INTODUCTION:

Diabetes is the very common word that we hear in our present day to day life. Diabetes has become a great threat to human health all over the world. Diabetes mellitus is a chronic disease which can be caused by abnormal secretion of a hormone- insulin. Pancreas secretes insulin and malfunctioning of pancreas may lead to diabetes. Diabetic patients cannot properly absorb the glucose from the food they eat. Insulin allows glucose to enter into the body cells and use it for energy. Glucose is the source of energy that tissues and organs need to function properly. When cells are resistant or not responding to insulin hormone, glucose cannot be able to enter into the cells which ultimately increases the blood sugar level and thus results in diabetes. Frequent urination, feeling thirsty, increased hunger are some warnings of high blood glucose level.

Statistical results in 2019 shows that 463 million people were living with diabetes worldwide, which will increase to 700 million by 2045 [1]. In our country, recent study by the Union Ministry of Family and Health Welfare published on January 6, 2021 that 9.3 percent senior citizens living in rural areas and 26.1 percent senior citizens living urban areas were diagnosed [2]. Though the number of cases of diabetes is similar between men and women, there is a high prevalence among senior citizens. Statistical results demonstrates that diabetes had a arise from 4.7% to 8.5% from 1980 to 2014 among adults [3]. Diabetes may lead to life threatening complications if blood glucose level stays high for a longer duration. Complications include cardiovascular issues- coronary artery disease chest pain, stroke, high blood pressure, high cholesterol; nerve damage; kidney damage that may lead to kidney failure; eye damage- cataracts, glaucoma; foot damage; skin infections; erectile dysfunction; hearing loss; depression; dementia and also dental problems. These complications may also lead to death. Diabetes resulted in 4.2 million deaths approximately in 2019 [4]. The problem associated is, there is no long term cure, but chances of recovery is greater if early predictions are possible.

Machine Leaning techniques have become very useful in early disease predictions with the advancement in technology. In this work, six different machine learning algorithm namely Logistic Regression, Support Vector Machine, Naïve bayes, Decision Tree, k-Nearest Neighbor and Random Forest are used to predict diabetes. Pima Indians Diabetes data set was experimented in this work. Experimental performance of all the six algorithms are compared and highest accuracy of 100% on training data and 90.74% on testing data for Random Forest (RF) algorithm is achieved which shows the effectiveness of the RF in predicting the disease. The rest of the paper is structured as follows: Section-II describes about related work of various techniques of diabetes prediction, Section-III discusses the proposed work, Section-IV gives the experimental analysis and Section-V determines the conclusion of the work.

REFERENCES:

[1] <https://idf.org/aboutdiabetes/what-is-diabetes/facts-figures.html>

[2] <https://www.downtoearth.org.in/news/health/diabetes-among-senior-citizens-more-prevalent-in-urban-india-lasi-report-75038>

[3] <https://ieeexplore.ieee.org/abstract/document/9076634>

[4] <https://en.wikipedia.org/wiki/Diabetes>