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Prenatal and Postpartum Complications and Delivery Types Among Pregnant Women with Diabetes: Pilot Study.

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Abstract:

This study examines the effects of age, body mass index (BMI), and the duration of diabetes onset recognition (DDOR) on pregnant diabetic women (PDWs) receiving care at the Zliten Medical Center and private hospitals in Zliten City. This pilot study included 20PDWs, utilizing data from their medical records and anthropometric measurements to estimate BMI. A one-way analysis of variance (ANOVA) was conducted with a significance level of 5%. The results indicate that age, BMI, and DDOR significantly influence prenatal and postpartum complications (PPC) as well as delivery types (DTs). An inverse relationship was observed between DDOR and DTs, while increased overweight and obesity among PDWs were associated with a higher likelihood of PPC and cesarean deliveries. The study recommends regular medical follow-ups, maintaining a healthy weight, and continuous monitoring of PDWs throughout pregnancy until delivery.

Key word: Pregnancy. Diabetes. Complications. Deliveries.

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Introduction

Pregnant diabetic women (PDWs) may have either pre-existing diabetes (PED) or gestational diabetes mellitus (GDM), which develops during pregnancy. GDM typical-ly resolves after delivery. However, women who have had GDM face a 40% increased risk of developing type 2 diabetes (T2DM) later in life (Simmons et al., 2023; Buckley et al., 2012). Both PED and GDM increase the risk of various complications, including physical or mental defects in the infant, stillbirth, and macrosomia (birth weight over 4000g), unless blood glucose levels are carefully monitored and maintained within a normal range (Dirar & Doupis, 2017; Bener et al., 2011). GDM plays a significant role in the diabetes epidemic, as it poses a major risk for the development of T2DM in both the mother and the fetus later in life (American Diabetes Association, 2021). GDM, characterized by carbohydrate intolerance, results in hyperglycemia of varying severity, which is diagnosed during pregnancy, regardless of whether insulin is used or whether the condition persists after delivery. GDM can develop in the first or second trimester, or after the 24th week of pregnancy, when placental hormones induce insulin re-sistance. Reports indicate that GDM affects 1% to 14% of all pregnancies. Notably, the mother may experience symptoms or may remain asymptomatic (Tovar et al., 2011). Women with GDM often have a history of the condition from a previous pregnancy. If a woman experiences GDM during her first pregnancy, the likelihood of developing it in subsequent pregnancies increases unless proper medical treatment and a healthy diet are followed to reduce the incidence (Hanna & Peters, 2002). In contrast, PED occurs when a woman has diabetes before pregnancy. PED is a more dangerous condition for both the mother and the fetus. It is crucial for the mother to manage her health before and during pregnancy to minimize risks. During pregnancy, the body's insulin require-ments increase significantly and continuing to rise throughout the pregnancy until de-livery. Hyperglycemia in GDM typically does not become established until the late second trimester, after organogenesis (Jesuino et al., 2020). As a result, most studies agree that GDM is not associated with an increased rate of malformations. However, similar to PED, elevated maternal glucose and amino acid levels can lead to fetal pan-creatic hyperplasia, which causes hyperinsulinemia. This, in turn, results in fetal macro-somia, contributing to obstetric and perinatal complications. Long-term maternal com-plications, including postpartum complications and T2DM, can also occur (Najim & Alsaayih, 2019; Ogonowski et al., 2009). Scientific studies suggest that most cases of GDM resolve after childbirth, and many women who manage their blood glucose lev-els through treatment have healthy pregnancies and babies. Treatment must continue until delivery, and maintaining blood glucose levels as close to normal as possible can help prevent complications for both the mother and the baby (Tovar et al., 2011). The frequency of GDM is 7 to 10 times higher in pregnant women over 24 years of age compared to those under 24 years, suggesting that universal screening is more effective in the older group (Reece et al., 2009; Mandel et al., 2005). Obesity is strongly associ-ated with the development of GDM, particularly when the BMI exceeds 30 kg/m². Obese women face a three-fold increased risk of developing GDM compared to non-obese women. Additionally, overweight women also have a significantly higher risk of developing GDM. When comparing pregnancy complications

