

Chapter 12

Intelligent Establishment of Correlation of TTH and Diabetes Mellitus on Subject's Physical Characteristics: MMBD* and ML Perspective in Healthcare

AQ1

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Abstract

Diabetes is a chronic disease and the major types of diabetes are type 1 and type 2. On aging, people with diabetes tend to have long-term problems in hypertension, coronary artery disease, obesity, and nerves. Given the increasing number of complications in recent years, by 2040, 624 million people will have diabetes worldwide and 1 in 8 adults will have diabetes in the future. Machine learning (ML) is evolving rapidly, many aspects of medical learning use ML. In this study, tension-type headaches (TTH) were associated with diabetes using SPSS, Pearson correlation, and ANOVA tests. Data were collected from Delhi NCR Hospital. It contains 30 diabetic subjects. The purpose of this study was to correlate diabetes analysis from TTH and other diseases using the latest technologies to analyze the Internet of Things and Big Data and Stress Correlation (TTH) on human health. The authors used Pearson correlation to correlate study variables and see if there was any effect between them. There was an important relationship between the percent variable, the total number of individuals, the number of individuals, and the minimum variable. The age (field) of the number of individuals to one of the total number of individuals showed a strong correlation (1.000) with a significant value of p (1.000). Overall, cases of TTH increased with age in men and do not follow the pattern of change in diabetes with age, but in cases of TTH, patterns of headaches such as diabetes increase to age 60 and then tend to decrease.

* Multi Media Big Data (MMBD)

Keywords: Diabetes mellitus; tension-type headaches (TTH); coronary artery disease (CAD); Big Data (BD) and Internet of Things (IoT) in healthcare; artificial intelligence, machine intelligence in healthcare; deep learning

Introduction

Diabetes Mellitus

Diabetes is a kind of problem which occurs due to an increase in sugar level in our body. This problem increases with age. That is why it is mainly seen in old people. The main cause of diabetes is taking a high amount of sugar regularly. Then if we neglect this problem, it will cause serious damage to the body. So for the prevention of this problem, we should have proper knowledge of diabetes and various preventive practices we can do cure this problem. Diabetes mellitus is also known as diabetes. In diabetes, there are two situations where the body cannot produce enough insulin or we cannot use the insulin our body produces. There are different types of diabetes.

Type 1 diabetes (T1D): In T1D, the immune system attacks and destroys the pancreas cells that make insulin.

Type 2 diabetes (T2D): In T2D, our body either doesn't produce enough insulin, or it resists insulin, hence blood sugar increase.

Prediabetes: In prediabetes, blood sugar levels are above the normal level.

Gestational diabetes: In gestational diabetes, high sugar level is observed in pregnancy (Rachel Nall, 2018).

Stress

Stress is a medical condition in which an individual thinks too much for a particular problem which leads to stress. This type of problem is mainly seen in youngsters as this is the age where there are many ups and downs in teenage life. They come across various new things which they had never seen before. They had not the proper knowledge about the stress, so they become the victim of it. So it is very important to know about stress and various methods to overcome it (Satya et al., 2019).

The main cause of stress is due to finance, work, relationship, and various other situations. Stress not only has disadvantages but also has some advantages. Stress leads the body to be prepared for the competition. It is obvious that when we have stress on some competition then our body will work thoroughly and practice until we will prepare well for the competition. If someone is overstressed then the best method to overcome stress is doing Yoga and Pranayamas. Yoga relaxes our body and provides calmness to the body. Pranayamas makes us physically and mentally active (Satya et al., 2019).

Migraine

A migraine is a type of pain resulting in only one side of the head. Migraine can last from hours to days and result in serious problems and interfaces with the

daily routine. Therefore, it is necessary to know about the symptoms and how we can cure this problem (Shah & Dipesh, 2017).

Causes. The main cause of migraine is drinking. Drinks, especially wine and too much caffeine, are also the main cause of migraine. Stress at work or home can also cause this problem. Getting too much sleep is or getting too less sleep both is harmful and causes migraine. The change in weather can also cause migraines.

Tension-type Headaches (TTH)

Today, TTH are the most common type of headaches found in people. Various causes of TTH cause mild headaches on the back and head of the eyes. They can be observed once or twice a month (Chaturvedi et al., 2018b) and (Rastogi, Chaturvedi, Satya, Arora, Yadav et al., 2018).

Causes of TTH. A headache is a type of tension that can be caused by different types of foods, activities, and so on. The major causes of headaches types are smoking, eye strain, fatigue, alcohol, cold or flu, dry eye, caffeine and sinus infections.

Symptoms of TTH. Symptoms of TTH include pressure around the forehead, dull headaches, tenderness, and scalp. TTH pain is usually moderate, but sometimes it can be severe, depending on the duration of the headache you are facing (Chauhan et al., 2018d; Rastogi, Chaturvedi, Satya, & Arora, 2018).

This various study shows that in different countries episodic TTH and chronic TTH are experienced by the people whether it is man or women. Around 71% and 3% of people in Denmark, 39% and 2.5% in Germany, and around 38.3% and 2.2% are suffering by this episodic TTH and chronic TTH, respectively (Chauhan et al., 2018d).

