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Original Article

# Hepatitis B and C Infection: should gynaecological patients be routinely screened?

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## ABSTRACT

**Background:** Hepatitis B and C viral infections constitute infectious hazards due to its risk of transmission. **Aim:** The study was undertaken to determine the prevalence and Risk factors of infection with Hepatitis B virus and Hepatitis C virus in patients attending gynaecological outpatient clinics at Niger Delta University Teaching Hospital Okolobiri, Bayelsa State, Nigeria. **Methods:** This was a prospective cross-sectional study carried out over a Seventeen months period, January 2011 to May 2012. A total 365 women attending our gynaecological clinics were consecutively recruited for the study. Information on demographics and risk-factors were obtained with a self administered questionnaire. Rapid diagnostic test kits were used to detect the presence of Hepatitis B surface antigen (HBsAg) and anti-Hepatitis C virus (HCV) antibodies**. Results:** The prevalence of infection with Hepatitis B surface antigen (HBsAg) was 7.9%, Hepatitis C antibody 4.7% and 1.9% had mixed infection. The risk factors identified includes; unsafe abortion 161 (44.1%), multiple sexual partners (12.6%), tattoo marks (17.3%) ,scarification marks (47.1%), past blood transfusion (8.5%) and previous surgeries or dental procedures (14.2%); there was no statistical relationship between these risk factors and acquisition of HBV or HCV infection(all *P*-values >0.005). **Conclusion:** It is concluded that though the prevalence of Hepatitis B and C infection's is relatively low in our environment compared with other reports; however, the policy of routine screening of all gynaecological patients especially those that require surgical intervention should be made mandatory and the principles of universal precaution should be re-emphasized.

**Key words:** HBsAg, HCV, risk factor, prevalence, gynaecological patients

## INTRODUCTION

Exposure to Blood and body fluid is a well known occupational hazard that as been documented in the literature over fourty years ago.[1] The majority of infections among Health care workers attributed to occupational exposure occur in developing countries, on the contrary over 90% of reporting of occupational exposure to blood

and body fluid is from the developed world.[2, 3] This failure to report occupational exposure increases the risk of infection among Health care workers in the developing world; furthermore, this is made worst by the lack of formal blood and body fluid exposure reporting system in most Hospitals in developing countries, leading to unreported and or inadequately treated body fluid exposure.[4]

Transmission may occur due to accidental punctures with contaminated instruments or the use of unsterilized medical equipment; in body cavities, poorly expose body sites, during invasive procedures and exposure of non intact skin or mucous membrane to infectious materials.[5] The risk of transmission depends on; the dose of pathogen transmitted; the infectious characteristics of the pathogen; and the frequency or probability of exposure to infectious material.[5]

Many people infected with hepatitis B or C rarely displays any symptom, although they can still transmit the virus to others. [6] Over 70% of individuals infected with Hepatitis C Virus develop a persistent viraemia,[7] which further increases the chances of transmitting the virus.

HBV and HCV infections are a major cause of morbidity and mortality. The World Health Organization (WHO) estimates that about 3% of the world populations (200 million people) have so far been infected with the Hepatitis C virus, of which about 50% will become chronic carriers and are at risk of liver cirrhosis and liver cancer.[8,9] Chronic infection with HBV and HCV are often asymptomatic, and can lead to liver cirrhosis and hepatocellular carcinoma.[8,9] Thus, most infected people are unaware of their HBV or HCV statuses. Mortality associated with HCV infection is increasing even in industrialized countries due to the difficulty in diagnosing first infections and the poor results of treatment.[10,11]

Prevention of infection following occupational exposure to a healthcare provider is based on the concept of universal precautions; which is the assumption that all patients may be infected with blood borne pathogens and stresses the importance of applying appropriate precautions to all patients and their body fluids.[5] These includes staff training on safe clinical procedures, awareness and education on the health risk of blood and body fluid exposures, exposure reporting, post exposure risk assessment, treatment, follow-up and counseling of exposed Individuals.[5] Hepatitis B vaccine provides a safe and effective means of primary prevention and protection.[5]

The prevalence of HBV infection in Nigeria is estimated to be 2.4 - 18.4% of the population.[12-14] A baseline data based on the local population is helpful to ascertain the prevalence and risk factors of Hepatitis B and C infection among apparently healthy women in our gynaecological clinics which are the aims of this study.

## METHODOLOGY

### Study design

This was a prospective cross-sectional study carried out over a 17 month period spanning from January 2011 to May 2012. 365 women attending gynaecological out patient's clinic at the Niger Delta University Teaching Hospital (NDUTH), Okolobiri, in Bayelsa State, Nigeria, were consecutively recruited for the study.

