

Prevalence of Viral Hepatitis B Among Pregnant Women in N'Djamena

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Abstract: Introduction: Viral hepatitis B represents a major public health problem in the world. Vertical transmission has been identified as one of the causes of the high prevalence of hepatitis B virus infection in sub-Saharan Africa. Pregnant women carrying the virus expose their offspring to infection. The aim of this study was to determine the prevalence of viral hepatitis B in pregnant women. Methods: This descriptive cross-sectional study included pregnant women seen at the prenatal consultation (PNC). The data were collected by means of a questionnaire sent to each respondent included in the study. Statistical processing and analysis of the data collected was done using SPSS 2.1 software. Bivariate analysis was used to study the relationships between the dependent variables and the explanatory variables. HBsAg testing was performed by a rapid diagnostic bioassay. Results: A total of 266 pregnant women participated in the study. The mean age was 25.62 ± 5.17 years, with extremes of 18 and 41 years. The majority (51.9%) had been tested for HBsAg during the prenatal consultation, of which 10.1% (n=14) tested positive. There was no statistically significant relationship between HBsAg carriage and monthly income of pregnant women. Similarly, there was no statistically significant relationship between HBsAg carriage or not and the existence of a family member with hepatitis B. Conclusion: In light of our results, it is important to develop effective control strategies. There is a need to sensitize women of childbearing age in order to reduce the risk of HBV transmission from mother to child.

Keywords: Prevalence, Pregnant Women, Viral Hepatitis B, HBsAg, Chad

1. Introduction

Viral hepatitis B represents a major public health problem. At least one third (1/3) of the world's population has had contact with the hepatitis B virus (HBV) in their lifetime. According to the World Health Organization (WHO), approximately 240 million people are chronic HBV carriers [1]. The modes of transmission are variable. Whether it is horizontal or Vertical transmission is more frequent in tropical Africa and Asia [2, 3]. Vertical transmission has been identified as one of the causes of the high prevalence of hepatitis B virus infection in sub-Saharan Africa [4, 5]. Pregnant women who are carriers of the virus expose their offspring to hepatitis B virus infection. Transmission of the

virus can occur at the time of delivery, during the perinatal period or during the preschool years. HBV infection, when it occurs in early childhood, is more likely to progress to chronicity [6]. Chronic HBV infection puts patients at high risk of death from cirrhosis and liver cancer. These complications can be prevented by vaccination and early detection. Those who test positive should be followed up and treated if necessary to slow the progression to complications.

The prevalence of chronic carriers is very high in Africa and East Asia in the general population. It is in the order of 8 to 26% [7, 8].

In Benin, the seroprevalence of viral hepatitis B in pregnant women according to Khadjiatou et al. was 14.02%. The factors associated with this carriage were the practice of

scarification, personal history of jaundice and family history of viral hepatitis B [9].

In Chad, despite the high prevalence of viral hepatitis B, very little work has been done among pregnant women to our knowledge. Thus, the aim of this work was to determine the prevalence of HBV in pregnant women.

2. Patients and Methods

This was a descriptive cross-sectional study. The study population consisted essentially of pregnant women seen at the ANC, meeting the inclusion criteria.

The sampling was consecutive and exhaustive. The data collection medium was a standard questionnaire sent to the respondents retained in this study. Data were entered on an EPI Data mask and processed by SPSS software. The Chi-2 test was used as appropriate and the threshold of significance was a value of $p < 0.05$.

HBsAg testing was performed by a rapid diagnostic bioassay, with a sensitivity of 5ng/ml and an accuracy greater than 99.5%. A drop of blood was taken from the fingertip and placed on the strip at the indicated arrow. The reading was taken after 10 minutes.

The socio-economic level was defined as low for anyone whose monthly income was below the SMIG (94\$). It was considered average/acceptable between 94\$ and 468\$.

3. Results

3.1. Socio-Demographic Characteristics

A total of 266 pregnant women aged at least 18 years participated in the survey. The average age of the respondents was 25.62 ± 5.17 years, with extremes from 18 to 41 years. The 21 to 25 age group was the most represented (32.3%).

Table 1. Socio-demographic characteristics of respondents.

Characteristics		n	%
Aging (years)	18 – 20	56	21,1
	21 – 25	86	32,3
	26 – 30	81	30,5
	31 – 35	33	12,4
	36 – and more	10	3,8
Marital status	Married	257	96,6
	Single	6	2,3
	Divorced	3	1,1
Level of study	Not in school	65	24,4
	Elementary	29	10,9
	Secondary	108	40,6
Profession/occupations	Higher	64	24,1
	Housewives	133	50,0
	Public servant	6	2,3
	Shopkeepers	26	9,8
	Students	101	38,0
Monthly income (\$)	Less than de 94\$	229	86,0
	94\$ and more	37	14,0

Married pregnant women were in the majority in this study series (96.6%). They had a high school level of education in 40.6% of the cases, followed by those who did not attend

school in 24.4% of the cases.

