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Analysis of Hyperglycemia Effected People using Pearson, Cost Optimization, Control Chart Methods

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ABSTRACT

In this paper, we described what hyperglycemia really is, symptoms and measures. We also added some statistical content to showcase its effects. We use cost optimization, control chart and Spearmen methodologies for Analyzing the Number of people effected by High Sugar level. The Spearmen methodology is the correlation methodologies used in Software development process to identify the complexity between the various modules of the software. Identifying the complexity is important because if the complexity is higher then there is a higher chance of occurrence of the risk in the software. With the use of control chart mean, variance and standard deviation of data is calculated. With the use of Cost optimization model we find to optimize the variables. Hence we choose the Spearmen, control chart and cost optimization methods.

KEY WORDS: Correlation, Pearson, Monotonic function, Linear Relationship.

1. INTRODUCTION

Hyperglycaemia, or high glucose is a condition in which an excessive amount of glucose circulates in the blood plasma. This is due to rise in glucose level higher than 11.1 mmol/l. High glucose, or hyperglycaemia, is a noteworthy concern, and can affect individuals with both type 1 and type 2 diabetes. Diabetes is the most widely recognized reason for hyperglycaemia. Individuals with type 1 diabetes are prone to a build-up of acids in the blood called ketoacidosis. On the off chance that you have type 2 diabetes or in case you're at hazard for it, extremely high blood sugar can prompt a possibly deadly condition in which your body can't process sugar. It's called hyperglycaemic hyperosmolar nonketotic syndrome (HHNS).

Numerous customary plant medicines for diabetes mellitus are utilized all through the world. Administration of diabetes with no symptom is as yet a test to the restorative framework. This has prompted an expanding interest for normal items with hostile to diabetic movement and less reactions numerous herbs and plant items have been appeared to have hypoglycaemic activity. Different morphological parts of *Annona muricata* have been accounted for to be valuable as compelling cures against diabetes, hypertension, migraine, wooziness, stoppage, catarrh, liver issues, neuralgia, stiffness and joint pain torment. It has been proposed that bioactive mixes from plants sources having hostile to hyperglycemic exercises might act by a few instruments, for example, fortifying insulin discharge, expanding repair or expansion of β-cells what's more, upgrading the impacts of insulin and adrenalin . The aftereffect of this present review demonstrated that there was a critical decrease in the blood glucose grouping of diabetic rats by *A. muricata* treatment. The introduce examine additionally demonstrates that every day intraperitoneal organization of 100mg/kg of concentrates of *A. muricata* to diabetic rats for 15 sequential days created a factually critical increment in the body weight of diabetic creatures in spite of the decline in sustenance and liquid admission saw in these creatures. This could be the consequence of enhanced glycemic control delivered by muricata separates.

Below are some statistics describing sugar level. In software the complexity between the various modules are being low is considered as one of major requirement for software and the methods like Spearmen and other methods helps in finding the complexity between the modules. The more the complex is system the more risk of occurrence of fault in the future, increasing the risk of the Software building.

In this document we used the data of different people that has been taken and apply the complexity methods to verify the correlation between the data. We are going to use the Pearson, cost optimization and control chart identify the relationship between the attributes.

Pearson Correlation: The Pearson helps to find the correlation between the continuous samples. The correlation values lies between +1 and -1. +1 and -1 indicating that the correlation is high. And it gradually decreases from the 1 to 0 and then increase from 0 to -1. The Pearson cannot be accurate when used for ordinal values.

Correlation is a technique for investigating the relationship between two quantitative, continuous variables, for example, Effected people and Year. Pearson's correlation coefficient (r) is a measure of the strength of the association between the two variables.

The relationship between two continuous variables is to draw a scatter plot of the variables to check for the linearity. The correlation coefficient should not be calculated if the relationship is not linear. For the correlation only purposes, it does not really matter on which axis the variables is plotted. However, conventionally, the variable is plotted on the x-axis and the dependent variable is plotted on the y-axis.

$$r = \frac{N.\sum xy - \sum x.\sum y}{\sqrt{(N.\sum x^2 - (\sum x)^2).(N.\sum y^2 - (\sum y)^2)}}$$

Here, N is the number of pairs of scores; $\sum xy$ is the sum of the product of paired samples; $\sum x$ is the sum of x samples; $\sum y$ is the sum of y samples; $\sum x$ is the sum of squared x samples; $\sum y$ is the sum of squared y samples.

The scatter of points is to be a straight line, the higher strength of association between the variables. It does not matter what measurement units are been used.

As per Pearson correlation we know that if the value of an R is near to the +1.0 or the -1.0 it indicates that the correlation is higher. SO in this case the value near to 0 suggesting that the low correlation.

Linear regression-Cost function: Here cost optimization is optimizing the variables initially $h_\theta(x) = \theta_{0+}\theta_1 x$.

