

RISK FACTORS IN PREGNANT WOMEN BETWEEN 20 AND 30 YEARS-OLD.

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ABSTRACT

INTRODUCTION. Gestational diabetes (GDM), which usually develops in the second half of pregnancy, has increased significantly in prevalence in the last 20 years. Current incidence rates are 1.7 to 15.7 percent, depending on ethnicity, maternal age, and diagnostic criteria. GDM can also cause various pregnancy complications, including increased prenatal and perinatal mortality, perinatal complications, and delayed neurodevelopment.

MATERIAL AND METHOD. An observational, descriptive, and cross-sectional study was carried out on 57 pregnant women between 20 and 30 out of 113 pregnant women of all ages to determine the maternal risks in this age group during 2022. Fifty-eight cases were studied.

RESULTS. The variables analyzed are present in Table 1, where adequate prenatal control. However, the number of cesarean sections is high, and the cases of preeclampsia as well, and as a maternal risk factor, obesity was high; hypovolemic shock was 28% unnecessary maternal risk regarding the rejection of any contraceptive method, which is understandable since they wanted to get pregnant again.

DISCUSSION. Two major maternal cardiometabolic disorders, hypertensive disorders in Pregnancy (HDP) (including preeclampsia) and gestational diabetes mellitus result in a significant disease burden for pregnant women worldwide. No global consensus has been reached on the diagnostic criteria for both disorders, making it difficult to assess the differences in their disease burden. However, both diseases show an uneven distribution. **CONCLUSIONS.**

Keywords: risk factors; hypertension; pregnancy; obesity; preeclampsia; caesarean section; prenatal control.

INTRODUCTION

Historically, before the discovery of insulin, a strict carbohydrate-restricted diet was the primary therapeutic strategy for diabetic mothers. At that time, babies born alive were generally low birth weight. The purpose of this restricted diet was not only to normalize maternal serum glucose levels but also to prevent or decrease the high rate of low birthweight term delivery. Maternal starvation was the way to reduce serum glucose levels and avoid intrauterine fetal death or severe diabetic complications with placental damage. Everything looks different today, but we still have a long way to go to complete satisfaction.

Gestational diabetes mellitus (GDM), which usually develops in the second half of pregnancy, has increased significantly in prevalence in the last 20 years. The current incidence is 1.7 to 15.7 percent, depending on ethnicity, maternal age, and diagnostic criteria. GDM can also cause various pregnancy complications, including increased prenatal and perinatal mortality, perinatal complications, and delayed neurodevelopment of the fetus (1).

Previous studies by Horn J et al. (2) indicate that spontaneous pregnancy loss may be associated with an increased risk of type 2 diabetes mellitus, higher serum cholesterol, and arterial hypertension. Thus, pregnancy complications, including preeclampsia, gestational hypertension, preterm birth, and gestational diabetes mellitus, have emerged as women-specific risk factors associated with cardiovascular disease.

GDM is diabetes diagnosed in the second or third

trimester of pregnancy that was non-manifest diabetes before pregnancy. GDM is an essential factor affecting maternal and child health and is one of the most common complications during pregnancy. One study showed that the overall incidence of GDM has increased worldwide over the past decade (3). According to a 2018 meta-analysis, the prevalence of GDM in China ranged from 13 to 21% (3-5).

MATERIAL AND METHOD

An observational, descriptive, and cross-sectional study was carried out in 57 pregnant women between the ages of 20 and 30 of 113 pregnant women of all ages in the Gynecology and Obstetrics Service of the Playa del Carmen General Hospital to know the maternal risks in this group of age during the year 2022. Fifty-seven cases were studied. Used measures of central tendency and dispersion as well as percentages.

RESULTS

The variables analyzed are present in Table 1, where is observed adequate prenatal control. However, the number of cesarean sections is high, and the cases of preeclampsia as well, and as a maternal risk factor obesity was high; hypovolemic shock was 28% unnecessary maternal risk regarding the rejection of any contraceptive method, which is understandable since the wanted to get pregnant again.

Table 1. Variables in 57 pregnancies woman at General Hospital Playa del Carmen during 2022 year.

