AWARENESS ABOUT OBESITY AND STRESS ARE RISK FACTORS FOR PRE-ECLAMPSIA. A SURVEY STUDY

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ABSTRACT
Aim: The study aims to provide awareness about obesity and stress are the risk factor for pre-eclampsia. Background: For several years, pre-eclampsia has been the most frequent hypertension condition of pregnancy. Obesity and stress are thought to play a role in the development of pre-eclampsia. The hypothesis, on the other hand, has been varied and has frequently yielded conflicting results. Obesity and stress have been identified as risk variables for pre-eclampsia in this investigation. Method: A total of 50 pregnant women were surveyed in the eroded district, specifically in the Gobi, Bhavani, and Sathyamangalam areas. Pregnant women in Erode district who are receiving prenatal care or using a skilled delivery system. Face-to-face interviews were used to collect data, and measurements of mid-upper arm circumference, waist circumference, obesity, and stress were taken during the interview. The effect of the independent variables was estimated using both univariate and multivariate logistic regression methods. Result: The results suggest that there are 50 ladies in total. Only 35 women are classified as being seriously stressed due to their weight. Women are advised to be attentive, as well as maintain a healthy diet, take drugs, relax with music, and practice deep breathing exercises. Obesity and stress were also discovered to increase the risk of pregnancy problems. On either side, adherence to folate, vitamin, and iron supplementation throughout pregnancy, as well as a healthy diet, were linked to a lower incidence of pre-eclampsia. Conclusion: Obesity had become an epidemic worldwide. During pregnancy, women are advised not to do weight reduction especially during the 1st and 2nd trimester it is more chance of getting pre-eclampsia. Among pregnant women, it had increasing day by day. Especially during the gestation period, maternal obesity had more risk for pre-eclampsia, a hypertension disorder of the pregnancy that may lead to life-threatening complications for the mother and baby. Stress also plays an important role in pre-eclampsia in most working women.

Keywords: Pre-eclampsia, obesity, MUAC, and WC.

INTRODUCTION
Pre-eclampsia is a pregnancy disease marked by sudden hypertension (a rapid rise in blood pressure), albuminuria (the leakage of a high amount of protein albumin in the urine), edema, and other symptoms (swelling on hand, feet, and face). Pre-eclampsia is the most serious and prevalent pregnancy condition. Pre-eclampsia usually develops during the first trimester of pregnancy. Pre-eclampsia is more common in the first trimester of pregnancy. This is more likely among people who are ethical or who are expecting twins. Pre-eclampsia causes an increase in protein in the urine or other indicators of renal diseases, such as momentary vision loss, upper abdomen pain, a drop in platelet count, and impaired liver function, among other things. Pre-eclampsia causes abrupt weight gain and swelling (edema), especially in the hands and face.

The risks and advantages of delivery at different times are determined by the severity of the condition. Toxemia or toxic pregnancy are terms used to describe pre-eclampsia. Preeclampsia is a serious condition that can occur during pregnancy. It could, for example, be a signal that the placenta is separating from the uterus. Untreated preeclampsia can lead to eclampsia, an existing condition marked by coma and convulsions in both the mother and the fetus.
Pre-eclampsia usually develops before the 20th week of pregnancy, however, it can also develop later in the pregnancy or after delivery. New blood vessels begin to grow between the placenta and the uterine wall during the early stages of pregnancy. For a variety of factors, including insufficient blood flow to the uterus, blood vessel damage, immune system disorders, and genetic factors, these new blood vessels may form improperly. The volume of blood that may flow to the placenta is restricted by these aberrant blood arteries.

The blood arteries of pregnant women may dilate as a result of this malfunction. Obesity has long been linked to an increase in type 2 diabetics and cardiovascular disease. Obesity, on the other hand, has significant implications for pregnancy outcomes. Other negative impacts are more widespread than the "mechanical limitations" linked with morbid obesity. First, obesity appears to be the major cause of pre-eclampsia in the United States, with obesity being present in 30% of cases (3).

Overweight has negative effects on both the mother and the foetus. During pregnancy, pre-eclampsia and gestational diabetes are two maternal concerns. For the foetus, stillbirth and congenital defects are likely alternatives. Overweight during pregnancy can have long-term health implications for both the mother and the child. Stress is known to be a potential risk for pre-eclampsia, and obesity is linked to the potential cause for pre-eclampsia in numerous ways.

