved by the identification of risk factors. This aids in the overall care of preeclampsia, which includes supportive treatment with antihypertensives and anti-epileptics up to delivery, which is the only effective therapeutic option. Patients are frequently induced with or

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without corticosteroids after 37 weeks of gestation in preeclampsia without severe symptoms to hasten lung maturation.

Conclusion

It is not clear that the placenta is the primary contributor of preeclampsia usually. Reduced placental perfusion causes oxidative stress, endoplasmic reticulum stress, and inflammation, all of which combine to alter maternal physiology with endothelium as a key target. The preeclampsia risk is larger for women over 40. African American ethnicity multiple gestation (carrying multiple fetuses). Additionally, among women who have previously experienced preeclampsia, non-white women are more likely than white women to experience the condition again during a subsequent pregnancy. There is presently no 100% surefire way to prevent preeclampsia. While some reasons of high blood pressure cannot be treated, others can, Reducing the risk factors for preeclampsia can benefit from following dietary and activity guidelines.

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Conflict of Interest

There is no conflict of interest.

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