Variable	X	S	Num.	%
Age	25	2.8		
Gestation	1.8	0.97		
Caesarean sections	1.15,	0.5		
Intergenic period	4	2.7		
Weeks of gestation	32.4,	11.2		
Intrahospital days	4.4	3.7		
Prenatal control			43	75
Cesarean section			40	70
Preeclampsia			37	65
Obesity			32	56
Rejected contraceptive method			20	35
Hypovolemic shock			16	28
Deliveries			7	12.2
Arterial hypertension			7	12.2
Uterine atony			5	8.7
Ectopic pregnancy			4	7.0
Urinary tract infection			3	5.2
Placental abruption			3	5.2
Exploratory laparotomy			3	5.2
Instrumental curettage			3	5.2
Septic shock			2	3.5
Eclampsy			2	3.5
Mellitus diabetes			1	1.7

DISCUSSION

Continuous glucose monitoring provides unique information on daily glycemic control and allows for a better understanding of how glucose variability can influence the long-term complications of diabetes. GDM is defined as any degree of glucose intolerance that begins during pregnancy. It is associated with increased fetomaternal morbidity and long-term complications in the mother and offspring [4]. The amount of insulin secreted by pancreatic beta cells in GDM was lower than that of pregnant women with standard glucose tolerance, the most significant

risk (6).

The risk of complications in women with GDM increases proportionally with worsening glycemic tolerance. Comprehensive glucose monitoring and treatment are essential to prevent these complications because even small increases in glucose are associated with poorer clinical outcomes. The most common complications among the children of women with metabolic abnormalities during pregnancy include the future risk of obesity, glucose intolerance, or the development of T2D (7).

Lin J et al. (8) conducted a retrospective survey of pregnancy BMI <25.0 kg/m² and no GDM during 710 women diagnosed with GDM. Serum lipids, the pregnancy index observed an annual BMI gain of ≥0.6 kg/m²/year during the interpregnancy period. For women with a pre-pregnancy BMI of <25.0 kg/m² and no GDM during Pregnancy, maintaining an annual BMI gain of <0.6 kg/m²/year can prevent GDM during subsequent pregnancy (9).

were diagnosed when HOMA-IR ≥ 2.0, insulin resistance (IR). IR significantly increased the risk of Two major maternal cardiometabolic disorders, hypertensive disorders of pregnancy and large-for-gestational-age products in women with GDM, preeclampsia) and GDM, result in a significant disease burden for pregnant women worldwide. No consensus has been reached on the diagnostic criteria for both disorders, making it difficult to assess the differences in their disease burden. However, both diseases show an uneven distribution (10).

Compared to standard groups, a higher body mass index (BMI) before pregnancy category (overweight or obese group) were associated with increased second-trimester IR risk and prediagnosis weight gain was also associated with increased second-trimester IR risk in women with GDM. At the same time, age was a weak protective factor for IR. In addition to many clinical, demographic, and behavioral risk factors, maternal disorders' development and clinical consequences are substantially influenced by social determinants of health, such as systemic deprivation. Although progress has done in the early detection and management of these disorders, the accuracy and long-term effects of these detection and management programs are still under investigation. In addition to pharmacological therapies and lifestyle modifications at the individual level, a multilevel approach should be taken with a multisectoral partnership to address public health problems and the resulting health inequity (11).

Weight change during pregnancy is related to GDM in subsequent pregnancies. In counseling between pregnancies, the time frame for goal setting is essential, while the timing of the next conception is unpredictable, and preventing age-related body weight gain is complicated. The study by Tano S, et al., aimed to investigate the association between annual weight gain during the period between pregnancies, which provide a more precise time frame, and GDM in subsequent pregnancies. They conducted this study by collecting data on two pregnancies of the same women in 2009-2019. They evaluated the association between annual BMI gain and GDM during subsequent pregnancy. They included 1,640 pregnant women with a history of GDM and an annual BMI increase associated with GDM during the subsequent pregnancy. Women with a pre-

Clinical guidelines recommend several risk factors to identify women in early pregnancy at high risk of developing pregnancy-associated hypertension. However, these variables result in a low predictive value. Hypertension associated with pregnancy is

one of the most severe complications, affecting 1 to 8% of pregnancies worldwide. It results in increased mortality and morbidity for both pregnant women and newborns.

It is reported that prophylactic low-dose aspirin reduces the incidence of pregnancy-associated complications and systemic arterial hypertension (AHT). Also, starting aspirin early in pregnancy appears more effective than starting late. Have been developed algorithms using biomarkers such as placental growth factor (PIGF) and uterine artery Doppler ultrasound to predict pregnancy-associated hypertension. However, introducing this strategy may require more work in routine clinical practice. Measurement of uterine artery Doppler velocimetry and PIGF in early pregnancy may not be possible in all pregnant women, especially in low-resource areas. In addition, routine practice has not established uterine artery Doppler or PIGF measurement during early pregnancy in low-risk pregnant women because of the high cost of PIGF measurement and ultrasound examination (12).

