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*Full Length Research Paper*

# Patients' knowledge of causes, effects and complications of diabetes mellitus in Ilorin, Kwara state, Nigeria

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**This study assessed knowledge on the causes, effects and complications of diabetes mellitus among patients in Ilorin, Kwara State, Nigeria. The descriptive research design was employed for the study and two hundred (200) diabetic patients were selected using a stratified random sampling technique. The researcher-designed content and face validated questionnaire that was subjected to reliability test; using test retest method was employed to gather data for the study. Data collected were analyzed using descriptive and inferential statistics. The result showed that causes of diabetes do not include poverty and ignorance, but effects of diabetes are found to be sexual dysfunction and infertility, also prolong illness and sudden death were discovered as complications of diabetes mellitus among the patients in Ilorin, Kwara State, Nigeria. It was therefore, recommended that diabetic health education on the causes, effects and complications should be emphasized in our hospitals/clinics in Ilorin, Kwara State, Nigeria.**

**Key words:** Patients' knowledge, diabetes mellitus, causes, effects, complications.

## INTRODUCTION

The World Health Organization (WHO), (1999) defines diabetes mellitus as a condition of metabolic disorder which occurs as a result of defects in insulin secretion, action or both. It is characterized by chronic hyperglycemias resulting into long term damage dysfunction and failure of various organs. It was originally considered to be a disease characterized by wasting and the passage of large amount of sweet and urine leading to death over the course of a few weeks or months. It is a deadly metabolic disorder which results from an insufficient insulin production by the pancreas, with the subsequent impairment of glucose metabolism (Alade, 2000).

The usual age of onset is between forty and sixty, but it has been reported in newborn babies. Arnold, (2009) reported that disease is a hereditary ailment and so is more likely to be present if another member of the family has the same condition. For example, if both parents have diabetes, it is very likely that their children will develop it sooner or later. But if any one of the parent has diabetes, there is only one in five chance of the child developing the ailment. Williams (2002) opined that diabetes mellitus interferes with release of insulin after meal. In severe cases, a pancreas may produce virtually no insulin at all but, because there is enough insulin to metabolize food, the level of sugar in the body remain high, so either the kidney are unable to process all of it.

According to Diabetes Association of Nigeria (DAN) (2006), the good news is that diabetes did not mean that patients will not live a healthy life. Diabetes is a common disease which affects 24 millions of peoples in South Africa, 1-1.2 million in Nigeria, of all ages, all races, both men and woman from all walks of life. According to IDF (2012), a person with diabetes incurred medical costs that are two to five times higher than those of a person without diabetes. This is due to more frequent medical visits, purchase of supplies and medication and higher likelihood of being admitted to hospital

The hallmark of diabetes is an elevated blood glucose concentration, but this abnormality is just one of a

number of biochemical and physiological alterations that occur. According to (Williams (2002), diabetes is not one disorder but can arise as a result of a number of defects in regulation of the synthesis, secretion and action of insulin. The type of diabetes that most commonly affect children is the type 1 which is insulin dependent diabetes mellitus. The diabetes that generally begins in adulthood and is particularly common in obese individuals is called type 2 which is non-insulin dependent diabetes mellitus (Williams, 2002).

**Causes of Diabetes Mellitus**

Fawole, (2001) discovered that diabetes is found among the rich people because they have enough money and time to indulge in those habits that encourage diabetes. It cannot be categorically referred as a poor man's disease. Anne, (2002) opined that ignorance on the consumption of too sugary substances and carbohydrates foods like potatoes, rice, yam, can make a person develop diabetes meaning that a number of respondents are ignorant of the particular type of food the body system require. However, there are numbers of conventional causes which brings about diabetes mellitus in human beings as highlighted by Jones (2008).

**Genetic Factor:** The mode of genetic inheritance in diabetes mellitus is not clearly understood but it is believed that diabetes is clearly recognised as having familiar tendency.

**Pancreatic disease:** Individual with pancreatic disease can suffer diabetes mellitus as a result of impaired function of pancreas to produce adequate insulin.

**Insulin Antagonist:** These may occur in condition where there is abnormal secretion of the following hormones: growth hormones, glucorticoid, ketachalmine and glucagons.

**Drug:** Certain drugs such as thiazxide-diuretic reduce insulin secretion, although effect of this is usually reversible once the drug is withdrawn.

**Virus:** This is evidence that infection with certain viruses plays parts in the development of insulin dependent diabetes in some patients.

