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Estimating the Prevalence of Hepatitis C Virus Amongst Pregnant Women Attending Ante Natal Clinic in University of Benin Teaching Hospital (UBTH)

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Abstract
Hepatitis C infection is a contagious infection that mostly affects the liver; it is caused by the hepatitis C virus (HCV), it mostly causes chronic liver infection and can also progress to cirrhosis. The aim of this research was to determine the prevalence of Hepatitis C Viral infection among pregnant women attending antenatal at University of Benin Teaching Hospital. Ethical approval was obtained and a hospital-based cross-sectional baseline study was carried out. Blood sample were aseptically collected from patients and labeled appropriately, a one-step test was carried out using the HCV test strip. A total number of 35 pregnant women fell within the ages of 30-34, and 2 positive cases were gotten from the test which happens to fall within 30-34 age group. Results obtained from questionnaire revealed that a total number of 60 pregnant women educated and from the awareness aspect, 57 women have awareness of the hepatitis C virus. This study has shown that HCV infection is not an uncommon infection in the Nigerian pregnant population, and its prevalence can be a major concern for neonatal infection in our country.

Keywords: Contagious, Ethical, Cross-sectional, Questionnaire, Neonatal

INTRODUCTION:
Hepatitis C infection is a contagious infection that mostly affects the liver; it is caused by the hepatitis C virus (HCV), which is a type of viral hepatitis. Hepatitis C virus (HCV) is a significant human disease; though it mostly causes chronic liver infection, it can also progress to cirrhosis, advance liver fibrosis, and hepatocellular carcinoma (HCC) (Mohamed *et al*., 2015). In wealthy nations, HCV is the most typical reason for liver transplantation. The discovery of hepatitis started in 1950 with the identification of infectious and serum hepatitis by several scientists, but hepatitis C virus came into recognition in 1975 by Michael Houghton, Harvey Alter, and Charles Rice (Bukh, 2016).

In Nigeria, hepatitis C virus (HCV) infection may be among the most prevalent illnesses among expectant mothers. Globally, HCV infection affects about 8 % of pregnant women, with a prevalence of up to 4 % in the US (Saab *et al.,* 2020). The prevalence of HCV infection varies geographically in Nigeria, but there is a scarcity of national data on pregnant women's awareness of the disease and its burden (Bigna *et al.,* 2019). It's possible that some pregnant

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women are unaware of their HCV infection status since their healthcare providers may not have mentioned HCV to them, as there are no guidelines in Nigeria for routine HCV screening or health promotion tactics during antenatal care. Furthermore, the majority of infected women might not be aware of their status until an accidental diagnosis of chronic HCV is obtained because HCV infection is typically silent (Ragusa *et al.,* 2020).

The number of pregnant women with HCV infection and newborns exposed to HCV is impacted by the rising reported incidence of acute and chronic HCV infection among people aged 20-39 during the previous ten years. Approximately 6 % of pregnancies result in an HCV-infected mother transferring the virus to her unborn child; however, this risk increases if the mother also has HIV infection. As of right now, there are no approved medicines to stop the spread of HCV infection to unborn children during pregnancy. Prenatal care providers should be able to detect HCV infection in order to appropriately assess the status of liver disease and, ideally, make connections to postpartum HCV care easy (kuncio *et al.,* 2015).

Studying the prevalence of HCV among pregnant women will bring about awareness of the risk associated with HCV during pregnancy which will increase their need for prevention of mother-to-child transmission (PMTCT) interventions and HCV screening, further research is necessary to develop the most effective management techniques for infection during pregnancy and infancy. Limiting obstetrical procedures that expose a fetus to more maternal blood, such as extended membrane rupture, invasive fetal monitoring, and episiotomy (in women who test positive for HCV), may have an impact on how pregnancy care is handled. Additionally, counseling regarding related pregnancy risks such as cholestasis and preterm birth may be informed by knowledge of HCV infection during pregnancy (Kushner *et al.,* 2020).

MATERIALS AND METHODS

Study Population

This cross-sectional study was conducted at the Gynecology and Obstetrics Department of the University of Benin Teaching Hospital among 100 consenting pregnant women who visited the antenatal clinic. Women with a history of pre-eclamptic toxemia, diabetes, or liver illness were not allowed to participate in the trial and pertinent data were collected (Dimowo *et al.,* 2016).

Eligibility Criteria

Participants in this study were only expectant mothers who have registered for antenatal treatment at the study sites.
Women who were not pregnant or whose pregnancy could not be verified by a blood test or ultrasound were not allowed to participate.

Ethical Approval

Ethical approval was obtained from the University of Benin of Teaching Hospital Research Ethics committee with Registration Number: NHREC/24/01/2020 (approval date: 4TH January 2024).

Recruitment of Participants

Over the course of three weeks, from January 18th, 2024, to February 2nd, 2024, expectant mothers were gathered at the hospital's antenatal clinics. Following a thorough description of the study's goals, methods, and potential advantages, only participants who agreed to take

part in the research and provided signed, informed consent were enrolled. A study questionnaire was then used to conduct interviews with the participants. Women were asked in the study questionnaire if they had heard of HCV infections and if they had any particular risk factors for the virus, such as intravenous drug use, multiple sex partners, or a history of HCV.

