

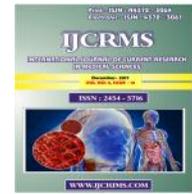


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**Review Article**

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# The relation between hypertension and gestational diabetes- A review

**Zohre Mahmoodi**

Faculty of Medicine, Zabol University of Medical Sciences, Zabol, Iran

### Abstract

**Introduction:** gestational diabetes are associated with serious midwifery complications. One of the important problems of these patients is gestational hypertension. Gestational hypertension is observed in 10% of pregnant women and is associated with different fetal and maternal complications such as preterm delivery, delayed intrauterine growth, asphyxia, fetal death, placental abruption, liver and kidney failure, bleeding prior and after delivery, and mother's death.

results of the studies showed that female infants who are overweight during infancy are exposed to a higher risk of developing pregnancy poisoning. In addition to maternal complications and pregnancy blood pressure disorders, fetal and infancy complications are other main complications of this disease.

**Material and methods:** The present study was conducted by searching both English and Persian databases including magiran, SID ,Google scholars, and science direct pub med by using keywords such as hypertension, gestational diabetes and review. At first, the researcher searched a large number of studies. Then, from among the studies searched, those that were not related to the subject of the present study were removed, and the researcher used only those studies having a proper relationship with the present study. In the present study, it was attempted to investigate the relation between HTN and GDM.

**Discussion:** Mortality rate before delivery in pregnant women with gestational hypertension is five times higher than pregnant women with normal blood pressure. Main pregnancy problems such as dysfunction of large and small vessels, the incidence of diabetes after pregnancy is terminated, and gestational hypertension are more common in pregnant women with gestational diabetes than pregnant women without gestational diabetes. Pregnancy can cause hypertension in women who used to have normal blood pressure. Increased blood pressure during pregnancy is one of the most common causes of women hospitalizations. If hypertension is intensified and other symptoms of preeclampsia are observed, the fetus and the mother's life will be in danger. In most of the cases, increased gestational hypertension is a transitory and temporary condition and can be controlled by resting, but the danger of intensified hypertension and the incidence of preeclampsia continue to exist until the pregnancy is terminated. The relation between pregnancy-induced hypertension and gestational diabetes is not well understood several studies suggest an association between these diseases, but others do not.

**Keywords:** HTN ,GDM,

## Introduction

Gestational diabetes is the most common metabolic disorder during pregnancy whose prevalence varies from 1.4 to 14% in different societies. Pregnant women suffering from gestational diabetes are exposed to complications such as giving birth to a preterm baby, macrosomia, difficult delivery, hypoglycemia, increased baby bilirubin levels, polyhydramnios, and childbirth injuries(1). In total, 90% of pregnancies in women with gestational diabetes are associated with serious midwifery complications. One of the important problems of these patients is gestational hypertension. Gestational hypertension is observed in 10% of pregnant women and is associated with different fetal and maternal complications such as preterm delivery, delayed intrauterine growth, asphyxia, fetal death, placental abruption, liver and kidney failure, bleeding prior and after delivery, and mother's death (2). Increased blood pressure due to pregnancy is a common disorder which, together with bleeding and infection, make the death-causing triad. Around 0.05% of pregnant women develop preeclampsia which causes the majority of complications and mortalities during pregnancy (3). Despite extensive research, the formation and intensification of hypertension during pregnancy has remained as an unsolved problem. Some studies have mentioned obesity as the risk factor for preeclampsia and have shown that the relationship between the mother's weight and preeclampsia is a progressive risk and varies from 0.3 to 0.4 in women with a body mass index of 35 kg/m<sup>2</sup> or higher (4). The level of C reactive protein which is an inflammatory index increases during pregnancy, and this protein is effective in the development of preeclampsia. Also, there is evidence showing that obesity causes an increase in endothelial activity and a kind of systemic inflammatory response with atherosclerosis contribute to the development of gestational hypertension (5). The results of the studies showed that female infants who are overweight during infancy are exposed to a higher risk of developing pregnancy poisoning. In addition to maternal complications and pregnancy blood pressure disorders, fetal and infancy

complications are other main complications of this disease (6).