and outcomes between obese and non-obese women, the GDM rate is 24.5% for obese women versus 2.2% for non-obese women (Bo et al., 2001). Obesity is further linked to postpartum hemor-rhage and an increased likelihood of cesarean delivery (Innes et al., 2002). Macrosomia can occur when the fetus grows larger due to the mother's blood glucose levels exceed-ing 130 mg/dl. Studies suggest that elevated blood glucose leads to increased insulin secretion, which results in thicker skin layers, increased muscle mass, enlarged organs, and inappropriate fat distribution, especially around the trunk and shoulders compared to the head. This can complicate delivery and lead to conditions such as shoulder dys-tocia (Center for Chronic Disease Prevention & Health Promotion, 2011; Kattini et al., 2020). Furthermore, research indicates that poor blood sugar control in mothers with GDM is linked to an increased risk of miscarriage. Postpartum complications may also include preterm operative delivery, cesarean sections, jaundice, hypoglycemia, respira-tory distress syndrome, blood clotting issues, heart muscle hypertrophy, and the devel-opment of T2DM (Salah & Galiwan, 2018; Ogonowski & Miazgowski, 2015).

This study explores the impact of age, BMI, and the DDOR on PPC and DTs among PDWs. By analyzing these factors, the research aims to identify risk factors, develop preventive measures, and improve disease management for PDWs.

Materials and methods:

Type of Study:

This study employed a descriptive and analytical approach to investigate the influence of age, BMI, and DDOR, whether PED or GDM, on the occurrence of PPC and DTs among PDWs. The study included 20 PDWs who attended Zliten Medical Center and private hospitals in Zliten City in 2021. Data were collected from patients' medical records, and BMI measurements were obtained. Pregnancy and delivery complications including stillbirth, preterm birth, mode of delivery normal or cesarean section, and postpartum hemorrhage were evaluated using data from patients' medical records during and after delivery.

Research Ethics:

The study received approval from the administration of Zliten Medical Center and several private hospitals in Zliten City. Informed consent was obtained from all study participants before the commencement of the study. Participants were fully informed about the study's purpose and the use of their data for scientific research.

Specialized Method:

Data were analyzed using SPSS version 23 (2015). Frequencies (f) and percentages (%) described the study participants. The Chi-Square Test of Independence or Fisher's Exact Test, as appropriate, was used to examine relationships between variables. One-Way Analysis of Variance (ANOVA) was applied to compare means and identify significant differences among variables. In addition, Cramer's V was calculated to measure the strength of association between categorical variables. A significance level of $P \leq 0.05$ was adopted for all analyses.

The results:

The study included 20 women with an average age of 35 years. Participants were categorized into three age groups: 20-29, 30-39, and ≥40 years, as shown in Table 1. Among the participants, 13 women (65%) had Non-PPC, while 7 (35%) had experienced PPC. The highest frequency of PPC was observed in the 30-39 years age group, with 4 women (20%). This age group also had the highest number of Non-PPC women, totaling 8 (40%). Statistical analysis, conducted at a significance level of $P \leq 0.05$, yielded a P-value of 0.041, indicating significant differences in PPC occurrence among age groups. Furthermore, The strength of this association, measured by Cramer's V, was 0.495, reflecting a moderate positive association. Regarding delivery types, 14

Table (1): The Effect of Age Groups on PPC and DTs.

Complications	Total f(%)	Age groups/years 20-29 f(%)	30-39 f (%)	≥ 40 f (%)	Cramer's V	P-value
PPC	7(35%)	2(10%)	4(20%)	1(5%)		
Non-PPC	13(65%)	3(15%)	8(40%)	2(10%)	0.495	0.041
DTs						
Cesarean Delivery	14(70%)	3(15%)	9(45%)	2(10%)		
Normal Delivery	6(30%)	2(10%)	3(1%5)	1(5%)	0.235	0.027

(f): frequency. (%): percent. Cramer's V: measure of association between categorical variables

women (70%) underwent cesarean deliveries, and 6 women (30%) had normal deliveries. The 30–39 years age group had the highest frequency of both cesarean (9 women, 45%) and normal deliveries (3 women, 15%). Chi-Square analysis revealed a significant association between age groups and delivery types P = 0.027, with Cramer's V = 0.235, indicating a weak positive association. These results suggest that age group is moderately associated with PPC occurrence and weakly associated with the type of delivery.

