knowledge, Attitude, and Practices of HIV-Hepatitis Co-infection among Expectant Women attending Health Facilities in Ekiti South Senatorial District, Ekiti State.

Abstract

Human immunodeficiency virus(HIV), hepatitisB virus(HBV), and hepatitisC virus(HCV) are blood-borne infections that are extremely dangerous to human health, especially in sub-Saharan Africa, Nigeria, particularly in endemic regions such as Ekiti State where the infection is still a major public health concern. Pregnant women's knowledge, attitudes, and practices regarding HBV,HCV,HIV infection, and mother-to-child transmission(MTCT) are poorly understood despite various control measures, the disease persists, necessitating a better understanding of pregnant women receiving prenatal care's knowledge, attitudes and practices(KAP) related to HIV-Hepatitis B and C. This study assesses the influence of demographic factors, socioeconomic status, and prevalence of HIV-Hepatitis B and C in relation to area of residence in Ekiti State. A cross-sectional KAP study was conducted among 620 pregnant women recruited from selected health facilities in Ekiti South Senatorial District, Ekiti State. Structured questionnaires were administered to collect demographic information and data on HIV-Hepatitis B and C knowledge, attitudes, and practices. HIV-Hepatitis B and C prevalence was determined using Rapid Diagnostic Tests. Knowledge about HBV, HCV and HIV among pregnant women was found to be moderately satisfactory, their attitude is acceptable, and their practices were subpar. The overall prevalence rate of Hepatitis B, C and HIV was 28(4.52%), 0(0%) and 17(2.74%) respectively. Therefore, a comprehensive health education program should be given to pregnant women to increase their awareness. Enhancing access to effective Hepatitis B, C and HIV prevention strategies are important for reducing the disease burden in Ekiti State.

Keywords: Hepatitis B, Hepatitis C, HIV/AIDS, Knowledge, Attitudes, Practices, Ekiti State.

INTRODUCTION

The Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV) are pathogens present in blood that present considerable health dangers, especially in sub-Saharan Africa (Pennap, 2019), where their rates are notably high. These are viruses transmitted through blood, capable of being passed from mother to child, and they represent significant health challenges, particularly among pregnant women in Africa (Oti et al., 2021). The Hepatitis B virus (HBV) contains a genome made up of partially double-stranded DNA, whereas the Hepatitis C virus (HCV) is a single-stranded RNA virus that can lead to either acute or chronic infection (Liang, 2009). It is the 10th leading cause of death, increasing from 1.1 million in 2019 to 1.3 million in 2022; Hepatitis B was responsible for 83% of these fatalities, while Hepatitis C accounted for 17%. The estimated number of new infections dropped from 3 million in 2019 to 2.2 million in 2022. There were 1.2 million new cases of Hepatitis B and 1.0 million new cases of Hepatitis C. Worldwide, there are 254 million individuals living with Hepatitis B and 50 million with Hepatitis C. Among those affected, nearly half of the chronic HBV and HCV cases are found in individuals aged 30 to 54 years, with 58% being men. Children also face the challenge of hepatitis, accounting for an estimated 12% of cases, especially with HBV. Furthermore, 10% of hepatitis cases are reported in sub-Saharan Africa and East Asia (Global Hepatitis Report, 2024). Every age group is impacted by HBV globally, including expectant mothers and infants. The occurrence of Hepatitis B in pregnant women and the rate of transmission from mother to child vary considerably across different continents (Barut et al., 2011). The primary pathways for hepatitis viral infection predominantly impact individuals who have had exposure to unsafe blood products, injections, and other medical materials. In infants, transmission can occur from mother to child (MTCT), during prenatal stages (in utero), at the time of birth (during delivery), or after birth (during childcare or through breast milk).

The prevalence of hepatitis B virus infection, which can be deadly, differs significantly worldwide, with infection rates spanning from 0.1% to 20%. The highest rates are found in Taiwan (over 10%) and Thailand (over 8%), while Japan has the lowest rate at 0.8%. In the Asian region, the prevalence of HBV among pregnant women varies, with most countries reporting rates below 8% (Sinha and Kumar, 2010). In contrast to pregnant women chronically infected with HBsAg in various regions where HBV is common (such as Southeast Asia), the rate of HBeAg positivity is relatively low in Africa, with figures below 2% in Ethiopia, Ghana, and Nigeria, 3.3% in Zimbabwe, 4.6% in South Africa, 9.5% in Senegal, 16.1% in Zambia, and 24% in southern Tanzania. A significant number of individuals with Hepatitis might not show any symptoms following the infection, and the clinical signs in both acute and chronic instances range from vague symptoms to organ failure (Muhammad et al., 2016).