Table.1. Linear Regression Data for Persons per Sample

Samples	PPS	Mean-PPS	(Mean-PPS)^2
1	1342	-2032.59	4131422
2	1432	-1942.59	3773656
3	6321	2946.41	8681332
4	7654	4279.41	18313350
5	2314	-1060.59	1124851
6	4213	838.86	703686.1
7	345	-3028.91	9174314
8	546	-2828.16	7998489
9	439.54	-2935.05	8614519

Mean = Sum of PPS / N
N = Number of Columns
Here N = 9
Standard Deviation = SUM (Mean-PPS) ^2 / N
From the table Mean = 3374.59
Standard Deviation = 2560.765

Factual analysis: The information were investigated utilizing expressive and inferential insights. All qualities are exhibited as mean + standard blunder of mean (SEM) for nine samples in each containing different size. The criticalness of contrast in the methods for all parameters announced for the nine gatherings of samples was resolved utilizing matched specimen using t – test and what's more, a p – estimation of < 0.05 (two followed) was considered as huge.

Table.2. Linear Regression-Cost Optimization

2005	1	168555 3.329, 0.5	55716.5 9139, 0	55716.59 139, 0
2006	42097 07.78, 1	1	55716.5 9139, 0	85536.71 525, 0
2007	5612327.6 21, 2	192176 6.289, 2	1	4050 9.5 9498, 1
2008	61436 91.214, 2	193332 6.392, 2	2672 8.9, 0.5	1

Symptoms for hyperglycemia: Increase in thirst; Cerebral pains; Inconvenience concentrating; Obscured vision; Visit peeing; Weariness (powerless, tired feeling); Weight reduction.

Numerical Analysis for Cost Function:

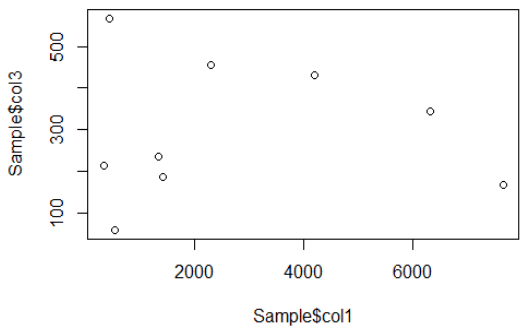

Figure.1. Scatter Graph

Causes: Your sugar level may rise on the off chance that you:

- Skip or overlook your insulin or oral glucose-bringing down medication
- Eat excessively numerous grams of sugars for the measure of insulin you took, or eat an excessive number of carbs as a rule
- Have a contamination
- Are sick
- Are under anxiety
- Turned out to be inert or practice not as much of course
- Partake in strenuous physical movement, particularly when your glucose levels are high and insulin levels are low.

The most effective method to prevent it is:

- Monitor your glucose level regularly – follow a plan for meal, exercise regularly, and preferred timetable - you shouldn't need to stress over hyperglycemia. You can likewise:
- Know your eating routine - check the aggregate sums of carbs in every dinner and nibble.
- Test your glucose routinely.
- Tell your specialist on the off chance that you have rehashed irregular glucose readings.
- Wear medicinal distinguishing proof to tell individuals you have diabetes if there should arise an occurrence of a crisis.
- Drink more water. H20 expels overabundance of sugar from your blood through urine, and it helps you from the situation of lacking hydration.

Exercise more. Working out can help bring down your glucose. In any case, under specific conditions, it can make glucose go significantly higher. Ask a specialist what kind of exercise is appropriate for you.

Diagrammatic Representation:

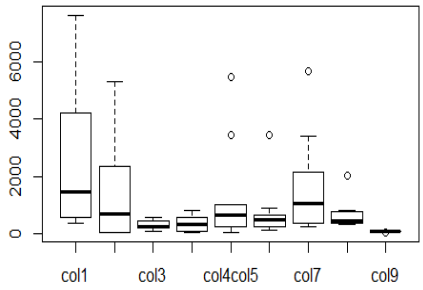

Figure.2. Box Plot

2. CONCLUSION

From the results it is clear that hyperglycemia had adverse effects. The health condition of effected people decreases making them weak and makes immune system work poorly. The stats show that increase or decrease in glucose level, both are serious issues, one need to take care of. This paper gives the essential data about the disease, its side effects, symptoms, causes, determination, and treatment. It demonstrates that hypoglycemia is a perilous condition, yet if you they give convenient help to the patient, the treatment result will be certain. Everybody ought to think about the manifestations of the ailment, keeping in mind the end goal to have the capacity to distinguish it at an early stage. Each individual ought to know how to shield himself from this malady and how to give medical aid to a man who experiences hypoglycemia effects.

As we can see from the above figures and calculations using the Pearson the correlation is low among the same. And from above processes it can be said that there is relevant data in the data collected and based on the r value. This metric analysis helps us to analyse the Sugar level in the new age easily.

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