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CORRELATES OF HEPATITIS B AND C VIRAL INFECTIONS AMONG PREGNANT WOMEN IN OBIO COTTAGE HOSPITAL IN RIVERS STATE, NIGERIA

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ABSTRACT: *Globally, vertical transmission of hepatitis B and C viruses causes fetal effects on the neonate, leading to impaired mental and physical health later in life. It leads to an increase in mortality, morbidity, economic wastage, and other health complications. The study aims to identify the correlates of hepatitis B and C virus among pregnant women receiving antenatal care. These include the determination of the seroprevalence of hepatitis B and C viruses,knowledge, and attitude regarding HBV and HCV infections. A descriptive survey design was used and the research was conducted at Obio Cottage Hospital in Obio-Akpor LGA of Rivers State, Nigeria between 1st February 2022 and 30th July 2022. Qualified medical laboratory personnel collected venous blood samples from participants and processed them for hepatitis B surface antigen (HBsAg) and anti-Hepatitis C virus (HCV) antibodies using ELISA kits. Descriptive and inferential analyses, utilizing SPSS v.27, Excel, and GraphPad Prism, were conducted on the data collected. There were low seroprevalence rates of hepatitis B (1.41%) and C (0.31%); low level of knowledge (49.76%±14.207%) and positive attitude (45.76%±9.71%) towards hepatitis B and C, Significant inverse relationships were noted between attitude and prevalence of both viruses ($p=0.0407$ for hepatitis B, $p=0.0489$ for hepatitis C). Increased knowledge and positive attitude were significantly associated with lower prevalence rates ($p<0.0001$, $OR=99.000$ for hepatitis B, $OR=84.333$ for hepatitis C). There was a low seroprevalence among the respondents with a low level of knowledge but a positive attitude towards Hepatitis B and C. Enhanced Screening Programs, Antenatal Counseling, and Integration of Services are recommended.*

KEYWORDS: Hepatitis B, Hepatitis C, Pregnant women, Infection, Knowledge, Attitude, Rivers State, Nigeria.

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INTRODUCTION

Globally, hepatitis is one of the silent epidemics and leading causes of morbidity and mortality, particularly in developing countries (including Nigeria). In Africa, more than 90 million people are living with hepatitis in the Region, accounting for 26% of the global burden. (WHO, 2019). Nigeria has a prevalence rate of 8.1% and 1.1% for HBV and HCV among adults aged 15-64 years respectively (Nigeria HIV/AIDS Indicator and Impact Survey2018).

Viral hepatitis during pregnancy is associated with a significant risk of maternal complications. There is a high rate of vertical transmission, causing fetal and neonatal hepatitis which can have serious effects on the neonate, leading to impaired mental and physical health later in life (Elinav et al., 2006). Using this background information, the epidemiology of viral hepatitis during pregnancy is essential for health planners and program managers (Ejele & Ojulu, 2024).

One of the key problems is the high prevalence of Hepatitis B and Hepatitis C among pregnant women with its attendant risks of chronic infection, liver disease, and other complications (Saab, Kullar & Gounder, 2020; Fernandes et al., 2014). A study on awareness and prevalence of hepatitis C virus infection among pregnant women revealed a seroprevalence of 1.3% (95% confidence interval = 0.2%–4.5%) in Nigeria (Eleje et al., 2021).

One of the profound contributing factors to the prevalence of these viral infections is the issue of awareness and knowledge. Lack of awareness and education about Hepatitis B and Hepatitis C among pregnant women, healthcare providers, and the general population is a significant problem. A cross-sectional study conducted in Ethiopia among pregnant women on the knowledge, attitude, and associated factors towards vertical transmission of hepatitis B virus shows there is poor knowledge (87.9-91.3%) among the studied population.(Eleje *et al*., 2021).

This study was therefore conceived to determine the correlates of Hepatitis B and C. among pregnant women in Obia-Akpor LGA of Rivers State, Nigeria

The specific objectives of the study are to:

i. Determine the seroprevalence of hepatitis B and C viruses among pregnant women;

ii. Determine the knowledge of pregnant women about HBV and HCV infections; and to

iii. Determine the attitude of pregnant women about HBV and HCV infections.

HYPOTHESES

The following hypotheses were formulated to be tested in this study:

Hypothesis 1: There is high seroprevalence of hepatitis B and C Viruses among pregnant women in Obia-Akpor LGA of Rivers State.

Hypothesis 2: There is a low level of knowledge about HBV and HCV infections among pregnant women in Obia-Akpor LGA of Rivers State.

Hypothesis 3: There is a poor level of attitude about HBV and HCV infections among pregnant women.

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METHODOLOGY

Study Design

A descriptive survey design was adopted for the study.

Study Area/Population

This study was conducted in Obio Cottage Hospital, in Obia-Akpor Local Government Area of Rivers State, among pregnant women who attended the hospital's antenatal clinic during the study period (1 February—31 July 2022).

Obia-Akpor Local Government Area has an estimated population of 649,600 projection, a landmass of 263.1 km² and 3.5% annual population growth (National Bureau of Statistics, 2006) and a projected population of 237,647 women of reproductive age Word Health Organization,2010) The choice of the facility was informed based on the heterogeneous nature of pregnant women who access antenatal care in the facility, arising from the availability of modern medicine. Also, the partnership of the hospital management with the Shell Petroleum Development Company has helped to reduce (subsidize) the cost of antenatal care, while the clients still have access to quality and affordable healthcare services.

