**PREVELENCE OF HIGH BLOOD SUGAR(HBS) AMONG PATIENCE ATTENDING PRIMARY HEALTH CARE CENTER LAMURDE. MUBI SOUTH.**

**ABSTRACT**

The investigation carried out At Primary Health Care Center (PHCC) Lamurde Mubi in Mubi South Local Government Area Adamawa State. Random sampling technique of 52 patient with equal ration to male and female.

These research was conducted to determine or estimate the prevelence of High Blood glucose or sugar level of the youth, and ageing adult, secular question like what is the mean random glucose levels of apparently healthy adult? the relationship of high glucose level on age ? and comparing the mean value of male and female.

Blood sample was collected into a standard test tube an Anti-coagulant was added to prevent the blood sample from clothing. The sample was spin in the centrifuge for 5minute for seperation the blood/serum collected using automatic pipette apply on the test area of Glucose strip. The strip was insected into the blood glucosemeter, a meter with high degree of accuracy, the blood glucosemeter allow the generation of sample to flow into the test area known as reaction zone. In order to know whether the mean sample drawn from the normal population delicate significantly from the glucometer value /reading varies , a student test method was adopted, it show an individual being diabetic or not , depend on whether or not the blood sugar level is low, option or high condition most associated with such variation.

From the hypothesis drawn since the difference between the glucose content or means of male and female, youth and ageing adult are significantly different. We reject the null hypothesis and conclude that the alternative hypothesis is correct.

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**CHAPTER ONE**

**INTRODUCTION**

The blood sugar concentration or blood glucose level is the amount of glucose (sugar) present in the blood of human or animals.

The body naturally lightly regulate blood glucose level as a part of metabolic homeostatic (property of a system to regulate it internal environment and tends to maintain a stable, relatively constant condition such as temperature) glucose is the primary source of energy, for the body’s cell, and blood lipid. This is also primarily a compact energy store (there are exception: because carbohydrate tend to be used by human is continuously glocuneogenic. Glucose is transported from liver to body cell via the blood stream and is made available for cell absorption via the hormone insulin (a peptide hormone produce beta cell of the pancreas and it central to regulate carbohydrate and fat metabolism in the body) produced in the body primarily in the pancreases. The mean normal blood glucose level in human is about 5.5moll or 100 mg/df. However this level fluctuate through at the day.

Glucose levels in blood fall to indicate hunger. The brain is dependents on glucose as its primary energy producing substance. Low blood glucose indicate to the brain that there is need for food intake and this triggers sensations of hunger. Glucose is absorbed from the intestine via blood stream, it reaches the liver and various body cell to provide the primary source of energy for body cell. Glucose levels rise after meals for an hour or two by a few grams and are usually lowest in the morning before the first meal of the day. The morning levels are the lowest since it follows around 6 to 8 hours of fasting throughout the night. The normal blood glucose level (fasted while fasting for non-diabetics, should be between 70 and 100mg/df, and blood sugar level for those without diabetes and who are not fasting should be below 129mg/dl

According to American Diabetes Association the blood glucose target range for diabetes should be 70-130(mg/df) before meals and less than 150mg/df after meals (as measure by a blood glucose monitor)

Blood sugar level outside the normal range may be and indicator or a medical condition.

STATEMENT OF THE PROBLEM

A persistently high level glucose is referred to as Hyperglycemia, low level are referred to as Hypoglycemic. Diabetes mellitus is characterized by persistent hyperglycemia , it result in the inability of pancreas to produce enough insulin and intake of alcohol causes an initial surge in blood surgeand later tends to cause level to fall also certain drugs can increase or decrees glucose level. [www.wikipedia.org/wiki/blood.sugar](http://www.wikipedia.org/wiki/blood.sugar)

**AIM OF THE STUDY**

* The relationship of high blood sugar with age
* The prevalence of high blood Glucose of the youths and ageing, males and females
* The mean random glucose level of apparently healthy adult
* To compare the mean value for men and women.

DEFINITION OF TERM

**Gluconeogenesis:> Is the process of making glucose (sugar) from its own breakdown products.**

**Diabetes:> Is a condition that causes blood glucose levels to rise.**

**Gestational Diabetes:> Is a type of diabetes that can develop during pregnancy**

**CHAPTER TWO**

**2.1 BACKGROUND OF STUDY**

Blood sugar or blood glucose level by Dr. Ananya Mandal of Medical Health Care is the amount of glucose present in the blood of a human or animal.

