

Analysis of Anthropometric Parameters of Type 2 Diabetic and Non-Type 2 Diabetic Patient Attending Dutse General Hospital, Jigawa State

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Abstract

This study focuses on exploring the prevalence, characteristics, and management practices of type 2 and non-type 2 diabetic patients attending Dutse General Hospital. A cross-sectional study was conducted over a period of six months, involving a sample of type 2 diabetic patients attending Dutse General Hospital. Data was collected using structured questionnaires and medical records review. A total of 50 patients were included in the study, with their consent. The study findings revealed that out of the 50 type 2 diabetic patients. The majority of the participants were middle-aged adults, with a slight male predominance. Furthermore, the most prevalent risk factors for developing diabetes were obesity, sedentary lifestyle, and family history of diabetes. The high prevalence of risk factors, such as obesity and sedentary lifestyle, suggests the need for targeted interventions to address these modifiable factors. The low adherence to lifestyle modifications found in this study emphasizes the need for patient education, counseling, and ongoing support to promote sustained behavior change

Keyword: analysis, anthropometry, parameters, type 2 diabetic, non type2 diabetic.

Introduction

Diabetes comprises many disorders characterised by hyperglycaemia. According to the current classification there are two major types: type 1 diabetes (T1DM) and type 2 diabetes (T2DM). The distinction between the two types has historically been based on age at onset, degree of loss of β cell function, degree of insulin resistance, presence of diabetes-associated auto antibodies, and requirement for insulin treatment for survival. However, none of these characteristics unequivocally distinguishes one type of diabetes from the other, nor accounts for the entire spectrum of diabetes phenotypes. There are several reasons for revisiting the diabetes classification. Firstly, the phenotypes of T1DM and T2DM are becoming less distinctive with an increasing prevalence of obesity at a young age, recognition of the relatively high proportion of

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incident cases of T1DM in adulthood and the occurrence of T2DM in young people. Secondly, developments in molecular genetics have allowed clinicians to identify growing numbers of subtypes of diabetes, with important implications for choice of treatment in some cases. In addition, increasing knowledge of pathophysiology has resulted in a trend towards developing personalised therapies and precision medicine. Unlike the previous classification, this classification does not recognise subtypes of T1DM and T2DM, includes new types of diabetes (—hybrid types of diabetes and —unclassified diabetes), and provides practical guidance to clinicians for assigning a type of diabetes to individuals at the time of diagnosis.¹⁻¹²

Diabetes is a growing public health concern that affects millions of people worldwide. Recent estimates suggest that over 425 million people (or 8.8% of the world's population) have diabetes.¹³ Type 2 diabetes (T2D) is the most common type of diabetes, accounting for 90–95% of all cases. Non-type 2 diabetes (NT2D), on the other hand, is much less prevalent and includes different forms including gestational diabetes and rare genetic mutations.¹³ The primary risk factor for developing T2D is a combination of physical inactivity, unhealthy eating habits, and obesity.¹⁴ In contrast, NT2D is caused by rare genetic mutations or is sometimes related to the body's response to pregnancy.¹⁴ While the underlying cause of T2D and NT2D may differ, both involve the dysfunction of the endocrine system leading to abnormalities in blood glucose levels.

The purpose of this study is to provide insight into the differences in anthropometric parameters between type 2 diabetic and non-type 2 diabetic individuals attending Dutse General Hospital.

Research Methodology

Study area

The study was done in Dutse town which is the Administrative and Headquarters of Jigawa State.

Research Population

The population of this study includes the inhabitant of Dutse and its environ, specifically, those that are rearing animals, be it house wives, herders and individuals that takes domestic animal (especially sheep and goats) as fashion.

- **Ethnic Composition:** The major ethnic in the town are Hausa/Fulani people which are about 94 percent, others are Kanuri, Yoruba, Igbo and others.
- **Religion:** 99percent of the town inhabitant are Muslim.

Data Collection Methods

Data collection is the process of collecting and analysing information on relevant variables in a predetermined, methodical way so that one can respond to specific research questions, test hypotheses, and assess results. Data consists of primary data collected by the principal investigator directly from the cases of newly detected type 2 diabetes mellitus admitted in the medical ward in the hospital under study.