When a person experiences too much stress, they may experience difficulty sleeping, headaches, loss of appetite, or a tendency to overeat, all of which can be dangerous to the mother and the baby during pregnancy. A high degree of stress can lead to high blood pressure in the body, which can lead to preterm labor and low birth weight babies.

Pre-eclampsia / gestational hypertension was linked to workplace stress in four further trials, predominantly in working women. Another study found that worry during early pregnancy increases the probability of pre-eclampsia by more than thrice (4-6).

Similarly, depression and perceived stress during pregnancy are linked to a higher risk of pre-eclampsia. Psychosocial stress activates the hypothalamic-pituitary-adrenal axis, which can lead to endothelial dysfunctions and pro-inflammatory activities, as well as blood pressure increase (7-12). When a high amount of stress is present at work for an extended period, it can lead to health problems including high blood pressure and heart disease. During pregnancy, stress might increase the chances of having a premature baby (born before 37 weeks) or a baby with low body weight (less than 5 pounds 8 ounces). Babies born prematurely or with a small number of siblings are more likely to have health problems.

As per an article published in the journal of affective disorders, pregnant women with anxiety are more likely to develop hypertensive disorders during pregnancy, such as gestational hypertension, pre-eclampsia, and pre-eclampsia. Gaining more than 5 to 6 pounds in a week is a sign of pre-eclampsia. When blood vessels are damaged, more water leaks and stays in the body tissue rather than passing through.

Weight loss during pregnancy should not be recommended by women since it poses a substantial risk to both the baby and the mother throughout the gestational period. Pre-eclampsia is linked to dietary components and attributes connected with macronutrients, micronutrients, dietary fiber, alcohol, caffeine, particular meals, and all eating patterns, according to observational research, (13-15).

In early phytochemical screening, the presence of phenolic, flavonoids, carbohydrates, and volatile oils was discovered (16).

Epidemiology:
The prevalence of pre-eclampsia was investigated in a 2017 report. It comprised information from over 177,000 pre-eclampsia and eclampsia deliveries.

According to race and ethnicity, black women have 69.8 pre-eclampsia and eclampsia every 1,000 deliveries. Hispanic women have 46.8 per 1,000 deliveries, white females have 43.3 per 1,000 deliveries, and Asian / Pacific Islander women have 28.8 each 1,000 deliveries. Over the last ten years, the incidence of comorbid anxiety related to obesity in pre-eclampsia has grown about six fold.

Method:
Study design and period:
A facility-based control study followed pregnant women seeking prenatal care or competent delivery in an eroding region for two years.

Study area:
The survey is being carried out in the Erode district. After Chennai, Madurai, and Salem, it is the state's seventh-largest urban agglomeration. It is a 109.52-kilometer-long city. The research is being carried out in the adjacent Gobi, Sathyamangalam, and Bhavani localities.

Currently, prenatal care and expert delivery services are in high demand (16). Females who use ANC or competent delivery services have similar features, with no differences in the kind of health facilities they use. (A hospital or a health clinic.) They come to receive one or both of these services

Study method:

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A total of 50 pregnant mothers were studied during two years. During the trial period, pregnant women who started visiting antenatal care (ANC) and were looking for expert delivery services were involved in the study. The proportions of ANC attendance were the same for both the case and the controls. Participants and non-participants have no prior knowledge of one other.

Pregnant women diagnosed with any form of pre-eclampsia/eclampsia during ANC follow-up or delivery by a clinician are referred to as cases. After 20 weeks of pregnancy, pre-eclampsia women were identified as cases if they had a blood pressure of 140/90 mm Hg or higher at least twice 4 hours apart, as well as urine laboratory results revealing protein excursion. This figure comes from a prior research that found advanced age to be a potential risk for pre-eclampsia.

**Sampling technique:**
During the study time, pregnant women who were using an ANC or delivery service. This inclusion criterion includes all fat and short women who are pregnant. Women who are on contraceptive pills, women who already have hypertension, diabetes, and heart disease medications, women who have had abortions, and women who are on hypertension meds. This criterion does not apply to women with lower BMI values.