Power Calculation

A simple random sampling technique was used to recruit a total of 640 eligible pregnant women in the study following the inclusion/exclusion criteria.

Using Taro Yamane's formula: $n= N/1+N(e)^2$

n= sample size required(?), N= number of pregnant women in the population (237,647)

e= allowable error (%) (0.05), $n=237,647/1+237,647\ (0.05)^2$

$^{=}$ 399.32.439, therefore, a minimum sample size of 400 was used for this study.

Data Collection Instrument

Rapid diagnostic test kits were used to screen for Hepatitis B surface antigen (HBsAg) and anti-Hepatitis C virus (HCV) antibodies by the facility medical laboratory health personnel using the venous blood sample of the participants. The data on risk factors, knowledge and attitude was collected with the aid of a well-structured, self-administered questionnaire.

Data Analysis

The retrieved data from the participants were entered into an Excel template and analyzed using the statistical package for the social science (IBM SPSS) version 24.0 in a simple descriptive statistic. Further analytical studies were carried out using Chi=Square to determine significance/association at a significant level of 0.05 and a confidence level of 95%.

Ethical Consideration

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Ethical approval was given by the Obio Cottage Hospital ethical committee. The study was carried out according to the guidelines of the ethical committee and ensured that participant's confidentiality was safe and protected during and after the research work.

RESULTS

Respondents' Age and Packed Cell Volume

The study showed that among the 640 participants, the mean age was 30.52+/-5.03 and that of the mean PCV was 32.04+/-3.24, whereas the highest age and PCV were 42% and 40 years respectively. This is shown in Table 4.1.

Table 1: Respondents' Age and Packed Cell Volume

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Age	640	24.00	18.00	42.00	30.5203	5.02820	25.283
PCV	640	19.00	21.00	40.00	32.0406	3.24024	10.499

Parity and Educational Status of Respondents

Respondents in this study revealed that modal parity was 2 issues (32.81%) with significant difference in performance among patterns of parity (p=0.0221, t=3.273). Most of the respondents were reported to have secondary education (69.53%) and not having a significant difference in educational status (p=0.0811, t=2.180). This is contained in table 4.2.

Table 2: Parity and Educational Status of Respondents

Characteristics	Mode	Min	Max	Sig.	t	Df	Md	95% ci	
Parity		0.00	5.00	0.0221	3.273	5	2.500	0.5364	4.464
Education		1.900	88.000	0.0811	2.180	5	31.333	-5.625	68.291

The Sero-prevalence of Hepatitis B and C Viruses among Pregnant Women

About 1.41% (9) of the study population was reported to be sero-prevalent with hepatitis B. This translates to 1 in every 71 persons or 14 persons in every 1,000 persons in Obia-Akpor LGA of Rivers State of Nigeria possibly being positive for hepatitis B viral infection. For hepatitis C viral infection, the study population revealed 0.31% (2) prevalence, translating to 1 in every 320 persons or 3 persons in every 1,000 persons. Extreme significant differences were reported between the prevalence and non-prevalence of hepatitis B (p=0.0064) and hepatitis C (p=0.0064). This is shown in table 4.3 below

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Table 3: Hepatitis B and Hepatitis C Seroprevalence

	Positive		Negative		Rate	In 1000	P value	t	Md
Hepatitis B	9	1.41	631	98.59	1:71.11	14.1 in 1,000	0.0064	t = 99.000	-49.500
Hepatitis C	2	0.31	638	99.68	1:320	3.1 in 1,000	0.0064	t = 99.000	-49.500

Hypothesis 1: There is high sero-prevalence of hepatitis B and C Viruses among Pregnant Women in Obia-Akpor LGA of Rivers State

The study reported 1.41% and 0.31% prevalence of hepatitis B and hepatitis C. The critical t-values reported are greater than the expected t-values comparable in the student t-distribution table. The null hypothesis is hereby rejected. This means that there are low levels of sero-prevalence of hepatitis B and C viruses among pregnant women in Obia-Akpor LGA of Rivers State.

Knowledge of Pregnant Women about HBV and HCV Infections

About 49.76%+/-14.207% level of knowledge of pregnant women about HBV and HCV infections was reported in this study. Individual knowledge items did not reveal any statistical difference between having knowledge in such items or not (p> 0.9999, t=0.000). Percentage of knowledge contributed by individual items ranged from 23.28% to 74.38%. This is shown in table 4.4 below.

Table 4: Knowledge about HCV and HBV

	Yes		No		Pvalue	T	Md
Have you ever heard about HCV and HBV?	458	71.56	182	28.44	0.6264	0.5696	-22
Hepatitis B and C is caused by a virus	310	48.44	330	51.56	0.9601	0.05652	2
Hepatitis B and HBC can be transmitted through blood transfusion?	312	48.75	328	51.25	0.9601	0.05652	2
Hepatitis B and C are not transmitted by water and food?	149	23.28	491	76.72	0.5708	0.6720	27.000
Hepatitis B and C can be transmitted through unsterilized syringes and sharps?	245	38.28	395	61.72	0.7727	0.3300	12.000
Hepatitis B and C It is transmitted from mother to baby during pregnancy?	314	49.06	326	50.94	0.9800	0.02828	1
Vaccine for HCV and HBV is not available?	326	50.94	314	49.06	0.9800	0.02828	1
Harmless to use a cup/glass of HCV and HBV infected people?	259	40.47	381	59.53	0.8075	0.2774	10.000
HCV and HBV cause cancer?	476	74.38	164	25.63	0.6029	0.6120	-24.00
Are HCV and HBV Infected people at risk of other diseases?	313	48.91	327	51.09	0.9800	0.02828	1

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An individual can be infected by both HBV, HBC, and HIV?	341	53.28	299	46.72	0.9402	0.08470	-3.000
	318.45	49.76	321.55	50.24	> 0.9999	0.000	0.000

Hypothesis 2: There is a low level of knowledge about HBV and HCV infections among pregnant women in Obia-Akpor LGA of Rivers State.

