Early Prediction and Prevention of Lifestyle Diseases

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Abstract- Helping people with diabetes early and stopping it from getting worse is really good for them. It can make them live longer and have a better life. It could also save money for society and health-care companies. To deal with the growing problem of diabetes, the International Diabetes Federation brought together a group of experts in 2006 to talk about how to prevent and understand the disease. The main purpose of the workshop and this document was to stop diabetes in both rich and poor countries. The IDF wants to lower the chance of heart problems in people who are more likely to get diabetes. They have a plan to prevent diabetes by managing things that can be changed to lower the risk, and they are focusing on two groups of people: those at high risk and everyone else.
Being motivated to live a healthy lifestyle is important for preventing and managing diabetes. People are motivated by their thoughts, bodies, and surroundings, which scientists have been studying for the last 25 years. In this article, we will look at and think about what we know about what makes people do things and how it relates to their lifestyle. We will pay special attention to people with diabetes or obesity

INTRODUCTION-
Nowadays, people are too busy for their regular checkups. They are very busy with their work and hardly have time to take care of their own health. However, they can only do the analysis if the right app can give them information about the person's overall health. This is because they don't have to set aside separate time for this. Instead, they can use time they already have, like when they're traveling, for example. All you need is a smartphone, which almost everyone has nowadays. This is like a health checker that you can use easily on your phone.
We want to make a tool that can predict the risk of getting diabetes for a whole group of people. This tool can be used with health insurance records and other information from doctor visits. We use machine learning to find replacements for missing variables in a careful way.
We want to find out which risk factors are most important for predicting when someone will get diabetes. Observational studies look at the lives of patients before they are diagnosed with diabetes using data from their medical history and how they use healthcare services. This gives a big picture of what happens before diagnosis. It includes information from 95% of lab tests. We started with a group of 4. 1 million people who were Independence beneficiaries. They were at least 18 years old and signed up for Independence's insurance program between 2005 and 2013.

PROCESSES INVLOVED -

A. EARLY IDENTIFICATION OF THE LIFESTYLE DISEASES:

If you look at how people live nowadays, you'll see that most of the time, they are not living in a healthy way. So it's really important to figure out what diseases you have as soon as possible.

This project accomplishes the goal mentioned earlier. It keeps track of how the person acts over a long time and finds out if they have a sickness based on unusual patterns.

B. PREVENTION OF LIFESTYLE DISEASES:

- The pace program was started to improve people's understanding of diabetes. It had four parts.
- A campaign to share knowledge with the public including lectures and programs;
- 164 "PACE Education Counters" opened at various bookstores, grocery stores, pharmacies, and clinics in Chennai, providing free diabetes education;
- Communication programs, including a documentary on diabetes and regular publication of information through various media channels; and
- Training for experts in diabetes management and prevention.

C. MANAGEMENT OF LIFESTYLE DISEASES:

Taking care of yourself means doing things like eating healthy, staying active, taking your medication, giving yourself insulin shots, checking your blood sugar, and adjusting your insulin dose. Lifestyle medicine is a way to manage long-term illnesses like diabetes. The rules for how to take care of yourself when you have diabetes say that people with diabetes need to learn how to take care of themselves by gaining knowledge, skills, and abilities. It's important to get education and support to help manage diabetes. Controlling diabetes is improved by using self-care techniques. DSME needs to be personalized to fit the individual's needs and consider their personal traits, like medical history, age, health beliefs, and attitudes, knowledge about diabetes, physical capabilities, support from family and financial situation. Also, healthcare providers should focus on cultural beliefs in programs for taking care of oneself.

Taking care of yourself includes things like eating healthy, exercising, taking your medication when you're supposed to, giving yourself insulin shots, checking your blood sugar levels, and adjusting your insulin dose. Lifestyle medicine is a way to manage chronic diseases like diabetes. The national rules for diabetes self-care education support the process of learning how to manage diabetes by yourself. It is meant to help you gain the knowledge, skills, and abilities needed to successfully take care of your diabetes.
Taking care of yourself is really important if you have diabetes. It helps to keep your blood sugar levels in check, makes your life better, and lowers your chances of getting sick or ending up in the hospital. Taking care of yourself is important to control your blood sugar and stop diseases from getting worse. Intervention programs that help people feel more in control of their health can also help them make big improvements in how they eat and keep track of their blood sugar levels. Empowering people helps them understand more and builds trust and open communication between patients and healthcare providers. This will help people with diabetes feel more confident and take better care of themselves. They can be more involved in making decisions about their health and improve their well- being.