Sampling Method

Systematic sampling method was used to select the subjects. The study population was

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estimated to be 300 diabetic patients attending diabetic clinic in a month using the average weekly attendance for the clinic of 330 patients. The sampling interval was determined by dividing the study population by the sample size ($300/191 = 1.5$) which is approximately 1 year.

Procedure for Data collection

Data from respondents was collected using the study instrument. Anthropometric measurement (weight, height;) was collected by the same trained investigator (examiner) and an assistant (recorder).

Ethical considerations

Ethical clearance for the study was obtained from the Ethical Committee of Dutse General Hospital before commencement of the study. A written informed consent was obtained from each of the respondents before commencement of the interview.

Anthropometric Measurement

The weight, height, abdominal (waist) and hip (buttocks) circumferences of the subjects was measured using standard scales.

Data Analysis

All quantitative variables were summarised using mean and standard deviation while qualitative variables were summarised using frequencies and percentages. Chi-square test was used to determine association between categorical variables. A p value ≤ 0.05 was considered significant. HOMA IR score was used to determine insulin resistance in study subjects, where subjects that scored 1 were considered 100% sensitive and those that scored more than 1 were considered to have insulin resistance.

Results

The study initially targets 60 patients. The study creates 52 questionnaires, of which 42 were filled and returned. However, only 50 were deemed to fit criteria selected for the study. Accounting for 70% response rate. The 50 respondents used for study from proved adequate for data analysis and fulfilment of study objectives.

Table 1: Socio Demographics of the Respondents

Variable	Option	No. of the Respondents (n=42)	Percentage Response (%)
Gender:	Male	26	62
	Female	16	38
Age:	22-30years	8	19
	31-40 years	11	26
	40 years – above	23	55

Source: Field work 2023

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In the study population, 62% were males and 38% were females. From this, it therefore showed that majority of the respondents were male. Based on the age distribution of the respondents, 55% patients were aged more than 40 years; This signifies that DM predominantly is diagnosed in middle age. This tally with the findings of Osotimehin *et al.* (2016) who reported that old age affects people for hypertension. 26% patients are between the age of 31-40 years of age. This is because of the current trend of ageing population were while 19% of the respondents were between the age of 22-30 years.