### Study area

The study was carried out at the NDUTH situated in Okolobiri community, a semi-urban community in the Yenagoa Local Goverment Area of Bayelsa State, in the Niger Delta region of Nigeria. The NDUTH is a tertiary hospital that serves the entire Bayelsa State and neighbouring communities in Delta and Rivers States of Nigeria. The hospital serves different socio-economic strata of the society - mostly the lower and middle socioeconomic groups.

### Exclusion/inclusion criteria

Apparently healthy women attending Gynaecological Out-Patient's Clinic were recruited for the study. Women with a past history of hepatitis, those with jaundice, fever, liver enlargement were excluded from the study.

### Data collection

Demographic and clinical data were further obtained using a self administered

questionnaire. The questionnaire asked about previous history of blood transfusions, previous surgery, previous termination of pregnancy, previous sexually transmitted infections, tattooing, scarification marks, and polygamy/exposure to multiple sex partners, exposure to jaundiced patients. Systematic random sampling was used with every third client being interviewed. The appointment list for each day of the week was got and the sample fraction calculated. The number of study participants was determined using probability proportionate to-population size allocation methods. The questionnaires were administered by the researchers to a total of 365 participants. Respondents were given a free hand in response to questions and were only guided in their responses when they voluntarily called for assistance. They were also assured that the information provided would be kept confidential. The sampling method we used was systematic random sampling with every third client being interviewed. We got the appointment list for each day of the week and calculated the sample fraction. The information obtained were coded and transferred onto a proforma already design for the study.

### Ethical clearance

Ethical approval for the study was obtained from the Ethics Review Board of the NDUTH. Informed consent was obtained from all subjects recruited into the study.

### Sample collection and processing

5ml of venous blood was collected by vene puncture into a plain bottle with no anti-coagulant, and allowed to clot. The sample was centrifuged at 2000g for 5 minutes and the serum was transferred to a plain container and stored at 4°C. The presence of Hepatitis B surface antigen (HBsAg) was determined using third-generation enzyme immunoassay (EIA), rapid test ELISA kits (Acon Laboratories, USA). Presence of antibodies against HCV (anti-HCV) was also determined using rapid test ELISA kits.

### Statistical analysis

Graphpad Prism version 4® (Graphpad software, San Diego, CA) was used for statistical analysis. One-way analysis of variance (ANOVA) or paired t- test was used to determine the differences between groups with the level of significance set at $P < 0.05$.

## RESULTS

The ages of the pregnant women ranged from 16 years to 63 years.166 (45.5%) of them were married and 201 (55.1%) had secondary school education, 62 (52.2%) were housewives and 121 (33.2%) were nullipara (table 1). 29 (7.9%) subjects had serum samples positive for HBsAg (95% CI: 1.55 5.79), whilst 17 (4.7%) subjects had samples positive for anti-HCV (95% CI: 0.04 - 2.62). Seven were positive for both HBsAg and anti- HCV (1.9%) (table 2).

The risk factors identified include unsafe abortions( *P*= 0.797, 0.08), scarification marks (*P*= 0.268, 0.31), **p**revious blood transfusion (*P*= 0.252, 0.19), **t**attooing (*P*= 0.14,0.96), sexually transmitted infections (*P*=0.587,0.55), previous surgery (*P*=I, 0.08) and multiple sexual partners (*P*=0.75, 0.52) (table 3).

## DISCUSSION

Many people infected with hepatitis B or C rarely displays any symptom, although they can still transmit the virus to others.[6] The results of this study showed that the prevalence of Hepatitis B surface antigen (HBsAg) was 7.9% among women attending Gynaecological Out-Patients Clinic. The prevalence of HBV infection among pregnant women during the antenatal period as been used as a reliable indicator of prevalence rate in the general population, the prevalence rate from this study is similar to findings from other centers in Nigeria.[15,16] It is however higher than the prevalence of 3.67% reported from our center among pregnant women and from other centers in Nigeria,[17-19] even though other centers have reported higher prevalence rates.[20, 21]

Furthermore, the sero-prevalence of 4.7% for anti-HCV is similar to the prevalence rates of 3.6% to 5% reported from previous studies in Nigeria.[22,23] This is however higher than 1.3% reported from our center among pregnant women, 2.1% in Gabon and1.03% observed in India.[17,24,25] The differences observed may be due to regional differences

in risk factors and cultural practices. Scarification/tattoo marks are recognized risk factors for hepatitis infection in this study, which is similar to previous finding from our center and another center in Nigeria,[17,26] but is different from results obtained in another study in Nigeria.[15] This is because scarification marks are commonly inflicted on the body for a variety of reasons in West Africa, using knives, blades and other sharp instruments. These instruments are frequently used on multiple people at the same time.[27] Tattoos are applied in a similar fashion to scarification marks.

