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# Hepatitis B and C Viral Infections among Pregnant Women in a Rural Community of Nigeria

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**Abstract:** Hepatiatis B and C viral infections are global health problems.Data on the prevalence of these viruses among preganat women in rural Nigeria is missing. This study was carried out with a view to determine the prevalence of Hepatitis B and C Virus infections in pregnant women in Okada Community of Edo State,Nigeria and assess risk factors for their transmission. Venous blood was collected from two hundred and sixty seven (267) pregnant women with age ranging from 13-42 years. A questionnaire was used to obtain relevant information from participating pregnant women. Samples were investigated for antibodies to Hepatitis B virus (HBV) and Hepatitis C virus (HCV) using immunochromatographic methods. The prevalences of Hepatitis B and C viral infections in pregnant women were 5.6% and 1.1 % respectively. Parity, age and presence of facial scarification did not significantly affect infection with HBV and HCV in pregnant women. History of blood transfusion was found to be associated with HBV infection in this study (OR=3.318, 95%CI=1.067, 10.318, P= 0.046). Delivery by traditonal birth attendant significanty affected the prevalence of HCV in pregnant women (OR=12.424, 95%CI= 0. 6345, 234.2, P= 0.049). Hepatitis B and C virus infections in pregnant women in Okada is not uncommon. Routine screening of all pregnant women, enlightenment on mode of transmission and provision of improved blood screening and transfusion services are advocated.

**Key words:** Pregnancy · HBV · HCV · Rural community · Nigeria

## INTRODUCTION

Infections with Hepatitis B and C viruses are global public health problems [1,2]. Hepatitis B virus (HBV) infection affects over 350 million people worldwide [2], reaching endemic proportions in sub Saharan Africa [3]. Available data show that about 3% of the world population is infected with Hepatiatis C virus (HCV) with the highest prevalence rate recorded in Africa [2]. HBV and HCV infections have also been reported to be endemic in Nigeria [4,5].

Viral hepatiatis during pregnancy is associated with high risk of maternal, foetal and neonatal complications [6]. Acute hepatiatis in pregnancy has been shown to induce premature labour and prematurity with its attendant effects [7,8 ]. Vertical transmission of HBV and HCV have also been reported [9,10 ]. Unlike in developed countries of the world where HBV infection occurs predominantly in adults and in resource poor settings, high number of infants and children are infected, approximately 90% of whom were infected at birth [11]. Screening of pregnant women for Hepatitis B Virus therefore could be a reliable indicator of its prevalence in the general population and a useful tool in the prevention of mother to child transmission.

Risk factors for transmission include unprotected

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sexual contact [12,13], blood transfusion, [6,14] and facial/body scarification [13,14 ]. Delivery by traditional birth attendants have been reported to significantly affect HCV infection in a previous study [6]. Poverty and ignorance directly or indirectly impact negatively on spread of HBV infection [12 ].These factors are rife in most rural settings in Nigeria. Due to the endemicity of infections causing anaemia, malnutrition, surgical and obstetrical emergencies associated with blood loss in sub-Saharan Africa, the demand for blood transfusion services is high [15]..Sadly however a good number of blood transfusion practices in Nigeria especially in rural areas, does not undergo internationally accepted screening procedures [16].This puts the rural pregnant woman who may require blood transfusion during the course of her pregnancy at great risk of infection with HBV, HCV and other blood transfusion related diseases.

Facial scarification is a cultural practice in Africa, especially in Nigeria [17]. This practice although gradually being eroded in some quarters,is still a thing of pride and identification by most uneducated and rural dwellers in Nigeria,where it is often done with sharp needles and blades which could serve as possible vehicles for HBV and HCV transmission. Data on the prevalence of HBV and HCV infection in antenatal population in Nigeria is sparse and virtually none existent in Okada community. Poverty, illitracy and patronage of traditional birth attendant are also rife in Okada community. Against this background and the need to assess the prevalence of HBV and HCV infections and associated risk factors of transmission in Okada, this study was therefore undertaken.

