



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2529618>Available online at: <http://www.iajps.com>

Research Article

**RISK OF COMPLICATIONS OF PREGNANCY IN WOMEN
WITH TYPE 1 DIABETES: A NATIONWIDE PROSPECTIVE
STUDY**¹Dr. Asma Mushtaq, ²Dr. Muhammad Tanveer Ashraf, ²Dr. iqra Shah Jahan¹Services institute of Medical Sciences, ²Ghurki Trust and Teaching Hospital, ³Islamabad
Medical and Dental College**Abstract:**

This study is based on nationwide cohort prospective for the investigation of neonatal, maternal and perinatal results of pregnancies in female patients specifically with "type 1 diabetes" according to data taken by PubMed Database for the 118 hospitals in the Netherlands. There were 323 women who become pregnant with type 1 diabetes between (as per data record of PubMed Database) 1st April 1999 and 1st April 2000. There were perinatal, neonatal and maternal outcomes of pregnancy. Pregnancies were planned (n=271) 84% and in pregnancy, the glycaemic control at initial was better with many women "HbA_{1c} 7.0% (n=212) in 75% of the population as prescribed in PubMed Database), accordingly there were also reports for folic acid supplements that it was adequate (n=226) in 70%. Pre-eclampsia rates (40;12.7%) caesarean section (139; 44.3%), delivery of preterm (101;32.2%), maternal mortality (2;0.6%), perinatal mortality (9;2.8%), congenital malformations (29; 8.8%) and there was macrosomia (146; 45.1%) which is significantly greater as compared with general population. With one or more than one complication "neonatal morbidity" was very high (with the ratio of 260; 80.2%). The main congenital malformation incidence was importantly lower in these deliberated pregnancies than in unintended pregnancies as (4.2% (n=11) v 12.2 (n=6) with 95% confidence interval 0.13 to 0.88 and with relative risk 0.34. Besides high frequencies of intended pregnancies, in diabetes type 1 woman; there are results which showed good glycaemic initially control, folic acid high adequate rate and increased perinatal and maternal complications.

Corresponding author:**Dr Asma Mushtaq,**

Services institute of Medical Sciences.

QR code



Please cite this article in press Asma Mushtaq et al., *Risk of Complications of Pregnancy in Women with Type 1 Diabetes: a Nationwide Prospective Study.*, Indo Am. J. P. Sci, 2019; 06(01).

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 results [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. 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 [2].

METHODS:

In the specific locale, the author requested all internists, diabetes nurses, gynecologists and educators to incorporate all type 1 diabetes women for antenatal care according to the given period from April 1st, 1999 till April 1st, 2000. 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 [3]. 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. We also collected data about the occurrence of chronic complications (such as nephropathy, macro-angiopathy, and retinopathy), diabetes duration, diabetes treatment or medication, analog lispro insulin or human insulin [4].

CONTROLLING GLYCAEMIC DURING

PREGNANCY:

During the 1st (n=283), 2nd (n=276) and 3rd trimesters (n=262) we gathered HbA_{1c} from local hospitals. A specific standard procedure has been adopted for variation between assays of local HbA_{1c}. There was a division of three categories regarding glycaemic control: (with normal range "excellent") mean HbA_{1c} 6.0%, mean (2-4 SD "good") HbA_{1c} 6.1-7.0% and (not optimal) HbA_{1c} > 7.0% mean. It was also asked patients to deliver a self-gathered sample of blood to laboratory about the determination regarding (Normal Reference Value 4.0-6.0%), HbA_{1c} initially in pregnancy in the period of 10 weeks [5].

MEASUREMENT OF RESULTS:

Obstetric Difficulties

Pre-eclampsia has been defined as diastolic BP 90 mm Hg on dual instances at least 4 hours separately in pregnancy 2nd half in normotensive women (300mg/24 hours). All those patients who have preeclampsia and hypertension, accordingly there were happening of proteinuria de novo in pregnancy 2nd half [6].

Perinatal Result

As per plan, we separate congenital malformations in further groups of minor and major malformations. We categorized a specific malformation as core if that malformation is fatal, similar to guide in serious handicap, life-threatening or there is main surgery requirement or cosmetic defect. Similarly, we also plan to chromosomal abnormalities like main malformations. We also comprised 24 week's gestation fetuses with the weight of 500 grams and curative abortions regarding chromosomal abnormalities or congenital malformations (n=4).

Neonatal Result

We also described neonatal hypoglycemia <206 mmol blood glucose and stern neonatal hypoglycemia <2.0 mmol/l blood glucose. Similarly, we described the syndrome of infant respiratory distress as per the Giedion et al. and as per the respiratory stress clinical system [7].