The study reported 49.76%+/-14.207% level of knowledge on hepatitis B and hepatitis C. Low level of knowledge is classified against percentages below 50% level of knowledge. The critical t-values reported (0.05638) is lesser than the expected t-value (2.228) in the student t-distribution table. The null hypothesis is hereby accepted. This means that there is a low level of knowledge of pregnant women about HBV and HCV infections in Obia-Akpor LGA of Rivers State. The hypothesis testing is contained in table 4.5 below.

Table 5: One Sample t-test

Mean	SD	Min.	Max.	P value	t	df	Md	95% CI	
49.759	14.207	23.280	74.380	0.9562	0.05638	10	0.2409	40.215	59.303

Expected t=2.228

Attitude of Pregnant Women about HBV and HCV Infections

There was a reported 45.76+/-9.71% level of positive attitude of pregnant women towards hepatitis B and C in Obia-Akpor LGA of Rivers State. This level of attitude was reported to range from 36.09% to 57.97%, but not with a significant difference between patterns of attitude (p=0.2919). This is contained in table 4.6 Below.

Table 6: Attitudes towards HCV and HBV

	Yes		No				
	Count	Count			Pvalue	T	Md
HCV and HBV infected people shouldn't be isolated for prevention?	371	57.97	269	42.03	0.8439	0.2234	-8.000
Are you willing to be screened for hepatitis B and C virus?	369	57.66	271	42.34	0.8439	0.2234	-8.000
Are you willing to let your baby take the HBV and HBV vaccine?	311	48.59	329	51.41	0.9800	0.02828	1.000
If you have hepatitis B infection, are you willing to let your baby take an antibody of hepatitis B?	231	36.09	409	63.91	0.7397	0.3813	14.000
Is it safe to visit a HCV and HBV infected friend/relative?	236	36.88	404	63.13	0.7560	0.3559	13.000

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Are Hepatitis C and HBV considered a major health problem?	301	47.03	339	52.97	0.9402	0.08470	3.000
Safe to visit HCV and HBV infected friend/relative?	231	36.09	409	63.91	0.7397	0.3813	14.000
	292.86	45.76	347.14	54.24	0.4492	1.174	27.000

Hypothesis 3: There is poor level of attitude about HBV and HCV infections among Pregnant Women

The study reported a 45.759+/-9.71% level of attitude towards hepatitis B and hepatitis C. Poor level of attitude is classified against percentages below 50% level of positive attitude. The critical t-values reported (1.155) is lesser than the expected t-value (2.447) in the student t-distribution table. The null hypothesis is hereby accepted. This means that there is a low level of positive attitude of pregnant women about HBV and HCV infections in Obia-Akpor LGA of Rivers State. The hypothesis testing is contained in table 4.7 below.

Table 7: One Sample T-test

Min.	Max.	Mean	SD	Pvalue	t	df	md	95% CI
36.090	57.970	45.759	9.714	0.2919	t = 1.155	6	-4.241	-13.226 to 4.743

Expected t=2.447

DISCUSSION

Seroprevalence of Hepatitis B and C Viruses among Pregnant Women

There are reported low levels of seroprevalence of hepatitis B and C viruses among pregnant women in Obia-Akpor LGA of Rivers State. About 1.41% (9) of the study population was reported to be seroprevalence with hepatitis B. This translates to 1 in every 71 persons or 14 persons in every 1,000 persons in Obia-Akpor LGA of Rivers State of Nigeria possibly being positive for hepatitis B viral infection. For hepatitis C viral infection, the study population revealed 0.31% (2) prevalence, translating to 1 in every 320 persons or 3 persons in every 1,000 persons. Extreme significant differences were reported between the prevalence and non-prevalence of hepatitis B (p=0.0064) and hepatitis C (p=0.0064).

Knowledge of Pregnant Women about HBV and HCV Infections

A low level of knowledge of pregnant women about HBV and HCV infections in Obia-Akpor LGA of Rivers State (t=0.056) was reported. About 49.76%+/-14.207% level of knowledge of pregnant women about HBV and HCV infections was reported in this study. Individual knowledge items did not reveal any statistical difference between knowing such items or not (p> 0.9999, t=0.000). The percentage of knowledge contributed by individual items ranged from 23.28% to 74.38%.

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Unpaired t-test reveals that there is an insignificant difference between those who had some level of knowledge and were still seroprevalence with hepatitis B (p=0.2559), and a significant difference between those who had some level of knowledge and were still seroprevalence with hepatitis C (p=< 0.0001). There was a reported significant relationship between knowledge and seroprevalence of hepatitis B and C among pregnant women in Obia-Akpor LGA of Rivers State. Fisher's Exact test on the possible effect of an increase in knowledge against the level of prevalence of hepatitis B and C reveals a significant and likely relationship between hepatitis B and hepatitis C (p< 0.0001, OR=99.000, CI=13.279 to 738.10).