## MATERIALS AND METHODS

**Study Population:** This study was carried out at the Igbinedion University Teaching Hospital Okada from May 2010 to Febuary 2011. Some neighbouring communities (Villages) also attend the Hospital being the only Tertiary Health care provider in Okada.

A total of 267 pregnant women were recruited for this study. The age range of study population was 13-42 years. A questionnaire was administered to all participating pregnant women. Verbal informed consent was obtained from all participating subjects prior to specimen collection. The study was approved by the Ethical Committee of the Igbinedion University Teaching Hospital, Okada, Nigeria.

**Collection and Processing of Specimen:** Five ml of blood was collected from each subject and dispensed into a plain container and allowed to clot. The serum obtained was used for serological diagnosis of Hepatiatis B and C viruses.

Antibodies to hepatiatis B and C Virus were detected using immunochromatographic methods (Clinotech diagnostics and Pharmaceuticals Inc. Canada). Briefly, sera obtained from patients were applied to test strips and observed for the emergence of line bands on the strips. Positive and negative control sera were run alongside test. Interpretation of results was done according to manufacturers instruction.

**Statistical Analysis:** The data obtained were analyzed using Chi-square ($X^2$) or Fischer's exact test as appropriate and odd ratio analysis using the statistical software INSTAT® [18 ]Statistical significance was set at $P < 0.05$

## RESULTS

Fifteen (5.6%) and 3 (1.1%) out of the 267 pregnant women studied were infected with Hepatiatis B and C viruses respectively. Parity, age and scarification did not significanyly affect infection with HBV and HCV among pregnant women studied (P>0.05) (Tables 1 and 2 ).

Blood transfusion was found to be a significant risk factor only for infection with HBV among pregnant women (OR=3.318, 95%CI=1.067,10.318, P= 0.0458) (Table 1). The prevalence of HCV infection among pregnant women was significantly affected by previous delivery by traditional birth attendant. (OR=12.424, 95 % CI= 0. 635, 234.2, P= 0.049) (Table 2).

## DISCUSSION

With so much emphasis given to the study of HIV/AIDS among pregnant women in Nigeria in recent years, little attention has been drawn to Hepatitis B and C viral infections which have been shown to have similar modes of transmission as the Human Immunodeficiency Virus. Data on HBV and HCV infections among pregnant women in Nigeria are sparse and where they exist, have had their focus largely on urban ante-natal populations. This study therefore focused on determining the prevalence and prevailing risk factors of HBV and HCV infections among pregnant women in Okada community a rural settlement in Edo State, Nigeria.

The prevalence of HBV and HCV infections among

pregnant women was 5.6% and 1.1% respectively. This is consistent with previous findings [19, 20]. It is however at

Table 1: Prevalence of HBV infection and associated risk factors for transmission among the investigated pregnant women.

| Characteristics | N | N & (%) of Positives | OR | 95% CI | P value |
|---|---|---|---|---|---|
| Parity | | | | | |
| Multiparous | 65 | 5 (7.7) | | | 0.397 |
| Primiparous | 106 | 7 ( 6.6) | | | |
| Nilliparous | 96 | 3 (3.1) | | | |
| Age (years) | | | | | |
| 13-18 | 14 | 0 (0.0) | | | 0.398 |
| 19-24 | 120 | 6 (5.0) | | | |
| 25-30 | 94 | 6 (6.3) | | | |
| 31-36 | 32 | 3 (9.4) | | | |
| 37-42 | 7 | 0 (0.0) | | | |
| Facial / body scarification | | | | | |
| Yes | 73 | 4 (5.5) | 0.964 | 0.297,3.131 | 1.000 |
| No | 194` | 11(5.7) | 1.037 | 0.319,3.367 | |
| Blood Transfusion | | | | | |
| Yes | 38 | 5 (13.2) | 3.318 | 1.067, 10.318 | 0.046* |
| No | 229 | 10 (4.4) | 0.301 | 0.097,0.937 | |
| Delivery by TBA | | | | | |
| Yes | 98 | 9 (9.2) | 2.747 | 0.947, 7.970 | 0.094 |
| No | 169 | 6 (3.6) | 0.364 | 0.126, 1.856 | |

