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Research Article

### ANALYSIS OF DIFFERENT RISKS OF COMPLICATIONS OF PREGNANCY IN WOMEN WITH TYPE 1 DIABETES

Dr. Kanwal Shehzadi<sup>1</sup>, Dr. Fahad Anwar<sup>1</sup>, Dr. Muhammad Irfan Majeed<sup>1</sup><sup>1</sup>Health department Punjab, Pakistan.**Abstract:**

**Introduction:** Type 1 diabetes holding pregnant women are also associated with a highly increased risk of congenital malformations, neonatal morbidity, and obstetric complications. These highly adverse results are related to pre-conceptional care typically related to the glycaemic control level.

**Aims and objectives:** The basic aim of the study is to analyze different Risks of Complications of Pregnancy in Women with Type 1 Diabetes.

**Material and methods:** This study was conducted in Punjab Health Department, Pakistan. Record gathered from 118 hospitals with the total number of 364 women stated for the study coordinator. As per database record, 11% (41 women) were excluded due to initial trimester spontaneous abortion as well as type 2 diabetes diagnosed in 16; 4% and follow up loss 2; 1%. We also stated the assessment of 323 pregnancies and all respondents gave written apprised consent. Entitled women completed questionnaires at inclusion (at the end of the initial trimester and around gestation of ten weeks) but during the trimester three (which is almost around 34 weeks).

**Results:** Maternal outcomes in pregnant women with type 1 diabetes and those without the disease were evaluated in this study. No maternal mortality occurred within 30 days of delivery in 630 pregnancies with type 1 diabetes. However, pregnant women with type 1 diabetes were usually at a much higher risk of developing adverse maternal events during their pregnancy than women without type 1 diabetes, even after adjusting for age and infant sex or age, infant sex, place of residence, income level, occupation, calendar year, and Charlson comorbidity index. The risks of preeclampsia, eclampsia and cesarean delivery, increased in the type 1 diabetes cohort.

**Conclusion:** It is concluded type 1 diabetes remains a significant disease threatening pregnant women and their offspring. Clinicians should be aware of this clinical situation.

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**INTRODUCTION:**

Type 1 diabetes holding pregnant women are also associated with a highly increased risk of congenital malformations, neonatal morbidity, and obstetric complications. These highly adverse results are related to pre-conceptional care typically related to the glycaemic control level. Sufficient pre-conceptional care declines the congenital malformation frequency and boosts the pregnancy result [1].

Encouraging diabetic women to manage their pregnancies; to begin supplements of folic acid; to optimize in the control of glycaemic before conception; is however considered as a recognized objective [2]. Our gathered data is based on the PubMed Database, collected through different centers with specific thought of pregnancy and diabetes, but not associated with the total local population. Nationwide population data are infrequent and most of the data have been gathered retrospectively [3].

The pregnancy outcomes in type 1 diabetic patients reported between 1991 and 2003 are grim. High rates of maternal and fetal adverse outcomes highlight the challenges physicians face in the management of pregnant patients with the disease [4]. The causes of adverse pregnancy outcomes may include a high proportion of unplanned pregnancies with prior poor glycemic control, failure to maintain tight metabolic control during pregnancy, and preexisting medical comorbidities, such as nephropathy and hypertension [5].

Care for type 1 diabetes has advanced with time. Preconception and early pregnancy care to achieve optimal glycemic control has lowered perinatal mortality and the rate of fetal malformations. The widespread adoption of blood glucose self-monitoring has enabled patients to adjust their insulin dose in a timely manner and modify their lifestyle to control their glucose levels [6]. Compared with human insulin, a fast-acting insulin analogue has been demonstrated to lower the risk of fetal adverse outcomes. New insulin delivery systems, including continuous subcutaneous insulin infusion, sensor-augmented pump therapy, and closed-loop insulin delivery, have also provided additional tools to improve glycemic control. In addition to glycemic control, multidisciplinary patient-centered care of type 1 diabetes before and during pregnancy likely has led to better gestational outcomes [7].

