1.3.2. Parameter with Dataset (Key Factor)

* Blood Pressure
* Age
* Diabetes Pedigree
* Skin Thickness
* Insulin
* BMI
* Gestational Diabetes
* Glucose Level
* Depression Level
* Prediabetes

### 1.3.2. Relationship of parameters (key factors) between Diabetes Mellitus.

#### Blood Pressure

Most diabetic patients suffer from high blood pressure. Because diabetes damages arteries and affect to make them harden which is called atherosclerosis. It will lead to heart attack, blood vessel damage and kidney failure. Diabetes and high blood pressure have a significant relationship. People with diabetes have a more than 130/80 of blood pressure. Therefore, high blood pressure is a major effect of diabetes.

#### Age

There is an estimate that about 3.7% of people in age between 20-44 and 13.7% of people between age 45-64 years and 26.9% of people in the age of over 65 are suffering from diabetes. The risk of diabetes is it increase as people get older, especially after 45. The reason for that is when people get older, they tend to exercise less and lose muscle mass and gain weight.

#### Diabetes Pedigree

Genetic is one of the main factors which is caused for type 2 diabetes. This means group of genes which is passed down from parents to their children can lead to diabetes. Scientists already have researched about several gene mutations to a higher diabetes risk. Every people who have these mutations will not get diabetes, but they have got a greater chance of developing diabetes if they have those genes.

#### Skin thickness

Diabetes can affect directly to skin thickness. Skin thickness is primarily depending on collagen content and it will be increased in insulin-dependent diabetes and significantly related to duration of diabetes.

#### Insulin

Insulin is a hormone which controls the amount of glucose in bloodstream at any given moment. It also helps to store energy. If body does not make or does not make enough it will lead to diabetes. If someone’s body doesn’t use insulin properly, it also leads to have diabetes. Therefore, diabetes patients suffer from lack of insulin level in their body usually. Some people with diabetes must take insulin therapy to control their blood sugar levels.

#### BMI

People, who are with BMI of 25-29.9(overweight) or BMI of 30-39.9(obesity) or BMI of 40 or greater (sever obesity) have a great risk of developing diabetes. Any increase in BMI above normal level has a relationship with increasing the risk of having complication of diabetes mellitus.

#### Gestational Diabetes

Hyperglycemia first detected at any time during pregnancy should be classified as either gestational diabetes mellitus (GDM) or diabetes mellitus in pregnancy, according to WHO criteria. It is estimated that GDM affects around 7-10% of all pregnancies worldwide. Also, the prevalence of GDM in the antenatal clinics at SJGH is 5.5%.

However, the prevalence is difficult to estimate as rates differ between studies due to prevalence of different risk factors in the population, such as maternal age and BMI.

#### Glucose Level

Fasting blood glucose is a test to determine how much glucose is in a blood sample after an overnight fast. The fasting blood glucose test is commonly used to detect diabetes mellitus. Normally fasting blood glucose (after 10-12 hours) should be less than 100mg/dL. If your fasting blood glucose level is 126 mg/dL or higher you may have diabetes. If your test result is in the 100 mg/dL to 125 mg/dL range, you have impaired fasting glucose and may have prediabetes.

#### Prediabetes

Prediabetes is a serious health condition where blood sugar levels are higher than normal, but not high enough yet to be diagnosed as type 2 diabetes. Prediabetes puts you at increased risk of developing type 2 diabetes, heart disease, and stroke. The global prevalence of IGT was estimated at 7.3% of the adult population in 2017, equivalent to 352.1 million individuals. By 2045 the prevalence is anticipated to increase to 8.3% of the global adult population, equivalent to an estimated 587 million individuals.