Treatment: Massaging scalp, temples, or bottom of your neck can help to relieve pain in a headache. Over the countries, painkillers such as ibuprofen, aspirin, paracetamol, and naproxen are mostly used by patients suffering from TTH. These painkillers are used when the condition of headache becomes uncontrollable and interferes with your physical activities. However, the treatment of TTH can vary according to the symptoms and triggers causing it (Chauhan et al., 2018d).

Obesity

Obesity is defined as the disease which takes place when there is excess fat in our body. When the body burns more calories than it burns, excess fat is consumed and stored in the body, leading to obesity. Obesity is a long-term condition that can cause problems such as high blood pressure and diabetes. Obesity can also be checked by evaluating the distribution of fat in our body. Therefore, there are two types to determine the risk of obesity-related health problems. The first type is body fat distributed around the waist and the second type is fat distributed on the waist and thighs. The main causes of obesity are overeating and sedentary habits and not exercising regularly (Brazier, 2018).

Coronary Artery Disease (CAD)

If the coronary arteries are too narrow, cardiovascular disease or CAD can occur. Coronary arteries are blood vessels that carry oxygen and blood to the heart and cause cholesterol in the walls of the arteries. These plaques can cause arterial occlusion and reduce blood flow to the heart. Thrombosis can disrupt blood flow and cause serious health problems. The coronary arteries form arteries on the surface of the heart where oxygen is supplied. The complication of CAD on the human heart have been studied much (Apollo Hospitals & Others, 2019). If these arteries are narrow, the heart may not be supplied with oxygen-rich blood, especially during physical activity. Sometimes cardiovascular disease causes heart attack (Nordqvist, 2019).

Symptoms. A type of chest pain is associated with heart disease. Angina can cause the following emotions in the chest:

- push
- pressure
- weight.

Angina can also cause the following symptoms:

- Indigestion
- heartburn
- weakness.

Treatment. There is no cure for CAD. However, there are several ways to manage things. Treatment includes lifestyle changes such as healthy eating, quitting smoking, and regular exercise. But some people need medicine and treatment.

Healthcare: The doctor talks about medicine. There are various drugs for this medicine treatment of cardiovascular disease.

The following are drugs that people can use to reduce the risk and impact of CAD.

Beta-blockers: Doctors can use beta-blockers to lower blood pressure and heart rate, especially for those who have had a heart attack before. This can increase arteries' hypertension and chest pain (Nordqvist, 2019).

The Cases When to See a Doctor

Headaches can indicate up and down blood sugar levels that can occur without complications from life-threatening side effects. Therefore, patients with frequent headaches should consult a physician. It is very important to contact your doctor after it becomes clear.

- Headaches can seriously affect everyday life.
- Blood sugar does not return to the required level.
- Severe or persistent symptoms with headache (Rastogi, Chaturvedi, Satya, & Arora, 2018; Rastogi, Chaturvedi, Satya, Arora, Yadav et al., 2018).

These are free computer system features that use various devices include notes (licenses and licenses) (Jiang et al., 2017; Panch, Szolovits, & Atun, 2018).

AI in Healthcare

The goal of AI is to mimic human cognitive functions. As per the rapid global paradigm shift of artificial medicine, access to medical data analysis is also changing in same pace. We review the current situation of AI in healthcare and discuss about its future. AI can be applied to various types of medical data (structured and unstructured). Common AI technologies include traditional machine learning (ML) techniques for structural data, such as backup devices and neural networks, advanced deep learning and natural language processing of raw data. Key areas of disease that use AI tools include cancer, neurology, and heart disease (Jiang et al., 2017).

Machine Learning

ML is an AI application that allows systems to automate their learning and development experience without explicit planning. ML is about developing computer programs that can access and learn data (Panch et al., 2018).

ML in Healthcare

Medical ML has recently developed a new technology developed by Google ML algorithms to help identify cancerous tumors in mammography. Stanford uses a deep learning algorithm to diagnose skin cancer. A recent article reported the results of a detailed ML algorithm that could detect diabetic retinopathy in retinal images. ML points to another need for clinical decision-making. However, ML is better than other different processes. It is also suitable for people with large image data sets such as radiology, cardiology, and pathology. In ML, inspecting images, identifying anomalies, and identifying areas of interest can improve the accuracy. In the long run, ML is beneficial for beds and doctors. ML can provide objective feedback to improve efficiency, reliability, and accuracy (Magoulas & Prentza, 2001).

Big Data (BD)

BD is a collection of structured, semi-structured, and unstructured data, which can extract information and be used in ML projects. BD also contains a variety of data, including structured data from SQL databases and data warehouses, unstructured data, and semi-structured data such as web server files and data streams. BD applications comprise multiple simultaneous data sources that cannot be integrated. For example, a BD analysis project can measure the success and sales of future products (Murdoch & Detsky, 2013).

Applications of BD in Healthcare

BD is very useful in the medical industry. For the past decade, electronic health records have been widely adopted by hospitals and clinics around the world. You

can use this data to discover important clinical knowledge and better understand patient disease patterns. This improves patient care and efficiency. BD offers targeted programs such as medical data solutions, cancer prevention, and patient vitamin monitoring. Most important application of BD is prevention in cheating (Murdoch & Detsky, 2013).