Table 2 presents the frequencies and percentages of BMI categories according to age groups among the study subjects. The total frequencies of normal-weight, overweight, and obese participants were 8, 8, and 4, respectively, representing 40%, 40%, and 20%. In total, 12 women (60%) were either overweight or obese. Statistical analysis revealed a P-value of 0.017, indicating a highly significant difference in BMI categories based on age group. Additionally, The strength of this association was measured using Cramer's V, yielding a value of 0.473, indicating a moderate positive association. These results suggest that BMI categories tend to vary with age, with a higher proportion of overweight and obese participants observed in the 30–39 years age group.

Table 3 presents the frequencies and percentages of women whose pregnancy-related PPC and DTs depended on BMI categories. The highest frequency of PPC, 3 women (15%), was found in the overweight category. The highest frequency of Non-PPC, 6 women (30%), was observed in the normal-weight category. Statistical analysis revealed a P-value of 0.039, indicating a significant difference in PPC occurrences based on BMI categories. The strength of this association, measured using Cramer's V**,** was 0.198**,** indicating a weak positive association. The frequencies of women who had cesarean and normal deliveries by BMI categories are given in the table earlier mentioned. The total frequencies of delivery types were 14 cesarean deliveries (70%) and 6 normal deliveries (30%). The highest frequency of cesarean deliveries, 8 women (40%), occurred in the overweight category, while the highest frequency of normal deliveries, 6 women (30%), was found in the normal-weight category. Statistical analysis revealed a P-value of 0.01, indicating a significant difference in DTs (cesarean vs. normal) based

Table (2): The distribution of BMI Categories by Age Groups**.**

Age Groups/y	Total f (%)	BMI Categories Normal weight f (%)	Over weight f (%)	Obesity f (%)	Cramer's V	P-value
20 – 29	5 (25%)	2 (10%)	2 (10%)	1(5%)		
30 – 39	12 (60%)	6 (30%)	4 (20%)	2 (10%)		
≥ 40	3 (15%)	0 (00%)	2 (10%)	1(5%)	0.473	0.017
Total	20(100%)	8 (40%)	8 (40%)	4 (20%)		

(f): frequency (%): percent Cramer's V: measure of association between categorical variables

Table (3): The Effect of BMI Categories on PPC and DTs

Complications	BMI categories Total f (%)	Normal weight f (%)	Overweight f (%)	Obesity f (%)	Cramer's V	P-value
PPC	7 (35%)	2(10%)	3(15%)	2(10%)		
Non-PPC	13 (65%)	6(30%)	5(25%)	2 (10%)	0.198	0.039
DTs						
Cesarean delivery	14 (70%)	2(10%)	8(40%)	4(20%)		
Normal delivery	6 (30%)	6(30%)	0(00%)	0(00%)	0.682	0.01

(f): frequency (%): percent Cramer's V: measure of association between categorical variables

on BMI categories. The strength of this association, measured by Cramer's V, was 0.682, reflecting a relatively strong positive relationship, suggesting that higher BMI is associated with a greater likelihood of cesarean delivery.

Table 4 presents the frequencies and percentages of PPC, Non-PPC, and DTs according to DDOR, classified into three categories: ≤1 year, 2–5 years, and ≥6 years. Among the subjects, 7 women (35%) had PPC, and 13 women (65%) had Non-PPC. The highest frequency of PPC, 4 women (20%), and Non-PPC, 7 women (35%), were observed in the ≤1-year category. Statistical analysis demonstrated a significant effect of DDOR on PPC and Non-PPC, with a P-value of 0.048. The strength of this association, measured using Cramer's V, was 0.186, indicating a weak positive association.. The table also shows the frequencies and percentages of DTs (cesarean vs. normal) by DDOR. 14 women (70%) had cesarean deliveries, and 6 women (30%) had normal deliveries. The highest frequency of cesarean deliveries, 8 women (40%), was found in the ≤1-year category, while the highest frequency of normal deliveries, 3 women (15%), was also in the same category. A significant difference was observed in the effect of DDOR on DTs (cesarean vs. normal), with a P-value of 0.028. The strength of this association, measured by Cramer's V, was 0.436, reflecting a moderate negative association, suggesting that as DDOR increases, the likelihood of cesarean delivery tends to decrease.