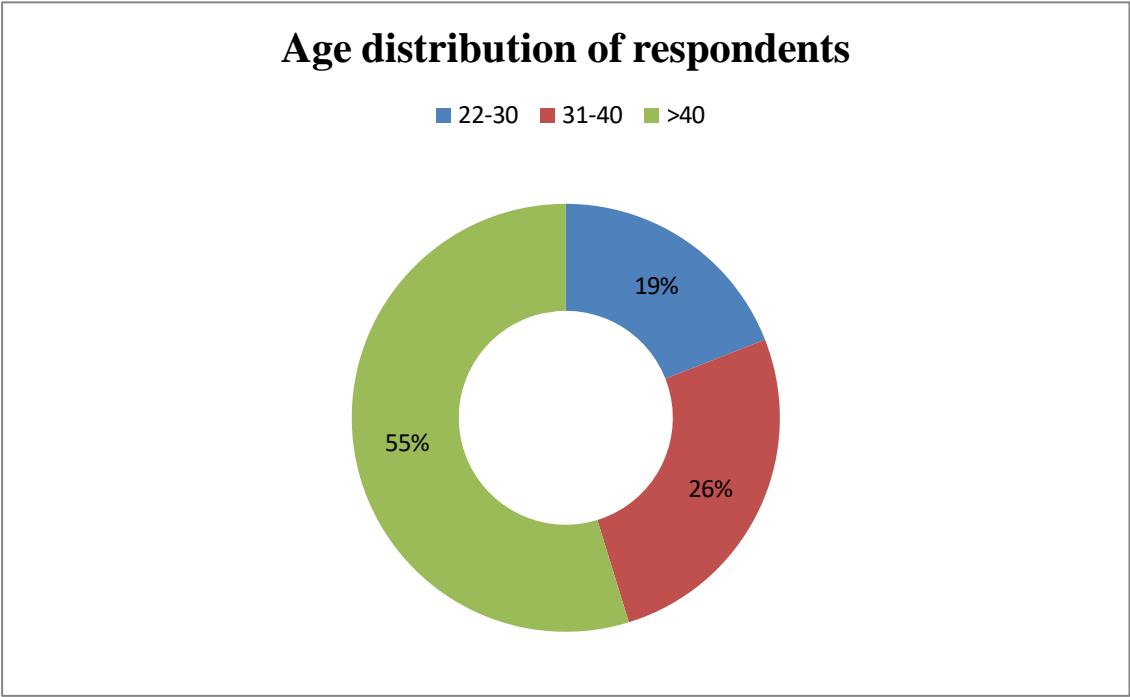


Figure 4.1: Age distribution of the respondents

Table 2: Distribution of Respondent on status of Diagnosis of Type 2 diabetes

VARIABLE	FREQUENCY	PERCENTAGE
Yes	31	73.80%
No	11	26.20%
Not Sure	0	0%
Total	42	100%

Source: field work 2023

Table 2 indicated that 73.80% of the respondents said have a medical diagnosis of Type 2 diabetes in Dutse General Hospital while, remaining 26% did not agreed with the opinion.

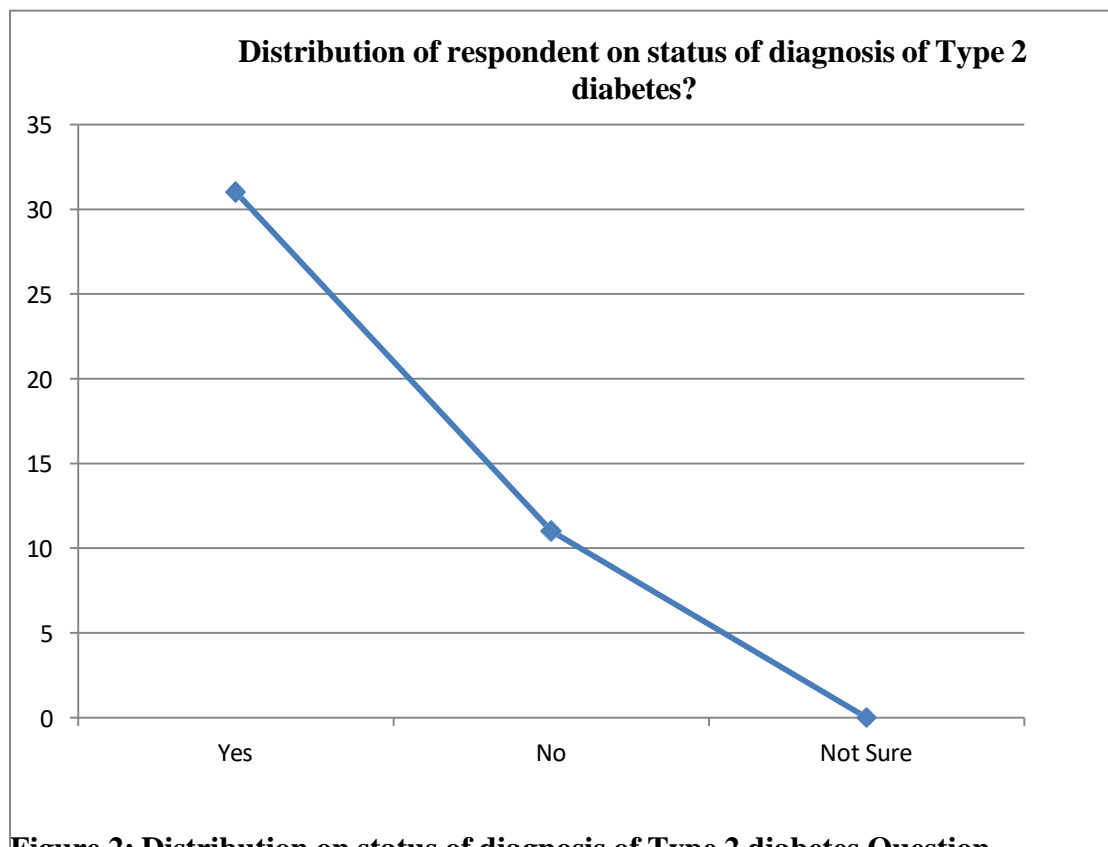


Figure 2: Distribution on status of diagnosis of Type 2 diabetes Question

Table 3: Anthropometric Parametres of the Patients

VARIABLE	CLASS SIZE	FREQUENCY	PERCENTAGE
Height, H (in centimetres):			
	120-150	11	26.19%
	150-180	25	59.52%
	Above 180	6	14.29%
Weight, W (in kilograms):			
	45-55	17	40.48%
	55-60	22	52.38%
	Above 60	3	7.14%
Body Mass Index:			
(BMI = W / (H) ²)	4-7	12	28.57%
	7-10	19	45.24%
	11-15	11	26.19%
Waist Circumference,			
W.C (in centimetres):	75-80	28	66.67%
	80-85	11	26.19%
	85-90		
		3	7.14%