**Table 1: Socio-demographics of the study subjects**

| Parameter | | n=365 | % |
|---|---|---|---|
| Age | 17 to 20 | 17 | 4.7 |
| | 21 to 30 | 149 | 40.8 |
| | 31 to 40 | 124 | 34.0 |
| | 41 to 45 | 49 | 13.4 |
| | >45 | 26 | 7.1 |
| Parity | 0 | 121 | 33.2 |
| | 1 to 3 | 203 | 55.6 |
| | >4 | 41 | 11.2 |
| Marital status | single | 73 | 20.0 |
| | co-habiting | 94 | 25.8 |
| | married | 166 | 45.5 |
| | divorced | 32 | 8.7 |
| Education | nil | 31 | 8.5 |
| | primary | 52 | 14.2 |
| | secondary | 201 | 55.1 |
| | tertiary | 81 | 22.2 |
| Occupation | unemployed | 21 | 5.7 |
| | housewife | 62 | 17.0 |
| | petty trader | 119 | 32,6 |
| | farmer | 34 | 9.3 |
| | civil servant | 97 | 26.6 |
| | student | 35 | 9.6 |

**Table 2: Prevalence of Hepatitis B and C infections among gynaecological patients**

| Number of patients | HBsAg | Anti-HCV | Both HBsAg and anti- HCV |
|---|---|---|---|
| 365 | 28(7.9%) | 17(4.7%) | 7(1.9%) |

Sexual practices could not be properly explored as most of the study subjects skipped questions pertaining to sexual practices and the number of partners. Cultural and religious reasons could be responsible for this unwillingness to divulge individual sexual practices. Previous termination of pregnancy is identified as risk factor in this study. Unfortunately, this finding is not surprising because abortion is illegal in Nigeria and many women with unwanted pregnancies end up in a clandestine or otherwise unsafe abortion 'clinics' in the hands of illegal practitioners, where unsterile instruments are frequently used in environments lacking the minimum medical standard.[28] The other risk factors are similar to findings from previous studies.

## CONCLUSION

The result of this study is a wake-up call for the need for preventive measures against hepatitis B and C viral infection among gynaecologists and other health care workers. The need for routine screening of all gynaecological patients, particularly those that will undergo surgical procedures for Hepatitis B and C infections is further re-enforced with the findings of this study. Also, the public should be educated on the various routes of transmission of the virus; procedures involving unsterile or inadequately sterilized equipment, traditional practices such as scarification, tattooing, female genital mutilation and ear piercing. Health care personnel should be familiar with and adhere to the concept of universal precautions. Blood and blood products from every patient should be treated as infectious and necessary precautions taken. It is thus pertinent to develop guidelines for the appropriate use of HBV vaccine. This should be made available to all health care workers, especially those who are likely to come in contact with blood or body fluids.

**Table 3: Probable risk factors associated with hepatitis B and C infections**

| | | HBsAg | | | anti-HCV +ve | | |
|---|---|---|---|---|---|---|---|
| **Variables** | No. Of subjects | HBsAg +ve | HBsAg -ve | *P*-value | anti-HCV +ve | anti-HCV -ve | *P*-value |
| **History of pregnancy termination** | | | | | | | |
| present | 161 | 13 | 148 | 0.797 | 4 | 157 | 0.08 |
| absent | 204 | 15 | 189 | | 13 | 191 | |
| **Scarification marks** | | | | | | | |
| present | 172 | 16 | 156 | 0.268 | 6 | 166 | 0.31 |
| absent | 193 | 12 | 181 | | 11 | 182 | |
| **History of sexually transmitted infection** | | | | | | | |
| present | 66 | 4 | 62 | 0.587 | 4 | 62 | 0.55 |
| absent | 299 | 24 | 275 | | 13 | 286 | |
| **History of blood transfusion** | | | | | | | |
| present | 31 | 4 | 27 | 0.252 | 0 | 31 | 0.19 |
| absent | 334 | 24 | 310 | | 17 | 317 | |
| **Tattooing** | | | | | | | |
| present | 63 | 2 | 61 | 0.14 | 3 | 60 | 0.96 |
| absent | 302 | 26 | 276 | | 14 | 288 | |
| **History of previous surgery** | | | | | | | |
| present | 52 | 4 | 48 | 1 | 0 | 52 | 0.08 |
| absent | 313 | 24 | 289 | | 17 | 296 | |
| **Multiple sexual partners** | | | | | | | |
| present | 46 | 3 | 43 | 0.75 | 3 | 43 | 0.52 |
| absent | 319 | 25 | 294 | | 14 | 305 | |

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