As regards occupation, housewives or homemakers were the most represented (50%). They were followed by pupils or students (38%). The majority of respondents had a monthly income of less than 94\$ (86%).

3.2. Prevalence of HBsAg Carriage

The study showed that of the 266 pregnant women interviewed, 138 had been tested for HBsAg. Of these, 14 were positive, i.e. a prevalence of 10.1%.

Of these, 138/266 reported having someone in the family with hepatitis B.

3.3. Vaccination Status

Of the women interviewed, 10.2% (n=27) reported being vaccinated against HBV.

In addition, of the 27 pregnant women who had taken the hepatitis B vaccine, 19 (70.4%) had received all 3 doses.

3.4. Associated Factors

The bivariate analysis showed that there was no statistically significant relationship between HBsAg carriage and monthly income of pregnant women ($p = 0.599$). Similarly, there was no association between HBsAg carriage and the existence of a family member with hepatitis B ($p = 0.333$).

4. Discussion

Out of a total of 266 women seen at the ANC during the study period, 138 were able to be screened for HBsAg (51.9%), 14 of whom tested positive, i.e. a prevalence of 10.1%, confirming the WHO data placing Chad among the countries with a high prevalence of HBV in the general population [7]. We certainly do not have data in pregnant women. However, a study conducted in 2014 found a prevalence of 16.1% among patients living with HIV [10]. In Benin, according to Khadidjatou et al, out of 214 pregnant women surveyed, 30 women tested positive for HBsAg, i.e. a prevalence of 14.02% [9]. In Cameroon, Mawouma et al. found a higher prevalence (18.4%) of hepatitis B antigen (HBsAg) [11]. These high prevalence rates observed in Chad than elsewhere (Benin and Cameroon), corroborate with WHO data which indicate that these countries are part of the high endemicity zone for viral hepatitis B with an average prevalence of over 8% [12].

The average age of the respondents was 25.62 ± 5.17 years, with extremes of 18 and 41 years. The 21 to 25 years old age group is the most dominant with a proportion of 32.3%. This result is similar to those of Mawouma et al. and Njoya et al. in Cameroon who also found a young population with average ages of 25 and 24.54 ± 6 years respectively [11, 13]. The same constant was also done in Benin by Khadidjatou et al. and Tatsi et al. in Ivory Coast who obtained respectively mean ages of 26.73 ± 5.68 and 26.82 years [9, 14]. On the other hand, the French study by Latthaphasavang found a slightly higher median age than the

African series (28 years) [15]. The young age found in all the series corresponds in reality to the propitious age of procreation.

Analysis of the data shows that almost all the women surveyed were married or living in couples (96.6%). Khadidjatou *et al.* had found a lower proportion than ours (62.62%) [7]. The high proportion of pregnant women living in a household could be explained by socio-cultural constraints in Africa in general, and more particularly in Chad, where conceiving outside of marriage is not well perceived by society.

As for the level of education, secondary school represents 40.6% ($n = 108$). On the other hand, 24.4% ($n=65$) had not attended school. Our results are close to those of Khadidjatou *et al.* in Benin, in which some pregnant women (28.97%) were not educated, while others (52.81%) had at least a secondary level [9]. The low rate of schooling among pregnant women is consistent with the reality of the country. In fact, according to the latest Chad Demographic and Multiple Indicator Cluster Survey (EDS-MICS), the schooling rate for women is low [16].

In terms of profession or occupation, the most represented are housewives (50%), followed by pupils or students (38%). Furthermore, the majority of these women (86%) have a monthly income below the minimum wage (94\$). In Benin, Khadidjatou *et al.* found 64.49% of pregnant women with a monthly income below the SMIG (62\$) [9]. The low income found in both Chad and Benin is related to the level of development of countries south of the Sahara classified as developing countries (DC) with limited resources.

With regard to vaccination status, 27 women surveyed (10.2%) reported being vaccinated against HBV, of whom 19 (70.4%) considered themselves to be fully vaccinated (3 doses). This low rate shows that much remains to be done in the fight against viral hepatitis in Chad.

Finally, the analysis of the statistical data showed that there is no statistically significant association between HBsAg carriage and the monthly income of pregnant women. Whether one has a good or low monthly income, the level of exposure remains the same. Also, there was no relationship between being a HBsAg carrier or not and the existence of a family member with hepatitis B. This shows the limits of knowledge about hepatitis B, which is often assimilated to viral hepatitis A, a disease of fecal-oral transmission.

5. Conclusion

Viral hepatitis B is a real international public health problem.

Chad is one of the so-called high prevalence areas according to the WHO.

The present study shows a high prevalence of HBsAg carriage among pregnant women, thus confirming the data in the literature. Particular emphasis should be placed on systematic screening of women at prenatal consultation, the main source of contamination in Africa. The introduction of the HBV vaccine at birth in all newborns, awareness raising

and massive screening of the general population is necessary to reduce this scourge.

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