These observations are in concordance with the findings from the study conducted by Taheri *et al*. (2015) who reported poor knowledge of 48% of the studied participants on the ways of contracting the hepatitis virus. This was attributable to poor awareness of the populace. Another study by Munivenkatappa and Govindaraj (2019) reported poor knowledge of the routes and risk factors for the transmission of the hepatitis viruses, thus, assuaging the concerns that enlightenment across different climes could influence the extent of information available to the populace, and their level of knowledge. Discordant reports include those made by Pham *et al*. (2019), Jha *et al*. (2016), and Haq *et al*. (2013), where high levels of Hepatitis B and C were reported.

The significant relationship between knowledge and seroprevalence of hepatitis B and C among pregnant women reported in this study was in tandem with that made by Mansour-Ghanaei *et al*. (2013), that the rate of transmission of hepatitis virus infections is statistically significant to the depth of information available at the disposal of the individual.

Attitude of Pregnant Women about HBV and HCV Infections

Low level of positive attitude of pregnant women about HBV and HCV infections in Obia-Akpor LGA of Rivers State (t=1.155). There was a reported 45.76+/-9.71% level of positive attitude of pregnant women towards hepatitis B and C in Obia-Akpor LGA of Rivers State. This level of attitude was reported to range from 36.09% to 57.97%, but not with a significant difference between patterns of attitude (p=0.2919). The study reported a significant inverse relationship between positive attitudes towards hepatitis B and C and the prevalence of hepatitis B (p=0.0407, r=-0.6396) and C (p=0.0489, r=-0.6370).

Fisher's Exact test on the possible effect of an increase in positive attitude against the level of prevalence of hepatitis B and C reveals a significant and likely relationship between hepatitis B and hepatitis C (p< 0.0001, OR=84.333, CI=11.309 to 628.91). The findings are in agreement with those of Musa *et al*. (2015) and Mihigo *et al*. (2013) reporting positive attitudes towards hepatitis infection within and outside Nigeria. This may be occasioned by the importance of enlightenment enshrined across climes and the awareness that ignorance of screening and knowledge of status does not exonerate one from having the infection or alleviate the symptoms and complications of them. Thus, in health-related issues, the human body and transmission of infectious diseases are similar globally. Poor attitude toward screening has also been reported by Gboeze *et al*. (2015).

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LIMITATIONS OF THE STUDY

The study is limited to the following factors:

The study is limited to the correlates of hepatitis B and C viruses among pregnant women in the health facility only, which may not give true representation of the information among the larger population. The study has limitation with the sample size and the laboratory methods used to screen for HBV and HCV. In addition, it was limited to the information provided or reported by the respondents, which might be influencing the accuracy of the findings

Based on the provided information, here are some potential limitations of the study:

Self-Reporting Bias: The data collected, particularly regarding knowledge, attitudes, and exposure to risk factors, may be subject to self-reporting bias. Participants might under-report or over-report information due to social desirability or recall bias, impacting the accuracy of the findings.

SUMMARY

The study conducted among pregnant women in Obia-Akpor LGA of Rivers State revealed pertinent findings regarding the prevalence of hepatitis B and C infections, as well as associated factors such as age, parity, education level, knowledge, and attitude. Key demographic statistics indicated a mean age of 30.52 years (±5.03) and a mean packed cell volume (PCV) of 32.04% (±3.24). Education level, predominantly secondary education (69.53%), did not exhibit significant differences in seroprevalence ($p=0.0811$, $t=2.180$).

The study revealed low seroprevalence rates of hepatitis B (1.41%) and C (0.31%) among pregnant women in Obia-Akpor LGA, with significant differences between prevalence and non-prevalence for both viruses ($p=0.0064$). Additionally, a low level of knowledge (49.76%±14.207%) and positive attitude (45.76%±9.71%) towards hepatitis B and C were reported, with significant inverse relationships observed between attitude and prevalence of both viruses ($p=0.0407$ for hepatitis B, $p=0.0489$ for hepatitis C). Increased knowledge and positive attitude were significantly associated with lower prevalence rates ($p<0.0001$, OR=99.000 for hepatitis B, OR=84.333 for hepatitis C).

In summary, the study underscores the importance of understanding demographics, knowledge, and attitudes in addressing the prevalence of hepatitis B and C among pregnant women in Obia-Akpor LGA of Rivers State.

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CONCLUSION

In conclusion, this study sheds light on the seroprevalence of hepatitis B and C among pregnant women in Obia-Akpor LGA of Rivers State, Nigeria, as well as their knowledge, attitudes, and exposure to risk factors related to these infections. Despite observing a low overall seroprevalence rate, it is evident that hepatitis B and C remain public health concerns in this population. Our findings highlight the importance of targeted educational interventions to improve awareness and knowledge levels among pregnant women regarding these infections, as well as the necessity for implementing effective preventive measures. Furthermore, the significant associations observed between positive attitudes, increased knowledge, and reduced seroprevalence underscore the potential impact of psychosocial factors on disease prevention. However, it is essential to interpret these results cautiously due to the study's limitations, including potential sampling bias, self-reporting bias, and the cross-sectional design. Future research employing more robust methodologies, such as longitudinal studies with larger and more diverse samples, could provide further insights into the dynamics of hepatitis B and C infections among pregnant women in this region. Nonetheless, our findings contribute valuable information to the ongoing efforts aimed at reducing the burden of viral hepatitis and improving maternal and child health outcomes in Obia-Akpor LGA and similar settings.