Blood glucose is a tightly regulated biochemical parameter in blood, it is important for metabolic homeostatic (maintenance of internal environment).

The term “blood sugar” is a misnomer (what is refers to) since it means only glucose yet there are other sugars beside glucose that are present in blood. Food contains several different type of sugar e.g fructose from fruit, galactose and lactose from milk and dairy, sorbito, xylose, maltose etc.

These sugar are inert with regard to the human metabolism and its regulation by insulin hormone and thus blood tends to refer to glucose alone. In human normal blood glucose levels are around 90 mgldl molecular weight of glucose is about 180 glmol when calculated the total amount of glucose normally is circulating, human is around 3.3 to 7g (assuming an ordinary adult blood volume of 5 liters).

Blood glucose (C6H1206) is measured in term of molarity of mgldL figure is to be converted to mmol/L, it is to be divided by 18 or multiply by 0.055 similarly to covert a mmol/L figure to mgldL is to be multiply by 18 or divided by 0.055, ([www.kgoradio.com/./.41723](http://www.kgoradio.com/.41723)

**Importance of Blood Sugar(Glucose )**

**Importance of Blood sugar or Glucose by Jennifer it is the main source of energy to the body, it aid in well functioning of brain, it keep metabolism up to standard, it fuels the cells in the body .**

**IMBALANCES OF GLUCOSE IN BLOOD**

It is the body facts to maintain normal level of glucose, it may give rise to several disease condition. Persistently high blood glucose is called Hyperglycemia, Diabetes millitus is characterized by persistent hyperglycemia from any of several cause. It result from the body’s failure to regulate blood sugar, long term hyperglycemia lead to damage of several organ like the retina, kidney’s arteries etc.

If blood sugar level drop too low, a potentially fatal condition called hypoglycemia develops. This may be manifested as weakness, drowsiness, shaking irritability, sweating etc. In severe cases it may lead to lose of consciousness and even brain damage. ([www.newsmedical.net/health](http://www.newsmedical.net/health)).

CAUSES OF BLOOD SUGAR INCLUDES:

Family history, Overweight, Obesity, Too little Exercise, Too little Sleeping, Diet, Alcohol intake without food, Late or skipped of meal, over eating, stress (physical), illness or infection, taking too much medication insulin, fasting for a prolonged period of time, exercise.

**2.2 PROCESSION OF SUGAR IN THE BODY**

Glucose is a monosaccharide, meaning it’s a single ring sugar. It is quite common in nature and can be found either on its own or in combination with other molecules of glucose or other monosaccharide in large sugar and starch compound. One’s Body Processes Glucose Through a Series of Chemical Reactions:>

--- Glucose Source

---- Digestion

--- Absorption

--- Metabolism

**Glucose Source:>**

We consume glucose anytime we consume sugar or starch is the common name for the chemical amylose, which is made up of long chains of glucose molecules chemically bonded together (Dr. Reginald Garrett and Dr. Charles Grishman.

“Biochemistry” sugar, similarly contain glucose fibre contain glucose as well but the human body can’t digest fibre, so once the body can neither access or process the glucose from fibre source, meaning they contain no calories.

**Digestion :>**

When the body digest food, glucose containing food and if glucose occur on it own and Is’nt bonded to other monosaccharide rings, body can absorbed glucose directly. But glucose is bonded to other sugar such as in starch or in table sugar is not available for absorption directly explains “Dr. Laurelee Sherwood”.

Human physiology” enzyme in the digestive track break apart the sugar rings and the intestine absorbs them individually.

**Absorption:>**

Once the body absorbs glucose from food, it end up in blood stream, from here, cells need to take up the glucose in order to use it. The pancreas releases a hormone called insulin “Dr. Sherwood” which signal cell to take up glucose form the blood stream. Once cells have taken up glucose, they can either burn it for immediate energy, store in form of glycogen for later use. This is done by liver and muscle cells or convert into fat.

**Metabolism:>**

To burn glucose for energy, cells have to break the glucose molecules into smaller molecules. This process liberate energy form the glucose cells used this energy to produce another molecules, called ATP explain Dr. Mary Campbell and Shawn Farrel.