Table (4): The Effects of DDOR on PPC and DTs.

Complications	DDOR Total f (%)	≤ 1 year f (%)	2–5years f (%)	≥ 6years f(%)	Cramer's V	P-value
PPC	7 (35%)	4(20%)	2(10%)	1(5%)		
Non-PPC	13 (65%)	7(35%)	3(15%)	3(15%)	0.186	0.048
DTs						
Cesarean delivery	14 (70%)	8(40%)	4(20%)	2(10%)		
Normal delivery	6 (30%)	3(15%)	1(5%)	2(10%)	-0.436	0.028

(f): frequency. (%): percent. Cramer's V: measure of association between categorical variables.

Discussion:

This study highlights that PDWs are more likely to experience PPC, particularly within the 30–39 age group. The findings indicate a statistically significant relationship between age and PPC occurrence. Additionally, the moderate positive association measured by Cramer's V = 0.495 between age groups and PPC suggests that the likelihood of PPC increases with age. Although the association is not very strong, this suggests that while age may play a role in the risk of developing PPC, other factors may also contribute to its occurrence. These factors could explain more of the variance in PPC occurrence, or perhaps age alone is not a sufficient predictor. The statistical analysis results suggest that age groups have a significant effect on the DTs

(cesarean vs. normal), as indicated by the P-value of 0.041. The strength of this association, measured by Cramer's V = 0.235, was weak, meaning that while age appears to influence DTs, the relationship is not very strong. This suggests that other factors, such as maternal health conditions, previous delivery history, or medical indications, may play a more significant role in determining delivery types. Future research could explore additional variables to provide a more comprehensive understanding of factors influencing the choice between cesarean and normal delivery. These results align with findings from previous studies (Bener *et al*., 2011; Najim & Alsaayih, 2019; Salah & Galiwan, 2018; Ogonowski & Modzelewski, 2015).The findings reveal that age group has a highly significant effect on BMI categories. This indicates meaningful differences in BMI across age groups, suggesting that age plays an important role in determining BMI categories. The moderate positive association, measured by Cramer's V = 0.473, suggests that as age increases, BMI tends to rise. However, other factors such as diet, physical activity, or lifestyle could also influence BMI. The study also demonstrated a significant difference in PPC occurrences based on BMI categories. Chi-Square analysis revealed a significant association P = 0.039, and the strength of the association, measured by Cramer's V = 0.198, was weak. This indicates that while BMI may play a role in the likelihood of developing PPC, it is not the sole predictor, and other factors likely contribute. Regarding delivery types, BMI categories had a significant effect P = 0.010. The association, measured by Cramer's V = 0.682, was relatively strong, suggesting that higher BMI is associated with a greater likelihood of cesarean delivery. This aligns with previous research linking obesity to increased risks of complications such as fetal macrosomia, prolonged labor, and difficulties during delivery, which may necessitate cesarean sections (Simmons *et al*., 2023; Innes *et al*., 2002; Bener *et al*., 2011; Reece *et al*., 2009; Bo *et al*., 2001; Dirar & Doupis, 2017; Ogonowski *et al*., 2009). While BMI is significant, other factors, such as pre-existing medical conditions and obstetric assessments, also influence delivery type.

Finally, the study indicates that DDOR has a significant effect on PPC P = 0.048, although the strength of the association, measured by Cramer's V = 0.186, was weak. This suggests that while DDOR is related to PPC outcomes, other variables likely contribute more strongly. Regarding delivery types, DDOR also had a significant effect P = 0.028, with a moderate negative association measured by Cramer's V = 0.436, indicating that as DDOR increases, the likelihood of cesarean delivery decreases. This suggests that DDOR may play a more influential role in determining delivery type than in predicting PPC. These findings underscore the clinical significance of DDOR in obstetric outcomes and highlight the need for careful monitoring and management of blood glucose levels in PDWs to reduce the risk of complications and cesarean deliveries.

