



# Analyzing the Risk Factors in Gestational Diabetes Mellitus Patients Using Data Mining Rules

S. Kavipriya, Dr. T. Deepa

Research Scholar, Sri Ramakrishna Arts and Science for Women, Coimbatore, Tamilnadu, India

Assistant Professor, Dept. of CS, Sri Ramakrishna Arts and Science for Women, Coimbatore, Tamilnadu, India

**ABSTRACT:** Diabetes is part of growing diabetes. Gestational diabetes mellitus is highly prevalent disorder nowadays among pregnant women. It has been associated with maternal and prenatal outcomes. Gestational diabetes mellitus treatment is not been full-term benefit, it has been short-term treatment.

**KEYWORDS:** Gestational diabetes mellitus, data mining, and risk factors.

## I. INTRODUCTION

Diabetes mellitus is a condition in which the body cannot properly control the glucose level in the body. The blood glucose level is normalized by hormone is called insulin. The insulin is produced by pancreas. The pancreas is a small organ. It is located between the stomach and liver. The pancreas will secrete one important enzymes; the enzymes help to digest the food. Originally, GDM was defined as decreased carbohydrate tolerance that develops or is first identified during pregnancy, but in 2010 the definition was changed as following. Thus, GDM is a carbohydrate intolerance that is not diabetes that has developed or been discovered for the first time during pregnancy. The GDM definition therefore does not include overt diabetes in pregnancy. Accordingly, hyperglycemic disorders that are thought to have been overlooked until the pregnancy are excluded from the definition of GDM and are instead diagnosed as “overt diabetes in pregnancy.

## II. DEFINITION AND BASIC CONCEPTS

**Type 1 diabetes:** Type 1 diabetes mellitus affecting in childhood or adolescence. It is also known as juvenile-onset diabetes or insulin-dependent diabetes mellitus. It will take one or two months to develop. The initial symptoms should be often urination, fatigue, weight loss, irritation of genitals, heavy thirst, etc. the treatment for type 1 diabetes are organ and cell transplantation. This treatment will be some success for the type 1 diabetes.

**Type 2 diabetes:** The pancreas will produce the insulin, that pancreas should not be use partially or completely by the body. This type 2 diabetes have the same symptoms of type 1 diabetes. It can be diagnosed with fasting blood glucose level and random blood glucose level, and oral glucose tolerance test.

**Gestational diabetes mellitus:** Gestational diabetes mellitus also known as GDM. This type of diabetes will affect the pregnant women during the second half of the pregnancy. Usually it will goes away after their delivery of the baby. In future gestational diabetes mellitus will develop as a type 2 diabetes mellitus. Women with gestational diabetes mellitus are mostly have large babies. The symptoms are increased urination, weight loss, fatigue, thirst, nausea, vomiting, and vagina infection.

### **Data mining:**

The data mining is a technique for discovering useful information from large databases. A large database represents a huge amount of information which can be potentially very useful if extracted and summarized correctly. Using statistical tools and modeling techniques one can discover interesting and hidden patterns in the data.



# International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: [www.ijirccce.com](http://www.ijirccce.com)

Vol. 5, Issue 3, March 2017

## III. GESTATIONAL DIABETES MELLITUS

Gestational diabetes mellitus patient's body could not produce enough insulin to growing baby and changing hormone levels. Insulin helps our body to control the level of glucose in our blood. If our body cannot produce enough insulin, our blood glucose levels will rise. If left undiagnosed or untreated of gestational diabetes mellitus can lead to high blood glucose levels. This increases the risk that your baby will weigh more than 4 kg and will have a difficult delivery. Gestational diabetes mellitus can also increase the risk of our baby becoming overweight and developing type 2 diabetes in the future. Gestational diabetes patient's baby will not be born with diabetes and we can expect to have a happy, healthy baby.

## IV. TREATMENTS

To diagnose gestational diabetes mellitus we should be work closely with our healthcare team to control our blood glucose levels and to keep them in normal target range. The normal blood glucose will lead to avoid the complications in labor and delivery.

The majority of gestational diabetes patients can control their diabetes with exercise and diet. Lifestyle advice including dietary modification is the primary intervention in all women diagnosed with gestational diabetes. However, 7-20% of women will fail to achieve adequate glycaemic control with diet and exercise alone. Most women who make changes in the way they eat and how often they check exercise are able to keep their blood sugar level within a target range. We may need to change what, when, and how much we eat.

Regular physical activity can help control our blood glucose levels. It can also help us:

1. Boost our energy
2. Sleep better
3. Reduce stress
4. Reduce pregnancy discomfort
5. Prepare for childbirth
6. Get our body back faster after childbirth.

