Prevalence and sociodemographic association of hepatitis B and C coinfection and dual infection among People Living with HIV: a seven year retrospective data review of Indigenous HIV Clinic in Northwestern Nigeria

Adepoju, V.A ¹, Ekerete-Udofia, C ², Okafor, V ³, Ogbudebe, C ⁴
Background (1)

• In 2015, 240 million and 70 million people are living with chronic hepatitis B and C respectively but less than 5% are aware

• 20 million Nigerians are infected with hepatitis B and C with estimated 1.4 million annual infection

• In the general population, prevalence of HBV in Nigeria range from 6-20% depending on subgroup and screening method (Emechebe et al, 2009)

• A pooled HBV prevalence of 13.6% from a systematic review (Eke et al 2016).

• Anti-HCV sero-prevalence of 1.0% among children aged 10–18 years has been reported

• Poorer outcome and rapid progression to cirrhosis and hepatocellular carcinoma associated with HIV/hepatitis coinfection compared with infection with hepatitis only
### Background (2)

- Among PLHIV, a study from Northwestern Nigeria reported HIV/HBV prevalence of 12.3% and HIV/HCV co-infection rate of 1.6% and 0.6% HIV/HBV/HCV dual infection.

- Prevalence could be to four times higher among Indigenous (poverty, overcrowding, clustering etc) compared with non-Indigenous people depending on region.

- With increasing age, significantly higher carriage of hepatitis B serum marker and exposure in the rural indigenous population in Eastern Nigeria compared with the urban population (Amazigo et al).

- Many studies in Nigeria have assessed prevalence of hepatitis B in various service delivery points (ANC, blood transfusion etc), there is a dearth of current research and literature of hepatitis prevalence with focus specifically on Indigenous people living with HIV.
Objectives

• To determine prevalence of hepatitis B and C among indigenous people living with HIV attending Federal Medical Center, Birnin Kebbi Kebbi State, Nigeria

• To document the demographic characteristics and association with HIV/Hepatitis coinfection

• To provide recommendations based on gaps for policymakers and implementer for inclusive programming of health of the indigenous population in Nigeria
Description of the study site

- Kebbi state is one of the States in rural North Western Nigeria with Birnin Kebbi as the Capital
- More than 85% inhabitants are indigenous population
- The people of Kebbi are predominantly Muslims who practice Islam as a religion and polygamy is entrenched in Islamic norms and practices
- There are 225 political wards, 3000 settlements and 1036 hard to reach indigenous settlements in the 21 Local Government Areas in the State.
- Population -3,137,989 (based on projection from 1991 census)
- Birnin Kebbi is mainly populated by indigenous Hausa people, with some members of Lelna, Bussawa, Dukawa, Kambari and Kamuk ethnic communities.
- Temporary henna tattoos called 'Laali' used for adornment by females - popular in Kebbi and other Northern states among Hausa and Fulani ethnic groups across West Africa. There are concerns about unsterilized equipment.
Method

Study Design

- A retrospective cohort study of 1728 indigenous people living with HIV and enrolled into HIV care between 2009 and 2016 at Federal Medical Center, Birnin Kebbi, Northwestern Nigeria
- A chart abstraction tool was then developed to capture sociodemographic and other clinical details of 102 PLHIV with documented screening and hepatitis test results in their clinic folders

Data Analysis

- Data was analyzed using SPSS version 21 16.0 with the level of significance set at $P < 0.05$
- Descriptive and inferential statistics were also used.

Screening Methods

1.) Method of Screening for HBsAg: All the blood samples were screened for HBV using the HBsAg rapid test kit (ACON, USA) following the manufacturer’s instructions.

2) Method of Screening for Anti-HCV:
- All the blood samples were screened for anti- HCV using rapid test kits (ACON, USA).

Ethical approval

- Since this is a retrospective data review with no contact with human subject, ethical approval was unnecessary.
- However, permission was obtained from HOD Record and management of Federal Medical Center, Birnin Kebbi
Results

Table 1: Sociodemographic characteristics of subjects

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>HIV infected only</th>
<th>HIV/Hepatitis B co-infected, n=11(%)</th>
<th>HIV/HepC co-infected, n=5(%)</th>
<th>HIV/Hepatitis B&amp;C Total co-infected, n=3(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Group</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0-14yrs</td>
<td>1(1.2)</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>15-29yrs</td>
<td>6(7.2)</td>
<td>7(64)</td>
<td>3(60)</td>
<td>2(67)</td>
</tr>
<tr>
<td>30-34yrs</td>
<td>1(1.2)</td>
<td>3(27)</td>
<td>2(40)</td>
<td>1(33)</td>
</tr>
<tr>
<td>35-44yrs</td>
<td>1(1.2)</td>
<td>1(9)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>45-54yrs</td>
<td>63(75.9)</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>55&gt;yrs</td>
<td>11(13.2)</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>46(55.6)</td>
<td>7(64)</td>
<td>4(80%)</td>
<td>1(33)</td>
</tr>
<tr>
<td>Female</td>
<td>37(44.4)</td>
<td>4(36)</td>
<td>1(20%)</td>
<td>2(67)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>17(20.4)</td>
<td>1(9)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Married(polygamous)</td>
<td>52(63)</td>
<td>7(63.6)</td>
<td>3(60)</td>
<td>3(100)</td>
</tr>
<tr>
<td>Married (monogamous)</td>
<td>2(2.4)</td>
<td>2(18.1)</td>
<td>1(20)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Divorcee</td>
<td>3(3.7)</td>
<td>1(9.3)</td>
<td>1(20)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Widow/Widower</td>
<td>9(10.5)</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
</tbody>
</table>
Table 2: Association of Age, Sex and family type with hepatitis B and C co - infection with HIV

