SCREENING FOR RISK FACTORS FOR CHRONIC KIDNEY DISEASE IN TYPE 2 DIABETIC PATIENTS IN UNIVERSITY OF BENIN TEACHING HOSPITAL.

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INTRODUCTION

- Incidence of diabetes mellitus is increasing worldwide and 20-30% of diabetics develop diabetic nephropathy (DN).

- DN is the leading cause of end stage renal disease in US and Europe. Prevalence of DN is on the increase in Nigeria and ranks 3rd amongst causes of chronic renal failure in Nigeria.

- Poor control of blood glucose, blood pressure, dyslipidaemia, obesity, metabolic syndrome are some of the risk factors for CKD in diabetics.

- Early identification and modification of risk factors for CKD should form part of the preventive strategies in the management of diabetic patients.
OBJECTIVES

- To determine the prevalence of some risk factors for CKD in type 2 diabetic patients attending UBTH.
METHODOLOGY

- A descriptive cross sectional study involving 144 (53 males and 91 females) type 2 diabetic patients who were recruited from outpatient clinic after meeting the inclusion criteria and giving informed consent.
- Study period was 6 weeks

- Inclusion Criteria: Type 2 diabetics, compliance to clinic attendance, consenting individuals.

- Exclusion Criteria: Type1 diabetics, non-compliance to clinic attendance, non-consenting individuals.
Socio-demographic data, duration of diabetes and hypertension were obtained. Weight in kg, height in cm, hip circumference in cm, waist circumference in cm were measured and BMI (kg/m²) was calculated.

FBS and BP of the last 2 clinic visits and index clinic visits were recorded and average of these values were calculated.

The fasting serum lipid profile results were recorded.
DEFINITION OF VALUES

- Poor glycaemic control was defined as FBS > 110 mg/dl.
- Poor blood pressure control was defined as SBP > 130 mmHg and or DBP > 80 mmHg.
- Dyslipidaemia was defined as any or combination of the following: TC > 200 mg/dl, LDL-C > 100 mg/dl, HDL-C < 40 mg/dl in males, < 50 mg/dl in females, TG > 150 mg/dl.
- Metabolic syndrome was defined using the NCEP-ATP III 2001 criteria. Any 3 of the following were taken as metabolic syndrome:
  - FBS > 100 mg/dl or diabetic on treatment
  - BP > 130/85 mmHg or hypertensive on treatment
  - WC > 102 cm in males and > 88 cm in females
  - TC > 150 mg/dl, HDL-C < 40 mg/dl in males and < 50 mg/dl in females
- Using the BMI values (kg/m²): underweight was defined as < 18.5, normal weight as 18.5-24.9, overweight as 25-29.9 and obese as > 29.9.
- Data were analyzed using SPSS version 16.
RESULTS AND DISCUSSION
## Characteristics of Study population

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mean</th>
<th>Std deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>57.49</td>
<td>11.49</td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td>103.40</td>
<td>12.82</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>99.22</td>
<td>12.44</td>
</tr>
<tr>
<td>Total Cholesterol (mg/dl)</td>
<td>177.94</td>
<td>45.52</td>
</tr>
<tr>
<td>HDL C (mg/dl)</td>
<td>52.60</td>
<td>18.58</td>
</tr>
<tr>
<td>TG (mg/dl)</td>
<td>111.94</td>
<td>42.59</td>
</tr>
<tr>
<td>LDLC (mg/dl)</td>
<td>104.22</td>
<td>38.28</td>
</tr>
<tr>
<td>BMI (kg/m$^2$)</td>
<td>28.322</td>
<td>5.03</td>
</tr>
<tr>
<td>FBS (mg/dl)</td>
<td>136.55</td>
<td>46.55</td>
</tr>
<tr>
<td>BP Systolic (mmHg)</td>
<td>132.76</td>
<td>15.73</td>
</tr>
<tr>
<td>BP Diastolic (mmHg)</td>
<td>79.32</td>
<td>8.91</td>
</tr>
<tr>
<td>Duration since Diagnosis (DM) (years)</td>
<td>6.02</td>
<td>6.21</td>
</tr>
<tr>
<td>Duration since Diagnosis (HTN) (years)</td>
<td>7.19</td>
<td>6.91</td>
</tr>
</tbody>
</table>
UKPDS, Kumamoto and ADVANCE studies have shown that tight glycaemic control can delay the onset and progression of DN. ⁴,⁵,⁶

Poor glycaemic control have been shown to be risk factor for overt nephropathy amongst diabetics.⁷
Overweight and obesity have been shown to be commoner in diabetics with nephropathy.\textsuperscript{10}
An association has been established between MetS and CKD independent of conventional risks factors like age, sex, glycaemic control, albuminuria and disease duration. ¹⁴
## Association btw MetS, BP & Glycaemic control

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetS vs BP control</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>MetS VS Glycaemic control</td>
<td>0.866</td>
</tr>
</tbody>
</table>
Dyslipidaemia has been shown to be associated with glomerular injury and an established risk factor for diabetic nephropathy.\textsuperscript{18,19}
HYPERTENSION

<table>
<thead>
<tr>
<th>Studies</th>
<th>Our study</th>
<th>Ajayi et al (^3)</th>
<th>Chineye et al (^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>67.4%</td>
<td>76.3%</td>
<td>60.9%</td>
</tr>
</tbody>
</table>
### Correlation between Age, BMI & BP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE vs SBP</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>AGE vs DBP</td>
<td>0.610</td>
</tr>
<tr>
<td>BMI vs SBP</td>
<td>0.377</td>
</tr>
<tr>
<td>BMI vs DBP</td>
<td>0.001</td>
</tr>
</tbody>
</table>
BP Control

UKPDS, ABCD Trial have shown that tight BP control reduces both macrovascular and microvascular complications in diabetic.  
Hypertension has been shown to be a risk factor for diabetic nephropathy in Nigerian diabetics.

<table>
<thead>
<tr>
<th>Studies</th>
<th>Our Study</th>
<th>Ajayi et al</th>
<th>Ogbera et al</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>29.9%</td>
<td>24.5%</td>
<td>17.2%</td>
</tr>
</tbody>
</table>

Good Control 29.9%
Poor Control 70.1%
Limitation of study

We could not use glycated haemoglobin to assess glycaemic control due to financial constraint.
The risk factors for CKD in type 2 diabetic patients attending UBTH were highly prevalent.

Efforts should be geared towards modifying these risk factors in order to prevent or slow down development of CKD.
REFERENCES


5. Motoaki S, Kishikawa H, Ohkubo Y, Wake N. Long-Term Results of the Kumamoto Study on Optimal Diabetes Control in Type 2 Diabetic Patients. Diabetes Care 23 (Suppl. 2) 2000 (Suppl.2):21–29


