CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1243145

Available online at: http://www.iajps.com Research Article

# HYPERGLYCEMIA IN PREGNANT LADIES AND ITS OUTCOME OUT IN THE OPD, LABOR WARD, GYNECOLOGY AND OBSTETRICS MAYO HOSPITAL LAHORE.

**[1]Dr. Sundus Amena, [2]Dr. Madeha Arshad,[3]Dr. Rai Muhammad Fazal-ur-Rehman Khan**
[1]WMO, BHU Nokhar, Nowhshera Virkan, Gujranwala.
[2]WMO, DHQ Hospital, Kasur.
[3]Ex MCPS Resident, Holy Family Hospital, Rawalpindi.

**Abstract:**
***Objective:*** *We aimed at the perinatal outcomes evaluation in the mothers having diabetes mellitus at the tertiary healthcare centers.*
***Design:*** *Research was descriptive in nature.*
***Place and Duration:*** *Research was carried out in the OPD, Labor ward, Gynecology and Obstetrics Mayo Hospital Lahore. Research was carried out from July, 2016 to June, 2017 and it took one year in its completion.*
***Patients and Methods:*** *We included in the research a total of 110 pregnant cases in the age limit of 20 – 40 years without considering their obstetrics history and parity. Sample was selected through convenience non-probability technique of sampling. All the women having eclampsia, pregnancy induced hypertension, antepartum hemorrhage and medical disorders were not selected in our research. A Performa was used for the documentation of patient's information and data analysis was made with the help of SPSS – 21.*
***Results:*** *We observed in the cases and peri-natal complications the incidence of macrosomia as 41.8% fetuses, infant's biochemical abnormalities were observed in the 85.3% of the cases, moderate nature to severe state birth asphyxia was observed in 33.6% and congenital malformations were noticed in the six infants associated to the mothers having diabetes.*
***Conclusion:*** *In the diabetic pregnancy related peri-natal difficulties of mothers having diabetes are repeated in the women with a higher incidence of parity. Macrosomia, asphyxia and biochemical abnormalities are repeated peri-natal complications as observed in the setting of this research.*
**Key Words:** *Diabetes Mellitus (DM), Biochemical Abnormalities, Asphyxia and Macrosomia.*

**Corresponding author:**
**Dr. Sundus Amena,**
*WMO,*
*BHU Nokhar, Nowhshera Virkan,*
*Gujranwala*

QR code

*Please cite this article in press Sundus Amena et al.,* ***Hyperglycemia in Pregnant Ladies and Its Outcome out in the OPD, Labor Ward, Gynecology and Obstetrics Mayo Hospital Lahore,*** *Indo Am. J. P. Sci, 2018; 05(05).*

## INTRODUCTION:

Increased congenital anomalies are linked with the incidence of diabetes in the mothers with obstetric complications causing morbidity of the neonates. There is an occurrence of two major kinds of DM in the mothers: diabetes as pre-existing and diabetes at the time of gestation. In UK this incidence has been observed as 04 / 1000 and in the live birth rate of USA as 2.6 percent; whereas, a research conducted in Pakistan observed that 2 percent. We can divide these fetal complications in the mothers in to two categories as maternal diabetes present in the mothers causing abortions and congenital abnormalities [1]. Both the complications are high in the women and mark the incidence of hyperglycemia in the 1st trimester. Insulin was used as the last hope of viable production of the offspring. After the introduction of the exogenous insulin mortality rate has been decreased. Diabetic pregnancies have been increased as the advancement have decreased mortality and improved the rate of fertility. There are concerns about the association of diabetes in the mothers with the morbidity and mortality of the neonates [2]. Few of the complications associated with the diabetic pregnancy are polyhydramnios, preterm labor and macrosomia, neonatal deaths, stillbirth and congenital deformities. A well-known feature is macrosomia which is linked with diabetes dependent in the insulin and inclines to dystocia of shoulder and related injuries during birth. The cause of all this lies in the maternal hyperglycemia which leads to the fetal hyperinsulinemia and hyperglycemia [3]. However, preconception counseling can reduce and prevent adverse effects during pregnancy and better glycemic control, early fetal anomalies screening, time and mode planning and better care of the neonate can be achieved. Importance of the research was the determination of the peri-natal results in the mothers having diabetes and also motivated and convinced the women for planned pregnancies for the optimized control of the glycemic level and supplementation intake such as folic acid well before the conception and being fertilized.