The infection of the human immunodeficiency virus (HIV) in pregnant women has emerged as a critical global health issue, resulting in significant medical, economic, and social ramifications (Chilaka and Konje, 2021). According to worldwide estimates from 2019, 19.2 million women were living with HIV, representing 52% of all adults infected with the virus (Wall et al., 2017). HIV infection during pregnancy has emerged as the leading cause of death among women of reproductive age. While pregnancy typically has minimal to no impact on the progression of HIV in asymptomatic women or those in the early stages of the infection, it presents significant risks to infants, families, and healthcare providers (Chilaka and Konje, 2021). The generally compromised health and weakened immune systems of women living with HIV, especially those in advanced stages of the disease, may result in a greater risk of obstetric complications and adverse perinatal outcomes, including intrauterine infections, restrictions in fetal growth, puerperal sepsis, ectopic pregnancies, hemorrhage, low birth weight, and preterm labor (Zaba et al., 2013). The risk of maternal mortality is eight times higher for pregnant women who are HIV-positive (Chilaka and Konje, 2021).

In Nigeria, the rates of HBV infection range from 2.4% to 18.4%, HCV from 3.6% to 5%, and HIV stands at 1.4% (NAIIS, 2018). Data provided by the Federal Government of Nigeria reveal a national HIV prevalence of 1.3% among adults aged 15 to 49 years. The previous estimation for the national HIV prevalence in Nigeria was 2.8%. According to UNAIDS and the National Agency for the Control of AIDS, approximately 1.9 million individuals are living with HIV in Nigeria. On a national level, the percentage of individuals aged 15 to 49 living with HIV who achieve viral suppression is 42.3% (with 45.3% of women and 34.5% of men being included in this statistic). Individuals who attain viral suppression can maintain their well-being and halt the virus's spread. Recent statistics indicate differences in HIV prevalence among states, underscoring an epidemic that heavily impacts specific areas of the country. The South-South region has the highest HIV prevalence rate at 3.1% for those aged 15 to 49 years. The North Central region shows a notable prevalence of 2.0%, while the South East region has a prevalence of 1.9%. In comparison, the South West and North East regions report lower rates of 1.1%, and the North West region has the lowest prevalence at 0.6%.

Research focused on assessing the knowledge, attitudes, and practices (KAP) related to HBV, HCV, and HIV among expectant mothers in Ekiti State, Nigeria is limited, and there have been no similar studies conducted in our study area. Assessing the KAP of pregnant women is the most effective method for preventing these infections, thus greatly reducing the likelihood of vertical transmission through health education programs.

In addition, the results of this study are important for program managers and health planners, helping them to develop vaccination strategies that enable more effective resource allocation for response, prevention, care, treatment services, and other preventive actions. It will allow for the implementation of a population–location strategy to provide services to the individuals and regions where they are most essential. Consequently, this research seeks to assess the awareness, perceptions, and behaviors related to HBV, HCV, and HIV among pregnant women attending antenatal care at designated health facilities in the Ekiti South Senatorial District of Ekiti State, Nigeria.

Methods and Materials

Study Area

The study was carried out in some selected Health facilities in Ekiti State, Nigeria. Ekiti state is situated entirely within the tropics. It is located between longitude 40051’ and 500 451’ east of the Greenwish meridian and latitude 700 151’ and 800 51’ north of the equator. It lies south of kwara and Kogi State, east of Osun State and bounded by ondo State in the East and in the South, with a total land Area of 5887.890sq km. Ekiti State has 16 Local government Councils. Ekiti state has three senatorial districts and the research will be carried out at Ekiti Central (Ado, Ekiti West,and Ijero), Ekiti North (Ido/osi, Moba and Oye) and Ekiti South (Ekiti East, Ekiti South West, Emure, Ikere and Ise/orun). The 2006 population census by the National population commission put the population of Ekiti State at 2,384,212 people. The state has two major seasons rainy and dry with its highest downpour around April to October and dry season through November to march. The inhabitants mostly engage in Agriculture which provides income and employment for more than 75% of the population of Ekiti State.

Ethical Considerations

Ethical approval for the collection of blood samples and administration of structured questionnaire was obtained from Ekiti State, Ministry of Health and Human Services, Ado-Ekiti. Similarly, advocacy visits were paid to Coordinators of Basic Health Centres in the south senatorial districts, and Officers in Charge (OICs) of various health centres where the research was conducted.

Sample Size Determination

Sample size was determined using of Raosoft sample size calculator (Raosoft, 2004) at 5% margin of error and 95% confidence level (WHO, 2009). The total sample size generated for this study was 384, despite the calculated sample size, a total of 620 pregnant women from antenatal clinic were enrolled for the study between January and December, 2024.

## Inclusion and Exclusion Criteria

Pregnant women who had a history of HBV vaccination were excluded from the study. All pregnant women, irrespective of their ages, attending ante natal clinic, at any stage of pregnancy and who consented to be part of the study and signed a written/verbal informed consent, were included in the study. Exclusion criteria was given to women with a history of co-infection prior to the current pregnancy.

Questionnaire Administration

A well-structured close-ended questionnaires was utilized, demographic information together with the knowledge, attitudes and practices of all participants on Hepatitis and HIV who participated in the research were collected. The age group of pregnant women for the study range from 12 to 50years. It was a cross-sectional and hospitals-based study. Pregnant women were given the questionnaires to fill after been properly informed about the aims and objectives of the research. All the participants that were unable to write and do not have the proper understanding of English language were interviewed with the questionnaire being administered for them accordingly.

