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Assessing pregnant women's knowledge of HBV and HCV Routes of transmission at the Bertoua Regional Hospital in the East Region of Cameroon

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ABSTRACT

Studies in Cameroon indicate generally poor knowledge and low awareness of viral Hepatitis among pregnant women, despite high endemicity, viral Hepatitis is challenging the health condition of the people around the world, and is considered a serious public global health problem of the human kind in the 21th century. In the globe, there are two well-known forms of chronic Hepatitis and this corresponds to Hepatitis B and Hepatitis C. This cross-sectional study at Bertoua Regional Hospital of Cameroon (June 2025-January 2026) aimed at identifying HBV and HCV routes of transmission among pregnant women at the Bertoua Regional Hospital in Cameroon attending the maternity unit. the majority of them (62%) were aged within (19-28). (66.5%) of the pregnant women had knowledge about HBV or HCV routes of transmission, (49.5%) of them had never heard about the Mother-to-child-transmission expression, to the question of how can Hepatitis B or C be transmitted from one person to the other, nearly all of them were awaaer and only (3%) had no knowledge about it, almost half (46%) of the pregnant women knew that breastfeeding is safe as long as nipples are not bleeding,, (19.75%) of them said the baby transmission through C-section is not possible, while (52,(%) of them agreed that a HBVor HCV mother can transmit the virus to her baby during pregnancy or delivery, still, (62%) of them are of the view that HBV or HCV can be spread by sharing personal items like a toothbrush or razor. However, data identifying pregnant women knowledge on HBV or HVC routes of transmission among pregnant women across both community and healthcare settings remain limited, hence the need of this research. The findings align with the World Health Organization as well as others organisms fighting for the prevention and elimination of viral Hepatitis such as the Centre of Disease Control and Prevention

Keywords : *knowledge, HBV and HCV , Routes of transmission ,Pregnant women ,Cameroon*

1. INTRODUCTION

HBV and HCV are acquired by contaminated blood product exposure, sexual activity or perinatal transmission. Although the prevalence of HBV is relatively low, in the US and generally with approximately 1 million Americans are chronically infected by HBV (Sorell MF et al 2009), it is more prevalent in East Africa (8%) (Ott JJ et al 2011), Southeast Africa and India 1 to 66% and Sub-Saharan Africa (8 to 12%) (Ott JJ et al 2011).

Viral Hepatitis is challenging the health condition of the people around the World and is considered a serious public global health problem of the human kind in the 21th century. Hepatitis B virus is a member of the Hepanaviridae family, it is a DNA virus with partially double-stranded DNA and a core antigen surrounded by a shell containing hepatitis B surface antigen (HBsAg). Despite availability of a vaccine and antiviral treatment, HBV infection is still a major health problem causing considerable morbidity and mortality (Chaiba et al; 2015). A systematic review by (Mahamat et al; 2021) estimated that the prevalence of Hepatitis B in Cameroon was low, with overall 2.3% all ages? In 2015, the WHO estimates that 257 million people were living with chronic Hepatitis B including 65 million women of childbearing age, with estimated number of deaths at 887000 mainly due to HCC (Angeles et al; 2020).

Hepatitis C virus is an RNA virus of the flaviviridae family and appears to have humans and chimpazees as the species susceptible to infection (Samuel et al;2004), about 170 million people are infected with HCV worldwide (Obi et al; 2006). In Cameroon, a study of (Mounchili et al; 2024) found anti-HCV overall prevalence of 13.50%; HBV and HCV can be prevalent and affect a wide range of population that include human immune deficiency virus (HIV) infected individuals, healthcare workers, blood donors, pregnant mothers, their children (Elkhateeb et al; 2018); various studies indicate that the prevalence of HBV and HCV among pregnant women becomes serious public health importance (Dabsu et al; 2019). In Cameroon, a study of (Frambo et al; 2014) reported a HBV prevalence in pregnant women of 9.7%, while in 2018, (Fouelifack et al; 2018) reported a 1.6% HCV pregnant women Mother-to-child transmission of HBV which might be via uterine transmission is a common phenomenon and causes chronic infection of the virus (Zhao et al; 2022); it is one of the main routes of transmission worldwide, despite the proven effectiveness of immunoprophylaxis, in particular the birth dose vaccine. Mother-to-child transmission can occur during pregnancy, during delivery or during breastfeeding (Mendoua et al; 2013); mother-to-child transmission is responsible for more than third chronic viral hepatitis cases (Noele teal; 2016) other routes of transmission include: having history of polysexual practices, previous history of dental procedures, health facility admission, blood transfusion (Mamuye et al; 2020). Overall, there is a paucity of research specifically addressing pregnant women and routes of transmission identification in Cameroon. Therefore, this study aims at identifying the various HBV and HCV routes of transmission among pregnant women at the Bertoua Regional Hospital in Cameroon, in other words, what knowledge do pregnant women have of Hepatitis B and C routes of transmission?