**Obesity:** Is associated with the insulin resistance, the exact cause is not known.

**Effects of Diabetes Mellitus**

**Diabetes and sexual dysfunction -** Erectile dysfunction (ED) is a common problem amongst men who have diabetes affecting 35-75% of male diabetics. Up to 75% of men suffering from diabetes will experience some degree of erectile dysfunction (erection problems) over the course of their lifetime. Olaitan (2012) asserted that men who have diabetes are thought to develop ED between 10 and 15 years earlier than men who do not suffer from the disease. As men facing diabetes age, erectile dysfunction becomes more common. Over the age of 70, there is a 95 per cent likelihood of facing difficulties with erectile function (Altman, 2006). Causes of ED are extremely complex, and are based around changes that occur to the body over time affecting nerve, muscle and blood vessel functions. In order to obtain an erection, men need to have healthy blood vessels, nerves, male hormones and a desire to have sex. Without blood vessels and nerves that control erection, ED can still occur despite a desire to have sex and normal male hormones.

Sexual dysfunction (SD) in women with diabetes is one of the chronic complications which have not yet been extensively studied. According to the American Foundation of Urological Diseases (AFUD), female sexual dysfunction (FSD) includes four elements:

- Hypoactive sexual desire disorder (HSDD; reduced frequency of sexual intercourse, aversion to intercourse),
- Female arousal disorder (FAD; inability to achieve arousal),
- Female orgasmic disorder (FOD; inability to achieve orgasm), and
- Sexual pain disorder (SPD; dyspareunia).

**Diabetes and infertility -** Infertility, the inability to become pregnant within 12 months of trying to conceive, affects about 10% of the population. There are no barriers to infertility: It affects all socioeconomic levels, racial, ethnic and religious groups. Because infertility knows no boundaries, there's a good chance that your friend, relative, co-worker, neighbour - or even you – maybe coping with the medical and emotional aspects of infertility.

Insulin is a hormone whereby any form of insulin resistance, there is a hormone imbalance. When one hormone is out of balance, it can trigger a domino-like effect with the rest of your hormones, including estrogen, progesterone and testosterone levels. These hormone imbalances can cause a wide variety of side effects, ranging from ovarian cysts to erectile dysfunction and infertility. Falcone (2012) says that most cases of infertility, whether they are related to diabetes complications or not, can be treated. In cases where

infertility is related to insulin levels, correcting the imbalance is often enough to result in a successful pregnancy.

### Complications of Diabetes Mellitus

**Diabetes and Prolong illness -** Arnold (2009) explains that, there are two types of diabetes complications, short term and long term. The short term complications develop and occur suddenly within a short time. The long time complications develop after prolonged illness. These are heart disease, high blood pressure, kidney disease, diabetic retinopathy, neuropathy, impotence, blindness, high cholesterol, and gangrene can lead amputation of limbs.

**Diabetes and Death -** Sometimes a complication of diabetes may give a clue to the presence of the disease. The principle complications or sequelae associated with diabetes are retinopathy, neuropathy, nephropathy and arteriosclerosis.

These complications are responsible for a reduction in the life expectancy of a newly diagnosed insulin dependent diabetic by about one-third. The basis of managing diabetes in the 90's is an improvement in the life-style of the diabetic and prevention of complications responsible for morbidity and mortality in diabetes (Albert, 2007).

## PURPOSE OF STUDY

The study was carried out to investigate on the causes, effects and complication of diabetes mellitus among diabetic patients in Ilorin, Kwara State, Nigeria.

## RESEARCH QUESTIONS

1. Do patients have knowledge about poverty and ignorance as causes diabetes in Ilorin, Kwara State, Nigeria?
2. Do patients have knowledge about sexual dysfunction and infertility as effects diabetes in Ilorin, Kwara State, Nigeria?
3. Do patients have knowledge about prolong illness and death as complications diabetes in Ilorin, Kwara State, Nigeria?

## RESEARCH HYPOTHESES

1. Diabetic patients do not have knowledge about poverty as a cause of diabetes mellitus in Ilorin, Kwara State, Nigeria.
2. Diabetic patients do not have knowledge about ignorance as a cause of diabetes mellitus in Ilorin, Kwara State, Nigeria.
3. Diabetic patients do not have knowledge about sexual dysfunction as an effect of diabetes mellitus in Ilorin, Kwara State, Nigeria.
4. Diabetic patients do not knowledge about infertility as an effect of diabetes mellitus in Ilorin, Kwara State, Nigeria.
5. Diabetic patients do not have knowledge about prolong illness as a complication of diabetes mellitus in Ilorin, Kwara State, Nigeria.
6. Diabetic patients do not have knowledge about death as a complication of diabetes mellitus in Ilorin, Kwara State, Nigeria.