“Biochemistry” cells then use ATP for their energy need muscle cells for instance, use ATP to produce movement metabolizing glucose for maximum energy required oxygen’ under some circumstance it is impossible for cells to process glucose to produce ATP without oxygen. This is term anaerobic metabolism or fermentation and produces much less energy than processing glucose with oxygen, (http//:livestrong.com>Home>weight-management>weight&bodyfat>HealthyBodyfatprecentage).

**2.3 VARIATION IN BLOOD SUGAR Or EFFECT EFFECT OF BLOOD SUGAR**

The effect recorded by an individual depends on whether or not the blood sugar level is low, optimum or high. The following conditions are associated with such variations.

**HYPERGLYCEMIA**

Hyperglycemia occurs when the blood sugar is too high, it happens when there is no insulin in the blood or not enough insulin in the blood to work properly.

It commonly occur to patient being treated for diabetes type 1 when there is lagging of insulin but for type 2 diabetic it could be insulin is less effective than it should be.

**Cause**

Overeating little exercise in a given day, mental stress. Remember that supply of insulin is determined by how much one’s give itself and when, for a person without diabetes his/her body will respond automatically with appropriate quantity of insulin.

**SYMPTOM / ADRENEGIC MANIFESTATION**

* High blood glucose
* High levels of sugar in urine
* Hungry often (polyphagia)
* Polydipsia (Excessive thirst)
* Polyuria (frequent urination)
* Blurred vision weight loss
* Wounds ant cuts heal poorly
* Dry mouth
* Deep & rapid breathing (Kussmaul hyperventilation)
* Erectile dysfunction (impotence)
* Itchy and dry skin
* Tiredness
* Stupor
* Coma
* Cardiac arrhythmia

People with hyperglycemia run a significant high risk of going into diabetic coma (ketoacidosis).

Ketoacidosis happen when there is not enough insulin in the blood. Without insulin the cells cannot get the vital fuel (energy) they need. The body starts breaking down fats to get its energy. This process of breaking down fats produces ketone – waste product. Large amount of ketones are bad for the body. Excess of at will result in frequent urination as the body tries to eliminate its.

**SYMPTOM OF KETOACIDOSIS**

* Breath smells fruity
* Nausea and sometime vomiting
* Mouth is extremely dry
* Shorten of breath.

**REMEDIAL MEASURES FOR HYPERGLYCEMIA**

* The American diabetes association says exercising can help lower blood glucose level.

If the blood glucose is above 240mgldL check urine from ketone and do not exercise because if ketone is present as this will raise blood glucose even more.

* Reducing food intake (work with a dietitian or health care professional) and stick to meal plan.
* Ask the doctor the best way to manages.

([http://diabetes-hypegly](http://diabetes-hypegly/)

**HYPOGLYCEMIA**

This persist when there is not enough sugar in the body to be used as fuel for cells.

**CAUSES**

* Medication like glimepiride (Amary), Nateglinide (starlix) prandin (replaglinide and sitagliptin (Janvvia)
* Used of alcohol, aspirin, Benemid, Coumadin (warfanin) it can occur if one’s take too much insulin for the amount of carbohydrates consumed.
* Diet, skipping meal, don’t eat whole meal (avoiding).
* Exercise

**SYMPTOM / ADRENEGIC MANIFESTATION**

* Confusion
* Dizziness
* Feeling shaky
* Hunger
* Headaches
* Irritability
* Pounding heart
* Pale skin
* Sweating
* Trembling
* Weakness
* Anxiety
* Poor concentration
* Numbness in mouth and tongue
* Coma
* Nightmares and bad dreams
* Passing out (fanting)

**TREATMENT**

Check the blood sugar level

* Avoid simple and eat frequent small meal during the day.
* Have snack before bed time such as proteins or a more complex carbohydrate. ([http://diabeteswelomdldiabetes-hypogly---](http://diabeteswelomdldiabetes-hypogly---/)

**DIABETES MELLITUS**

This is a chronic lifelong condition that affect the body ability to use the energy found in food. There are three major type of diabetes.

* Type 1 diabetes
* Type II diabetes
* Gestational diabetes .

**TYPE 1 DIABETES**

It is called insulin – dependent diabetes, it used to be called juvenile – on set diabetes, because it often begin in childhood. It an autoimmune condition, it caused by the body attacking its own pancreas with antibodies people with type 1 diabetes, the damaged pancreas doesn’t make insulin.