RESULTS:

The 323 women pregnancies with type-1 diabetes comprised 4 remedial abortions, 2 about core congenital malformations (like anencephaly and spina bifida) and 2 chromosomal abnormalities. In seventeen weeks' gestation, there was one maternal death has been happened and 4 other pregnancies

over before twenty-four weeks of gestation. There were 8 twin pregnancies resulting in 324 babies born after twenty-four weeks' gestation.

MATERNAL FEATURES:

Maternal age, race, and parity did not importantly divers from that populace of general pregnant. First trimester mean HbA_{1c} was (with SD 0.7%) 6.5%; there was glycaemic control considered "excellent" with the ratio of (HbA_{1c} 6.0%) specifically in 90 (which is 32%), glycaemic control considered good (6.1-7.0%) in pregnant patients of 122 (43%) and considered not optimal (>7.0%) in pregnant patients 71 (25%) of overall pregnancy [8].

MATERNAL RESULT:

Pre-eclampsia higher than 12% pregnancies considered complicated due to pre-eclampsia, with twelve times greater as compared with the reference group. Caesarean and Prematurity Section – prematurity rate (which is gestation' 37 weeks delivery) was with the ratio of 32.2%. there are reasons for persuaded delivery which are based on fetal distress (31.3%, 20), pre-eclampsia (40.6%, 26), macrosomia (7.8%, 5) and some others (20.3%, 13). The cesarean section rate was 23.9 (n=75) 44.3% primary and 64 (20.4%) secondary, accordingly almost fourfold upsurge in the risk. Fetal distress was the main reason for primary caesarean with was 30.7%, 23, macrosomia 20.0% 15, pre-eclampsia 25.3%, 19, breech presentaiton 12.0%, 9 and some others 12.0%, 9 [9].

Maternal Mortality – in one year period, 0.6% (2) maternal deaths happened. One patient died owing to high hypoglycemia which was followed by a cardiac arrest. The second woman died in the period of parturition owing embolism of amniotic fluid.

NEONATAL AND PERINATAL RESULT:

Congenital Malformations – occurred in 8.8% (29) of the babies. Main congenital malformation (as per n=18) contained cardiovascular anomalies, neural tube defects, and urogenital anomalies. Congenital malformations incidence was higher with greater initial trimester HbA_{1c}—6.3%. accordingly, we originated a similar link when we utilized centrally regulated HbA_{1c} levels. All congenital malformations' incidence was 6.3% (as n=14) in pregnancies according to with good initial or excellent trimester HbA_{1c} (7.0%) as associated with

12.9% .

Perinatal Mortality – there was 9 perinatal death 27.8/1000 births; 2.8% happened.

Macrosomia – birth weight mean about 324 babies was 3454 (standard deviation 829) g at the gestation of 2.7 weeks; 52.5% 17 babies were macrosomic, comprising 28.4% 92 adversely macrosomic as per the charts maintained by officials. The comparable percentage was 45.1% and (n=78) 24.1% as per the maintainer growth charts on the Database of PubMed for the locale. Seventy seven (which is 23.8%) babies had weight at birth >4000 g, comprising 7.1% (23) weighing > 4500 g. During pregnancy 1st, 2nd and 3rd trimester HbA_{1c} in the period of pregnancy was little but importantly greater in macrosomic infant holding women (HbA_{1c} mean at the period of 6.4% pregnancy (Standard Deviation 0.9%) v 6.0%); P=0.001.

Neonatal Result – there are neonatal results also, as neonatal morbidity (not necessary in one or more than one complications) was exist in 80.2% 260 of babies. Neonatal hypoglycemia and shoulder dystocia happened importantly more frequently in macrosomic as compared with non-macrosomic babies like (n=20) with the percentage of 27.4% v 4.7% with the relevance of risk 5.8, 2.3 and 14.7) and (107) 75.4% v 54.5% (91) with the relevance of risk 1.4, 1.2 and 1.6. Respiratory disorders, hyperbilirubinemia, asphyxia, and hypertrophic cardiomyopathy were particularly more existent in preterm babies (with P <0.005). Perinatal, neonatal and maternal results (excluding congenital malformations) in females with 75%, initial trimester HbA_{1c} 7.0% good glycaemic control were also analogous to those in a female with lower good control [10].