Sample Collection and Hepatitis B,C HIV Screening

Hepatitis B, C HIV diagnosis was carried out among the pregnant women to have an insight of the current infections prevalence in the district which could have been influenced by their knowledge, attitudes and practices towards the disease. Aseptic collection of 5 ml venous blood samples was performed on each pregnant woman through vein puncture, using 70% ethanol for disinfection, into properly labeled sample bottles. The sera were separated and kept at room temperature in labeled containers for approximately 2 hours before being centrifuged at 3000 rpm for 10 minutes. The serum was then transferred into new cryovials, each appropriately labeled, and stored at −20°C until the assay was conducted. For the testing, immunoassay (ELISA) kits (Curaty Rapid Diagnostic Test HBsAg, Curaty Rapid Diagnostic Test HCV, and Determine Kit for HIV) were employed; the kits were dipped into the serum with the arrow side facing downward for 2-3 seconds, after which the strips were placed on an absorbent test bench, ensuring each strip was positioned next to its corresponding labeled sample tube for identification purposes. When two colored bands are visible on the Control and Test Band, it indicates a positive result for HcsAg, HBsAg, and HIV. Conversely, if only a single color band is present on the Control and there is no line on the Test Band, it signifies a negative result for HcsAg, HBsAg, and HIV. Sociodemographic characteristics (age, marital status, educational background, occupation, residence, and gestational age) and variables related to KAP like information source, screening for HBV, HCV and HIV, accessibility of health care workers, awareness of vaccine availability, and sharing of needles and blades were gathered using a pretested structured questionnaire.

Quality Control

The questionnaire was originally prepared in English and was communicated in Yoruba to the women who could not read and understand English for easy understanding of the questionnaire. Training of the data collection team was made to insure the possible quality data.

Data Analysis

Data were recorded on Microsoft excel sheet and then analyzed by using Statistical Package for Social Sciences (SPSS) version 26 database software program. Categorical variables were measured as percentages while continuous variables were expressed as mean ± standard deviation. Frequencies were used to summarize descriptive statistics; Test for significance was done using Pearson’s Chi-Square at P=0.05.

Knowledge was assessed by questions focusing on HBV, HCV and HIV etiology, sign and symptoms, transmission, prevention and treatment. Each response was scored as “yes” or “no or “I don’t know”. Practices towards HBV, HCV and HIV were assessed by asking nine questions listed. Each question was labeled with “yes” or “no or “I don’t know”. Furthermore, Attitude towards HBV, HCV and HIV were assessed by asking eight questions listed. Each question was labeled with “yes” or “no or “I don’t know”.

RESULTS

A total of 620 pregnant women accessing ante-natal services in the district, with a 100% response rate, were captured during the study. There was a significant (p=0.000) distribution of the participants into different age groups in which majority of the participants were within the age group of 19-25 years, comprising 238 women (38.4%), followed by the 26-32 years age group, with 195 women (31.5%) while those that were above 50 years of age presented the least number of participants (10 women, 1.6%). According to the area of residence, about 54% of the pregnant women reside in the urban area, with a total of 335 pregnant women, while 46% reside in the rural area, with a total of 285 pregnant women. There is a significant difference (p=0.045) among pregnant women in their area of residence (Table 1).

Table1: Demographic information of Pregnant Women

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristics | Response | Frequency | Percentage (%) | p value |
| Age(In Years) | 12 –18 | 40 | 6.5 | 0.000 |
|  | 19 – 25 | 238 | 38.4 |  |
|  | 26 – 32 | 195 | 31.5 |  |
|  | 33 – 39 | 99 | 16 |  |
|  | 40 – 49 | 38 | 6.1 |  |
|  | 50> | 10 | 1.6 |  |
|  | Total | 620 | 100 |  |
| Residence | Rural | 285 | 46 | 0.045 |
|  | Urban | 335 | 54 |  |
|  | Total | 620 | 100 |  |

Majority of the respondents were identified to be married (416women) accounting for 67.1% of the total respondents, while a lower number of 183 pregnant women (29.5%) were identified to be single with a dual divorced (0.3%) and 19(3.1%) are widow as recorded during the study. Statistical analysis highlights a significant difference (p=0.000) in the distribution of the Participants as regards their marital status. Results revealed that most of the women are in their second trimester, 280(45.2%), followed by the first trimester at 200(32.3%), and finally the third trimester with 140(22.6%). (Table 2)

Table 2: Demographic information of Pregnant Women

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristics | Response | Frequency | Percentage (%) | P value |
| Marital Status | Single | 183 | 29.5 | 0.000 |
|  | Married | 416 | 67.1 |  |
|  | Divorce | 2 | 0.3 |  |
|  | Widow | 19 | 3.1 |  |
|  | Total | 620 | 100 |  |
| Gestational Age | 1st Trimester | 200 | 32.3 |  |
|  | 2nd Trimester | 280 | 45.2 | 0.000 |
|  | 3rd Trimester | 140 | 22.6 |  |
|  | Total | 620 | 100 |  |

The socioeconomic details of participants who enrolled in this current study indicates that the majority of the participants had a high level of education, with more than half of the respondents having tertiary qualifications 321(51.8%), followed by those who hold secondary qualifications (31.8%), primary qualifications (10.3%) while a small fraction of only 17 women (2.7%) had no formal education and thereafter 21(3.4%) had other. There was a significant difference (p=0.000) in the distribution of the participants as regards their different educational status. Also, there was a significant (p=0.000) relationship in the distribution of the participants as regards their occupation, with the majority of the participants engaged in skilled work 219 (35.3%) while 113(18.2%) engaged in unskilled work. Additionally, the civil service employed 101 pregnant women (16.3%), while 187 (30.2%) were unemployed (Table 3).

