



Short Communication

# Association of gestational diabetes and hypertensive disorders among pregnant women

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Gestational diabetes and hypertensive disorders are common pregnancy complications among pregnant women worldwide because it shares metabolic and cardiovascular risk factors. Pregnant women with gestational diabetes are known to have insulin resistance pre-pregnancy and during pregnancy. Typically, they were diagnosed between 24 and 28 week of gestation using glucose tolerance test. Elevated of postprandial blood glucose more than 120mg/dL or fasting blood glucose more than 95mg/dL is considered poor glycemic control leading to pregnancy complications, particularly hypertensive disorders. The purpose of this review is to examine the association of gestational diabetes and hypertensive disorders among pregnant women and its outcomes. Inclusion criteria for recruited studied paper is the study of association of gestational diabetes and hypertensive disorders among pregnant women published within 5 year, 2016–2020. Exclusion criteria are 1) The study of association of pre-gestational diabetes, type 1 and type 2 diabetes and hypertensive disorders, 2) It is not printed in English.

There are four categories of hypertensive disorders in pregnancy: 1) Gestational hypertension, 2) Preeclampsia-eclampsia, 3) Preeclampsia superimposed chronic hypertension, and 4) Chronic hypertension. It can be classified into two groups of manifestation: Before 20 week of gestation and after 20 week of gestation. Pregnant women are usually diagnosed of chronic hypertension before 20 week of gestation. Another groups developed hypertension after 20 week of gestation. Gestational hypertension is diagnosed when pregnant women develop hypertension, blood pressure of 140/90mmHg or over after 20 week of gestation and without proteinuria. It is also

named as transient hypertension of pregnancy. Elevated blood pressure and present of proteinuria are considered preeclampsia without severe features or with severe features.

Pregnant women with gestational diabetes who developed preeclampsia-eclampsia are overweight or obese, usually they were diagnosed after 24–28 week of gestation because of occurring peak of insulin resistance and endothelial dysfunction. Placental hormones act against insulin action in order to preserve blood glucose for developing fetus. In addition, prior insulin resistance due to oxidative stress leads to hyperinsulinemia and beta-cell dysfunction. Prolonged hyperglycemia, insulin resistance, and dyslipidemia also affect endothelial function leading to atherosclerosis, thickening and stiffness of vascular, vasoconstriction and its related complications.

Gestational diabetes and hypertensive disorders affect pregnancy outcomes including preterm labor and birth, macrosomia, maternal death, and perinatal death. Maternal gestational diabetes and hypertensive disorders are associated with large for gestational age fetus and macrosomia. Stillbirth rates in pregnant women with hypertensive disorders is 21.9 per 1,000 birth. In addition, women with a history of gestational diabetes and hypertensive disorders are at risk for development of chronic hypertension later in their lives.

Primary prevention by raising awareness of healthier dietary pattern and doing regular exercise before conception and during the first half of pregnancy would be suggested for all pregnant women. The moderate intensity of prenatal exercise including brisk walking, water aerobics, stationary cycling,



resistance training can prevent the development of gestational diabetes and hypertensive disorders among pregnant women. Early detection and management of gestational diabetes and hypertensive disorders in pregnancy would be helpful to delay development maternal and newborn complications. Lastly, modification of healthy behaviors is recommended for women with a history of gestational diabetes and hypertensive disorders in order to improve metabolic imbalance and cardiovascular pathogenesis. As a result, maternal and newborn complications will be decreased [1–10].

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