Source: field work 2023

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Table 4: Distribution of patients based on Body Mass Index

VARIABLE	FREQUENCY	PERCENTAGE
Underweight	4	9.52%
Normal	30	71.42%
Overweight and Obese	8	19.05%
Total	42	100%

In Table 4 When classified based on BMI, 71.42% of newly detected diabetic patients had BMI within normal range 19.05% had obesity BMI more than 9.52% had BMI in underweight range. BMI, WC and WHR were considered according to WHO standards. This indicates that occurrence of diabetes which was attributed to obesity as an important factor need not always be present. Because 71% of patients in our study had normal BMI range.

This finding contraindicates with other studies; Peter, et al (2017) shown that WHR was the best predictor of T2D events and BMI the worst predictor. Olumuyiwa (2018) showed that BMI was the strongest predictor of T2Dm and at defined levels of BMI, the incidence of T2DM

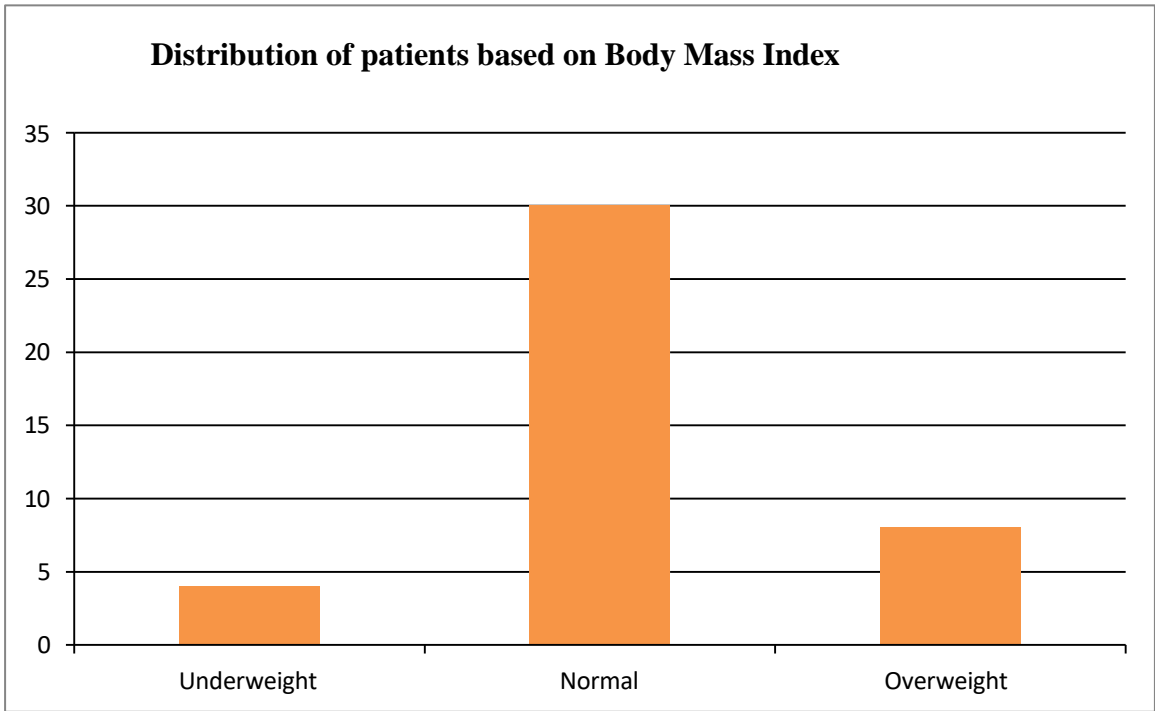


Figure 4.3: Distribution Based on Body Weight

Table 5: Distribution of patients based on duration of diagnosis (in years)