Table 3: Demographic information of Pregnant Women

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristics | Response | Frequency | Percentage (%) | P value |
| Educational Status | Primary | 64 | 10.3 |  |
|  | Secondary | 197 | 31.8 | 0.000 |
|  | Tertiary | 321 | 51.8 |  |
|  | Other | 21 | 3.4 |  |
|  | None | 17 | 2.7 |  |
|  | Total | 620 | 100 |  |
| Occupation | Unemployed | 187 | 30.2 | 0.000 |
|  | Unskilled worker | 113 | 18.2 |  |
|  | Skilled worker | 219 | 35.3 |  |
|  | Civil Servant | 101 | 16.3 |  |
|  | Total | 620 | 100 |  |

Practices towards HBV, HCV, and HIV were assessed by asking nine questions. Each question was labeled yes, no, and I don’t know. A response of Yes below 50% is categorized as a fair practice, while a response of No above 50% is termed a poor practice. Out of the 620 participants, a mean percentage of 53.84% were within the poor practice range, while 46.16% showed good practice, and 12% did not practice at all. The majority of the respondents, 313 (50.5%), 280(45.2%), and 293(47.3%) had never been screened for HBV, HCV, and HIV, respectively. Also, 323 (52.1%) have never been vaccinated against HBV, while 342(55.2%) of them have not shared needles or syringes with someone else. The majority of the women, 380(61.3%), intend to vaccinate their newborn baby against Hepatitis B after birth, and 363(58.5%) would feel comfortable discussing HIV/AIDS with their healthcare provider (Table 4).

Table 4: Practice towards Hepatitis B, C and HIV among Pregnant Women

|  |  |  |  |
| --- | --- | --- | --- |
| Practice Items | Response | Frequency | Percentage(%) Pvalue |
| Have you ever been tested for Hepatitis B? | Yes No I don’t know | 234 313 73 | 37.7 .000  50.5  11.8 |
| Have you ever shared needles or syringes with someone else? | Yes No I don’t know | 171 342 107 | 27.6 .000  55.2  17.3 |
| Have you received the Hepatitis B vaccine? | Yes No I don’t know | 208 323 89 | 33.5 .000  52.1  14.4 |
| Do you intend to vaccinate your newborn baby against Hepatitis B? | Yes No I don’t know | 380 185 55 | 61.3 .000  29.8  8.9 |
| Have you ever been tested for Hepatitis C? | Yes No I don’t know | 273 280 66 | 44 .000  45.2 10.6 |
| Do you intend to discuss Hepatitis B, C and HIV testing with your healthcare provider? | Yes No I don’t know | 163 345 112 | 26.3 .000  55.6  18.1 |
| Have you ever been tested for HIV/AIDS? | Yes No I don’t know | 248 293 78 | 40 .000  47.3  12.6 |
| Do you know how to prevent HIV transmission during sex? | Yes No I don’t know | 181 346 93 | 29.2 .000  55.8  15 |
| Would you feel comfortable discussing HIV/AIDS with your healthcare provider? | Yes No I don’t know | 363 179 77 | 58.5 .000  28.9 12.4 |

Attitudes towards HBV, HCV, and HIV were assessed by asking eight questions. Each question was labeled yes, no, and I don’t know. Most participants (499, 72.4%) believe co-infection with these viruses can affect the health of their babies, while only 87(14%) say co-infection with the viruses cannot affect their babies. The respondents, 416(67.1%), ascertained that they are concerned about getting Hepatitis B, C, and HIV during pregnancy, while 117(18.9%) are not concerned. The majority of pregnant women, 435(70.2%), believe getting tested for Hepatitis B, C, and HIV is important during pregnancy, a few 107(18.9%) don’t attach much importance to getting tested, and 77(12.4%) don’t know at all. The majority of the respondents, 446(71.9%), submitted to vaccinate their newborn baby against Hepatitis B even if they are not infected, 95(15.3%) said no, while 79(12%) are not knowledgeable about vaccination. One-third, 244(39.4%), believe that Hepatitis B, C, and HIV are curable diseases, while others, 214(34.5%), said no, and 161(26%) don’t know. There is a high level of stigmatization as more than half of the respondents 333, 53.7%) reveal that People with Hepatitis B, C, and HIV should be isolated from others. Pregnant women 280(45.2%) submitted that treatment for Hepatitis C is difficult and has many side effects. (Table 5).