## METHODS AND SUBJECTS

A descriptive survey method was adopted and the population for consists of diabetic patients attending various hospital in Ilorin, Kwara State, Nigeria between January 2010 - January 2012. Two hundred (200) subjects were randomly selected from University of Ilorin Teaching Hospital (UITH), Civil Service Clinic, and Ola-olu hospital, all within Ilorin axis. They include 100 male and 100 females. The instrument used for the study was a researcher structured questionnaire of four rating scale likert scale format ranging from strongly agree (SA), Agree (A), disagree (D), and strongly disagree (SD). The questionnaire comprised two sections. Section A is bio-data of respondents i.e. gender, age, marital status, occupation and religion, while section B contained items on diabetes mellitus' causes, effects and complications. The content validity of the instrument was established and a test - retest method was used to determine the reliability of the questionnaire, which were distributed to 20 diabetic patients in University College Hospital (UCH) Ibadan, Oyo State, which gave reliability co-efficient of 0.88r. The researcher and 6 trained research assistants collected the data from the respondents. And this was analysed using a descriptive statistics of frequency counts and percentages for the bio-data and research questions, while inferential statistics of chi-square was employed to analyse the hypotheses at 0.05 level of significant.

## RESULTS AND DISCUSSION

### Data analysis

Table 1 showed that the respondents consisted of 100 (50%) male and 100 (50%) female. This showed that equal number of both male and female participated in the study. 58 (29%) of the respondents are less than and equal to 40 years, 72 (36%) are within ages 41-50 years,

**Table 1**. Bio-data of respondents N=200

| ***Gender*** | ***Frequency*** | ***Percentage %)*** |
|---|---|---|
| Male | 100 | 50% |
| Female | 100 | 50% |
| | | |
| ***Age Range*** | | |
| ≤ 40 years | 58 | 29% |
| 41-50 years | 72 | 36% |
| 51-60 years | 56 | 28% |
| ≥61 years | 14 | 7% |
| | | |
| ***Marital Status*** | | |
| Single | 94 | 47% |
| Married | 106 | 53% |
| | | |
| ***Occupation*** | | |
| Civil servant | 60 | 30% |
| Trader | 64 | 32% |
| Others | 76 | 38% |
| | | |
| ***Religion*** | | |
| Islam | 106 | 53% |
| Christianity | 84 | 42% |
| Others | 10 | 5% |
| | | |
| ***Total*** | ***200*** | ***100*** |

56 (28%) were within the ages 51-60 years and 14 (7%) were greater than and equal to 61 years. Therefore, diabetes mellitus was more rampant between ages ranges 41-50 years. The singles were 94 (47%) while married were 106 (53%). This shows that more of respondents in the study were married. On the occupation of respondents; 60 (30%) are civil servants, 64 (32%) were traders and 76 (38%) are in other occupations which constituted the highest in this study. In the religion of the respondents; 106 (53%) were Muslims, 84 (42%) were Christians, while others were 10 (5%). This clearly showed that more of the respondents were Muslims (Table 1).

From the analysis of the data (Table 2); in Hypothesis 1, calculated value of 4.39 was less than critical value of 21.03 at 0.05 alpha level of significant with df 12. Therefore, the Ho 1 which states that, diabetic patients do not have knowledge about the causes of diabetes mellitus is accepted. This finding corroborates Fawole, (2001) that diabetes is found among the rich people because they have enough money and time to indulge in those habits that encourage diabetes. For instance, they can afford to pay for a very large meal that is very rich in fat and sugar, their consumption of alcohol is very high and finds it difficult to engage themselves in physical activities which can help them in burning up the excess fat present in their body for them to avoid having diabetes.

In Hypothesis 2; calculated value of 5.25 is less than critical value of 21.03 df 12 and 0.05 alpha level (Table 2). Therefore, Ho 2 which states that, diabetic patients do not have knowledge about ignorance as a cause of diabetes mellitus is accepted. This is supported by Anne, (2002) that consumption of too sugary substances and carbohydrates foods like potatoes, rice and yam, can make a person develop diabetes meaning that a number of respondents are ignorant of the particular type of food the body system require.

In Hypothesis 3; calculated value of 49.54 is greater than critical value of 21.03 at df 12 and 0.05 level of significance (Table 2). Therefore, Ho 3 which states that diabetic patients do not have knowledge about sexual dysfunction as an effect of diabetes mellitus is rejected. This finding aligns with findings of Altman (2006) that erectile dysfunction (ED) is a common problem amongst men who have diabetes affecting 35-75% of male diabetics and that of AFUD that sexual dysfunction (SD) in women with diabetes is one of the chronic complications.