VARIABLE	FREQUENCY	PERCENTAGE
Less than 1 months	11	26.19%
1 years to 3 years	8	19.08%
3 years to 5 years	7	16.67%
5 years to 7 years	4	9.52%
7 years to 9 years	4	9.52%
9 years to 11 years	5	11.9%
More than 11 years		
	3	7.14%
Total	42	100%

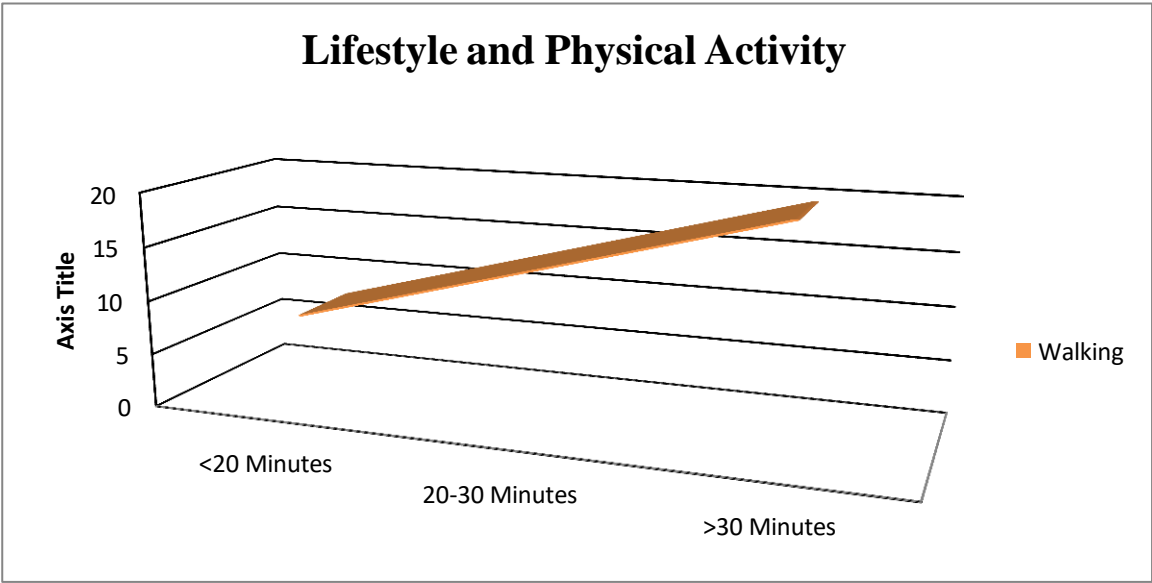
Source: field work 2023

Table 5 above indicated that 26.19% of the respondent, have for a once being diagnosed from Type 2 diabetes in a period of less than a month; while 8 patients with a percentage of 19 have being diagnosed for a period of less than 3 years, 7, 4's 5 and 3 have 16.67, 9.52, 11.9 and 7.14 respectively. Ali and Anwar (2017) are corroborated by the finding of present study, Type 2 diabetes cases are more to type one in Nigeria compared to Egypt.

Table 6: Distribution of Patients Lifestyle and Physical Activity

VARIABLE	FREQUENCY	PERCENTAGE
Less than 20 minutes daily	8	19.05%
20 to 30 minutes daily	29	69.05%
More than 30 minutes daily	5	11.90%
Total	42	100%

Source: field work 2023



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Table 7: Distribution of Patients comparison waist circumference of with HDL