Table 5: Assessment of Attitude towards Hepatitis B, C and HIV among Pregnant Women

|  |  |  |  |
| --- | --- | --- | --- |
| Attitude Items | Response | Frequency | Percentage (%) Pvalue |
| Do you believe co-infection with these viruses can affect the health of the baby? | Yes No I don’t know | 449 87 84 | 72.4 .000  14 13.5 |
| I am concerned about getting Hepatitis B, C and HIV during pregnancy. | Yes No I don’t know | 416 117 87 | 67.1 .000  18.9  14 |
| I believe getting tested for Hepatitis B, C and HIV is important during pregnancy. | Yes No I don’t know | 435 107 77 | 70.2 .000  17.3 12.4 |
| I would vaccinate my newborn baby against Hepatitis B even if I am not infected. | Yes No I don’t know | 446 95 79 | 71.9 .000  15.3  12.7 |
| People with Hepatitis B, C and HIV should be isolated from others. | Yes No I don’t know | 333 184 103 | 53.7 .000  29.7  16.6 |
| Hepatitis B, C and HIV is a curable disease. | Yes No I don’t know | 244 214 161 | 39.4 .000  34.5  26 |
| Treatment for Hepatitis B, C and HIV is very difficult and has many side effects. | Yes No I don’t know | 280 194 146 | 45.2 .000  31.3  23.5 |
| If I am diagnosed with HIV/AIDS, I would not be able to have a healthy baby. | Yes No I don’t know | 260 226 134 | 41.9 .000  36.5  21.6 |

Knowledge scores for individuals were summed to divide the participants into having adequate knowledge (who answered yes above 50%), having poor knowledge (who answered no below 50%), and not knowing (who answered don’t know). Of the 620 participants, 68.0% showed good knowledge, 17.40% were within the poor knowledge range, and 14.6% did not have the knowledge. In these present findings, 467(75.3%) of the participants are aware that Hepatitis B, C, and HIV are viral infections. 505(81.5%) are aware of the test that shows whether or not someone is hepatitis B or C and HIV positive. Moreover, 366(59%) are aware of the availability of a vaccine against HBV, while 308 (49.7%) believe HBV can be cured. On the transmission of the infections, 382 (61.6%) reported that HBV, HCV, and HIV infection can be passed from mother to child, and 319(51.5%) of them said people with Hepatitis B or C and HIV cannot donate blood. However, 377 (60.8%) respondents believe HBV, HCV, and HIV infection can be prevented. (Table 6).

Table 6: Assessment of Knowledge towards Hepatitis B, C and HIV among Pregnant Women

|  |  |  |  |
| --- | --- | --- | --- |
| Knowledge Items | Response | Frequency | Percentage (%) Pvalue |
| Are Hepatitis B and C and HIV viral infection diseases? | Yes No I don’t know | 467 60 93 | 75.3 .000 9.7 15 |
| Can hepatitis B or C and HIV be transmitted by contact with open wound/cut? | Yes No I don’t know | 449 90 81 | 72.4 .000 14.5 13.1 |
| Can hepatitis B and C and HIV virus be spread by someone who looks healthy? | Yes No I don’t know | 383 168 69 | 61.8 .000 27.1 11.1 |
| Is there a test that shows whether or not someone is hepatitis B or C and HIV positive? | Yes No I don’t know | 505 55 60 | 81.5 .000 8.9 9.7 |
| Do you think people with hepatitis B, C and HIV can have chronic infection? | Yes No I don’t know | 435 99 86 | 70.2 .000 16 13.9 |
| Is there a vaccine for HBV? | Yes No I don’t know | 366 91 163 | 59 .000 14.7 26.3 |
| Can hepatitis B be cured? | Yes No I don’t know | 308 178 134 | 49.7 .000 28.7 21.6 |
| Can HBV and HCV and HIV infection be passed from mother to child? | Yes No I don’t know | 382 144 94 | 61.6 .000 23.2 15.2 |
| Can people with Hepatitis B or C and HIV donate blood? | Yes No I don’t know | 242 319 59 | 39 .000 51.5 9.5 |
| Can HBV, HCV and HIV infection be prevented? | Yes No I don’t know | 377 165 78 | 60.8 .000 26.6 12.6 |

Dynamics of the transmission pattern of hepatitis B among pregnant women with their area of residence revealed a high prevalence of infection in the study area (Table 7). Out of the 620 participants who enrolled for the study, 12(1.94%) tested positive for hepatitis B in the rural area and 16(4.70%) in the urban area. Higher burden of Hepatitis B infection, tilted slightly towards the urban area when compared to the rural area, with a total prevalence of 28(4.52%) in the study area. Statistical analysis revealed a significant difference (p=0.014) in the pattern of distribution of hepatitis B prevalence in the area of residence of the pregnant women in the study. (Table 7)

Table 7: Prevalence of Hepatitis B in relation to area of residence

|  |  |  |  |
| --- | --- | --- | --- |
| Settlement | HBV Status | | |
| Negative (%) | Positive (%) | Total (%) |
| Rural | 273(44.0%) | 12(1.94%) | 285(45.97%) |
| Urban | 319(51.5%) | 16(4.70%) | 335(54.03%) |
| Total | 592(95.5%) | 28(4.52%) | 620(100%) |

X2 = 0.114; df =1; p=0.014

Differently, there was no significant difference (p=0.371) in the prevalence of HIV among participants in the study area in relation to their area of residence, with rural dwellers recorded 6(0.97%) and urban area recorded 11(1.77%) prevalence (Table 8).