This type may be caused by a genetic predisposition, it could also be the result of faulty beta cell in the pancreas that normally provide insulin. Some medical risks are associated with many of them stem from damage to the tiny blood vessel in the eye called (diabetes retinopathy) nerves (diabetes neuropathy) and kidney (diabetic nephropathy) even more serious can cause increase heart disease and stroke.

**TREATMENT**

* Taking insulin, which need to be infected through the skin into fatty tissue below (AIC blood test).
* Frequent testing of the blood sugar level.
* Careful meal planning.
* Daily exercise.

People with type 1 diabetes can lead long, active lives if they carefully monitor their glucose, make the lifestyle changes, and adhere to the treatment plan.

**TYPE II DIABETES**

The most common form of diabetes is type II diabetes, accounting for 95% of diabetes cases in adult. It also called adult-onset diabetes but with the epidemic of abese and overweight kids. More teenagers are now developing type II diabetes.

It can be known as non insulin independent diabetes it causes major health complicating particular in the smallest blood vessel in the body that nourish the kidneys nerve and eyes. Type 2 diabetes also increases risk of heart disease and strokes.

The type 2 diabetes the pancreas usually produces some insulin, but either the amount produce is not enough for the body’s needs or the body’s cells are resistance to it. Insulin resistance, lack of insulin happens primarily in fat, liver and muscle cells. People who are obese more tha 20% over their ideal body weight for their height are at particularly high risk of developing type 2 diabetes and it related medical problems.

Obese people have insulin resistance with the pancreas has to work overly hard to produce more insulin but even then there is not enough insulin to keep sugars normal.

**TREATMENT / CONTROLLED**

* Weight management
* Nutrition
* Exercise

**GESTATIONAL DIABETES**

Diabetes that’s triggered by pregnancy is called gestational diabetes (pregnancy to some degree leads to insulin resistance), it is often diagnosed in middle or late pregnancy.

Because high blood sugar levels in a mother are circulated through the placenta to the body, it must be controlled to protect the baby’s growth and development.

According to the National institute of Health the reported rate of gestational diabetes is between 2% to 10% of pregnancy. It usually revolved itself after pregnancy. This diabetes usually put mother at risk for developing type 2 diabetes later in life.

It can occur a few weeks after delivered two month or year later, risk of unborn child or baby are even greater than risk to the mother.

**BABY RISK**

* Abnormal weight gain before birth.
* Breathing problem later in life.
* Higher obesity and diabetes risk later in life.

**MOTHER RISK**

* Needing cesarean section due to an overly large baby, as well as damage the heart, kidney, nerves and eyes.

**TREATMENT**

* Working closely with your health team.
* Carefully meal planning to ensure adequate pregnancy nutrient with excess fat and calories.
* Controlling pregnancy weight gain

(htt://Wikipedia.org/diabetemellitus).

**CHAPTER THREE**

**3.0 MATERIALS/EQUIPMENT**

* **Blood Glucose Meter**

**MATERIAL USED**

* Sample bottle
* **Lancet**
* **Cotton/alcohol swab**
* Syringes 2ml per sample
* Glucose strip
* Automatic pipette
* Blood sample
* Pipette tip
* EDTA (Ethylene Diaminetatra acetic acid)
* Serum

**SAMPLING**

* Capillary blood or veinous blood can be used, and was collected into a standard tube.
* **An elastic band was tied around the upper arm causing the vein to swell with blood .**
* **Syringe was inserted into the vein and blood was drawn into it.**
* **Cotton was placed over the puncture area/ site and pressure was applied to the puncture site for a few second.**
* After collection using various bloods, the sample was spin in centrifuge for 5 minute for separation.
* Blood /Serum is collected using automatic pipette and put into a clean sample collection bottle.
* Automatic pipette was used in application of the blood / serum to the test area of the glucose strip.
* The strip was Inserted into the blood glucose meter and the sample flow into the reaction zone.
* The glucometer measure mmol/L which is 3:3-6.05mm0l/L and produce result within 5 - 10 second and the result was tracked and recorded.

RESULT:

To test the significance of mean of a random Sample, to compare the mean for male and female, the relationship of high blood Glucose with age, prevalence of high blood sugar levels of apparently adults males and females, Whether the mean of a sample drawn from a normal population Deviate significantly from a state value, We Calculate the Statistics :