**Procedure:**
A total of 50 pregnant women are selected based on the findings of this study. Pregnant women are given stress scale questionnaires based on their BMI. Face-to-face interviews are used in the study, and the inclusion and exclusion criteria are stated above. After a positive pregnancy test, this investigation is carried out. During the investigation, the levels of albumin and globulin were also measured.

**Study variables:**
Pre-eclampsia/eclampsia during pregnancy or delivery was the primary outcome, whereas eating habits were the outcome variable in maternal sociodemographic variables (age, marital status, education, domicile, monthly income, and mother occupation) (intake of fruits, green vegetables, meat, and animal product, and folate). Nutritional status and hemoglobin value (Hbg) evaluated in the first trimester, as well as maternal lifestyle pattern (physical activity, alcohol consumption, and coffee consumption), are all examined before and/or during pregnancy. Pre-eclampsia was categorized as early-onset (34 completed weeks gestation), late-onset (_34 completed weeks gestation), or overall pre-eclampsia based on gestational age (GA). Psychosocial stress is a type of stress that happens before or during pregnancy. Based on gestational hypertension, which usually occurs between 5 and 7 months of pregnancy.

**Measurement of nutritional status:**
**Mid-upper arm circumference:**
MUAC is a valuable technique for determining nutritional status quickly. It is a easy and inexpensive process of determining nutritional status, and it is used increasingly frequently in poor nations for rapid and thorough nutrition surveillance and screening. (18, 19, 20)

In unwell patients, MUAC is a helpful sign of malnutrition (normal MUAC >23 cm in males and > 22 cm in females) (20).

**Waist circumference:**
Waist circumference is a measurement that can be combined with BMI to assess the likelihood of developing a disease. Fat in the upper abdomen is associated with a greater incidence than fat in other areas of the body. Abdominal fatness is the leading cause of heart disease and type 2 diabetes mellitus. The circumference of the mid-upper arm and the circumference of the waist are measured with an inch tape.

**BMI:**
The use of BMI to measure nutritional quality in individuals, especially pregnant women, has been recommended in poor nations around 10 weeks of pregnancy (22).

**Procedure for gathering data:**
A direct Interviewer-administered pretest questionnaire was used to obtain the data. The mother's waist circumference was measured at the time of the interview, and her medical records were examined for information on categorization into wider age groups and various stratum-specific homogeneous variables. The results obtained were compared across age groups for three forms of pre-eclampsia. Finally, a distinct age of categorized and modified covariate analysis was carried out, with the results provided in detail.

Pre-pregnancy, first trimester, second trimester, and third-trimester stress and obesity measurements, as well as postpartum MAC and WC circumference measurements.
Psychosocial stress and pre-eclampsia/eclampsia, on the other hand, have yielded mixed results. Depression, anxiety, and other psychopathologists have been linked to worse prenatal and neonatal outcomes, including preterm delivery, in certain studies (24, 25).

Table 1: Measurement Of Obesity, Stress and Mac And Wc Circumference In Pregnancy Women

<table>
<thead>
<tr>
<th></th>
<th>MUAC</th>
<th>WC</th>
<th>Obesity</th>
<th>Stress</th>
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<tbody>
<tr>
<td>Mean difference</td>
<td>8.22</td>
<td>5.98</td>
<td>5.4</td>
<td>8.64</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>3.21</td>
<td>3.22</td>
<td>2.67</td>
<td>4.11</td>
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<tr>
<td>T value</td>
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<td>6.3</td>
<td>14.27</td>
<td>14.84</td>
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<td>2.15</td>
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</tbody>
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Figure 1: Data Analyzation

MUAC: Mid Upper Arm Circumference. WC: Waist Circumference.