Table 8: Prevalence of HIV in relation to area of residence

|  |  |  |  |
| --- | --- | --- | --- |
| Settlement | HIV Status | | |
| Negative (%) | Positive (%) | Total (%) |
| Rural | 279(45.0%) | 6(0.97%) | 285(45.97%) |
| Urban | 324(52.25%) | 11(1.77%) | 335(54.03%) |
| Total | 603(97.25%) | 17(2.74%) | 620(100%) |

X2=0.802; df =1; p=0.371

Notably, there was nill prevalence of hepatitis in the study area in relation to their area of residence. Rural area recorded 0% while the urban area also recorded 0% (Table 9).

Table 9: Prevalence of Hepatitis C in relation to area of residence

|  |  |  |  |
| --- | --- | --- | --- |
| Settlement | HCV Status | | |
| Negative (%) | Positive (%) | Total (%) |
| Rural | 285(44.35%) | 0(0%) | 285(44.35%) |
| Urban | 335(54.03%) | 0(0%) | 335(54.03%) |
| Total | 620(100%) | 0(0%) | 620(100%) |

Discussion

The overall prevalence rate of Hepatitis B, C, and HIV was 28(4.52%), 0(0%), and 17(2.74%), respectively. Considering the area of residence, 12(1.94%) of them were tested positive for hepatitis B in rural areas and 16(4.70%) in the urban area. Also, for HIV, 6(0.97%) were recorded for the rural area, and 11(1.77%) were obtained at the urban area. Hepatitis B and HIV with a higher burden of infection, tilting slightly towards the urban area when compared to the rural area. This study aligns with Egbebi et al. (2022) who reported an overall prevalence rate of 7.7% for HBV. The prevalence of HBV infection in this study is regarded as moderate following the WHO classification of assessing the severity of HBV infections in HBV-endemic countries. WHO defines settings with high hepatitis B surface antigen seroprevalence in the general population to be >2% or >5% HBsAg seroprevalence (WHO, 2022). The pooled prevalence of HBV in Nigeria was reported as 13.6% and 14.1% for pregnant women attending the antenatal clinic in the University of Calabar teaching hospital, Calabar (UCTH), Nigeria. It was recorded that 83.5% of pregnant women already diagnosed with chronic liver disease were positive for HbsAg. Ola et al. (2021) reported that Nigeria has a national prevalence rate of HBV among pregnant women ranging from 8% to 15%, which complies with this study. Otegbayo et al. (2022) submitted that prevalence rates of HCV infection among pregnant women in Nigeria vary between 0.5% and 3%, which contradicts the 0% that was recorded in the present study. Nigeria records one of the highest burdens of HIV, with prevalence among pregnant women ranging between 1.4% and 4.1% depending on the region (UNAIDS, 2023). This aligns with the present study. This present study complies with Akinbolaji et al. (2015), who reported that the Prevalence of HBV was found to be 6.16%, but contradicts its HCV, which was reported to be 1.71%, while the co-infection of HBV/HCV was 0.12% in Ekiti State, Nigeria.

The current study sought to evaluate knowledge, attitude, and practice towards HBV, HCV, and HIV among pregnant women who attended antenatal services in their pregnancy journey. Results of the study revealed that Knowledge about HBV, HCV, and HIV among pregnant women was found to be moderately satisfactory, their attitude was acceptable, and their practices were subpar.

Out of the 620 participants, 68.0% showed good knowledge and 17.40% were within the poor knowledge range and 14.6% don’t have the knowledge at all, this aligns with the study of (Teklay, 2020) which showed that 73.4% of the participants had poor knowledge, whereas another study conducted in eastern Ghana in 2016 showed that 40.2% of pregnant women had good knowledge (Adjei et al.,2016). Moreover, a cross-sectional study conducted in China in 2017, only 21% of the participants were able to answer all the general knowledge-related questions correctly (Han et al., 2017). Similarly, a study conducted in Ghana in 2014 revealed that less than half of the participants (46.2%) knew about hepatitis B infection and its disease (Dun-Dery et al., 2017). Moreover, a study conducted in the Bureau Health District, Cameroon, in 2012 showed that <20% of the participants had the correct knowledge (Frambo et al.,2014). On the other hand, in a study conducted in Addis Ababa, Ethiopia, in 2014, 39.2% of them had adequate knowledge about HBV (Fikremariam, 2014).

Knowledge (Adjei et al.,2016). Moreover, a cross-sectional study conducted in China in 2017, only 21% of the participants were able to answer all the general knowledge-related questions correctly (Han et al., 2017). Similarly, a study conducted in Ghana in 2014 revealed that less than half of the participants (46.2%) knew about hepatitis B infection and its disease (Dun-Dery et al., 2017). Moreover, a study conducted in the Bureau Health District, Cameroon, in 2012 showed that <20% of the participants had the correct knowledge (Frambo et al.,2014). On the other hand, in a study conducted in Addis Ababa, Ethiopia, in 2014, 39.2% of them had adequate knowledge about HBV (Fikremariam, 2014).