RECOMMENDATIONS

Based on the findings and conclusions of the study, here are some plausible recommendations:

1. **Enhanced Screening Programs: Government and medical practitioners should** Implement routine screening programs for hepatitis B and C among pregnant women to increase case finding and early initiation of appropriate medical interventions.

2. **Educational Interventions:** Government agencies and NGOs should design, develop, and implement targeted educational materials and campaigns to improve knowledge and awareness levels of the people regarding hepatitis B and C among pregnant women. These campaigns should focus on transmission routes, prevention strategies, and the importance of prenatal care.

3. **Antenatal Counseling**: Healthcare workers (Clinicians, Pharmacists, Nurses, Medical Laboratory, etc.) Should provide comprehensive antenatal counseling services that address hepatitis B and C infections, including the benefits of vaccination, the importance of regular prenatal care visits, and strategies to reduce the risk of vertical transmission to newborns.

4. **Integration of Services**: The government should formulate policies that will aid the integration of services by incorporating hepatitis B and C screening and management services into existing maternal and child health programs to ensure accessibility and uptake of services among pregnant women.

5. **Training Healthcare Providers**: Government, medical practitioner professional bodies and NGOs should conduct routine training and capacity-building initiatives for healthcare providers, including midwives, pharmacists, and obstetricians, to enhance their knowledge and skills in managing hepatitis B and C infections during pregnancy and delivery.

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6. **Community Engagement**: Engage community leaders, religious leaders, and traditional birth attendants in awareness-raising activities to promote a supportive environment for hepatitis B and C prevention and control efforts by Government and professional bodies

7. **Research and Surveillance**: Provision of grants and funds to health care workers to conduct clinical research to have a better understanding of the epidemiology and determinants of hepatitis B and C infections among pregnant women in the region. Longitudinal studies and surveillance systems could provide valuable data for informing evidence-based interventions.

8. **Policy Advocacy**: Advocate for the development and implementation of policies and guidelines at the national and local levels that prioritize the prevention, screening, and management of hepatitis B and C infections in pregnant women as part of broader efforts to improve maternal and child health outcomes by NGOs, medical practitioners, and agencies.

By implementing these recommendations, stakeholders can work towards reducing the burden of hepatitis B and C infections among pregnant women in Obia-Akpor LGA of Rivers State, and ultimately improve maternal and child health outcomes in the region.

In summary, the study underscores the importance of understanding demographics, knowledge, attitudes, and exposure factors in addressing the prevalence of hepatitis B and C among pregnant women.

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Conflict of Interest

The authors declares no conflict of interests

AUTHOR's CONTRIBUTIONS

KFA: Performed the study and analysis

JFE: Supervised the study

All authors contributed to the conception and design of the study, analysis, and interpretation of data, revised the article critically for important intellectual content, and provided final approval of the version to be submitted.

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REFERENCES

Abdalla, M., Abou, A., Eltahir, Y. M., & Ali, A. S (2009). Sero-prevalence of Hepatitis B virusand Hepatitis C virus among blood donors in Nyala, South Dar Fur, Sudan. *Virology Journal, 6*, 146. https://doi.org/10.1186/1743-422X-6-146.

Abdo, A., Mohammed, D., & Satti, M (2015). Prevalence of Hepatitis B virus among blooddonors and assessment of blood donor's knowledge about HBV in Sudan. *HIV/AIDS Research, Treatment and Open Journal, 2*(3), 76–80.

Abebe, A., Messel, T., Dejene, A., Enquselass, F., & Cutts, F (2003). Sero-epidemiological Study of Hepatitis B Virus in Addis Ababa, Ethiopia: Transmission Patterns and Vaccine Control. *Vaccines, 131*: 757–770.

Abel, G. (2012). Sero-prevalence of HBV and HCV among chronic liver disease patients visiting Out-Patient Department in public hospitals in Addis Ababa. *ISRN, 2013*(563821):1–7.

Abia-Bassey, L. N., &Tabi, D (2006). Sero-positivity of B virus among Health care workers, In Calabar Nigeria. *Mary Slessor Journal of Medicine, 6*: 36-39.

Abiola, A., Omoyeni, O. E.,& Akodu, B. A. (2013). Knowledge, attitude, and practice ofhepatitis B vaccination among health workers at the Lagos State accident and emergencycenter, Toll-Gate, Alausa, Lagos State. *West African Journal of Medicine, 32*(4):257-262.

Adekanle, O. A., Ndububa, D., Olowookere, S., Ijarotimi, O., &Ijadunola, K. (2015). Knowledge of Hepatitis B Virus Infection, Immunization with Hepatitis B Vaccine, Risk Perception, and Challenges to Control Hepatitis among Hospital Workers in a Nigerian Tertiary Hospital. *Hepatitis Research and Treatment*, 20, 15.

Adeyemi, A. B., Enabor, O. O., Ugwu, I. A., Bello, F. A., &Olayemi, O. O. (2013). Knowledgeof hepatitis B virus infection, access to screening and vaccination among pregnantwomen in Ibadan, Nigeria. Journal of Obstetrics and Gynaecology, 33(2):155-159.

Agbede, O. O., Iseniyi, J. O., Kolawole, M. O., & Ojuawo, A. (2007). Risk factors and seroprevalence of hepatitis surface antigenemia in mothers and their preschool age children in Ilorin, Nigeria. *Therapy, 4*:67–72.

Ahizechukwu, C. N., Uzoamaka, A. E., Charles, I. O., & Ifeanyichukwu, U. E. (2011). Prevalence, Correlates and Pattern of Hepatitis B Surface Antigen in Low Resource Setting. *Virology Journal, 8*:12.