2. RELATED WORKS

Childbearing women can potentially transmit HBV and HCV to their children, they transmit an

infection to new-borns usually during birth following close contact. There is a higher likelihood of vertical transmission of infection from mothers to offspring in 4.6% and 1.6% of babies delivered to pregnant women with HBV and HCV infections respectively (Dagnew et al 2020). New-borns who are exposed to HBV will have almost 85-90% risk of developing chronic liver disease (Brian J.Mc Mahon et al 1990).

Vertical transmission is common among asymptomatic female carries who are unaware of their status, in cases of high viral multiplication in the mother, and in the absence of serovaccination, 90% infected newborns are likely to develop chronic Hepatitis B (Sogni et al; 2015) and have a much higher risk of developing liver disease, including HCC in adulthood (Dong et al; 2015).

A Cameroonian previous study of (Mbongue et al; 2024), a prospective, cross multicenter study was conducted from 17 September 2018 to 25 February 2019 in 102 pregnant women aged 15 to 44 years. The results showed out that scarification and tattooing were significantly associated with HBV infection and previous contact with HBV.

Another study of (Ayenew et al; 2023), A cross-sectional study conducted from March 15th to September 16th, 2022, at the Debre Tabor Comprehensive Specialized Hospital antenatal care clinic. The results showed out that tattooing and dental therapy were significantly associated with HBV infection.

3. MATERIALS & METHODS

Inclusion criteria were Pregnant women aged of 19 years and above (58) who freely consented, and came for antenatal care visit at the maternity unit of the BRH, and had not been vaccinated against HBVwithin the study period; as well, the study excluded pregnant women less than 19 years and non-pregnant women. Those of them who had receive HBV vaccine at the period of the study were also excluded. The prospective health facility-based study setting was chosen because of the required study population of pregnant women who register for regular antenatal care visits. Moreover, data collected at a specific point in time was deemed adequate to establish a diagnosis of HBV virus, hence, justifying the choice of a cross-sectional study design, this is because testing for Hepatitis B and C virus has been made a routine test for all the pregnant women on their antenatal care visit at the Bertoua Regional Hospital and actually were free of charge during the study. A total of 400 pregnant women were consecutively sampled (non-probabilistic) registered for their visit during the study period and all were approached with a request and signed the informed consent to take part in the study, all of them gave their consent to participate in the study and they were consecutively enrolled to the study.

Participants were assigned codes for anonymity purposes, we used for HBV screening Diaspot HBsAg, these are step Hepatitis B Surface Antigen (HBsAg) test strip package insert and for HCV, Diaspot HCV virus anti-body (HCV-Ab) test strips. Those are immune-chromatographic strips for qualitative detection of antibodies and antigens. Their sensitivity and specificity are above 99% and 98% respectively. Results were disclosed to participants with proper counselling; all infected pregnant women were counselled on the disease and referred for proper specialization care while the non-infected were counselled for HBV vaccination. Data were obtained using a well-structured questionnaire which was designed for the research and for laboratory analysis; questions

elicited data to cover the objectives of the study, the questionnaire included seven sections, each focusing on a particular aspect to answer the research questions and gaps as well. The quantitative part of the questionnaire featured MCQ and Likert-scale questions allowing participant to rate their experiences, knowledge, feelings and attitudes. The questionnaires also included open-ended questions inviting participants to give other factors not mentioned. Frequencies (sums and percentages) were calculated for the socio-demographic factors and the different attitudes, feelings and practices towards HBV and HCV.