## Materials and Methods

The present study was conducted by searching both English and Persian databases including magiran, SID ,Google scholars, and science direct pub med by using keywords such as hypertension, gestational diabetes and review. At first, the researcher searched a large number of studies. Then, from among the studies searched, those that were not related to the subject of the present study were removed, and the researcher used only those studies having a proper relationship with the present study. In the present study, it was attempted to investigate the relation between HTN and GDM.

## Discussion

Women suffering from gestational hypertension are exposed to the risk of pregnancy seizure, hypertension after delivery, metabolic syndrome, cardiovascular diseases, and stroke. Gestational hypertension, bleeding, and infection are three main causes of mortality in pregnant women. Mortality rate before delivery in pregnant women with gestational hypertension is five times higher than pregnant women with normal blood pressure (7). Main pregnancy problems such as dysfunction of large and small vessels, the incidence of diabetes after pregnancy is terminated, and gestational hypertension are more common in pregnant women with gestational diabetes than pregnant women without gestational diabetes (8). Although the main factor causing gestational diabetes is not known, some risk factors such as number of pregnancies, multiple pregnancy, being overweight, chronic kidney diseases, chronic hypertension, family history, new sex partner, the mother's young age, the mother's age being above 40, blood incompatibility, living in high altitude areas, and unsecure socio-economic status are considered to be effective in the development of gestational hypertension (9). Pregnancy can cause hypertension in women who used to have normal blood pressure. Increased blood pressure during pregnancy is one of the most common causes of

women hospitalizations. If hypertension is intensified and other symptoms of preeclampsia are observed, the fetus and the mother's life will be in danger (10). In most of the cases, increased gestational hypertension is a transitory and temporary condition and can be controlled by resting, but the danger of intensified hypertension and the incidence of preeclampsia continue to exist until the pregnancy is terminated (11). In addition, this disorder imposes a lot of stress and expenses to the patients and the healthcare system. The exact cause of this disorder is not known, but several theories have been offered in this regard, including nutritional theories (12). Currently, educating women about diet during pregnancy is based on the ideas from two decades ago, in which women were encouraged to be fed for both the mother and the fetus. Healthcare authorities should pay due attention to educating diet to pregnant women based on recent studies. Furthermore, given the role of BMI in the incidence of these disorders, emphasis should be put on gaining an ideal weight and secure weight gain during pregnancy, especially in women with history of abortion and family history of hypertension, in programs intended to educate women about diet before and during pregnancy (13). Also, to prevent supplement overconsumption which can have adverse effects, it is suggested that supplements be prescribed based on a careful analysis of the diet. Increased blood pressure is an important problem during pregnancy. Gestational hypertension and proteinuria are known as preeclampsia syndrome which occurs in 2-8% of pregnancies and is the direct cause of 10-15% of maternal mortalities in all countries with low, medium, and high incomes. Preeclampsia is related to preterm delivery, low weight of the baby at birth, intrauterine growth restriction, and fetus and infant mortalities (14). Measuring blood pressure is a common screening test in pre-delivery healthcare which is used to diagnose or predict the hypertension disease. In the second half of pregnancy, measuring mean arterial pressure is a better predictor for increased gestational hypertension than systolic blood pressure or systolic and diastolic blood pressure. Consuming omega 3 in late stages of pregnancy reduces thromboxane A2 production and increases

prostacyclin production by two to three times. Therefore, consuming omega 3 in late stages of pregnancy may be effective in preventing or treating preeclampsia (15). Food resources contain unsaturated fatty acids with long omega 3 chains. The reactions resulting from EPA and DHA molecular processes in the cell membrane reduce thromboxane A2. Reducing thromboxane A2 plays an important role in primary and secondary prevention of increased blood pressure and other cardiovascular diseases. The relation between pregnancy-induced hypertension and gestational diabetes is not well understood several studies suggest an association between these diseases, but others do not.

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