**Aims and objectives:**

The basic aim of the study is to analyze different Risks of Complications of Pregnancy in Women with Type 1 Diabetes.

**MATERIAL AND METHODS:**

This study was conducted in Punjab Health Department, Pakistan. Record gathered from 118 hospitals with the total number of 364 women stated for the study coordinator. As per database record, 11% (41 women) were excluded due to initial trimester spontaneous abortion as well as type 2 diabetes diagnosed in 16; 4% and follow up loss 2; 1%. We also stated the assessment of 323 pregnancies and all respondents gave written apprised consent. Entitled women completed questionnaires at inclusion (at the end of the initial trimester and around gestation of ten weeks) but during the trimester three (which is almost around 34 weeks). Internists complete the specific abovementioned questionnaire comprising common features, history of medical and other those items which are diabetes related; accordingly, gynecologists provided information regarding the pregnancy results and finally pediatricians completed in a specific questionnaire to gather newborns' information. We also gather (through PubMed Database) BMI, age, marital status, level of education, ethnic origin, use of alcohol, parity and smoking habits.

**Statistical analysis**

The data were sampled and entered into the SPSS worksheet for analysis. The alpha criterion was set at 0.05. After constructing a 2x2 contingency table, chi-square without Yates correction was used to find the association between the potential risk factors and pregnancy status.

**RESULTS:**

Maternal outcomes in pregnant women with type 1 diabetes and those without the disease were evaluated in this study. No maternal mortality occurred within 30 days of delivery in 630 pregnancies with type 1 diabetes. However, pregnant women with type 1 diabetes were usually at a much higher risk of developing adverse maternal events during their pregnancy than women without type 1 diabetes, even after adjusting for age and infant sex or age, infant sex, place of residence, income level, occupation, calendar year, and Charlson comorbidity index. The risks of preeclampsia, eclampsia and cesarean delivery, increased in the type 1 diabetes cohort. Pregnant women with type 1 diabetes were at a higher risk of developing pregnancy-related hypertension, puerperal cerebrovascular disorders, acute renal failure, shock, intracranial injuries, cardiac arrest/ventricular

fibrillation, acute myocardial infarction, severe anesthesia complications, and thrombotic embolism.

**Table 01:** Maternal outcomes among pregnant women without type 1 diabetes and pregnant women with type 1 diabetes

	No. of events (%)					
	Without T1D	With T1D	Crude OR (95% CI)	Model 1 OR (95% CI) <sup>a</sup>	Model 2 OR (95% CI) <sup>b</sup>	P value (Model 2)
Death ≤ 30 d postpartum	314 (0.01)	0 (0)	NA	NA	NA	
Preeclampsia	36,985 (1.57)	110 (17.46)	13.16 (10.57–16.39)	11.53 (9.57–13.90)	10.27 (8.53–12.4)	< 0.0001
Eclampsia	1,755 (0.07)	8 (1.27)	16.60 (7.95–34.68)	17.36 (8.71–34.59)	15.6 (7.81–31.15)	< 0.0001
Cesarean delivery	781,843 (33.27)	386 (61.27)	2.86 (2.38–3.43)	1.89 (1.76–2.04)	1.85 (1.72–2.0)	< 0.0001
Adult respiratory distress syndrome	999 (0.04)	14 (2.22)	53.48 (29.38–97.36)	53.99 (30.0–97.3)	38.34 (21.23–69.21)	< 0.0001
Pulmonary edema	325 (0.01)	7 (1.11)	81.52 (38.40–173.08)	83.44 (39.6–176)	69.51 (32.81–147.25)	< 0.0001
Sepsis	5,853 (0.25)	22 (3.49)	14.21 (8.89–22.69)	14.25 (9.13–22.25)	11.04 (7.12–17.11)	< 0.0001
Pregnancy-related hypertension	53,917 (2.29)	132 (20.95)	11.16 (9.07–13.73)	9.51 (8.02–11.26)	8.34 (7.04–9.87)	< 0.0001
Puerperal cerebrovascular disorders	1,707 (0.07)	6 (0.95)	13.34 (5.97–29.79)	13.59 (6.13–30.1)	11.31 (5.13–24.94)	< 0.0001
Acute renal failure	503 (0.02)	7 (1.11)	52.22 (22.61–120.63)	53.79 (23.3–124)	46.55 (20.21–107.22)	< 0.0001
Internal injuries of thorax, abdomen, and pelvis	966 (0.04)	2 (0.32)	3.74 (0.53–26.37)	3.78 (0.53–26.8)	3.13 (0.45–22.06)	0.25209