Ahmad, A., Sann, L. M., &Rahman, H. A. (2016). Factors associated with knowledge, attitude, and practice related to hepatitis B and C among international students of Universiti Putra Malaysia. *British Medical Council Public Health, 16*:611. https://doi.org/10.1186/s12889-016-3188-5.

Ahmad, I., Khan, S. B., Rahman, H. U., Khan, M. H., & Anwar, S. (2006). Frequency of Hepatitis B and Hepatitis C among cataract patients. *Gomalina Journal of Medical Sciences, 4*:61–64.

Ahmad, K. (1998). *Hepatitis B in Viral Hepatitis: An overview: proceedings of seminar.* AFIP Rawalpindi, Pakistan. Pp. 16–19.

Ahmedin, J., Taylor, M., Ram, C. T., Asma, G., Alicia, S., Elizabeth, W., Eric, J. F., & Michael, J. T. (2004). A new section in cancer offering timely and targeted information. *A Cancer Journal for Clinicians, 54*(8):10.

Article DOI: 10.52589/IJPHP-ZZIO0NOU
DOI URL: https://doi.org/10.52589/IJPHP-ZZIO0NOU

Akani, C. I., Ojule, A. C., Opurun, H. C., &Ejikele, A. A. (2005). Sero-prevalence of hepatitis B surface antigen (HBsAg) in pregnant women in PortHarc0urt Nigeria. *The Nigerian Postgraduate Medical Journal, 12*: 266-267.

Alavian, S. M., Mahboobi, N., Mahboobi, N., Savadrudbari, M. M., Azar, P. S., & Daneshvar, S. (2011). Waste handlers knowledge of hepatitis C virus infection and its control practices. *Journal of Dental Education, 75*:1627–1634

Chan, O. K. (2012). Deficient Knowledge on Hepatitis B Infection in Pregnant Women and Prevalence of Hepatitis B Surface Antigen Carriage in an Endemic Area: A Review. *HepatitisResearch and Treatment, 2012,* 8.

Eleje GU, Rabiu A, Mbachu II, et al. Awareness and prevalence of hepatitis C virus infection among pregnant women in Nigeria: A national pilot cross-sectional study. *Women's Health*. 2021;17. doi:10.1177/17455065211031718

Ejele, O. A., Nwauche, C. A., &Erhabor, O. (2004). The prevalence of hepatitis B surface antigenaemia in HIV positive patients in the Niger Delta Nigeria. *Nigerian Journal of Medicine, 13*: 175-179.

Elinav E, Ben-Dov IZ, Shapira Y, et al. Acute hepatitis A infection in pregnancy is associated with high rates of gestational complications and preterm labor. *Gastroenterology*. 2006;130:1129–1134. [PubMed] [Google Scholar]

Ejele, Q., &Ojule, A. (2004). The prevalence of Hepatitis B surface antigen among prospective blood donors and patients in Port Harcourt, Nigeria. *Nigerian Medical Journal,13*:336–338.

Gboeze, A. J., Ezeonu, P. O., Onoh, R. C., Ukaegbe, C. I., & Nwali, M. I. (2015). Knowledge and awareness of hepatitis B virus infection among pregnant women in Abakaliki Nigeria. *Journal of Hepatitis Research, 2*(3), 1029.

Ghouri, A., Aslam, S., Iqbal, Y., &Shah, A. A. (2015). Knowledge and awareness of hepatitis B

Jha, S., Devaliya, D., Bergson, S., & Desai, S. (2016). Hepatitis B knowledge among women of childbearing age in three slums in Mumbai: a cross-sectional survey. *Hepatology and Medical Policy, 1*(1):5.

Hang Pham, T. T., Nguyen, T. X., Nguyen, D. T., Luu, C. M., Truong, B. D., Tran, P. D., &So, S.(2018). Knowledge, Attitudes and Practices of Hepatitis B Prevention and Immunization of Pregnant Women and Mothers in Viet Nam. Retrieved on 28th August, 2022 from https://doi.org/10.1101/470849;

Mansour-Ghanaei, R., Joukar, F., Souti, F., & Atrkar-Roushan, Z. (2013). Knowledge and attitude of medical science students toward hepatitis B and C infections. *International Journal of Clinical and Experimental Medicine, 6*(3): 197/.

Mihigo, R., Nshimirimana, D., Hall, A., Kew, M., Wiersma, S., & Clements, C. J. (2013). Control of viral hepatitis infection in Africa: Are we dreaming? *Vaccine, 31*(2), 341-346.

Musa, B. M., Bussell, S., Borodo, M. M., Samaila, A. A., & Femi, O. L. (2015). Prevalence of hepatitis B virus infection in Nigeria, 2000-2013: A systematic review and meta-analysis. *Nigerian Journal of Clinical Practice, 18*(2):163-172.

Munivenkatappa, S., &Govindaraj, S. M. (2019). A study evaluating knowledge of and attitude towards hepatitis B among pregnant women at a teaching hospital in Nellore, India. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 8*(8):3183-3188. DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20193532.

Nigeria HIV-AIDS Indicator and Impact Survey (NAIIS) 2018

Article DOI: 10.52589/IJPHP-ZZIO0NOU
DOI URL: https://doi.org/10.52589/IJPHP-ZZIO0NOU

naca.gov.ng/wp-content/uploads/2021/01/NAIIS-Report-Final-version_for-printing_03Sept2020-1.pdf

Pham, T. T., Le, T. X., Nguyen, D. T., Luu, C. M., Truong, B. D., & Tran, P. D. (2019). Knowledge, attitudes and practices of hepatitis B prevention and immunization of pregnant women and mothers in northern Vietnam. *Plos One, 14*(4):e0208154

Reproductive Health Outlook (2010). Overview and lessons learned. Retrieved from http://www.who.org/html/infertility-overview.htmlHH.