Gestational diabetes affects 3–9% of pregnancies, depending on the population studied. It is especially common during the last three months of pregnancy. It affects 1% of those under the age of 20 and 13% of those over the age of 44. A number of ethnic groups including Asians, American Indians, Indigenous Australians, and Pacific Islanders are at higher risk. In 90% of people gestational diabetes will resolve after the baby is born. Women, however, are at an increased risk of developing type 2 diabetes.

The nutritionists are helping designing a meal plan and it takes into individual schedules and preferences. Eating a variety of foods are recommending and it is better to eat smaller portions throughout the day rather than just a few large meals. Many women with gestational diabetes will be advised to eat fewer carbohydrates than in their normal diet. It is important to limit consumption of foods containing large amounts of simple sugars. High-fiber foods like fresh fruits and vegetables, as well as whole-grain products, are not only nutritious but also effective in keeping blood sugar levels stable. Skipping meals is not recommended because this leads to undesirable fluctuations in blood sugar levels.

## IV. RISK FACTORS FOR GDM

The following risk factors have been facing by the gestational diabetes mellitus patient's

1. Rising the body mass index.
2. Previous gestational diabetes mellitus.
3. Family history of diabetes.
4. Risk of normal delivery.
5. Birth trauma.



# International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: [www.ijirccce.com](http://www.ijirccce.com)

Vol. 5, Issue 3, March 2017

6. Maternal age.
7. Previous poor obstetric history.

## V. GESTATIONAL DIABETES AFFECTS THE BABY

Women with gestational diabetes who receive proper care typically go on to deliver healthy babies. However if we have persistently elevated blood glucose levels throughout pregnancy, the fetus will also have elevated blood glucose levels. High blood glucose can cause the fetus to be larger than normal, possibly making delivery more complicated. The baby is also at risk for having low blood glucose immediately after birth. Other serious complications of poorly controlled gestational diabetes in the newborn can include a greater risk of jaundice, an increased risk for respiratory distress syndrome, and a higher chance of dying before or following birth. The baby is also at a greater risk of becoming overweight and developing type 2 diabetes later in life. If diabetes is present in an early pregnancy, there is an increased risk of birth defects and miscarriage compared to that of mothers without diabetes.

## VI. PREVENTION OF GESTATIONAL DIABETES MELLITUS

Gestational diabetes cannot always be prevented; however, obesity is a prime determinant for developing the disease. Maintaining a healthy weight and following a good nutritional plan both before and during pregnancy can decrease our chances of developing gestational diabetes. Maintaining a healthy weight can also decrease our chances of developing type 2 diabetes of pregnancy.

## VI. METHODS

The previous studies have been done using with data mining techniques and the possibilities have been 20% to control the risk factors and also complications in delivery. In this paper we are applying data mining techniques and rules.

## VII. CONCLUSION

From the above study we can find the complications, risk factors of gestational diabetes mellitus patient's and also complications of baby. We can predict the threshold level of each data which we are collecting from the gestational diabetes mellitus patient's. In this paper we are using data mining rules to control the risk factors of GDM patient's. With the help of the data mining rules we can reduce risk factors of GDM and also increasing the possibilities of normal delivery with proper food intakes and exercises. And also reducing risk for new born baby with over weighted baby.

## REFERENCES

1. "Diabetes Blue Circle Symbol". International Diabetes Federation. 17 March 2006.
2. "Gestational Diabetes". NIDDK. September 2014. Retrieved 31 July 2016.
3. Donovan, Peter J; McIntyre, H David (1 October 2010). "Drugs for gestational diabetes". Australian Prescriber. 33 (5): 141–144.
4. Takeda Y, Jinbo T. Perinatal committee report: gestational diabetes mellitus (GDM). Acta Obstetrica et Gynaecologica. Japonica. 1995;47:609–610.
5. 1. Fagot-Campagna A, Saaddine JB, Flegal KM, Beckles GL. Diabetes, impaired fasting glucose, and elevated HbA1c in U.S. adolescents: the Third National Health and Nutrition Examination Survey. Diabetes Care 2001;24:834–837. [PubMed: 11347739]
6. Harris MI, Flegal KM, Cowie CC, Eberhardt MS, Goldstein DE, Little RR, Wiedmeyer HM, Byrd-Holt DD. Prevalence of diabetes, impaired fasting glucose, and impaired glucose tolerance in U.S. 1998;21:518–524. [PubMed: 9571335].
7. Rosenbloom AL, Joe JR, Young RS, Winter WE. Emerging epidemic of type 2 diabetes in youth. Diabetes Care 1999;22:345–354. [PubMed: 10333956]
8. Cowie CC, Rust KF, Byrd-Holt DD, Eberhardt MS, Flegal KM, Engelgau MM, Saydah SH, Williams DE, Geiss LS, Gregg EW. Prevalence of diabetes and impaired fasting glucose in adults in the U.S. population: National Health And Nutrition Examination Survey 1999–2002. Diabetes Care 2006;29:1263–1268. [PubMed: 16732006]