Planned Pregnancies

Initial trimester HbA_{1c} was particularly lesser in mentioned above planned pregnancies as compared with unplanned pregnancies "(6.4% (SD 0.9%)v 7.0% (1.4%); P < 0.001)". main congenital malformation incidence was importantly lesser (with the ratio of 4.2%, with the n=11 v 12.2%) in planned pregnancies and other results did not diverse.

Hypoglycaemia during Pregnancy

Forty-four (which were 41% in ratio) of 264 females were suffered from high hypoglycemia in the initial trimester and 17% (116/286) were also suffered in the period of the third trimester. HbA_{1c} mean were lightly but importantly lesser in mentioned females as

compared within those females who did not have any experience of hypoglycemia. Macrosomia incidence was particularly lesser in females suffered from high hypoglycemia, but all other results are identical.

Lispro utilization during Pregnancy

In all prescribed patients, 35 (which is 11%) females utilized lispor insulin during pregnancy. The occurrence of HbA_{1c} levels of highly severe hypoglycemia and congenital malformations rate in these specific females did not dissimilar from those who were using human insulin [10].

CONCLUSION:

According to the American Diabetes Association which described that in tight glycaemic pregnancy control is accomplished when HbA_{1c} is inside one percent of the higher limit of the range of 4.0-6.0%. Accordingly, HbA_{1c} deliberately to be linked with macrosomia and congenital malformation rates no higher than those non-diabetic pregnancies. Therefore, this research also represents that this control level is not particularly enough to avoid these complications. This further designates that latest criteria for severe glycaemic management are not "safe" and sufficient or such as HbA_{1c} does not enough reflection with glucose variability of short-term (hyperglycemia and hypoglycemia). There is also a reflection of the second possibility, which has certainly been representing with constant glucose monitoring system.

REFERENCES:

1. Charles, M., Soedamah-Muthu, S., Tesfaye, S., Fuller, J., Arezzo, J., Chaturvedi, N. and Witte, D. (2010). Low Peripheral Nerve Conduction Velocities and Amplitudes Are Strongly Related to Diabetic Microvascular Complications in Type 1 Diabetes: The EURODIAB Prospective Complications Study. *Diabetes Care*, 33(12), pp.2648-2653.
2. Evers, I., de Valk, H. and Visser, G. (2004). Risk of complications of pregnancy with type 1 diabetes. *BMJ*, 328(7445), p.915.
3. Juhl, B., Lauszus, F. and Lykkesfeldt, J. (2017). Poor Vitamin C Status Late in Pregnancy Is

Associated with Increased Risk of Complications in Type 1 Diabetic Women: A Cross-Sectional Study. *Nutrients*, 9(3), p.186.

4. Li, X., Sundquist, J., Zöller, B., Bennet, L. and Sundquist, K. (2013). Risk of hospitalization for type 1 diabetes in first- and second-generation immigrants in Sweden: a nationwide follow-up study. *Journal of Diabetes and its Complications*, 27(1), pp.49-53.
5. Murphy, H., Bell, R., Cartwright, C., Curnow, P., Maresh, M., Morgan, M., Sylvester, C., Young, B. and Lewis-Barned, N. (2017). Improved pregnancy outcomes in women with type 1 and type 2 diabetes but substantial clinic-to-clinic variations: a prospective nationwide study. *Diabetologia*, 60(9), pp.1668-1677.
6. Rijpert, M., Evers, I., de Vroede, M., de Valk, H., Heijnen, C. and Visser, G. (2009). Risk Factors for Childhood Overweight in Offspring of Type 1 Diabetic Women With Adequate Glycemic Control During Pregnancy. *Diabetes Care*, 32(11), pp.2099-2104.
7. Soedamah-Muthu, S., Chaturvedi, N., Witte, D., Stevens, L., Porta, M. and Fuller, J. (2008). Relationship Between Risk Factors and Mortality in Type 1 Diabetic Patients in Europe: The EURODIAB Prospective Complications Study (PCS). *Diabetes Care*, 31(7), pp.1360-1366.
8. Sun, Q., van Dam, R., Willett, W. and Hu, F. (2009). Prospective Study of Zinc Intake and Risk of Type 1 Diabetes in Women. *Diabetes Care*, 32(4), pp.629-634.
9. UK Prospective Diabetes Study Group (1998). Risk of Complications of Pregnancies in Type 1 Diabetes. *BMJ*, 317(7160), pp.713-720.
10. Welters, S., Kamphuis, E., de Boer, M. and de Groot, C. (2018). Risk of cardiovascular mortality in women with a history of spontaneous preterm birth. *Pregnancy Hypertension*, 13, p.S33.