Hypertensive disorders of pregnancy are a group of syndromes defined by the onset of hypertension during pregnancy, with an incidence of 8-10%. The recurrence rate of hypertension is as high as 20 to 60%. Women with a history of HDP are at increased risk of future cardiovascular disease and mortality, which is increased in women with recurrent events compared with those with a single event.

Therefore, although HDP shows spontaneous postpartum remission, it affects subsequent pregnancy outcomes and the woman's health. It recognized

care/counseling between pregnancies for its beneficial role in maternal health and subsequent pregnancy outcomes. In addition to a history of HDP and overweight/obesity ($BMI \geq 25.0 \text{ kg/m}^2$), increased body mass index (BMI) between pregnancies, defined as the difference between the BMI before the index pregnancy and that of the subsequent pregnancy, reported to be associated with hypertensive disorders of pregnancy or gestational hypertension (GH). Total BMI gain during the period between pregnancies is undoubtedly a valuable indicator to detect a high risk of GH at the first visit for subsequent pregnancy; however, the metric has no role or relevance in the prevention of HG in subsequent pregnancies in the stage of care/counseling between pregnancies that is provided only to plan a weight control goal. We should also consider the difficulty of preventing age-related weight gain (13).

Recent evidence has shown that although excessive gestational weight gain predicts adverse perinatal outcomes among normal-weight women, the degree of obesity before pregnancy predicts adverse perinatal outcomes more than gestational weight gain among obese women. Furthermore, low BMI and insufficient gestational weight gain are associated with poor perinatal outcomes. Observational data have shown that first trimester gain is the strongest predictor of adverse outcomes. Interventions starting early in pregnancy or before conception are needed to prevent later complications for mothers and their children. Women and doctors often ask about a healthy diet for a pregnant woman. The message should be "Eat better, not more. Can achieve by basing the diet on a variety of nutrient-dense whole foods, including fruits, vegetables, legumes, whole

grains, and healthy fats with omega-3 fatty acids, including nuts and seeds, and fish, instead of whole foods of lower quality, such as processed foods. They need comprehensive nutritional supplementation (multiple micronutrients plus balanced protein and energy) among women with inadequate nutrition and associated with improved birth outcomes, including decreased rates of low birth weight. A diet that severely restricts any class of macronutrients should avoid, specifically the ketogenic diet that lacks carbohydrates, the Paleo diet due to dairy restriction, and any diet characterized by excess saturated fat (14).

Because maternal depressive symptoms and stress during pregnancy are associated with poor health for the mother and the developing child, it is vital to understand the predictors of women's mental health to prevent complications in the perinatal period. Eichler J et al., (15) examined the association between six risk factors: 1) gestational weight gain, 2) low physical activity, 3) sleep problems, 4) alcohol and cigarette consumption, 5) consumption of snacks, and 6) mental health problems during pregnancy. The results showed that sleep problems were associated with maternal mental health problems during pregnancy. Longitudinal studies using standardized measures, mainly diagnostic interviews and physiological or biochemical markers, are warranted to confirm patterns of risk factors, their association with depressive symptoms and stress during pregnancy, and their effects on maternal and child health.

In recent years, the pre-pregnancy BMI of women of childbearing age has shown an upward trend in

developed countries. The Pregnancy Risk Assessment Monitoring System revealed that preconception obesity reached 22%, an increase of 69% compared to 10 years ago in the United States. In China, the 2002 national nutrition survey revealed that being overweight (a BMI ≥ 24 kg/m²) and obese (a BMI ≥ 28 kg/m²) for women aged 18 to 44 reached 22 and 6%, respectively, and there was an increase mainly in women of childbearing age.

The nutritional status of expectant mothers is a good predictor of perinatal and long-term adverse effects for both the infant and the mother. Being overweight or obese before becoming pregnant are high-risk factors for GDM, hypertensive syndrome, and fetal growth disorders. Conversely, low-weight pregnant women are at increased risk for preterm birth and small-for-gestational-age newborns. In addition, women with inadequate weight gain may experience complications such as anemia and low birth weight [15]. In contrast, overweight women are more likely to develop GDM, HG, preeclampsia, and cesarean sections (16, 17).