Saab S, Kullar R, Gounder P. The urgent need for hepatitis C screening in pregnant women: a call to action. *Obstet Gynecol* 2020; 135(4): 773–777.

Taheri, J. B., Jafari, S., Farzanegan, A., & Norouzi, A. (2015). Assessing the Knowledge and Attitude about Hepatitis C virus among Dental Students in Tehran, Iran in 2014-2015. *Journal ofHealth Policy and Sustainable Health, 2*(2).

Ul Haq, N., Hassali, M. A., Shafie, A. A., Saleem, F., & Aljadhey H. (2012). A cross sectional assessment of health related quality of life among patients with Hepatitis-B in Pakistan. *Health and Quality of Life Outcomes, 10*(1):91.

Ul Haq, N., Hassali, M. A., Shafie, A. A., Saleem, F., Farooqui, M., & Haseeb, A. (2013). A cross-sectional assessment of knowledge, attitude and practice among Hepatitis-B patients in Quetta, *Pakistan. British Medical Council Public Health. 13*(1):448.

World Health Organization. (2023). *Global Hepatitis Programme. World Health Organization guidelines on hepatitis B and C testing.* Retrieved on April 02, 2024t: https://www.who.int/health-topics/hepatitis#tab=tab_1.

Article DOI: 10.52589/IJPHP-ZZIO0NOU
DOI URL: https://doi.org/10.52589/IJPHP-ZZIO0NOU

APPENDICES

INFORMED CONSENT FORM

Dear Sir/Madam,

I am **Koate Friday Adorle** a student (Clinical Pharmacy and Pharmacy Practice) of the School of Postgraduate Studies, Niger Delta University, Wilberforce Island, Amassoma, and Rivers State, Nigeria. I am researching to determine the

Correlates Of Hepatitis B And C Viral Infections Among Pregnant Women In Obio Cottage Hospital In Rivers State, South-South Nigeria

Purpose of the Study

To determine the Prevalence and Risk Factors Associated with Hepatitis B And C Viruses Among Pregnant Women Attending an Antenatal Clinic in Obio Cottage Hospital, Rivers State.

The knowledge from the study will contribute to knowledge, awareness, and management of HBV and HCV viruses among the populace especially pregnant women

This research will be carried out through the administration of a structured questionnaire and blood sample collection by venipuncture to test for HBV and HCV by trained qualified medical laboratory personnel in the facility while observing the universal precautions.

Your bio-data will be collected to provide information on the participants' social demographics.

You are advised to give your consent and read the options carefully before choosing an option.

Participation

Kindly note that your participation in this study is voluntary and you have the sole right to withdraw your participation at any time if you choose to do so. However, I will encourage you to participate in the study.

Expected Duration of Research:

This research will be conducted within 4- 12 weeks maximum; spending 5-10 minutes answering the questionnaire while your sample will collected alongside your basic antenatal investigations

Confidentiality

Be assured that all information given here by you will be confidential and will be used only for the study.

Risks:

There are no risks associated with this study

Benefits

The findings of this research will generate information that will guide the healthcare workers and the Ministry of Health (Federal and state) on the need to include HVC as part of the required routine investigation for pregnant women.

It will also provide insight to the patient on how informed and knowledgeable they are on the transmission, prevention, and management of the viruses.

All of these are in a bid to reduce the prevalence, mortality, comorbidity and complications associated with HBV and HCV viral infection in the state and the nation at large.

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Consent

Now that you are fully aware of the purpose and procedure of the study, are you willing to be part of this study?

If yes, please sign

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Researcher signature and date Participant signature and date

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QUESTIONNAIRE ON CORRELATES OF HEPATITIS B AND C VIRAL INFECTIONS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC IN OBIO COTTAGE HOSPITAL IN RIVERS STATE, SOUTH NIGERIA

FACULTY OF PHARMACY,
NIGER DELTA UNIVERSITY WILBERFORCE
AMASOMMA, BAYELSA STATE

This is a postgraduate thesis work to study the **Correlates of Hepatitis B and C Viral Infections among Pregnant Women Attending Antenatal Clinic in Obio Cottage Hospital in Rivers State.**
Please whatever information given here is confidential and strictly for the purpose of this study/work. Please answer these questions as honestly as you can.
Please tick ( ) the appropriate option.

Educational Background

a. Primary
b. Secondary c. Graduate d. Post graduate

Knowledge Questions

Have you ever heard about HCV and HBV?
Hepatitis B and C is caused by a virus
Hepatitis B and HBC can be transmitted through blood transfusion?
Hepatitis B and C are not transmitted by water and food?
Hepatitis B and C can be transmitted through unsterilized syringes and sharps?
Hepatitis B and C It is transmitted from mother to baby during pregnancy?
Vaccine for HCV and HBV is not available?
Harmless to use a cup/glass of HCV and HBV infected people?
HCV and HBV cause cancer?
Are HCV and HBV Infected people at risk of other diseases?
An individual can be infected by both HBV, HBC, and HIV?