According to our results, where measures against HBV, HCV, and HIV depend on whether people know that hepatitis B or C and HIV is a transmissible disease or not, 72.4% responded that the infections could be transmitted by contact with open wound/cut, and 61.6% from mother to child during pregnancy. This is in contrast with a study reported by Ul Haq et al. (2012) from Pakistan and Fikremariam from Addis Ababa, Ethiopia (Fikremariam, 2014). There is adequate knowledge about the infections, hence a reduction in the transmission of the infections in the community. This high level of knowledge of ways of HBV, HCV, and HIV transmission calls for improved and continuous targeted health education to prevent and control the spread of the virus. In alignment with this study, pregnant women in a study conducted in Nigeria in 2015 demonstrated good knowledge regarding the transmission of HBV from mother to child with a positive response of 72.9% (Gboeze et al., 2015) and a study reported by Pham et al., (2019) in Vietnam showed that 75.3% of the participants were aware that HBV is transmitted through unprotected sex. Good knowledge of pregnant women in different countries regarding the different modes of transmission of hepatitis B virus infection can be explained by the fact that these women have been receiving regular antenatal care education on the subject of hepatitis B infection.

In our study, 58% of the respondents had a positive attitude towards HBV. This was slightly higher than a study conducted by (Teklay et al., 2020), who reported 54%, and also higher than a study in Honiara, Solomon Islands (35.3%) (Kamal, 2015). Furthermore, a study conducted in Bangladesh in 2012 showed that 50% of study participants had a positive attitude (Rahman and Mannan,2010). Although 71.9% demonstrated a positive attitude to vaccinate their newborn babies against hepatitis B, even if they are not infected. Only 33.5% of the women reported having been vaccinated. The seroprevalence of HIV in our study was 2.74% lower than that reported in the Demographic and Health Survey (DHS) of 7.6% in 2011.

According to this study, 39.8% of study participants had a fair practice. This is slightly higher than (Teklay et al., 2020), who reported 20.3% good practice. Also, this is higher than a study conducted in Honiara, Solomon Islands, in 2015, which showed that 26.3% of study participants had good practice (Island, 2008). But a higher rate of good practice was reported (42.7%) from Addis Ababa, Ethiopia (Teklay, et al.2020). In this research, 50.5% had not screened for HBV, while a study conducted in China in 2017 showed that 68.5% of study participants had not screened (Han et al.,2017). Furthermore, in this research, 45.2% have not been screened for hepatitis. Also, 47.3% have never been screened for HIV/AIDS. Also, 52.1% of the pregnant women have not received the Hepatitis B vaccine. This might indicate limited health workers, a low level of awareness about the availability of vaccines, not recognizing the significance of screening for HBV prevention and control, and the educational status of the participant.

REFERENCES

Adjei, C. A. , Asamoah, R., Atibila,F., Ti-enkawol, G. N., and. Ansah-Nyarko,M., (2016). Mother-to-child transmission of hepati- tis B: extent of knowledge of physicians and midwives in eastern region of Ghana,” BMC Public Health, 16:1

Akinbolaji, T.J., Adekoya-Benson, T., Akinseye, F.J., Odeyemi, F.A., Adegeye, F.O., Ojo, O.I., (2015) Prevalence of Hepatitis B Virus and Hepatitis C Virus Co-Infections among Ekiti People in South-Western Nigeria. International Journal of Health Sciences & Research Vol.5(3):121-126

Barut, S., Gửnal, ὂ., and Erkorkmaz, U., (2011): Serum ferritin levels in chronic hepatitis C patients during antiviral therapy and prediction of treatment response. Scandinavian Journal of infectious diseases; 44:761-765

Chilaka, V. N., and Konje, J. C., (2021). Viral Hepatitis in pregnancy. European Journal of Obstetrics & Gynecology and Reproductive Biology, 256, 287-296

Dun-Dery,F., Adokiya, M. N., Walana, W., Yirkyio, E., and. Ziem, J. B ., (2017).“Assessing the knowledge of expectant mothers on mother–to-child transmission of viral hepatitis B in Upper West region of Ghana,” BMC Infectious Diseases, vol. 17, no. 1, p. 416, 2017.

Egbebi, A. H., Okiki, P. A., Oyinloye, J. M. A., Daramola, G. O., and Ogunfolakan, O. O.,(2022). Prevalence of Hepatitis B and D Antibodies among Pregnant Women Attending Antenatal Clinic at Ekiti State University Teaching Hospital, Ado-Ekiti, Ekiti State, Nigeria. Journal of Advances in Microbiology 22(9): 97-103; Article no.JAMB.86006 ISSN: 2456-7116

Federal Ministry of Health, Nigeria (2019). Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) 2018: Technical Report. Federal Ministry of Health, Abuja, Nigeria.