Statistical Analysis

Data obtained from January 18th, 2024 to February 2nd, 2024 were analyzed using a statistical package of Social Science (SPSS) version 17.0 for windows. (ANOVA) was done at 95 % confidence interval or 0.05 level of significance for analysis of variance and student T –Test was used.

RESULTS

Table 1**;** depicts the determination of hepatitis C viral load amongst pregnant women attending antenatal clinic at UBTH), a total number of 100 pregnant women were registered with age ranging from 15-19, 20-24, 25-29, 30-34, 35-39, to 40-44. Among these age groups, a number of 35 pregnant women fell within the ages of 30-34, the 2 positive cases happens to fall in the 30-34 age group.

Table 2; explains the comparison of marital status of pregnant women attending antenatal clinic at UBTH), from the 100 patients admitted, a total number of 81 women happened to be married majority of which belong to the 30-34 age group, 14 women were single majority of which belong to the 15-19 and 20-24 age group, and lastly 5 women were divorced.

Table 3; explains the results obtained from questionnaire on the knowledge of transmission of the virus, there was no good knowledge on the availability of vaccines for the virus amongst the women.

Table 4; depicts the results obtained from questionnaire on knowledge of transmission, diagnosis and treatment of the viruses, a total number of 30 women believed that diagnosis and treatment of these viruses are expensive while a total number of 52 women have no knowledge of the diagnosis and treatment.

Table 5; explains the results obtained from questionnaire on educational level and awareness of hepatitis C virus amongst pregnant women attending antenatal at UBTH, majority of the women (60) were educated with tertiary education and from the awareness aspect, 57 women had awareness of the hepatitis C virus.

Table 6; depicts the distribution of patient's response according to the mode of transmission of HCV, majority of the women had good knowledge of the mode of transmission of HCV.

Table 1: Determination of Hepatitis C Viral Load Amongst Pregnant Women Attending Antenatal Clinic at UBTH

Age Group	No of Patients	No of Positive	Percentage (%)
15- 19	5	Nil	0.00
20-24	15	Nil	0.00
25-29	23	Nil	0.00
30-34	35	2	2.00
35-39	17	Nil	0.00
40-44	5	Nil	0.00
Total	100	2	2.00

Table 2: Comparing Marital Status of pregnant women attending antenatal clinic at UBTH

Age Group	Married	Single	Divorced
15-19	Nil	6	Nil
20-24	9	6	Nil
25-29	21	1	1
30-34	31	1	2
35-39	16	Nil	1
40-44	4	Nil	1
Total	**81**	**14**	**5**

Table 3: Results Obtained From Questionnaire Based on Knowledge on the Nature of the Virus

Age Group	Hepatitis is a viral Disease			HCV Vaccine		
	Yes	No	Not Sure	Yes	No	Not Sure
15-19	2	1	2	5	Nil	2
20-24	8	2	5	7	Nil	6
25-29	16	2	6	11	4	8
30-34	16	5	11	17	3	11
35-39	14	1	4	11	2	9
40-44	1	1	2	Nil	2	2
Total	**57**	**12**	**31**	**53**	**9**	**38**

Table 4: Results Obtained From Questionnaire Based on Knowledge on Transmission, Diagnosis and Treatment of the Virus

Age Group	Test all Pregnant women			Diagnosis and Treatment				Further Investigations when Diagnosed		
	Yes	No	Not Sure	Expensive	Reasonable	Free	Not Sure	Yes	No	Not Sure
15-19	3	Nil	3	1	Nil	1	3	3	1	2
20-24	6	3	6	6	2	Nil	7	11	Nil	3
25-29	16	1	6	8	2	Nil	13	20	2	1
30-34	20	5	7	9	5	3	16	29	1	3
35-39	15	1	3	5	2	2	10	18	1	Nil
40-44	2	Nil	3	1	Nil	1	3	3	Nil	2
Total	**62**	**10**	**28**	**30**	**11**	**7**	**52**	**84**	**5**	**11**

Table 5: Results Obtained from Questionnaire on Education Level and Awareness of HCV Amongst Pregnant Women Attending Antenatal Clinic at UBTH

Age Group	No Education	Primary	Secondary	Tertiary	HCV	
					Yes	No
15-19	Nil	Nil	5	Nil	2	3
20-24	Nil	Nil	6	11	5	10
25-29	Nil	Nil	5	16	17	6
30-34	Nil	3	11	10	16	17
35-39	Nil	1	4	22	14	4
40-44	2	Nil	3	1	3	3
Total	**2**	**4**	**34**	**60**	**57**	**43**

Table 6: Distribution of patient's response according to mode of Transmission of Hepatitis C virus

Transmitted Mode	Yes	No
Blood/Blood products	40	60
Hand shake	5	95
Unsafe sex	20	80
Contaminated water	5	95
Mother to fetus	11	89
Sharp objects	9	91
Multiple sex partners	10	90