## PATIENTS AND METHODS:

We aimed at the perinatal outcomes evaluation in the mothers having diabetes mellitus at the tertiary healthcare centers. Research was descriptive in nature. Research was carried out in the OPD, Labor ward, Gynecology and Obstetrics Mayo Hospital Lahore. Research was carried out from January, 2017 to January, 2018 and it took one year in its completion. We included in the research a total of 110 pregnant cases in the age limit of 20 – 40 years without considering their obstetrics history and parity [4]. The sample was having single fetus in the gestational age above twenty-four weeks. Sample was selected through convenience non-probability technique of sampling. All the women having eclampsia, pregnancy induced hypertension, antepartum hemorrhage and medical disorders were not selected in our research. A Performa was used for the documentation of patient's information and data analysis was made with the help of SPSS – 11.

## RESULTS:

Total number of the hospital admission of obstetric cases were in one year as 2409, we short listed 110 cases who fulfilled the mentioned criteria. Our research observed 4.6 percent DM occurrence in the pregnant women. Gestational DM cases were 81 (73.6%); whereas, 29 cases (26.3%) were established DM cases. The age group from 20 – 30 years was observed in 41 cases (37.2%) and 31 – 35 years 58 cases (52.7%) were noticed. A number of cases were un-booked as 60 cases (55%). In terms of parity 52 cases were (47.2%) grand multipara; whereas, 19 cases (17.2%) were observed as primipara as shown in Table – I. Poor state of the economic condition was observed in 66 patients (60%). Private clinics are the 1st choice for the privileged class so no patients were observed from upper class in our research. In the total research sample, 59 cases (53.6%) were observed with DM in the period of intra-partum, 45 intra-partum cases (40.9%) and 06 cases (5.4%) presented pre-existing diabetes. Number of the cases were delivered in the gestational age of 37 – 40 weeks. Emergency CS cases were 37 (33.6%), elective CS were observed in 33 cases (30%), spontaneous delivery was observed in 27 cases (24.5%), vacuum extraction was carried out in 07 cases (6.3%) and forceps was carried out in 06 cases (5.4%). Diabetic mothers were less operated with instrumental delivery due to the factor of macrosomia which leads to the feto-pelvic disproportion. Large and small gestation age was observed in 46 cases (41.8%) and 04 cases (3.6%) respectively which shows pregnancy poor glycemic control as shown in Table – II. No asphyxia was observed in the 72 newborns (66.3%) cases, moderate ratio was seen in 23 cases (20.9%) ans severe was observed in 14 cases (12.7%) during delivery. Apgar score was used for the determination of the moderate and severe asphyxia in the event of birth. Below three score represents severe whereas in the range of 3 – 6 score represents moderate asphyxia. No injuries were seen in 94 newborns (85.4%), because of macrosomia and shoulder dystocia 16 cases (14.5%) had injuries. Few of the common injuries were facial nerve injury, brachial plexus trauma and humerus fracture. Hypoglycemia was observed in 48 cases (43.6%), hypocalcemia in 22 cases (20%) and

hyperbilirubinemia in the 24 cases (21.8%). Congenital malformations were seen in six newborn cases, congenital cyanotic heart disease was seen in 02 cases (1.8%), anencephaly in 02 cases (1.8%) and duodenal atresia in 02 cases (1.8%). Stillbirth cases were reported six in number, four of them had no explanation of the cause but anencephaly was observed in 02 cases (1.8%). Expiry rate in the early period was seen in 11 cases with congenital abnormality in 02 cases (1.8%), respiratory distress syndrome in 03 cases (2.7%) and birth asphyxia in 06 cases (5.4%).