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>HIV alone n=83</th>
<th>HIV/HBV n=11</th>
<th>P value</th>
<th>HIV alone n=83</th>
<th>HIV/HCV n=5</th>
<th>P value</th>
<th>HIV alone n=83</th>
<th>HIV/HBV/HCV n=3</th>
<th>P value</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
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<td></td>
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<tr>
<td>&lt;40yr</td>
<td>9</td>
<td>11</td>
<td>&lt;0.0001</td>
<td>9</td>
<td>5</td>
<td>&lt;0.0001</td>
<td>9</td>
<td>3</td>
<td>0.0021</td>
</tr>
<tr>
<td>&gt;40yr</td>
<td>74</td>
<td>0</td>
<td>1.0</td>
<td>74</td>
<td>0</td>
<td>1.0</td>
<td>74</td>
<td>0</td>
<td>0.5880</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>M</td>
<td>46</td>
<td>7</td>
<td>0.7508</td>
<td>46</td>
<td>4</td>
<td>0.3845</td>
<td>46</td>
<td>1</td>
<td>0.5502</td>
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<tr>
<td>F</td>
<td>37</td>
<td>4</td>
<td>1.0</td>
<td>37</td>
<td>1</td>
<td>1.0</td>
<td>37</td>
<td>2</td>
<td></td>
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<tr>
<td>Family Type</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Polygamous</td>
<td>52</td>
<td>7</td>
<td>1.0</td>
<td>52</td>
<td>3</td>
<td>1.0</td>
<td>52</td>
<td>3</td>
<td>0.5502</td>
</tr>
<tr>
<td>Other</td>
<td>31</td>
<td>4</td>
<td></td>
<td>31</td>
<td>2</td>
<td></td>
<td>31</td>
<td>0</td>
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</tr>
</tbody>
</table>

HIV: Human Immunodeficiency Virus, HBV: Hepatitis B Virus, HCV: Hepatitis C Virus
Discussion (1)

• Our study found HIV/HBV prevalence of 10.8%, HIV/HCV of 4.9% and HIV/HBV/HCV dual infection of 2.9%

• Also younger HIV/hepatitis B and C co-infected age group(<40yrs) were significantly affected than PLHIV without hepatitis B and C co-infection

• In addition, there were more males than female PLHIV who are co-infected with HBV and the reverse is the case for HCV co-infection. This may be because indigenous men involve in more aggressive contact sports like football with possible exposure to body fluids such as sweat and blood.

• Other reason is the cultural and religious acceptance of polygamous sexual relations for men in this population
Discussion (2)

- Similar non-significant findings of higher HIV/HBV coinfection in male than female (17.8% vs 14.7%) and higher HCV in females than males (7.1% vs 6.7%) in another study (Ojide et al. 2015).

- In NW Nigeria, relatively higher HIV/HBV prevalence in the general population (12.8%) than our study (Hamza et al. 2013). This could be as a result of 6% hepatitis screening among indigenous PLHIV reducing our study sample size.

- However, a higher HIV/HCV coinfection of 4.9% in our study compared to lower rate of 1.9% in the same Northwestern Nigeria study (Hamza et al. 2013).
Limitation

- Retrospective nature of the study thus the findings could be influenced by the screening methods and preferential testing of symptomatics or those at higher risk of infection rather than universal screening.

- Reduced sample size as a result of 94% indigenous PLHIV not screened for hepatitis.

- Comparison with general population and no comparative data with non-indigenous population.

- No consideration for the window period of the Australian antigen (disappearance of HBsAg and appearance of anti-HBs). Although useful, IgM anti-HBc serological marker not considered in detecting those in the window period.
Conclusion and Recommendations (1)

- HBV and HCV co-infections are common among HIV-infected indigenous PLHIV in Nigeria.
- Access to hepatitis screening among indigenous PLHIV is low.
- Particular efforts should be made to conduct targeted HBV screening with priority for indigenous males and the younger population.
- The findings highlight the need for opportunistic HBV screening of Indigenous people to identify people who would benefit from vaccination or treatment ensuring physical environments and culturally appropriate initiatives that reduce spread of the disease through unhygienic tattoo and mani-pedi practices especially among women.
Conclusion and Recommendations (2)

- Further assessment is required to determine rates of HBV and HCV chronicity among HIV-infected individuals and identify effective strategies to link individuals to care and treatment.

- Education on HBV and HCV risk factor need to be integrated into the national and subnational HIV intervention programs as both diseases share risk factors and mode of transmission.
References


• Graham, S et al (2013) Chronic hepatitis B prevalence among Aboriginal and Torres Strait Islander Australians since universal vaccination: a systematic review and meta-analysis BMC Infectious Diseases 13:403


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Thank You
E Se Pupo
Dalu !!