Internet of Things (IoT)

An IoT is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers, which transfer data over a network without human interaction. It has the ability to send information via computer (Baker, Xiang, & Atkinson, 2017).

IoT in Healthcare

The medical industry is very disappointed. Healthcare costs are lower than ever, the world's population is aging and the number of chronic diseases is increasing. Medical diagnoses consume most of the hospital bill. This technology can transfer medical examinations from the hospital to the patient's home. Correct diagnosis also reduces the need for hospitalization. The new paradigm, known as IoT, has broad applications in many areas, including healthcare. Greater use of this paradigm in health care is a mutual hope, as health centers function more efficiently and patients receive better care. This technology-based medical approach has the unique advantage of improving the quality and effectiveness of treatment and thereby improving patient health (Baker et al., 2017).

Role of Technology in Addressing the Problem of Integration of Healthcare System

Information and communication technology offers the opportunity to revolutionize healthcare. Technology-based healthcare coordination and healthcare systems, including web, mobile, measurement, computing, and bioinformatics technologies, offer great potential to enable a whole new model of healthcare both at home and abroad. They provide a formal care system and have the opportunity to have a major impact on public health. Increasingly, decision support tools are being built to help people better understand access and make decisions about treatment.

The integration of behavioral healthcare into a care center that largely manages physical health has great expectations for improving care coordination, quality, and impact, but it also creates scenarios that physicians must now overcome. The limits may not feel the expertise, time, or resources that affect the client's behavioral health.

Technology offers a great opportunity to promote integrated care. Using scientific-based approach, a technology-based care system on promoting health the behavior can simultaneously address a variety of chronic illnesses and health

issues in a way that best meets the needs of each patient. In this way, technology reduces the quiet and dedicated care of illnesses and provides countless opportunities for tailors to monitor them and provide intervention to each individual in response to therapeutic that changes over (Marsch & Gustafson, 2013).

Literature Survey/Previous Findings

According to Zou et al. (2018), diabetes is a chronic disease common in hyperglycemia.

They have revealed their study in decision trees, random forests, and neural networks to predict diabetes. The data set is a physical examination data set from a hospital in Leizhou, China. It includes 14 features. In this study, the model was explored using five-fold cross-validation. To validate the global applicability of the method, they selected the best method for independent laboratory experiments.

They found the results using only fasting glucose performed better with Lu data. In short, fasting glucose is the most important indicator of prediction, but accurate prediction requires more markers because fasting glucose alone is not optimal. Furthermore, they have compared the results of the three classifications that shows there is no significant. Decision trees and neural networks outperform others in some ways.

According to him, it is impossible to predict the type of diabetes, so in the future, he will try to predict the type of diabetes and determine the percentage of indicators that can improve the accuracy of predicting diabetes (Zou et al., 2018).

According to Perini et al. (2019), interpersonal stress and perception are clinically and clinically recognized.

Sensitive non-suicidal trauma factor (NSSI) and self-harm can lead to emotional and social adjustment. The following approach was used in a case-control study of three patients (adult women with N381 and 30 women during diagnostic imaging using functional magnetic resonance imaging).

They also assessed the psychological impact of social interactions. They have achieved results and the NSSI Group has shown a negative bias in dealing with social feedback from others. Multiple voxel pattern analysis (MVPA) identifies brain regions that include highly classified NSSI individuals and groups. Areas of interaction that contribute to classification include the posterior and anterior cingulate and the anterior subcutaneous cortex, areas of emotional control.

According to the N831 group, some voxel classification scores are associated with sensitivity to negative feedback from others. Drug squeal, symptoms of depression, and symptoms of borderline personality disorder are still important. They found that this study reflected the neurotic and behavioral characteristics of adolescents with NSSI in social interactions in a simulated media environment. These examples underscore the importance of understanding social information processing in this clinical population and could potentially guide therapeutic approaches (Perini et al., 2019).

Chérrez-Ojeda et al. (2018) have revealed the purpose of this study. The purpose was to assess the frequency and preference patterns of Information and Communication Technology (ICT) use in diabetic patients in Ecuador.

They used the following method in which a type 2 anonymous cross-sectional study was performed. A Chi-square test was used for correlation and regression analysis. They found the result. SMS was the most common information and communication technology. Some patients use the Internet to get diabetes information. SMS and e-mail have been identified as the most useful information and communication technologies to receive information about diabetes and to contact a doctor.

According to Chérrez-Ojeda, patients were interested in receiving information about diabetes and physicians via the WhatsApp. People with an educational background and a short history of diabetes use this form. Understanding the ICT preferences of diabetics can help you develop programs tailored to your specific needs. With the widespread use of information and communication technology, doctors and patients offer new relationships to communicate and improve communication channels in two ways (Chérrez-Ojeda et al., 2018).

Their study showed that a new traditional health education tool, called DCM, was effective in improving diabetes management self-efficacy (DMSE) and diabetes distress (DD) in low-income diabetics (Qasim et al., 2019).