**TABLE I: SOCIO-DEMOGRAPHIC PROFILE OF PATIENTS (n=110)**

| Variable | | Number | Percentage |
|---|---|---|---|
| **Age in years** | **20 - 30** | 41 | 37.2 |
| | **31 - 35** | 58 | 52.7 |
| | **36 - 40** | 11 | 10 |
| **Parity** | **Primi** | 19 | 17.2 |
| | **Para 1 - 4** | 39 | 35.4 |
| | **Para 5 or above** | 52 | 47.2 |

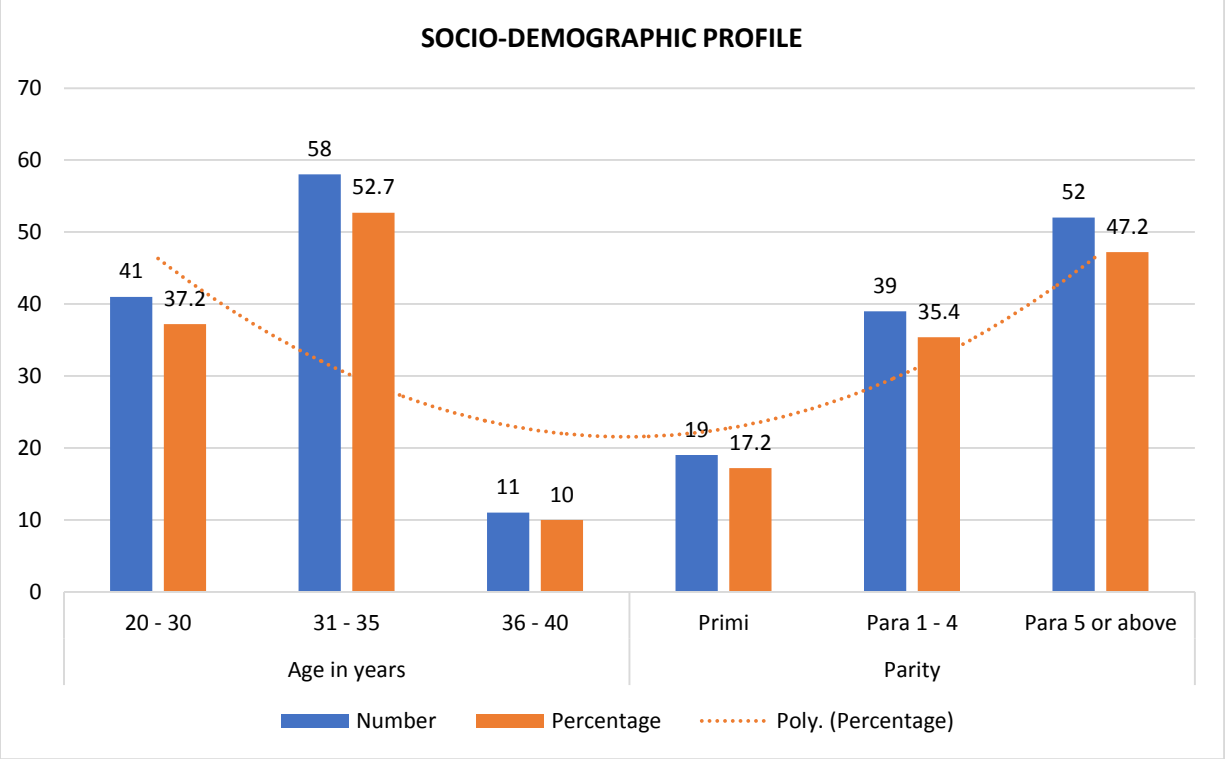
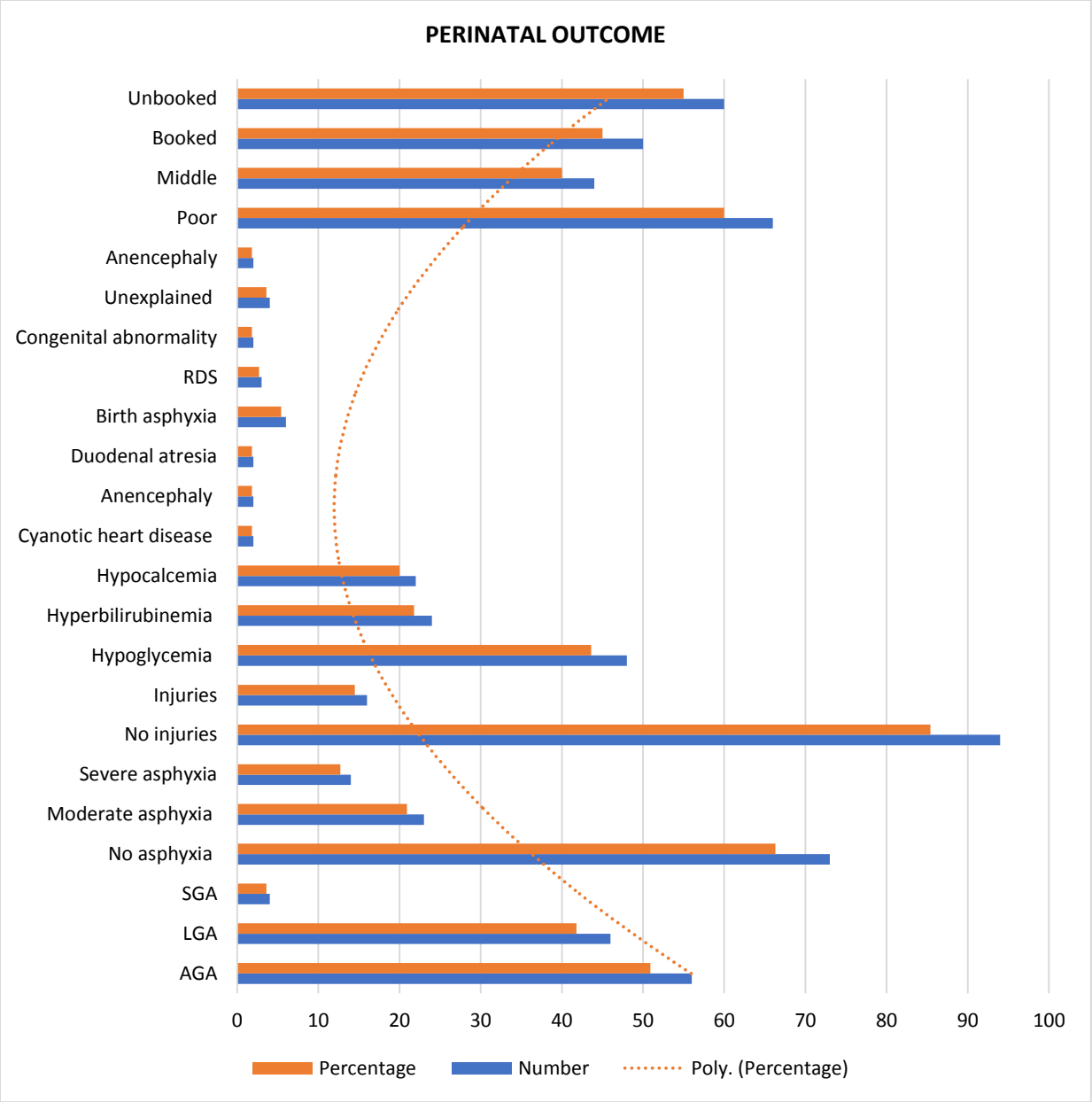


