COMMUNITY STUDY OF PREVALENCE AND RISK FACTORS FOR CHRONIC KIDNEY DISEASE AMONG PAEDIATRIC AGE GROUP IN ONDO WEST LOCAL GOVERNMENT AREA OF ONDO STATE NIGERIA

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The NKF/KDOQI in 2002 defined CKD as kidney damage manifested by structural or functional abnormalities lasting three or more months with or without decreased glomerular filtration rates (GFR) or a GFR< 60mls/min/1.73 m².
Introduction and Literature

• Little is known about the epidemiology of chronic kidney disease (CKD) among the paediatric population especially in Sub-Saharan Africa.
• Due to the asymptomatic nature of early CKD
• A prevalence of 12.1 to 74.7 cases per million children has been reported previously.
Nigerian data so far:

- Main source: major tertiary in-hospital data
- Tip of the iceberg (not truly representative).
- Examples: 4.0% (Enugu); 4.5% (Mid-west); 1.6% (Ilorin); 3.1% (Uyo)

• The highest percentage of paediatric CKD cases are potentially reversible (congenital)

• In Port-Harcourt, 28.9% of CKD were due to congenital disorders
• CKD in children is compounded by one or a combination of growth problems, nutrition, electrolyte imbalance, anaemia and hypertension.

• The child’s body system copes less with uraemia resulting in high levels of mortality among them.

• Early detection and management of kidney malfunction is crucial to delay or prevent progression of CKD to ESRD.
OBJECTIVES

• We therefore set out to determine the prevalence of CKD

...risk factors for CKD among children in Ondo State.
METHOD
Method

• 114 school children whose parents/guardians gave consent were studied
• Children outside 2-17 years and those who were acutely ill were excluded
• Their bio data was recorded on a proforma
• Their weights and heights were obtained with a standard stadiometer (RGZ-160 Lincon Mark Medical England)
• BMI was calculated using wt/ht$^2$
• BP was measured using Accossons Mercury Spyhgmomanometer with appropriate cuff for age on the right upper arm after 5 minutes rest to the nearest 2mmHg
Method

- Blood samples were collected for Serum chemistry, haemogram, fasing lipids and albumin.
- eGFR was calculated using Schwartz formula
- Urine samples for analysis were obtained after adequate counsel of the parents/guardians
- *Combi 10 Unistrip®* was employed for urinalysis
Method

• Height, BMI and BP percentiles were determined using the appropriate charts.
• Written consent was obtained from the school authority.
• Data was analyzed with SPSS 17.
RESULTS
Gender distribution of subjects

51.80% male
48.20% female
Distribution of subjects by class

- pre-secondary: 63.20%
- Secondary: 33.30%
- post-secondary: 3.50%
### Clinical and Lab parameters of subjects

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>8.99</td>
<td>4.26</td>
</tr>
<tr>
<td>eGFR (ml/min/1.73m²) BMI (kg/m²)</td>
<td>86.59</td>
<td>27.6</td>
</tr>
<tr>
<td></td>
<td>16.80</td>
<td>3.09</td>
</tr>
<tr>
<td>SBP (mmHg)</td>
<td>97.88</td>
<td>16.29</td>
</tr>
<tr>
<td>DBP (mmHg)</td>
<td>57.84</td>
<td>11.66</td>
</tr>
<tr>
<td>PCV (%)</td>
<td>37.23</td>
<td>4.34</td>
</tr>
<tr>
<td>Serum creatinine (umol/L)</td>
<td>75.14</td>
<td>16.72</td>
</tr>
<tr>
<td>Total cholesterol (mmol/L)</td>
<td>4.20</td>
<td>0.83</td>
</tr>
<tr>
<td>Triglyceride (mmol/L)</td>
<td>1.85</td>
<td>0.29</td>
</tr>
<tr>
<td>HDL-cholesterol (mmol/L)</td>
<td>1.24</td>
<td>0.21</td>
</tr>
<tr>
<td>Albumin (g/L)</td>
<td>40.60</td>
<td>6.23</td>
</tr>
</tbody>
</table>
## KDOQI Staging of CKD (n=104)

<table>
<thead>
<tr>
<th>KDOQI Stage</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>36</td>
<td>34.6%</td>
</tr>
<tr>
<td>Stage 2</td>
<td>60</td>
<td>57.7%</td>
</tr>
<tr>
<td>Stage 3</td>
<td>8</td>
<td>7.7%</td>
</tr>
<tr>
<td>Stage 4</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Stage 5</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>KDOQI STAGE</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Stage 1</td>
<td>20 (55.6%)</td>
<td>16 (44.4%)</td>
</tr>
<tr>
<td>Stage 2</td>
<td>29 (48.3%)</td>
<td>31 (51.7%)</td>
</tr>
<tr>
<td>Stage 3</td>
<td>5 (62.5%)</td>
<td>3 (37.5%)</td>
</tr>
<tr>
<td>Stage 4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stage 5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
eGFR by various criteria for CKD in our paediatric age-group

• In our study

✓ (8) 7.7% (cut off <60ml/min/1.73m$^2$)

✓ (37) 35.6% (cut off <75ml/min/1.73m$^2$)

## Prevalence of risk factors

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Percentage</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Freq (%)</td>
<td>Freq (%)</td>
</tr>
<tr>
<td>Pre-hypertension</td>
<td>12.4%</td>
<td>5 (35.7%)</td>
<td>9 (64.3%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>12.8%</td>
<td>1 (10.0%)</td>
<td>9 (90%)</td>
</tr>
<tr>
<td>Overweight</td>
<td>7.9%</td>
<td>5 (55.6%)</td>
<td>4 (44.4%)</td>
</tr>
<tr>
<td>Obesity</td>
<td>5.3%</td>
<td>1 (16.7%)</td>
<td>5 (83.3%)</td>
</tr>
</tbody>
</table>
Inverse relationship between TC and eGFR
SBP vs eGFR

R² Linear = 0.09
DBP vs eGFR

R² Linear = 0.088
Conclusions

• There is an apparent high prevalence of CKD among paediatric population of Ondo State
• There is a high prevalence of risk factors among them
• Hypertension, obesity and dyslipidaemia showed a significant relationship to eGFR.
Recommendations

• Higher nos of subjects needed;
• Follow-up of subjects with established risk factors;
• Follow-up of subjects with reduced eGFR;
• Identify causes of reduced eGFR in them;
• Screening of siblings of subjects with risk factors and/or reduced eGFR.
KIDNEY CARE CENTRE, ONDO
Laje Road Ondo, Ondo State
...Toward a better living

FEATURES:
- Friendly and highly motivated staff
- Multi-professional approach to patient care
- State-of-the-art dialysis suite
- World-class medical words for in-patient care
- Fully-automated diagnostic laboratory unit
- Mini-conference room/library

ENJOY OUR 3-PRONG APPROACH
- Primary prevention of kidney disease
- Secondary prevention / Dialysis
- Research

KCC...Toward a better living
Thank you