Prevalence of Diabetes and Anemia During Gestation in Females in Gujrat

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ABSTRACT:

Introduction: Gestational diabetes mellitus (GDM) is considered to be one of the main public health problems in Asia. It is actually one of the main metabolic complications during pregnancy, gestational diabetes mellitus (GDM), is linked to a higher risk of unfavorable pregnancy outcomes for both women and their fetus, both in the short- and long-term. Throughout the past few decades, the prevalence of GDM has been rising on a global scale. Also the anemia during pregnancy is mostly brought on by dietary deficiencies (iron, vitamin B12, folate), parasitic diseases (hookworm, malaria, etc.), and sudden blood loss. 15 To lower anemia among pregnant women, many national nutrition programs and preventative and control measures for micronutrient deficiencies have been put in place. 16Since anemia affects physical health, cognitive development, productivity, and represents a nation's underdeveloped economy, it is also widely seen as a sign of other undesirable health and socioeconomic implications.

Objective: To find out the prevalence of anemia and diabetes mellitus in women during pregnancy

Materials and methods: 399 pregnant females were included in the study. It was a cross sectional study from the time period of February 2023 to march 2023, the subjects included did not had any previous history of diabetes mellitus, Cushing syndrome, Polycystic ovary syndrome or any other chronic diseases including endocrinology disorders also were not undergoing corticosteroid treatment as these cause insulin resistance changing the results required.

Results: Out of our 399 pregnant females anemia was present in 314 females showing 78.7% of its prevalence and was absent in 21.3%. Whereas gestational diabetes was present in 69 females out of 399 which means the prevalence of diabetes was 17.3%.

Conclusion: The prevalence of anemia and diabetes in pregnancy from this study was found to be a severe health problem in Gujrat. Pregnant women's health literacy is crucial specially at this key period, for both their personal health and the health of their unborn children. Globally, the diabetes epidemic presents a significant public health concern. Although the GDM gives the worse pregnancy outcomes but still its prevalence is increasing markedly. GDM can lead to complications during childbirth and also the chances of acquiring type 2 diabetes mellitus of the mother increases in later life. Overall our study concluded that the prevalence of GDM in Gujrat is 17.3%. On the other hand, the prevalence of anemia in pregnant ladies is concluded to be almost 78.7%. Following the results, it is critical that a community based study design should be assessed

and the impact of the anemia on pregnancy should be summarized and informed. Health care and nutritional programs should be launched to aware the ladies to overcome the anemia.

KEYWORDS: Gestational Diabetes mellitus, Anemia, Hemoglobin(hb)

INTRODUCTION:

Gestational diabetes mellitus (GDM) is considered one of the main public health problems in Asia[1]. It is actually one of the main metabolic complications during pregnancy, gestational diabetes mellitus (GDM), is linked to a higher risk of unfavorable pregnancy outcomes for both women and their fetus, both in the short- and long-term[2]. Throughout the past few decades, the prevalence of GDM has been rising on a global scale[3]. Globally, the prevalence of type 2 diabetes mellitus (T2DM) has been rising quickly, and the age of onset is getting younger, as a result of the epidemiologic shift in the population towards ageing and a more sedentary lifestyle due to urbanization over the past few decades[4]. The term "gestational diabetes mellitus" (GDM) refers to a form of hyperglycemia that is first identified during pregnancy and manifests as blood sugar levels that are intermediate between those expected during pregnancy and those indicative of diabetes in a non-pregnant state[5]. GDM puts pregnant women and puerperae at risk for complications such gestational hypertension, polyhydramnios, early rupture of the membranes, infection, and preterm birth. In extreme situations, ketoacidosis can also happen, and puerperae may develop long-term postpartum diabetes[6].