**TABLE II: PERINATAL OUTCOME OF DIABETIC MOTHERS**

| Variable | | Number | Percentage |
|---|---|---|---|
| **Birth weight** | **AGA** | 56 | 50.9 |
| | **LGA** | 46 | 41.8 |
| | **SGA** | 4 | 3.6 |
| **Asphyxia** | **No asphyxia** | 73 | 66.3 |
| | **Moderate asphyxia** | 23 | 20.9 |
| | **Severe asphyxia** | 14 | 12.7 |
| **Birth injuries** | **No injuries** | 94 | 85.4 |
| | **Injuries** | 16 | 14.5 |
| **Biochemical abnormalities** | **Hypoglycemia** | 48 | 43.6 |
| | **Hyperbilirubinemia** | 24 | 21.8 |
| | **Hypocalcemia** | 22 | 20 |
| **Congenital malformation** | **Cyanotic heart disease** | 2 | 1.8 |
| | **Anencephaly** | 2 | 1.8 |
| | **Duodenal atresia** | 2 | 1.8 |
| **Neonatal death** | **Birth asphyxia** | 6 | 5.4 |
| | **RDS** | 3 | 2.7 |
| | **Congenital abnormality** | 2 | 1.8 |
| **Stillbirth** | **Unexplained** | 4 | 3.6 |
| | **Anencephaly** | 2 | 1.8 |
| **Socioeconomic condition** | **Poor** | 66 | 60 |
| | **Middle** | 44 | 40 |
| **Booking status** | **Booked** | 50 | 45 |
| | **Un-booked** | 60 | 55 |