N-number tested ;OR-odd ratio ; CI-confidence interval; *-Significant

Table 2: Prevalence of HCV infection and associated risk factors of transmission among the investigated pregnant women.

| Characteristics | N | N & (%) of Positives | OR | 95% CI | P value |
|---|---|---|---|---|---|
| Parity | | | | | |
| Multiparous | 65 | 1 (1.5) | | | 0.417 |
| Primiparous | 106 | 2 (1.8 ) | | | |
| Nulliparous | 96 | 0 (0) | | | |
| Age (years) | | | | | |
| 13-18 | 14 | 0 (0.0) | | | 0.921 |
| 19-24 | 120 | 1 (.0.8) | | | |
| 25-30 | 94 | 2 (2.1) | | | |
| 31-36 | 32 | 0 (0.0) | | | |
| 37-42 | 7 | 0 (0.0) | | | |
| Facial/body scarification | | | | | |
| Yes | 73 | 2 (27.4) | 5.437 | 0.485,60.521 | 0.182 |
| No | 194 | 1(0.5) | 0.184 | 0.016,2.061 | |
| Blood Transfusion | | | | | |
| Yes | 38 | 2 (5.3) | 12.667 | 1.119, 14.317 | 0.054 |
| No | 229 | 1(0.4) | 0.079 | 0.007,0.894 | |
| Delivery by TBA | | | | | |
| Yes | 98 | 3 (3.1) | 12.424 | 0. 635, 234,2 0.049* | |
| No | 169 | 0 (0) | 0.081 | 0.004, 1.579 | |

N-number tested ;OR-odd ratio ; CI-confidence interval; *-Significant

variance with others [21, 22]. The difference geographical location, predominant route of transmission, predominance of risk factors and the socio-biological factors of study groups may account for the observed variation. Parity, age and presence of facial / body scarification on pregnant women had no significant effect on prevalence of HBV and HCV infection in this study. Co-infection of HBV and HCV in pregnant women was not observed.

Blood transfusion was found to be a significant

risk factor for HBV infection among pregnant women in Okada. This has been previously reported [23]. Pregnant women with a history of blood transfusion had a 1-10 fold increase of being infected with HBV than those who had not being transfused with blood or blood products. Literature shows that a good number of blood transfusion practices in Nigeria especially in rural areas, does not undergo internationally accepted screening procedures [15]. This puts the pregnant women at great risk of infection with blood related diseases and, could very well explain this trend. It is however at variance with a Benin City study [24]. Ugbebor *et al*. [24] focused on pregnant women attending antenatal cliinics in an urban tertiary health care facilty, which was quite different from the study group in this work.

Previous delivery by a traditional birth attendant was found to significantly affect HCV prevalence among pregnant women in this study. This is in keeping with earlier reports [6, 22]. Repeated use of old and unsterilized cutting instruments may account for this observation as literature shows that TBA`s are largely uneducated [25] and unable to prevent and treat most life threatening obstrectic complications [26]. Lending support to this is the declaration by WHO that 40% of hepatitis C infection results from unsafe medical injections in the developing world [27], a practice that is evidently fuelled by poverty and illitracy. and often found to strive in rural areas of the developing world.

The prevalence of Hepatitis B and C infections in pregnant women in Okada community is 5.6% and 1.1% respectively.Blood transfusion and delivery by traditinal birth attendants were risk factors for HBV and HCV infections in rural Okada pregnant women. In contrast to our results, a recent Benin City study found no association between HBV and blood transfusion [24], suggesting that risk factors for HBV and indeed HCV transmission among pregnant women in Nigeria may differ from rural to urban settlements. The epidemiology of viral hepatitis during pregnancy is essential for health planners and programme managers.There is therefore apparent need for improved screening of all pregnant women and enlightenment at community level on risk factors of HBV and HCV transmission. It is quite unlikely that Nigeria would be able to provide enough skilled birth attendants, that will cater for the reproductive needs of her women in their child bearing age in the immediate future. Consequently traditional birth attendants should be educated on importance of the clean and safe obstetric practices.

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