According to Qasim et al. (2019), this protocol will evaluate studies of the efficacy of DCM compared to routine care in improving DMSE, reducing glycated hemoglobin Dllmid (HbA1c) in T2DM patients. These are randomized controlled trials conducted at the Dnjnjers National Endocrine Laboratory in Karachi, Pakistan. A sample of large middle-aged T2DM patients with diabetes control will be evaluated with eligibility criteria and DD screening tools. Patients who meet the eligibility criteria and have diabetes are included in the intervention and control groups. Multivariate linear regression is performed to adjust for possible variances.

According to a Chinese study, diabetics trained in DCM significantly reduced their diabetes scores and empowerment after six months of regular counseling. Thus, a cross-sectional study in Pakistan shows that DCM-based education can help improve the knowledge, attitudes, and performance of T2DM patients. Additionally, no other studies have evaluated the effectiveness of these new tools in DMSE and diabetes pain in well-designed clinical trials (Qasim et al., 2019).

Adu, Malabu, Malau-Aduli, and Malau-Aduli (2019) said that the purpose of this study was to identify a general gap between diabetes self-management skills and self-efficacy and explore other factors affecting diabetes self-management. Get better treatment results with self-management training and support for diabetics.

They described the methods used to conduct online surveys and international telephone interviews with T1D or T2D adults. The study asked about self-management skills and self-efficacy in diabetes and interviews evaluated other factors and barriers to self-management in diabetes. This study was performed using descriptive and inferential statistics. The interview was conducted using an

inductive theme analysis. Special gaps in diabetes self-management skills include the ability to detect and manage the effects of stress on diabetes, to plan for hypoglycemia and to interpret levels of hyperglycemic patterns. Self-efficacy was minimal when faced with stress, adjusting drugs to achieve ideal blood sugar levels and taking nutrients. Sixteen participants were interviewed.

Overall, advances in education using technology devices, including mobile applications, are highlighted as self-regulators of diabetes and can be identified as interventions to reduce the gaps identified in diabetes. It is self-managed. Additionally, strengthening diabetes self-management requires an improved approach to addressing the financial burden, work, environmental factors, and pain of diabetes (Adu et al., 2019).

Our Experiment Results, Interpretation and Discussion

Experimental Setup

The selected subjects from a health insurance company had diabetes who did not know their personal information (P1) or confidential personal information (SP1) by law. Samples such as S1, S2 are assigned to individuals to identify individual cases. We collected this BD and investigated people. We have studied their stress levels and have helped them cure it. In this chapter, we did our best to analyze diabetes such as stress headaches. Samples of test data and medical reports are collected for the following specifications:

- Gender
- Age
- Diabetes Type

Sample include the subject on insulin, having obesity, CAD, hypertension, and subject suffering from TTH. Our target area is the type of TTH/migraine parameter. This study focuses on the role of diabetes personality in TTH and strange possibilities. Some patterns can expose you to stress headaches.

About the Study and Analysis

The complete analysis is performed by the SPSS software. The statistic level for Windows IBM SPSS statistics, version 26.0, and validated queues was $p < 0.05$. Correlation is significant at the 0.01 level (two-tailed). We used Pearson correlation to correlate study variables and see if there was any effect between them. As shown in the correlation table, there is an important relationship between the variables; the total number of subjects, the number of individuals and the smallest variable. The age (field) of the number of individuals to one of the total number of individuals showed a strong correlation (1.000) with a significant value of p (1.000). This means that the greater the problem with TTH, the more directly related it is to diabetes, which is at least 1% of the total number of people. Age showed a negative correlation (-0.55) and a significant p -value (0.917).

Results and Discussion

Age Group and Gender Distribution

The distribution of gender is across the ages. On analyzing the frequency stacked columnar graph, it can be easily seen that females of age group 25–60 are the highest in frequency in the collected sample. On studying articles related to diabetes, it can be said that the possible cause can be the pregnancy in females, irregular sleeping, and daily habits, etc. (Fig. 1, Tables 1 and 2).

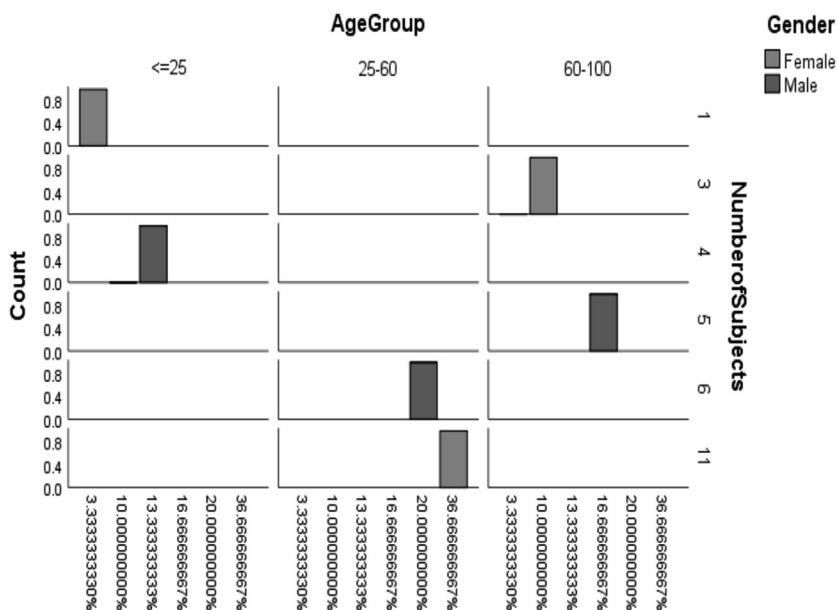


Fig. 1. Age Group and Gender Distribution in the Sample.