WORK PLAN-

- The client needs to sign up and fill the information asked after accepting the information, it'll prepare it and examine it.
- After examining it'll appear the client the Probabilities for different way of life infections (in this app,
cancer, weight, type-II diabetes, hypertension, asthma, heart illness.) that the person may have.
- It'll alarm the client allude to">to refer to the specialist in case of serious side effects.
- In case of least or no indications, it'll recommend the fitting preventive measures to client.
- Afterward on, the client can moreover overhaul the data in like manner.

CONCEPT USED-

In this project we're building a Machine Learning system that can predict if a person is diabetic or non-diabetic using one of the important algorithm support vector machine (coding in Python).

- Support Vector Machine:

Support Vector Machine is an important algorithm of supervised learning algorithms. Here, the data is being fed to Machine Learning Model and Machine Learning Model learns from the data fed and its labels (Pregnancies, Glucose, Blood Pressure, Skin Thickness, Insulin, BMI, Diabetes Pedigree Function, Age, Outcome) with Medical information and person id Diabetic or Non-Diabetic.

Support Vector Machine tries to plot the data in a graph and once it plots the graph it tries to find the hyper plane as shown in the image 1.0. The hyper plane separates 2 data. Once the new data is fed it tries to put the data either of 2 groups by this it can predict if the person is diabetic or non-diabetic.

- Diabetes Data:

A Data set is required to train and test the model. Here, the data set consists of 9 labels namely Pregnancies, Glucose, Blood Pressure, Skin Thickness, Insulin, BMI, Diabetes Pedigree

Support Vector Machine

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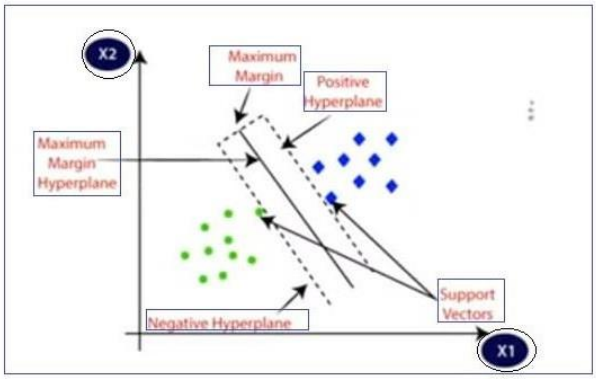

DATA CLEANING-

Data cleaning is one of the most important steps to be taken after the extraction of dataset. The process of checking the right data types under the right category of the variables is known as Data cleaning. With respect to this model, the data type of Pregnancies variable must be of integer type, so it must be ensured that all the values entered under the Pregnancy variable is if integer type.

It holds the similar for the blood pressure that it should be of float type Gender can suitably be considered of string type Age can be of float type.

So, in this way, variables need to be checked for the data type. After this, one should the summary of the variables of how many variables are of categorical type and how many are of numerical type

DATA PROCESSING-

When we try to analyses the data given won't be very suitable to feed the machine learning model and we need to standardize the data to do the same. As this medical data has a lot of attributes and labels we need to standardize the data and keep it in the same range.

Train test split:

Split the data into Training and testing data .Train the Machine Learning model with Training data and then we try to find accuracy score of the model with the help of testing data, this tells us how well our model is performing. Once the data is split we feed the data to Support Vector Machine Model.

Support Vector Machine Model:

The model classifies weather the patient id diabetic or non-diabetic. Once the model is trained we get Trained Support Vector Machine Classifier. Now we feed new data to Trained Support Vector Machine Classifier which can predict the patient is Diabetic or non- diabetic.

IMPACT AND FUTURE SCOPE-

In our project we have tried to help the user to overcome the lifestyle disease like diabetes which is itself a big
threat to humans, will increase awareness about diabetes and will help people remain healthy which is of utmost importance in today's fast-growing world, also changing the lifestyle of people for the good and give clarity about the health of a person or his current status.

In this fast growing world where Machine Learning is almost everybody's necessity and time is the most precious this application helps everybody keep track of their health with very less efforts.

CONCLUSION -

The research on the diabetes prediction have shown that we can use the concept of Machine learning in this project very efficiently. MVC is highly used in this project. The fatality and suffering rate of people can be drastically reduced by applications like these.

REFERENCES-

Prediction of diabetes based on personal lifestyle indicators

MB Malik Early Prediction and Prevention of Lifestyle Diseases