The prevalence of GDM varies greatly around the world, from 1% to 28%, depending on the population's characteristics (such as maternal age, socioeconomic status, ethnicity or racial background, or body composition), screening procedures, and diagnostic standards[7]. Anemia during pregnancy is another issue that raises maternal, fetal, and newborn mortality and morbidity on a global scale[8]. One of the more typical issues that arise during pregnancy is anemia[9]. Anemia is characterized as a state in which the body's hemoglobin (Hb) level is below normal, which reduces the ability of red blood cells to transport oxygen to tissues[10]. Plasma volume grows during pregnancy more fast than red cell mass, which results in physiological anemia[11]. As a result, there is a little reduction in Hb levels throughout pregnancy. According to earlier research, up to 20 weeks of gestation may be the ideal period to examine any risk factors related to anemia[12]. Even though anemia can affect any human group, it most frequently affects pregnant women and small children[13]. When a woman is diagnosed with gestational diabetes mellitus (GDM), two therapeutic approaches are taken into account: pharmaceutical therapy and lifestyle changes. To lessen difficulties for both the mother and the fetus, GDM therapy attempts to maintain a normoglycemic condition and prevent excessive weight gain[14]. In comparison to standard care, the key composite outcome of infant death, arm dystocia, bone disease, and nerve impairment was linked with a 67% reduction with intervention that included food advising, blood glucose monitoring, and insulin administration if needed as treatment of GDM[15].

While on the other hand the most common complication Anemia during pregnancy is mostly brought on by dietary deficiencies (iron, vitamin B12, folate), parasitic diseases (hookworm,

malaria, etc.), and sudden blood loss[16].Anemia is indicated as hemoglobin level concentration decreases from 11g and if seen globally 56 million pregnant women are going through it currently[17]. To lower anemia among pregnant women, many national nutrition programs and preventative and control measures for micronutrient deficiencies have been put in place[18]. Since anemia affects physical health, cognitive development, productivity, and represents a nation's underdeveloped economy, it is also widely seen as a sign of other undesirable health and socioeconomic implications[19]. Preterm labor, an early rupture of the membranes, and a higher rate of mother and fetal mortality are just a few of the negative perinatal effects that anemia during pregnancy can have[20]. The two most prevalent non-inherited types of anemias are physiologic (dilutional) anemia and iron deficiency anemia, although some cases may be brought on by an underlying illness like diabetes or lupus. Uncommon non inherited anemias are aplastic anemia and autoimmune hemolytic anemia[20]. Mild anemia, owing to increased plasma volume, is a typical physiological side-effect of pregnancy in addition with it the fact that severes the anemia is fetal growth, which creates a high demand on iron stores and results in a state of negative iron balance, raises the risk of iron depletion and anemia by placing a heavy strain on those stores[21].

Anemia affects 29, 38, and 43% of children, pregnant women, and non-pregnant adults worldwide, according to prior studies[22]. Over 32.4 million pregnant women worldwide had anemia, with Southeast Asia and Africa bearing the heaviest burdens at 48.7% and 46.3%, respectively[23]. The Sub-Saharan area has the highest prevalence of anemia during pregnancy, with 17.2 million expectant mothers being anemic[24]. From 20% in Rwanda to 32.5% in Uganda, anemia is a common condition among expectant mothers in East African nations as well[25]. So in total more than 56 million women worldwide, with two thirds of them from Asia, experience anemia during pregnancy[17]. Young maternal age, low family income, few/no parities, being in the third or second trimester, not attending ANC while pregnant, not taking iron supplements while pregnant, drinking tea right after meals while pregnant, and lower/no daily consumption of meat and vegetables while pregnant were all associated risk factors for anemia[26]. The majority of the research on anaemia in pregnancy is based on studies of populations from low-income African and Asian nations, where anaemia is more severe and has different causes than in high-income nations[27]. In order to lower the risk of low birth weight, maternal anemia, and iron deficiency, the World Health Organization (WHO) currently recommends daily oral iron and folic acid supplementation with 30 mg to 60 mg of elemental iron and 400 g (0.4 mg) folic acid as part of antenatal care[28]. Treatment for Iron deficiency anemia in patients should focus on restoring iron stores and bringing hemoglobin levels back to normal, this has been demonstrated to enhance pregnancy outcomes, morbidity, chronic disease prognosis, and quality of life [29].

Materials and Methods:

Data Collection:

399 pregnant females were included in the study. It was a cross sectional study from the time period of February 2023 to march 2023, the subjects included did not had any previous history of diabetes mellitus, Cushing syndrome, Polycystic ovary syndrome or any other chronic diseases

including endocrinology disorders also were not undergoing corticosteroid treatment as these cause insulin resistance changing the results required. The required data was noted in an ideal performa and the frequency of positive and negative result among these women was calculated using the statistical package for social sciences.