Tables displaying the frequency distribution for knowledge, attitude and practice towards HBV and HCV were entered into graph, each of the tables had frequencies for knowledge, maternal HBV/HCV preventive modes and practices, modes of transmission. Data were analyzed using Excel 2016 frequencies and percentages were determined

4. RESULTS & DISCUSSION

[See Annex — Table 1: Socio-demographic information and prevalence rates among pregnant women attending ANC]

The results showed that the majority of pregnant women (62%) were aged within the framed age (19-28), most of them (59.5%) were single, (32.5%) of the pregnant women had no formal education, while (38.75%) of them were housewives, (89.5%) were Christian and more than half (76.25%) were multigravida that is they were pregnant more than once

[See Annex — Table 2: HBV/HCV Routes of transmission among pregnant women at the BRH]

(66.5%) of the pregnant women had some knowledge about Hepatitis B and C transmission, (49.5%) of them were not aware of the expression Mother-to-child-transmission, to the question of how can Hepatitis B or C be transmitted from one person to the other, nearly all the pregnant women were right and aware, just 3% had no knowledge about it, almost half (46%) of the pregnant women knew breastfeeding is safe unless the nipples are not bleeding, (19.75%) of the pregnant women said a new-born baby cannot be transmitted HCV through C-section; while (52.5%) agreed that HBV/HCV mothers cant transmit the virus to her baby during pregnancy or delivery, (62.%) are of the view that HBV/HCV can be spread by sharing personal items like toothbrush or razor, the study showed a strong relationship between education, religion, and pregnant women awareness about HBV/HCV routes of transmission.

We found that (66.5%) of the pregnant women were able to identify HBV/HCV routes of transmission, and almost half (49.59%) of them were not knowledgeable about the expression Mother-to-child transmission, this was the case in the study of (Anyalem et al;2025), among the 419 pregnant women attending ANC at that Hospital, (80.7%) were not knowledgeable about the HBV vertical transmission, the overall knowledge of vertical transmission was poor (23.75%) of the pregnant women said that Hepatitis C can be passed from one person to another by sharing needles, this study is similar, to that of (Ephraim et al; 2015), a cross sectional study of 168 pregnant women recruited from the Agogo Presbyterian Hospital, in which the results showed that sharing needles, were associated with Hepatitis C infection). Also, a study of (Ivan et al; 2014) showed that a proportion of babies (as high as 34%) may acquire infection after birth due to close contact with the mother, while it is the contrary in our study, in which pregnant women are not aware

of the baby's risks of infection after his birth from an infected HBV mother. Another study is that of (Arzu et al; 2009), in which (90%) of the healthcare staff was aware of the sexual transmission route, which was not actually the case with our study in which just (15.25%) of the pregnant women were aware that Hepatitis C can be transmitted through sex, also, (62%) of the pregnant women were aware that Hepatitis B/C can be spread by sharing personal items like a toothbrush or razor, this actually was the case in (Arzu et al; 2009) in which (94%) of the healthcare workers were aware of the transmission rules by sharing personal items such as toothbrushes, razors, and nail scissors.

5. CONCLUSION

In conclusion, we found adding to our observations that pregnant women do have some general knowledge on routes of transmission viral Hepatitis, but their knowledge is superficial, we also noticed that the quasi-inexistence of antenatal classes within the hospital and lack of trained personnel in Hepatology might justify some unawareness.

So efforts should be addressed on counselling.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest in relation to this work.

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ANNEXES

Annex I — Table 1: Socio-demographic information and prevalence rates among pregnant women attending ANC

Variables					
Age	(19-28)	(29-38)	(39-48)	(49-58)	-
n	248	82	62	8	-
%	62%	20.5%	15.5%	2%	-
Marital status	Single	Married	Divorced	Widow	-
n	238	112	33	17	-
%	59.5%	28%	8.25%	4.25%	-
Education level	No formal education	Primary school	Secondary school	College	Postgraduate
n	130	122	84	49	15
%	32.5%	30.5%	21%	12.25%	3.75%
Occupation	Housewife	Business	Framing	Government employed	-
n	155	135	68	42	0
%	38.75%	33.75%	17%	19.5%	0%
Religion	Christian	Muslim	_	_	-
n	358	42	-	-	-
%	89.5%	10.5%	-	-	-
Gravidity and parity	First pregnancy	More than one pregnancy	-	-	-
n	95	305	-	-	-
%	23.75%	76.25%	-	-	-

Annex II — Table 2: HBV/HCV Routes of transmission among pregnant women at the BRH

HBV/HCV Routes of transmission	Pregnant women awareness	MTCT expression awareness	HBV and HCV Breastfeeding	Baby transmission after birth	Baby risk of transmission	
Yes						
n	266	202	184	28	136	
%	66.5%	50.5%	4%	70%	34%	
No						
n	134	198	124	15	244	
%	33.5%	49.5%	31%	37.5%	61%	