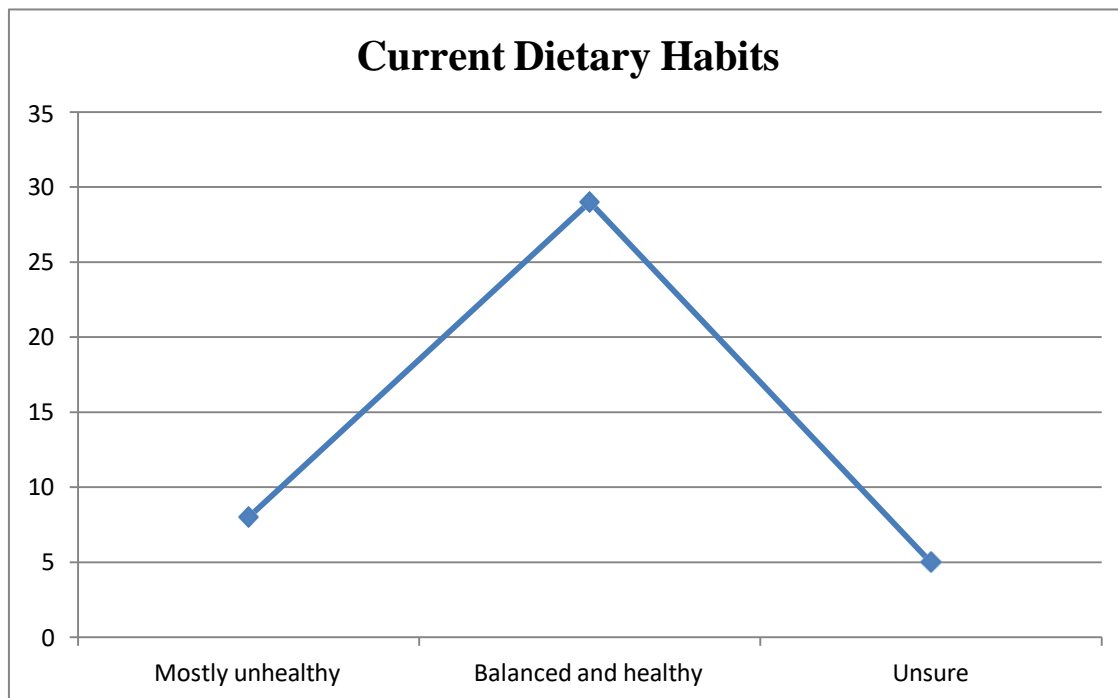
WAIST CIRCUMFERENCE	FREQUENCY	VARIATION	PERCENTAGE	FREQUENCY	PERCENTAGE
High	5		11.90%		
Normal	37		88.10%		

When waist circumference is compared with HDL values, the mean HDL was more than 40 in both groups but the patients with apple shaped obesity tend to have more HDL values. This finding contraindicates with other studies; Peter, et al (2017) shown that WHR was the best predictor of CVD events and BMI the worst predictor. Olumuyiwa (2018) showed that BMI was the strongest predictor of T2Dm and at defined levels of BMI, the incidence of T2DM varied with TGL and blood pressure.

Table 7: Distribution of Patients based on Current Dietary Habits

VARIABLE	FREQUENCY	PERCENTAGE
Mostly unhealthy	8	19.05%
Balanced and healthy	29	69.05%
Unsure	5	11.90%
Total	42	100%

Source: field work 2023



Discussion

It was draw from Table 7 that patients current dietary can help improve their health if they are taking balanced healthy meals, while 5 considered that as

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doubtful notion. The rest constitute 19% Have complained that their daily meals are often unhealthy or half cooked. In the study population, 62% were males and 38% were females. From this, it therefore showed that majority of the respondents were male. Based on the age distribution of the respondents, 55% patients were aged more than 40 years; This signifies that DM predominantly is diagnosed in middle age

Table 2 indicated that 73.80% of the respondents said have a medical diagnosis of Type 2 diabetes in Dutse General Hospital while, remaining 26% did not agreed with the opinion. In Table 3 When classified based on BMI, 71.42% of newly detected diabetic patients had BMI within normal range 19.05% had obesity BMI more than 9.52% had BMI in underweight range. BMI, WC and WHR were considered according to WHO standards. This indicates that occurrence of diabetes which was attributed to obesity as an important factor need not always be present. Because 71% of patients in our study had normal BMI range. Table 4 above indicated that 26.19% of the respondent, have for a once being diagnosed from Type 2 diabetes in a period of less than a month; while 8 patients with a percentage of 19 have being diagnosed for a period of less than 3 years, 7, 4's 5 and 3 have 16.67, 9.52, 11.9 and 7.14 respectively.

When waist circumference is compared with HDL values, the mean HDL was more than 40 in both groups but the patients with apple shaped obesity tend to have more HDL values.¹⁵

Conclusion

The study on type 2 patients attending Dutse General Hospital provides valuable insights into the prevalence, characteristics, management practices, and recommendations for improving diabetes care in this setting. The findings highlight the significant burden of type 2 diabetes, with a majority of patients falling into this category. The study also identifies key risk factors such as obesity, sedentary lifestyle, and family history of diabetes.

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