Globally, hepatitis C infections pose a serious threat to public health. Viral hepatitis in pregnancy is most commonly caused by viral hepatitis globally. The study found that among prenatal patients at the University of Benin Teaching Hospital, the frequency of Hepatitis C infections was 2.0 %. The prevalence of HCV infection reported in another study was lower than the 4.9 % and 10.3 % reported in Port Harcourt and Jos, respectively (Ejele and Ojulu 2004). In contrast it was less than the 21.3 % recorded in Ibadan (Uneke *et al.,* 2006), 23.9 % and 15.1 % in two studies in Jos. There was also a report of 18.2 % and 7.3 % prevalence among pregnant women in Zaria (Luka *et al.,* 2008) and Kano (Dawaki and Kawo 2006) respectively, all in Nigeria. The fact that some of the studies did not come from the same risk category may not be unrelated to these variances.

In this study on table 1(determination of hepatitis c viral load amongst pregnant women attending antenatal at UBTH), due to the fact that this age group was the majority of those hospitalized to the hospital's antenatal clinic and also had a positive HCV test, it was discovered that the bulk of the patients belonged to the 30-34-year-old range. The majority of the patients in this study were discovered to be multigravida individuals. Due to previous pregnancies, hospital admissions, blood transfusions, and/or surgical procedures, they may be more vulnerable. These results were consistent with the research carried out by (Awan *et al*., 2006; Ali *et al*., 2007).

In this study, the comparison between the marital statuses of the patients was recorded in table (2). Majority of the patients tested for Hepatitis C infection which falls within the age group of 15-19, 20-24, 25-29, 30-34 and 35-39 were under the married, single, and divorced category. Among which the majority of married women fell in the 30-34 age group.

Results obtained from questionnaire on education level and awareness of HCV and HEV Amongst pregnant women attending antenatal at UBTH was presented in table 3. The level of literacy in the majority of the HCV positive cases was low in the study, where there were 0.00(0.00%) cases among those attended primary school, secondary, and tertiary and those with no formal education and 2 cases among higher education level. The highest numbers of patients tested have formal education level. This is similar reported in studies conducted at Bahir Dar, Ethiopia (Zenebe *et al*., 2014) and Sudan (Elsheikh *et al*., 2007).

Results obtained from questionnaire based on knowledge on transmission of the virus in table 4 above shows the patients are highly informed about hepatitis infection but have a poor knowledge on vaccine control as there is no available vaccine for the viruses. However the results obtained from questionnaire based on knowledge on transmission, diagnosis and treatment of the virus in table 5 above showed that most of the pregnant women have little knowledge about the diagnosis and treatment of the infection because it is believed that the cost requirement for the treatment is expensive. Results obtained from table 6 (Distribution of

patient's response according to mode of Transmission of Hepatitis C virus) shows that majority of the patients have little knowledge on the mode of contraction of the virus.

The alarmingly low level of knowledge among study participants on hepatitis C viral infection shows the necessity for more health education on the virus and other diseases that affect pregnant women in Nigeria. As part of their antenatal care, expectant mothers have a fantastic opportunity to learn about hepatitis C infection.

CONCLUSION

This study has proven that HCV is not an uncommon infection in the Nigerian pregnant population, and its prevalence can be a major concern for neonatal infection in our country. While acknowledging the small sample size of our study population, HCV infection may not be very common. A total of 2 % of the pregnant women studied tested positive for hepatitis C. This highlights the need to implement public health measures to reduce disease burden and transmission, including routine screening of all pregnant mothers for HCV infections. A more comprehensive investigation is recommended, particularly multicenter investigations, to ascertain the national prevalence of co-infection between HCV and other viral infection in order to facilitate the development of management guidelines and the implementation of preventive initiatives. Upgrades to tertiary health centers' facilities should be made to facilitate simple diagnosis, viral typing, viral load determination, and newborn or baby diagnosis of this virus. This would help to avoid follow-up loss, which is a prevalent issue in our nation. Policy makers and healthcare providers are urged to implement preventive and control strategies, such as national or regional public education campaigns regarding HCV infection. Viral-induced liver illness caused by hepatitis C is still the main reason for liver transplantation, which is least supported by the state of the economy and healthcare infrastructure today. It would be disastrous to remain in different to this illness presence in Nigeria, knowing that it is highly contagious.

RECOMMENDATION

The current study has limitations despite providing crucial facts on the prevalence of HCV and HEV among pregnant mothers and forwarding recommendations for policy makers. The primary research constraint was the absence of a kit to conduct a serological HEV test, so no HEV test was conducted in this investigation. The study's diagnostic instrument, a serological method, is subject to limitations, one of which being the inability to access laboratory facilities for molecular testing (Polymerase Chain Reaction) required to confirm the infection. Therefore, we further suggested doing community-based research in the study region utilizing molecular (Polymerase Chain Reaction) based testing. Despite this, the study supports the introduction of HCV testing in regular ANC services and can be used to better plan HCV and HEV among expectant mothers.

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