**DISCUSSION:**

Pakistan bears a high rate of peri-natal deaths because of the poor maternal health and access to proper healthcare facilities is rare. High risk is posed to the diabetic pregnant cases. A worldwide estimate show that incidence of peri-natal mortality is 7.3 million, especially in the under developed countries like ours. Total births are fifty percent in south Asia and seventy percent is the peri-natal death rate [5]. DM incidence is different in various research studies. Our research observed the DM frequency as 4.6%. However, in another research held in Faisalabad observed the same as 2% [6]. Our outcomes are different in comparison to other research studies due to maximum number of un-booked cases. We observed gestational DM cases as 73.6% in comparison to the established cases of DM as 26.3%; whereas, in the research of Sheikh Zayed Hospital, Lahore, gestational DM was seen as 75% against established DM as 25% [7]. Intra-partum period DM cases were 46.3%. In the diabetic mother congenital malformations in the children are higher. We observed 5.4 percent of the cases with congenital malformations; whereas, in the research of Faisalabad it was 4% [8]. Planned pregnancy cases were observed in an audit held at international level. We found that a number of pregnancies were not planned and non-booked cases were (55%) with non-availability of sugar level records [8]. Through modern techniques the diabetes onset has been

managed very well without the quantification of the residual risk degree. Still birth rates were high in the diabetic cases than the non-diabetic cases [9]. In this research unexplained stillbirths were observed in the six percent of the cases. Clinical features observed macrosomia as symptom of poor control of the diabetes with associated peri-natal outcomes and adverse intra-partum [10]. A lower macrosomia rate was observed in the research held at Holy Family Hospital in comparison to our research because of the booked cases of the said hospital. Un-booked population in our research was fifty-five percent [11]. Common involved reasons of failure were limited resources, lack of patient education, poor motivation, delays pregnancies report, lack of self-esteem, difference in individuals, cultural gap, pregnancy initial and negative feeling, regular monitoring, complications and follow-up [12]. Mechanical obstruction chances are there in the case of macrosomia infants of the mothers with diabetes with associated issues of shoulder dystocia, facial injuries, brachial plexus trauma, birth asphyxia and cephalohematoma. In the existence of disproportion, the macrosomia is to be diagnosed through USG and planned CS is required for delivery [13]. We observed that elective CS was carried out in 30% of the mothers and emergency CS cases were 33.6%because of mechanical obstruction. The reason behind was the multiple pregnancy history and macrosomia prevalence. Diabetic mother's infant is also at the risk of the asphyxia. Asphyxia was observed in 37 new born cases with a score of Apgar as (< 3 at the age of 5 minutes). Research conducted in the Sheikh Zayed Hospital, Lahore, states development of asphyxia in 29% of the neonates and RDS [14]. Death cases were eleven because of the congenital abnormality, birth asphyxia and RDS. There is also an increased risk in the infants about biochemical complications development during early days of life; common and repeated issue is of hypoglycemia cases as (43.6%), 20% cases of hypocalcemia and 21.8% cases of hyperbilirubinemia. There are concerns about the association of diabetes in the mothers with the morbidity and mortality of the neonates. Few of the complications associated with the diabetic pregnancy are polyhydramnios, preterm labor and macrosomia, neonatal deaths, stillbirth and congenital deformities [15]. A well-known feature is macrosomia which is linked with diabetes dependent in the insulin and inclines to dystocia of shoulder and related injuries during birth. The cause of all this lies in the maternal hyperglycemia which leads to the fetal hyperinsulinemia and hyperglycemia [16]. However, preconception counseling can reduce and prevent adverse effects during pregnancy and better glycemic control, early fetal anomalies screening, time and mode planning and better care of the neonate can be achieved. Importance of the research was the determination of the peri-natal results in the mothers having diabetes and also motivated and convinced the women for planned pregnancies for the optimized control of the glycemic level and supplementation intake such as folic acid well before the conception and being fertilized.