Maternal adipose tissue grows during pregnancy to ensure the fetus's nutrition; too much visceral adipose tissue in early pregnancy can increase metabolic risk and gestational problems. Central obesity is more closely related to cardiovascular disease and metabolic syndrome development than obesity. Melero-Jiménez V et al. (18) examined the association between maternal visceral fat thickness, as determined by a first trimester ultrasound examination, and the risk of poor pregnancy outcomes. They found that women who experienced complications during pregnancy had higher levels of maternal vis-

ceral fat, especially GDM, linked to metabolic risk factors, including insulin resistance and elevated blood pressure. This fact may imply that the risk of complications would increase more when the distribution of visceral fat (associated with metabolic risk) is more significant than expected for a given degree of obesity/BMI. When done at first trimester ultrasound evaluation, sonographers can measure VFT at no additional time or cost. Identification of pregnant women with increased VFT (>37 mm) may benefit from follow-up, especially for the development of GDM, regardless of BMI.

Preeclampsia (PE) is a hypertensive disorder that occurs in 3 to 8% of pregnancies in the United States and affects more than 200,000 women and newborns each year. The United States has seen a 25% increase in the incidence of PE, mainly due to increased risk factors such as obesity and cardiovascular disease. Although the etiology of PE is unclear, impaired remodeling of the placental spiral artery is thought to reduce perfusion, leading to placental ischemia. Subsequently, the ischemic placenta releases antiangiogenic and proinflammatory factors, such as cytokines, reactive oxygen species, and the angiotensin II receptor autoantibody type 1 (AT1-AA), among others, into the maternal circulation.

These factors cause widespread endothelial activation, up regulation of the endothelin system, and vasoconstriction. In turn, these changes affect the function of multiple organ systems, including the kidneys, brain, liver, and heart. Despite extensive research on the pathophysiology of PE, the only treatment option remains preterm delivery and, more importantly, placenta. Although preterm birth effectively improves the immediate risk to the mother, grow-

ing evidence suggests that PE increases the risk of cardiovascular disease later in life. In particular, these women are at increased risk of hypertension, heart disease, and stroke, while sons are at risk of obesity, hypertension, and neurological disease, among other complications (19).

Meazaw et al. (20) conducted a meta-analysis and systematic review regarding primiparous women, history of preeclampsia, and family history of preeclampsia/eclampsia, high BMI, chronic hypertension, anemia during pregnancy, and lack of antenatal care visits as relevant factors associated with preeclampsia/eclampsia. This study aimed to synthesize the evidence on risk factors for preeclampsia/eclampsia using research published since 2000.

They also determined pooled odds ratios for different risk factors for preeclampsia/eclampsia. Their review found that primiparous women had a two-fold increased risk for preeclampsia/eclampsia. This result is consistent with a systematic review by Luo ZC et al. (21), and their finding, primiparous women were 2.4 times more likely to develop preeclampsia compared with multiparous women (OR: 2.42; CI 95%: 2.16, 2.71). The risk of preeclampsia/eclampsia in primiparous women may be explained by maternal immunological problems and incompetence with fetal tissue, and this exposure could increase the risk of preeclampsia/eclampsia in the first pregnancy. First-time pregnant women are at increased risk of developing severe complications, including preeclampsia/eclampsia. Therefore, adequate detection and follow-up of primiparous women during their first pregnancy is essential to reduce the risk of preeclampsia and its complications.

CONCLUSIONS.

Gestational diabetes is a type of diabetes that occurs during pregnancy, and this means that a pregnant woman has high blood glucose levels. It is estimated that it affects 7% of pregnant women worldwide. The exact cause of why this condition occurs during pregnancy is unknown. However, one of the hypotheses is that the hormones produced during this stage of life block the action of insulin, which is the hormone that helps the body use glucose as a source of energy. In most cases, gestational diabetes occurs during pregnancy, so glucose tolerance tests are performed between weeks 24 and 28 to detect this condition. However, it is true in the analysis performed At the General Hospital of Playa del Carmen in the age group of 20 to 30 years, 75% of the patients had a prenatal control of at least five consultations, of which 70% concluded in cesarean section, and only 12.2% were deliveries. 65% of the patients presented preeclampsia, and 56% presented some obesity, a precursor to developing gestational diabetes. A woman with this type of diabetes is at increased risk of miscarriage, congenital disabilities in the baby, intrauterine growth restriction, and excessive baby growth. Patients with diabetes during pregnancy have a higher risk of maternal and fetal complications than the general population, such as preeclampsia. The treatment of diabetes mellitus is necessary to reduce perinatal morbidity, and it must be individualized depending on the clinical characteristics of each patient. The cornerstone of management continues to be nutritional and insulin therapy, however, treatment with oral hypoglycemic agents.

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