Table 1. Age Group Distribution in the Sample.

Age Group	Gender	Min. Age	% of Total Number of Subjects	Frequency
<=25	Male	15	13.333333333%	4
<=25	Female	18	3.333333333%	1
25–60	Male	34	20%	6
25–60	Female	32	36.666666667%	11
60–100	Male	65	16.666666667%	5
60–100	Female	62	10%	3

Table 2. Correlations (Age Group and Gender).

		Min. Age	% of Total Number of Subjects	Number of Subjects
Min. Age	Pearson correlation	1	0.041	0.041
	Sig. (two-tailed)		0.938	0.938
	<i>N</i>	6	6	6
% of Total Number of Subjects	Pearson correlation	0.041	1	1.000 **
	Sig. (two-tailed)	0.938		0.000
	<i>N</i>	6	6	6
Number of Subjects	Pearson correlation	0.041	1.000**	1
	Sig. (two-tailed)	0.938	0.000	
	<i>N</i>	6	6	6

Diabetes and Insulin Consumption

In T1D, external insulin consumption is a must. It is due to the fact because the body of the subject either stopped insulin production or producing very less insulin so external consumption of insulin is a must. It can be by birth or hereditary.

In T2D, it can be seen in the stacked bar chart that the sample contains 76% of T2D subject which consumes insulin that means subject either not focusing on alternates of insulin-like correcting lifestyle, food habits, etc. or the case is so worsened that body is now dependent on external insulin (Fig. 2, Table 3).

It can be seen clearly that the in T1D category, the male is having 80% of total T1D subjects that are indicating that males are more prone to hereditary diabetes transfer as compare to females. Since the sample size is less, so to conclude it into the final remark one should study sample size for T1D patients. This fact is supported by the data when we look deeper into the details then we found that even in T1D the case the only female subject is of middle age while all male subjects are below 25 years of age group.

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In T2D category, female seems to dominate by 16% that indicates females are having more bad habits for food, lifestyle, etc. When we look into the insight of gender with age group distribution, it has been found that in every age group females are dominating.

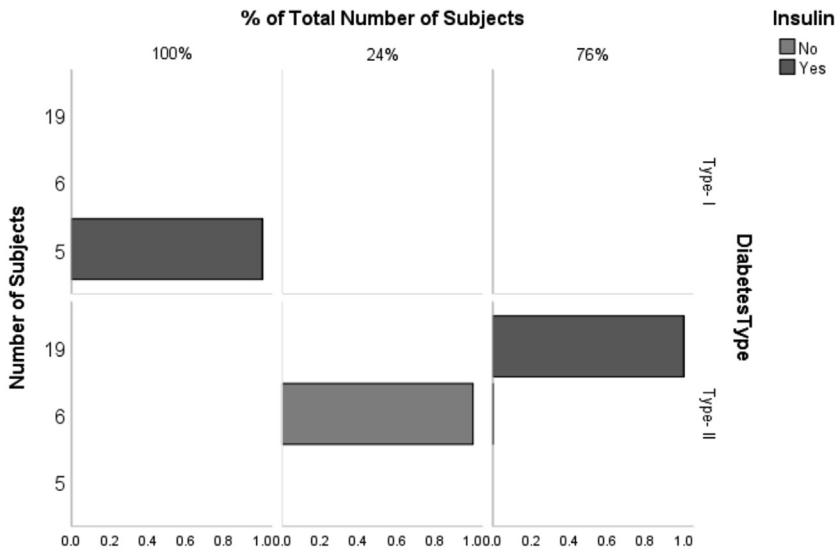


Fig. 2. Diabetes and Insulin Consumption group as Per T1D and T2D Subjects.

Table 3. Correlations (Diabetes and Insulin Consumption).

		% of Total Number of Subjects	Number of Subjects
% of Total Number of Subjects	Pearson correlation	1	0.145
	Sig. (two-tailed)		0.907
	<i>N</i>	3	3
Number of Subjects	Pearson correlation	0.145	1
	Sig. (two-tailed)	0.907	
	<i>N</i>	3	3

An interesting observation in both these graphs shows that none of our female subjects having diabetes is below 25 years, that is, early age diabetes cases are very less comparative to males subjected to the case sampling should not be impacted for age group gender biasing.

Analysis of the distribution of this ratio in gender showed that men are more likely to have a headache than women. In all, 25% of men have more headaches than women. After examining the data in detail and controversial, men are working exemplars, while women are less active, which may lead to work stress that could lead to headaches (Fig. 4, Table 5).