Cardiac arrest/ventricular fibrillation	112 (0.00)	4 (0.63)	133.44 (40.42–440.54)	140.49 (41.9–471)	103.67 (30.83–3448.55)	<b>0.00944</b>
Acute myocardial infarction	109 (0.00)	2 (0.32)	33.36 (4.66–238.63)	35.74 (5.01–255)	30.85 (4.27–222.68)	<b>0.00067</b>
Disseminated intravascular coagulation	1,541 (0.07)	2 (0.32)	2.56 (0.36–18.00)	2.57 (0.37–17.88)	2.31 (0.33–16.32)	<b>0.40129</b>
Severe anesthesia complications	300 (0.01)	2 (0.32)	12.70 (1.78–90.46)	12.62 (1.78–89.64)	12.07 (1.73–84.01)	<b>0.01187</b>
Severe postpartum hemorrhage	63,345 (2.70)	25 (3.97)	1.47 (0.98–2.21)	1.46 (0.99–2.16)	1.33 (0.90–1.97)	<b>0.15480</b>

### DISCUSSION:

This study showed strong correlations between type 1 diabetes and multiple adverse outcomes, including pregnancy-related hypertension, preeclampsia, eclampsia, cesarean delivery, stillbirth, and preterm birth. In addition to these well-recognized adverse outcomes, we also found that patients with type 1 diabetes were associated with high risks of other major morbidities, including adult respiratory distress syndrome, pulmonary edema, sepsis, chorioamnionitis, puerperal cerebrovascular disorders, acute renal failure, and shock [8]. These data emphasize that type 1 diabetes is associated with increased adverse outcomes in both mothers and fetuses.

We found that the only improvement in outcome was a lower risk of preeclampsia in the late period as compared with that in the early period in pregnant women with type 1 diabetes. The reasons behind for this improvement are unclear. Better glucose and blood pressure control, dietary and lifestyle modification, low-dose aspirin, and calcium supplementation in women with low dietary calcium intake have been reported to reduce the risk of preeclampsia [9]. We further supposed that the availability of free glucose test strips had relieved the financial stress associated with the disease and led to better diabetes care and outcomes. The decreased risk of preeclampsia is of high clinical significance because preeclampsia is associated with maternal morbidity and mortality during pregnancy and is a strong predictor of future cardiovascular disease in mothers [10].

Except preeclampsia, no improvement in maternal and fetal outcomes in the late period was found among pregnant women with type 1 diabetes. Similar to our results, a recent study also reported difficulty in improving pregnancy outcomes in women with type 1 diabetes; high rates of adverse pregnancy events, including preeclampsia, cesarean delivery, premature birth, and large for gestational age, were reported in that study population [11]. The excellent glycemic control achieved by the sensor-augmented pump therapy and closed-loop insulin delivery system described in that study was worthy of note. These data indicate that optimal glycemic control during pregnancy is insufficient to achieve promising pregnancy outcomes in this population [12].

### CONCLUSION:

It is concluded type 1 diabetes remains a significant disease threatening pregnant women and their offspring. Clinicians should be aware of this clinical situation.

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