Figure 2: Data Presentation Numerical Pain Rating Scale (NPRS) and GHQ-12 mental assessment between Group A, Group B


Result

The BMI has been increasing during pregnancy, according to this study. The BMI has increased more significantly during the third trimester. According to the WHO, underweight is defined as being under 18.5 pounds, normal weight is defined as being between 18.5 and 24.9 pounds, pre-obesity is defined as being between 25.0 and 29.9 pounds, Obesity class 1 includes people who weigh between 30.0 and 34.9 pounds, obesity class 2 includes people who weigh between 35.0 and 39.9 pounds, and
obesity class 3 includes those who weigh more than 40 pounds. The MUAC (mid-upper arm circumference) measurement is 8.22 in mean difference, 3.12 in standard deviation, and 18.06 in value. The mean difference for WC (waist circumference) is 5.98, the standard deviation is 3.22, and the t value is 13.12, whereas the mean difference for obesity is 5.4, the standard deviation is 2.64, and the t value is 14.27. The perceived stress scale is used to assess stress in pre-eclampsia. The range is 0 to 10, with normal being 0 to 10, mild being 11 to 20, moderate being 21 to 30, and severe being 31 to 40. The value of 36.58 in this study is severe. The mean difference in this study is 8.64, with a standard deviation of 4.11 and a value of 14.84. Stress is becoming more valuable.

DISCUSSION:
The purpose of this case study was to determine how pre-eclampsia in women was affected by fat and stress. Obesity, advanced maternal age, and higher coffee use were identified to be risk variables for pre-eclampsia when researchers looked at a variety of characteristics. A balanced diet and folate supplement, on the other hand, were protective factors against pre-eclampsia.

The author wanted to see if the link between MUAC and WC pre-eclampsia was masked by the mother's age. The age-stratified investigation found an effect modification/interaction between MUAC and WC and maternal age. Obesity and stress affected overall and late-onset pre-eclampsia only in women under the age of 35, primarily those between the ages of 25 and 35. Obesity and stress are linked to an increased risk of pre-eclampsia in young married women, according to this research.

In underdeveloped countries, as one's age rises, so does one's body size and the chance of pre-eclampsia (26). We believe that a rise in weight and stress among young women is a substantial risk factor for pre-eclampsia in women under the age of 35, as well as in women over the age of 25. Obesity and stress are linked to an increased risk of pre-eclampsia in young married women, according to this study.

According to the WHO, if a woman's BMI is less than 18.5 (underweight), she should gain about 28 -40 pounds during pregnancy, if her BMI is between 18.5 and 24.9 (normal weight), she should gain about 25-35 pounds, if her BMI is between 25.0 and 29.9 (overweight), she should gain about 15 to 25 pounds, and if her BMI is greater than or equal to 30.0, she should gain about 15 to 25 pounds (obese),

CONCLUSION:
According to the findings, only 35 women out of 50 are extremely stressed as a result of their obesity, while the remaining 15 women are the only ones who are experiencing moderate stress as a result of their obesity. Very stressed women are taken and given awareness, deep breathing exercises, relaxation to music, and drugs for the first trimester, two sessions lasting around three months. In pregnant women, the measurement is performed again after 3 months. In pregnant women, it demonstrates an excellent result with a good prognosis. This investigation yielded a significant value of 2.15, which is statistically significant.

Obesity and being overweight are risk factors for a variety of health problems, as well as being linked to other issues such as emotional and social issues. When evaluating pregnant conditions, the risk of getting diabetes is moderately increased in women, which can lead to pre-eclampsia (without gestational diabetes), as well as a greatly higher risk of developing diabetes.

Pregnancy stress and an unbalanced diet are thought to raise the risk of perinatal and adult morbidity, as well as the death rate in both the mother and her kid or children. According to research, women with diabetes who have protein in their urine due to diabetic neuropathy (kidney damage) have a fourfold increased risk of pre-eclampsia during pregnancy.

Women who are diabetic during pregnancy are more likely to have high blood pressure and pre-eclampsia. Gestational diabetes increases the risk of high blood pressure during pregnancy and is linked to pre-eclampsia, a major pregnancy condition that can cause serious problems for both the mother and the baby.

Obesity and stress at a young age are risk factors for late-onset and overall preeclampsia, whereas folate supplementation, vitamin, and iron supplementation, and a healthy diet are protective factors. The risks and safeguards that come with it.

REFERENCES

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21. Catov JM, Abatemarco DJ, Markovic N, Roberts JM. Anxiety and Optimism Associated with Gestational Age at Birth and Fetal Growth. Matern Child Health J. 2009 Aug 21;