Overall, age groups are plotted in gender and number of cases with TTH unclassified stacked column charts. We can see that stress headaches cases are

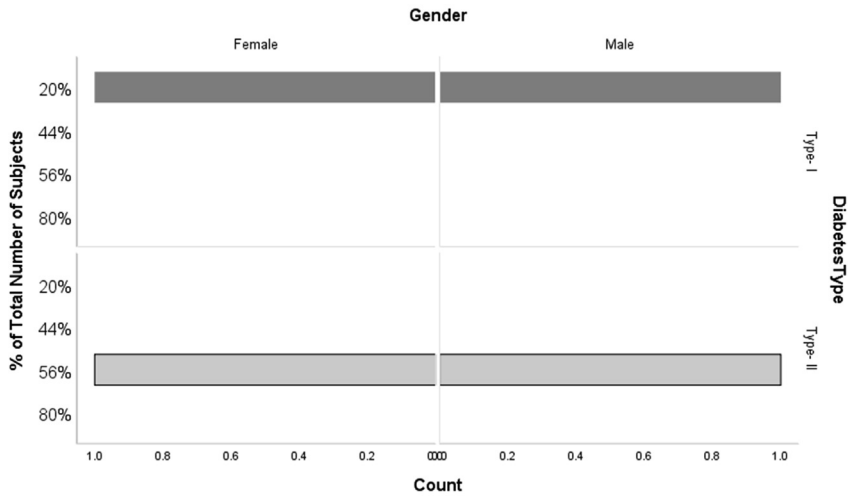


Fig. 3. Diabetes Type and Gender – Distribution as Per T1D and T2D in the Sample.

Table 4. Correlations (Diabetes Type and Gender).

		% of Total Number of Subjects	Number of Subjects
% of Total Number of Subjects	Pearson correlation	1	0.239
	Sig. (two-tailed)		0.761
	<i>N</i>	4	4
Number of Subjects	Pearson correlation	0.239	1
	Sig. (two-tailed)	0.761	
	<i>N</i>	4	4

much less common in men under but increase dramatically at age 60 (Fig. 5, Table 6).

Also, for women, the tendency to increase TTH by age 60 is greater than others. This is consistent with the overall pattern of changing the theme of diabetes by age group. To visualize this pattern in detail, see Fig. 6; Fig. 5 is only for people with headaches types. As a result, cases of tension headaches increased with age in men and do not follow the pattern of change in diabetes with age, whereas, in tension women, the pattern of headaches is the same as diabetes and increases up to 60 years and then tends to decrease (Fig. 6, Table 7).

To gain more insight and understand the role of T2D in the development of tension headaches, the stacking relationship between diabetes type and TTH has been drawn and T1D is almost the same in stress type. It has been observed to

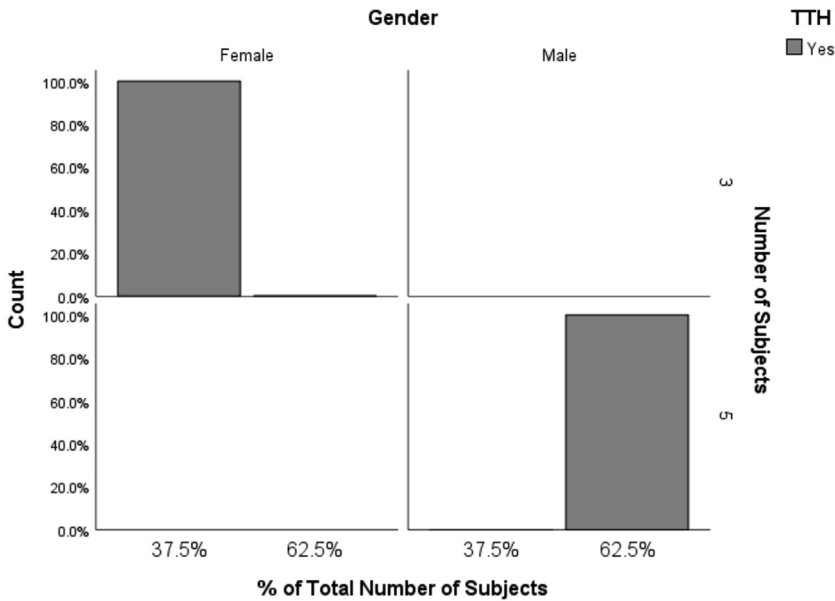


Fig. 4. Tension-type Headaches and Gender Distribution in the Sample.

Table 5. Correlations (TTH and Gender).

		% of Total Number of Subjects	Number of Subjects
% of Total Number of Subjects	Pearson correlation	1	1.000 **
	Sig. (two-tailed)		.
	N	2	2
Number of Subjects	Pearson correlation	1.000**	1
	Sig. (two-tailed)	.	
	N	2	2

play no role. Headaches, in other words, people with T1D have been reported to have very low tension headaches. This is justified because the people in T1D are younger. Therefore, you may be able to cope with stressful situations or fall into a major stress-free state that can lead to headaches (Fig. 7, Tables 8 and 9).