Conclusion:

This study highlights the significant influence of age, BMI, and DDOR on obstetric outcomes in PDWs, particularly PPC and DTs. Age and BMI demonstrated moderate positive associations with PPC and DTs, indicating that as these factors increase, the likelihood of complications and cesarean deliveries also rises. Weak associations suggest that other factors contribute to these outcomes. DDOR exhibited a significant yet weak association with PPC and a moderate negative association with DTs, implying its role in predicting delivery type. Future research should explore additional variables to provide a more comprehensive understanding, ultimately improving maternal care and pregnancy outcomes.

Limitations:

This pilot study is constrained by its small sample size, which limits the statistical power and generalizability of the findings. Additionally, the study setting was limited to a single city, which may not reflect broader populations. Future research should employ larger, multicenter, and prospective designs

to strengthen the validity and applicability of the results.

References

American Diabetes Association (2021). Management of Diabetes in Pregnancy: Standards of Medical Care in Diabetes-2021. Diabetes Care, 44(Supplement_1), S200-S210. https:// doi: 10.2337/dc21-S014

Bener, A., Saleh, N. M., & Al-Hamaq, A. (2011). Prevalence of gestational diabetes and associated maternal and neonatal complications in a fast-developing community: global comparisons. Int J Women's Health, 3, 367-373.https://doi.org/10.2147/IJWH.S26094

Bo, S., Menato, G., Lezo, A., Signorile, A., Bardelli, C., De Michieli, F., Pagano, G. (2001). Dietary fat and gestational hyperglycaemia. Diabetologia, 44(8), 972-978 https://doi: 10.1007/s001250100590

Buckley, B. S., Harreiter, J., Damm, P., Corcoy, R., Chico, A., Simmons, D., Dunne, F (2012). Gestational diabetes mellitus in Europe: prevalence, current screening practice and barriers to screening. A review. Diabet Med, 29(7), 844-854. https://doi: 10.1111/j.1464-5491.2011.03541.

Center for Chronic Disease Prevention and Health Promotion (U.S.), Division of Diabetes Translation. Published Date. (2011). National Diabetes fact sheet, 2011.URL:https://stacks.cdc.gov/view/cdc/13329

Dirar, A. M., & Doupis, J. (2017). Gestational diabetes from A to Z. World J Diabetes, 8(12), 489-511. https://doi: 10.4239/wjd.v8.i12.489.

Hanna, F., & Peters, J. (2002). Screening for gestational diabetes; past, present and future. Diabetic Medicine, 19(5), 351-358.https://doi.org/10.1046/j.1464-5491.2002.00684.x

Innes, K. E., Byers, T. E., Marshall, J. A., Barón, A., Orleans, M., & Hamman, R. F. (2002). Association of a woman's own birth weight with subsequent risk for gestational diabetes. JAMA, 287(19), 2534–2541. https://doi.org/10.1001/jama.287.19.2534

Jesuino, B. G., Foratori-Junior, G. A., Missio, A. L. T., Mascoli, L. S., & Sales-Peres, S. H. C. (2020). Periodontal status of women with excessive gestational weight gain and the association with their newborns' health. International dental journal, 70(5), 396–404. https://doi.org/10.1111/idj.12580

Kattini, R., Hummelen, R., & Kelly, L. (2020). Early Gestational Diabetes Mellitus Screening With Glycated Hemoglobin: A Systematic Review. Journal of obstetrics and gynaecology Canada : JOGC = Journal d'obstetrique et gynecologie du Canada : JOGC, 42(11), 1379–1384. https://doi.org/10.1016/j.jogc.2019.12.015

Mandel, D., Oron, T., Mimouni, G. S., Littner, Y., Dollberg, S., & Mimouni, F. B. (2005). The effect of prolonged rupture of membranes on circulating neonatal nucleated red blood cells. Journal of perinatology: official journal of the California PerinatalAssociation, 25(11),690-693. https://doi.org/10.1038/sj.jp.7211389