Lab Testing:

<u>FOR GESTATIONAL DIABETES INVESTIGATION:</u>

The subjects were diagnosed with gestational diabetes through oral glucose tolerance test (OGGT) and also hba1c was performed to monitor the glucose level prior 2 to 3 months before or during pregnancy according to their trimester. For OGTT, the patient is allowed to have orally 75g of glucose. One hour later, she had a blood test to measure blood sugar level. A blood sugar level of 190 milligrams per deciliter (mg/dL), indicated gestational diabetes

After taking fasting blood glucose measurement a 75g glucose was given and the following load was checked

- Fasting plasma glucose> or equal 92g/dl
- 1-hour plasma glucose > or equal to 180 mg/dl
- 2-hour plasma glucose 153mg/dl

The Hba1c was performed, it was also a blood test, the blood sample was taken and test was run in chemistry analyzer (Selectra PRO M). >5.7% of Hba1c indicated diabetes.

<u>FOR ANEMIA INVESTIGATION</u>:

Blood was taken in EDTA anti-coagulant vial. A complete blood count was performed with hematology analyzer (XP-300 sysmax). After calibration, the results were recorded for hemoglobin concentration and other red cell indices were observed. Hb level lower than 11 g was noted to be anemic

Blood smear was prepared according to the criteria and stained. After that it was observed under the microscope to find out the morphology of the blood cells and for confirmation of the anemia and its severity.

Statistical Analysis:

The statistical analysis was performed in the total sample size of 399 subjects. The Microsoft used for this purpose was IBM SPSS Statistics 20 (Statistical Package for Social Sciences). The frequencies of presence of anemia and gestational diabetes mellitus were checked in all the females taken as subject.

Results:

Anaemia was found in 314 of our 399 pregnant women, representing 78.7% of its incidence, and absent in 21.3% of them. In contrast, 69 females out of 399 had gestational diabetes, making the overall frequency of the disease 17.3%.

The prevalence of both variables in women revealed that, out of 399 women, 64 had both anaemia and GDM. Eighty patients had neither anaemia nor GDM.250 women were anaemic, but GDM wasn't present among them. Anaemia was detected in 5 of the pregnant women who had developed gestational diabetes too. The subjects' calculations produced these findings. Below is provided in tabular format:

Table 1.1 Anemia

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absent	85	21.3	21.3	21.3
	Present	314	78.7	78.7	100.0
	Total	399	100.0	100.0	

Table 1.2 Diabetes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absent	330	82.7	82.7	82.7
	Present	69	17.3	17.3	100.0
	Total	399	100.0	100.0	

Table 1.3 Anemia * Diabetes Cross tabulation

Count

		Diabetes		Total
		Absent	Present	
Anemia	Absent	80	5	85
	Present	250	64	314
Total		330	69	399

Conclusion:

According to this report, anaemia and diabetes in pregnancy are serious health issues in Gujrat. In particular during this critical time, pregnant women's health literacy is essential for both their own health and the wellbeing of their unborn children. The diabetes epidemic is a serious public health issue on a global scale. Despite the fact that GDM results in poorer pregnancy outcomes, its prevalence is noticeably rising. GDM raises a mother's risk of developing type 2 diabetes mellitus in the future and can cause problems during childbirth. Overall, our study found that 17.3% of Gujrat's population has GDM.

On the other hand, it's estimated that anaemia affects around 78.7% of pregnant women. Following the findings, it is crucial to evaluate a community-based study design and summarise and inform the public about the effects of anaemia on pregnancy. It is important to start health and nutrition education programmes to help the women fight anaemia. Along with other numerous factors causing complications, there is an association between age and the month of the trimester and it affects the level of Hb and diabetes as well.

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Overall, it may be necessary to make cooperative and ongoing efforts to gather data on global prevalence both within and between nations. These initiatives should be undertaken in order to provide information to healthcare policy makers so that they may create plans that could reduce disease prevalence and control it.

By raising awareness of the long-term adverse effects, action should be made early on. Children's health is a generational issue that needs to be treated seriously for their wellbeing and to prevent any challenges that may arise from a mother's anomalies even before the children are born. Anemia can be treated, and diabetes can be managed with the right medications if the mother's safety is a concern. If blood glucose goals cannot be attained with lifestyle modifications, glucose lowering treatment is required in addition to identified risk factors being taught, light exercise, extra supplements, including iron, and glucose lowering medication. Insulin is suggested as the primary pharmaceutical treatment for GDM.

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