A Novelty in Our Work

The Internet communicates, interacts, and identifies anytime, anywhere, making life more difficult and easier. This is one of the trends and innovations in recent technological advances. IoT-based solutions are exploding in many areas,

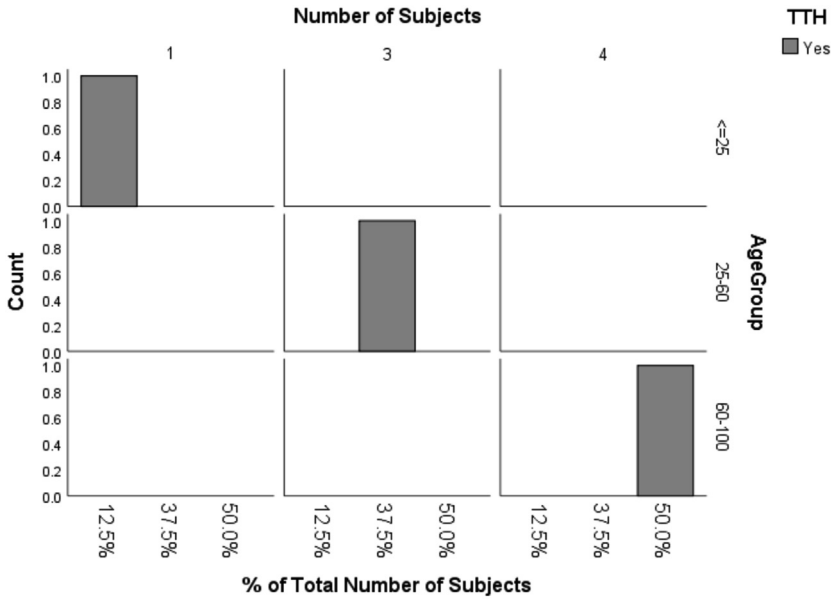


Fig. 5. Tension-type Headaches and Age Group Distribution in the Sample.

Table 6. Correlations (Tension-type Headaches and Age Group).

		% of Total Number of Subjects	Number of Subjects
% of Total Number of Subjects	Pearson correlation	1	1.000 **
	Sig. (two-tailed)		0.000
	<i>N</i>	3	3
Number of Subjects	Pearson correlation	1.000 **	1
	Sig. (two-tailed)	0.000	
	<i>N</i>	3	3

including cloud computing, connectivity, and data-intensive healthcare systems. There are many ML techniques used to analyze sensor data from health systems. These techniques can help improve medical staff, monitor healthcare, and create systems more accurately.

Future Scope, Possible Applications, and Limitations

The sample analysis showed that the sample had no sexual orientation. It can be used to analyze large sample sizes in the future. You can easily change topics other than those mentioned, such as obesity, cancer, heart attack, and the use of

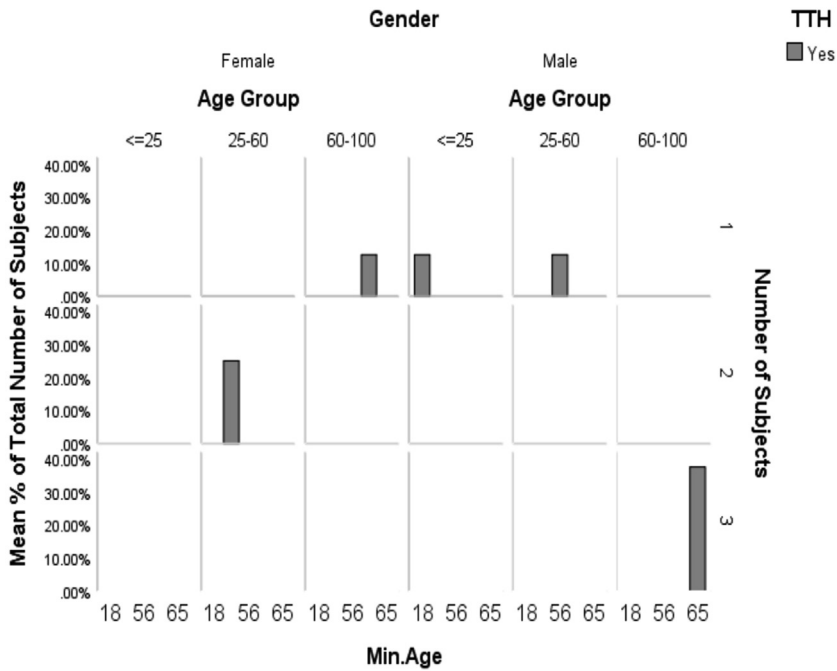


Fig 6. Age Group, Gender, and Tension-type Headaches Distribution in the Sample.

Table 7. Correlations (Age Group, Gender, and Tension-type Headaches).

		Min. Age	% of Total Number of Subjects	Number of Subjects
Min. Age	Pearson correlation	1	0.334	0.334
	Sig. (two-tailed)		0.583	0.583
	<i>N</i>	5	5	5
% of Total Number of Subjects	Pearson correlation	0.334	1	1.000 **
	Sig. (two-tailed)	0.583		0.000
	<i>N</i>	5	5	5
Number of Subjects	Pearson correlation	0.334	1.000 **	1
	Sig. (two-tailed)	0.583	0.000	
	<i>N</i>	5	5	5