Najim, S. S., & Alsaayih, S. A. (2019). The Probability of Pregnant Women Contracting Gestational and Type 2 Diabetes and Their Effects on Fetuses During Pregnancy and Postpartum: A Study in Sebha (2014–2018). Bachelor's degree research. Department of Zoology. Sebha University. https://repository.sebhau.edu.ly/handle/1/1524

Ogonowski, J., & Miazgowski, T. (2015). Intergenerational transmissionof macrosomia in women with gestational diabetes and normal glucose tolerance. European journal of obstetrics, gynecology, and reproductive biology, 195, 113–116. https://doi.org/10.1016/j.ejogrb.2015.10.002

Ogonowski, J., Miazgowski, T., Kuczyńska, M., Krzyzanowska-Swiniarska, B., & Celewicz, Z. (2009). Pregravid body mass index as a predictor of gestational diabetes mellitus. Diabetic medicine: a journal of the British Diabetic Association, 26(4), 334–338. https://doi.org/10.1111/j.1464-5491.2009.02695.x

Reece, E. A., Leguizamón, G., & Wiznitzer, A. (2009). Gestational diabetes: the need for a common ground. Lancet (London, England), 373(9677), 1789–1797.https://doi.org/10.1016/S0140-6736(09)60515-8

Simmons, D., Immanuel, J., Hague, W. M., Teede, H., Nolan, C. J., Peek, M. J., Flack, J. R., McLean, M., Wong, V., Hibbert, E., Kautzky-Willer, A., Harreiter, J., Backman, H., Gianatti, E., Sweeting, A., Mohan, V., Enticott, J., Cheung, N. W., & TOBOGM Research Group (2023). Treatment of Gestational Diabetes Mellitus Diagnosed Early in Pregnancy. The New England journal of medicine, 388(23), 2132–2144. https://doi.org/10.1056/NEJMoa2214956

Salah, T. M., & Gliwan, F. (2018). Study of Effect of the Gestational Diabetes mellitus on Human Embryos. The Second Annual Conference on Theories and Applications of Basic and Biosciences Sciences. 1/September/2018. https://www.researchgate.net/publication/334884448

Tovar, A., Chasan-Taber, L., Eggleston, E., & Oken, E. (2011). Postpartum screening for diabetes among women with a history of gestational diabetes mellitus. Preventing chronic disease, 8(6), A124.

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مضاعفات ما قبل وبعد الولادة وأنواع الولادات لدى النساء الحوامل المصابات بالسكري: "دراسة أولية"

عبدالسلام سالم نواره*[1] وابراهيم عبدالله اغفير[2] و مفتاح خليل العاتي[1]
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الملخص:

تهدف هذه الدراسة لمعرفة تأثير العمر ومؤشر كتلة الجسم (BMI)، ومدة ظهور مرض السكري على النساء الحوامل المصابات بداء السكري بمركز زليتن الطبي وبعض المستشفيات الخاصة بمنطقة زليتن. أجريت هذه الدراسة على عدد عشرون من النساء الحوامل المصابات بداء السكري، تم الحصول على البيانات من سجلات المتابعة الطبية لأفراد عينة الدراسة أخذت المقاييس الأنثروبومترية لإيجاد مؤشر كتلة الجسم. أظهرت النتائج أن عامل العمر ومؤشر كتلة الجسم ومدة الإصابة بداء السكري لدى أفراد الدراسة كان لها تأثير معنوي على مضاعفات ما قبل وبعد الولادة ونوع الولادة. كما كانت هناك علاقة عكسية بين مدة ظهور مرض السكري ونوع الولادة. بينت النتائج ارتفاع معدلات زيادة الوزن والسمنة بين افراد الدراسة، مما يزيد من احتمالية حدوث مضاعفات قبل وبعد الولادة والولادات القيصرية. أوصت الدراسة بالحفاظ على الوزن الصحي والمتابعة والمراقبة الطبية المنتظمة طوال فترة الحمل حتى الولادة.

الكلمة المفتاحية: الحمل. السكر الحمل. المضاعفات. الولادات.

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