Attitude

HCV and HBV infected people shouldn't be isolated for prevention?
Are you willing to be screened for hepatitis B and C virus?
Are you willing to let your baby take the HBV and HBV vaccine?
If you have hepatitis B infection, are you willing to let your baby take an antibody of hepatitis B?
Is it safe to Visit HCV and HBV infected friend/relative?
Hepatitis C and HBV Consider a major health problem?
Safe to Visit HCV and HBV infected friend/relative?

Risk Factors

Do you have past surgical operations?
Do you have a history of blood transfusion?
Have you had dental therapy before?
Do you have a tattoo on your skin?
Your spouse married more than one wife?
NB: Data On Age and Parity were gotten from laboratory register

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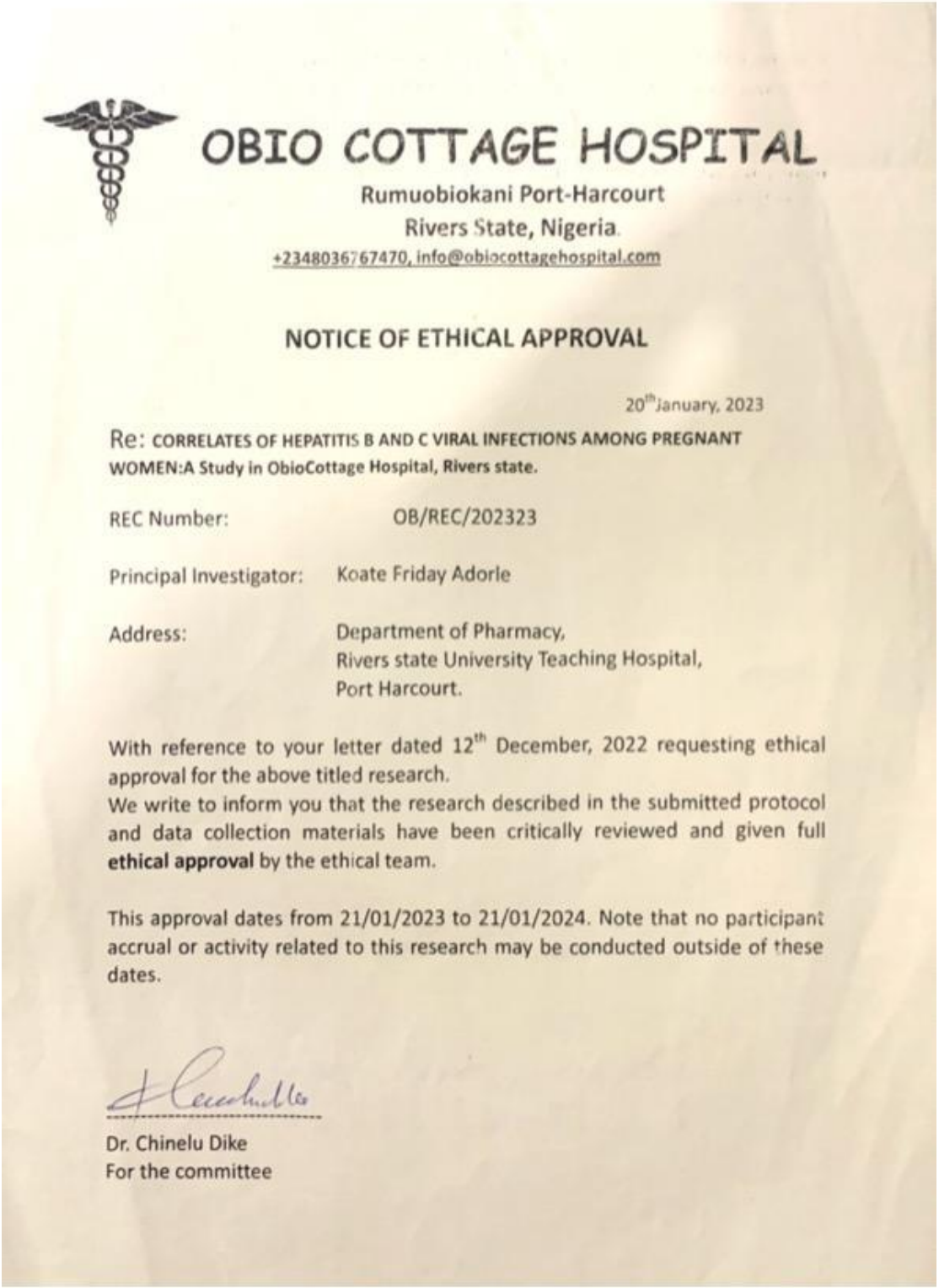

OBIO COTTAGE HOSPITAL

Rumuobiokani Port-Harcourt
Rivers State, Nigeria.
+2348036767470, info@obiocottagehospital.com

NOTICE OF ETHICAL APPROVAL

20th January, 2023

Re: **CORRELATES OF HEPATITIS B AND C VIRAL INFECTIONS AMONG PREGNANT WOMEN:A Study in ObioCottage Hospital, Rivers state.**

REC Number: OB/REC/202323

Principal Investigator: Koate Friday Adorle

Address: Department of Pharmacy,
Rivers state University Teaching Hospital,
Port Harcourt.

With reference to your letter dated 12th December, 2022 requesting ethical approval for the above titled research.
We write to inform you that the research described in the submitted protocol and data collection materials have been critically reviewed and given full **ethical approval** by the ethical team.

This approval dates from 21/01/2023 to 21/01/2024. Note that no participant accrual or activity related to this research may be conducted outside of these dates.

Dr. Chinelu Dike
For the committee

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