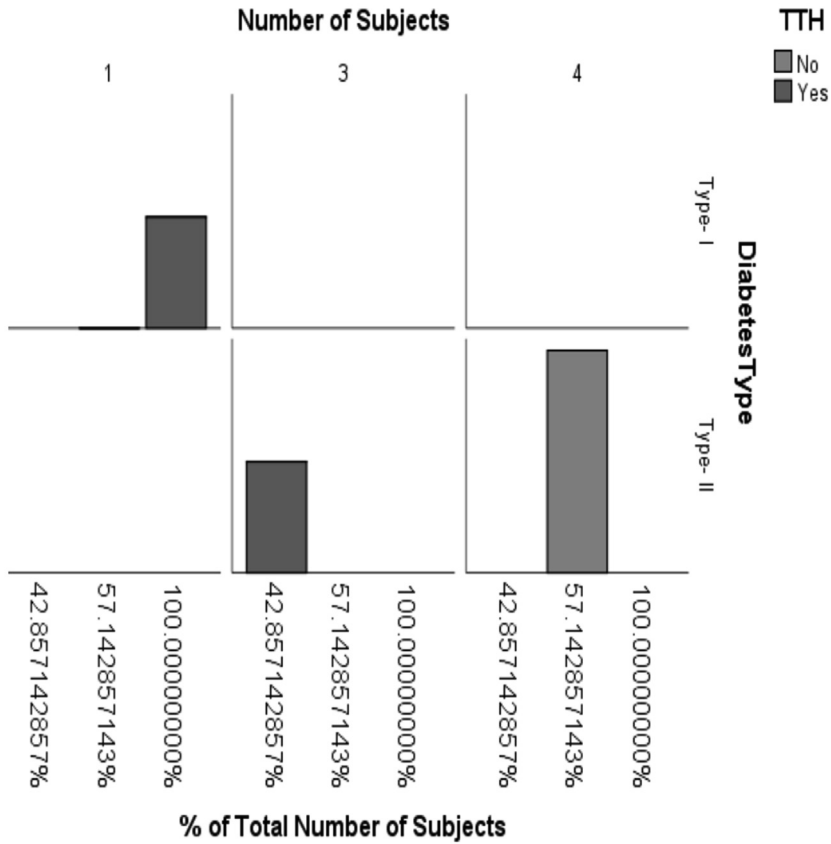


Fig. 7. Tension-type Headaches and Diabetes Distribution in the Sample.

Table 8. XXXX.

Diabetes Type	Tension-Type Headaches	% of Total Number of Subjects	% of Total Number of Subjects Within Each Diabetic Type	Number of Subjects
T1D	Yes	3.333333333%	20%	1
T1D	No	13.333333333%	80%	4
T2D	Yes	23.333333333%	28%	7
T2D	No	60%	72%	18

Table 9. Correlations (Tension-type Headaches and Diabetes).

		% of Total Number of Subjects	Number of Subjects
% of Total Number of Subjects	Pearson correlation	1	1.000 **
	Sig. (two-tailed)		0.000
	<i>N</i>	3	3
Number of Subjects	Pearson correlation	1.000**	1
	Sig. (two-tailed)	0.000	
	<i>N</i>	3	3

carpets per hour in large collections. Because the sample size is smaller than the conclusion, it is important to study a large sample of T1D patients living in different areas.

With the help of technology, you need to create a system for the creation and analysis of large-scale diabetes data and predict possible risks. Predictive analytics is the process of integrating various data mining techniques, ML, and statistical algorithms that integrate current and historical data sets to gain insight and predict future risks.

Symptom care systems may be due to low or high blood sugar, low blood sugar, or poor recognition of dehydration. When checking your blood glucose, if the symptoms do not match the reading system, or if you think the reading is incorrect, make sure that your blood glucose is set to glucose. This study does not include pregnant women, dialysis patients, or cancer patients.

Recommendations and Consideration

The author sought to include age, gender, insulin factor and its relationship to diabetes. Finally, the Tension Type Headaches (TTH) and cases of Coronary Artery Heart Diseases(CAD) in males with respect to age were found varying and diabetic pattern was lacking in them. But at the same time, same TTH and CAD in females was found with presence of diabetic rate which was increasing till age of 60 then it was declining. The number of cases of stress headaches in men younger than 60 years is found to be small but increases dramatically with age. There is also a direct link between stress-type headaches and age-related CAD. Design goals include a comprehensive analysis of the overall health of the patient's ecosystem. This system not only provides accurate and timely results but also provides useful diagnostic recommendations, as well as predicting possible medical disorders.

Conclusions

The current analysis collected a sample of 30 Indian random individuals and examined them under various medical parameters. These people had diabetes and

various other symptoms were recorded. We examined whether other diabetes was also likely. Patients with T1D and T2D were studied, with and without insulin taking part in the study.

The results show that other diseases, including obesity, hypertension, and CAD, are correlated with stress headaches and are direct predictors of these problems later in life. Age and gender parameters were also considered and detention analysis was performed accordingly. In the collected statistical samples, 31.58% of people suffer from tension headaches and CAD. This is important because one in four diabetics suffers from tension headaches – CAD. Diabetic patients commonly report stress-induced headaches and mental retardation due to problems such as diabetes.

In conclusion, TTH-men can increase the number of cases of CAD with age and follow the pattern of change in diabetes with age, but with female-type tension headaches, the pattern of CAD changes after reduction diabetes increases by the age of 60. This research will provide updates on new ML algorithms, optimization algorithms, and intelligent health applications.

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AUTHOR QUERIES

AQ1: MMBD occurs only in the title that there is no change of explaining the acronym. Are you okay with the footnote explaining MMBD? Please rephrase if needed.