Fikremariam, B., (2014). Prevalence of hepatitis B surface antigen and KAP towards HBV infection, among pregnant women attending selected antenatal Clinics in Addis Ababa, Ethiopia <http://localhost:80/xmlui/handle/123456789/4712>.

Frambo, A.A., Atashili, J., Fon, P., and Ndumbe, P., (2014) “Prevalence of HBsAg and knowledge about hepatitis B in pregnancy in the Bureau Health District, Cameroon: a cross-sectional study,” BMC Research Notes, 7:1-39

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):p. 1029.

Han, Z., Yin, Y., and Zhang, Y., (2017). Knowledge of and attitudes towards hepatitis B and its transmission from mother to child among pregnant women in Guangdong Province, China,” PLoS One,12:6, p. e0178671.

Hang Pham T. T., Le T. X., and Nguyen D. T., (2019). Knowledge, attitudes and practices of hepatitis B prevention and immunization of pregnant women and mothers in northern Vietnam. PLoS One.14(4):p. e0208154. doi: 10.1371/journal.pone.0208154.

Islands, S., (2008). Second generation surveillance of antenatal women and youth, Solomon Islands Ministry of Health, 2008.

Kamal, R., (2015). Knowledge, attitude and practice towards hepatitis B among the residents in Dhaandhoo island, Maldives, Faculty of Health Sciences, Malé, Maldives

Liang, T.J., (2009). Hepatitis B: the virus and disease. Hepatology. 49(S5):S13–S21. doi: 10.1002/hep.22881.

Muhammad, A., Ibrahim, B., and Ramadan, A., (2016). Knowledge, attitude and practice regarding hepatitis B infection among nurses in public hospitals of Niger State, Nigeria. International Journal of tropical Disease & Health. 12(3):1–9. doi: 10.9734/IJTDH/2016/18663.

Otegbayo, J.A., Taiwo, B.O., Akingbola, T.S., Odaibo, G.N., Adedapo, K.S., Penugonda, S., Adewole, I.F., Olaleye, D.O., Murphy, R., Kanki, P., (2008).Prevalence of hepatitis B and C seropositivity in a Nigerian cohort of HIV-infected patients. [Annals of Hepatology](https://www.researchgate.net/journal/Annals-of-Hepatology-1665-2681) 7(2):152-6

Oti, V.B., Isa, H. M., Ibrahim,Y., Chindo, I., Orok, I., Yakubu, Y. S., Attah, A. A., and Muriana, O.,(2021). Hepatitis B Virus Infection Prevalence among Patients in a Local Community Hospital in Nasarawa State, Nigeria. Journal of infectious disease and epidemiology, 5(4): 0 0 0 203.

Pennap, G.R.,Yakubu, A., Oyige, O., and Joseph F.J., (2010). Prevalence of hepatitis B and C virus infection among people of a local community in Keffi, Nigeria. African Journal of Microbiology Research Vol. 4 (4), pp. 274-278

Pham Hang T. T., Le T. X., Nguyen D. T.,(2019) Knowledge, attitudes and practices of hepatitis B prevention and immunization of pregnant women and mothers in northern Vietnam. PLoS One. 14(4):p. e0208154. doi: 10.1371/journal.pone.0208154

Rahman M. A., and Mannan, S. R., (2012). The knowledge, attitude and practices regarding HBV infection of married women in the reproductive age group living in different districts of Bangladesh,” Medicine Today, 22:1, pp. 29–31.

Sinha, S., and Kumar, M., Pregnancy and chronic hepatitis B virus infection. Hepatology Research. 2010;40(1):31–48. doi: 10.1111/j.1872-034X.2009.00597

Teklay G., Getu G., Mulualem L., and Markos N.,(2020). Knowledge, Attitude, and Practice towards Hepatitis B Virus among Pregnant Women Attending Antenatal Care at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia. International Journal of Hepatology. 5617603:10 <https://doi.org/10.1155/2020/5617603>

Ul H., N., Hassali M. A., Shafie A. A., Saleem F., Farooqui M., Aljadhey H.(2012) A cross sectional assessment of knowledge, attitude and practice towards hepatitis B among healthy population of Quetta, Pakistan. BMC Public Health. 12(1) doi: 10.1186/1471-2458-12-692.

World Health Organization (2022). Prevalence of Hepatitis B in the world by country. <http://www.who.int/csr/disease/hepatitis/en/>

[Yilma M. L](https://pubmed.ncbi.nlm.nih.gov/?term=Larebo+YM&cauthor_id=39483814)., [Abebe, A. A.](https://pubmed.ncbi.nlm.nih.gov/?term=Anshebo+AA&cauthor_id=39483814), [Sujit, K.B.,](https://pubmed.ncbi.nlm.nih.gov/?term=Behera+SK&cauthor_id=39483814) and [Natarajan, G.,](https://pubmed.ncbi.nlm.nih.gov/?term=Gopalan+N&cauthor_id=39483814) (2024). Knowledge, attitudes, and practices toward preventing and controlling hepatitis B virus infection among pregnant women attending antenatal care at a University Hospital in Central Ethiopia: a cross-sectional study.PMC11526330 [10.1177/20499361241285342](https://doi.org/10.1177/20499361241285342)