In Hypothesis 4; calculated value of 44.70 is greater than critical value of 21.03 with df 12 and at 0.05 alpha level of significance (Table 2). Therefore, Ho 4 which

**Table 2**. Chi-square results on causes, effects and complications of diabetes N=200.

| *Variables* | SA | A | D | SD | Calc.$X^2$ | Df | Crt/ Val | Decision |
|---|---|---|---|---|---|---|---|---|
| **Ho 1:** Poverty does not cause diabetes | 124 | 58 | 16 | 2 | | | | |
| | 64 | 114 | 22 | 0 | | | | |
| | 48 | 128 | 24 | 0 | 4.39** | 12 | 21.03 | Accepted |
| | 110 | 76 | 28 | 8 | | | | |
| | 50 | 44 | 98 | 8 | | | | |
| **Ho 2:** Ignorance does not cause diabetes | 102 | 84 | 14 | 0 | | | | |
| | 102 | 70 | 24 | 4 | | | | |
| | 118 | 58 | 20 | 4 | 5.25** | 12 | 21.03 | Accepted |
| | 124 | 58 | 14 | 4 | | | | |
| | 134 | 48 | 12 | 6 | | | | |
| **Ho 3:** Sexual dysfunction is not an effect of diabetes | 122 | 60 | 10 | 8 | | | | |
| | 62 | 94 | 38 | 6 | | | | |
| | 94 | 34 | 34 | 14 | 49.54* | 12 | 21.03 | Rejected |
| | 102 | 64 | 18 | 16 | | | | |
| | 134 | 40 | 16 | 10 | | | | |
| **Ho 4:** Infertility is not an effect of diabetes | 94 | 94 | 8 | 4 | | | | |
| | 56 | 106 | 28 | 10 | | | | |
| | 34 | 138 | 28 | 0 | 44.70* | 12 | 21.03 | Rejected |
| | 34 | 72 | 62 | 32 | | | | |
| | 56 | 134 | 10 | 0 | | | | |
| **Ho 5:** Prolong illness is not a complication of diabetes | 102 | 70 | 16 | 12 | | | | |
| | 60 | 76 | 34 | 30 | | | | |
| | 78 | 38 | 36 | 24 | 57.32* | 12 | 21.03 | Rejected |
| | 82 | 74 | 22 | 22 | | | | |
| | 119 | 56 | 14 | 12 | | | | |
| **Ho 6:** Death is not a complication of diabetes | 80 | 90 | 20 | 16 | | | | |
| | 84 | 98 | 24 | 30 | | | | |
| | 38 | 120 | 24 | 18 | 53.61* | 12 | 21.03 | Rejected |
| | 30 | 64 | 74 | 32 | | | | |
| | 40 | 130 | 14 | 16 | | | | |

≤0.05, * =significant, ** = Not Significant

states that diabetic patients do not have knowledge about infertility as an effect of diabetes mellitus is rejected. This is in line with Falcone (2012), who asserted that in diabetes, insulin hormone is out of balance and can trigger a domino-like effect with the rest of the hormones, including estrogen, progesterone and testosterone levels. These hormone imbalances can cause a wide variety of side effects, ranging from ovarian cysts to erectile dysfunction and infertility.

In Hypothesis 5; calculated value of 57.32 is greater than critical value of 21.03 with df 12 and at 0.05 alpha level of significance (Table 2). Therefore, Ho 5 which states that diabetic patients do not have knowledge about prolong illness as a complication of diabetes mellitus is rejected. This is supported by Arnold (2009) that the long time complications develop after prolonged illness of diabetes, this may be short term, but most of the time, it is long term illness.

In Hypothesis 6; calculated value of 53.61 is greater than critical value of 21.03 with df 12 and at 0.05 alpha level of significance (Table 2). Therefore, Ho 6 which states that diabetic patients do not have knowledge about death as a complication of diabetes mellitus is rejected. This juxtaposes a report from Chinese school net firms (2012) that complications from diabetes are responsible for a reduction in the life expectancy of a newly diagnosed insulin dependent diabetic by about one-third. This implies that, diabetic complication can lead to sudden death of the patient. Also supported that diabetes complications on adults lead to sudden death in the finding of Albert (2007) that a diabetic patient who is not treated with insulin the acidosis and dehydration lead to death from diabetic ketoacidosis**.**

## CONCLUSION AND RECOMMENDATIONS

Causes, effects and complications of diabetes mellitus

such as poverty and ignorance have been seen as not part of the causes of diabetes mellitus among the patient in Ilorin, Kwara State, Nigeria. Sexual dysfunction and infertility have been associated with effects of diabetes mellitus among this group of subjects. At the same time, prolong illness and death have been seen as complications resulting from diabetes mellitus within this group of respondents. In view of this, it is recommended that;

Diabetic Health Education should be carried out on regular basis in our various hospitals/clinics among the diabetic patients to forestall any problem that mat emanate from diabetes mellitus.

Government and public health workers should carry out an enlightenment campaign on the causes, effects, and complications of diabetes radio and television.

Reproductive Health expert should bear in mind the havoc of diabetes mellitus when counselling and treating patient with infertility.

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