## CONCLUSION:

In the diabetic pregnancy related peri-natal difficulties of mothers having diabetes are repeated in the women with a higher incidence of parity. Macrosomia, asphyxia and biochemical abnormalities are repeated peri-natal complications as observed in the setting of this research.

## REFERENCES:


1. D'Souza, K., et al., Regulation of Autotaxin and its Role in Obesity-Induced Tissue Insulin Resistance. Canadian Journal of Diabetes, 2016. **40**(5): p. S19-S20.
2. Josefson, J.L., et al., Maternal BMI associations with maternal and cord blood vitamin D Levels in a North American subset of Hyperglycemia and Adverse Pregnancy Outcome (HAPO) Study participants. PloS one, 2016. **11**(3): p. e0150221.
3. Leng, J., et al., Prevalence of gestational diabetes mellitus and its risk factors in Chinese pregnant women: a prospective population-based study in Tianjin, China. PloS one, 2015. **10**(3): p. e0121029.
4. Du, M., et al., Early third trimester maternal response to glucose challenge and pregnancy outcome in Chinese women—relationship between upper distribution level and recommended diagnostic criteria. European journal of clinical nutrition, 2015. **69**(10): p. 1133.
5. Association, A.D., 2. Classification and diagnosis of diabetes. Diabetes care, 2016. **39**(Supplement 1): p. S13-S22.
6. Kalagiri, R.R., et al., Inflammation in complicated pregnancy and its outcome. American journal of perinatology, 2016. **33**(14): p. 1337-1356.
7. Berry, D.C., K. Boggess, and Q.B. Johnson, Management of pregnant women with type 2 diabetes mellitus and the consequences of fetal programming in their offspring. Current diabetes reports, 2016. **16**(5): p. 36.
8. Chiswick, C., et al., Effect of metformin on maternal and fetal outcomes in obese pregnant women (EMPOWaR): a randomised, double-blind, placebo-controlled trial. The lancet

Diabetes & endocrinology, 2015. **3**(10): p. 778-786.
9. Duran, A., et al., Introduction of IADPSG criteria for the screening and diagnosis of gestational diabetes mellitus results in improved pregnancy outcomes at a lower cost in a large cohort of pregnant women: the St. Carlos Gestational Diabetes Study. Diabetes Care, 2014. **37**(9): p. 2442-2450.
10. Guariguata, L., et al., Global Estimates of Hyperglycaemia in Pregnancy: Determinants and Trends, in Nutrition and Diet in Maternal Diabetes. 2018, Springer. p. 3-15.
11. Ye, M., et al., The utility of HbA1c for screening gestational diabetes mellitus and its relationship with adverse pregnancy outcomes. Diabetes research and clinical practice, 2016. **114**: p. 43-49.
12. McIntyre, H.D., et al., Issues with the diagnosis and classification of hyperglycemia in early pregnancy. Diabetes Care, 2016. **39**(1): p. 53-54.
13. Scholtens, D.M., et al., Metabolomics reveals broad-scale metabolic perturbations in hyperglycemic mothers during pregnancy. Diabetes Care, 2014. **37**(1): p. 158-166.
14. Shahbazian, H., et al., Gestational diabetes mellitus in an Iranian pregnant population using IADPSG criteria: incidence, contributing factors and outcomes. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 2016. **10**(4): p. 242-246.
15. Tramontana, A., et al., Combination of first trimester serum afamin levels and three-dimensional placental bed vascularization as a possible screening method to detect women at-risk for adverse pregnancy complications like pre-eclampsia and gestational diabetes mellitus in low-risk pregnancies. Placenta, 2018. **62**: p. 9-15.
16. Markovic, T.P., et al., Randomized controlled trial investigating the effects of a low–glycemic index diet on pregnancy outcomes in women at high risk of gestational diabetes mellitus: the GI Baby 3 Study. Diabetes care, 2016. **39**(1): p. 31-38.