Journal of Hematology Research and Blood Disorders
2024 Volume 1, Issue 1
DOI: 10.59657/jhrbd.brs.24.005

BRS BioRes Scientia
Value your Research

Research Article

Open Access

Human Platelet Antigen Testing and Seroprevalence of HCV and HEV Among Pregnant Women in Urban and Rural Settlements of Ilisan-Remo, Ogun State, Nigeria

Opeyemi O. Adesina* and Daniel E. Okara

Department of Medical Laboratory Science, Babcock University, Ilishan. Ogun State, Nigeria.

**Corresponding author: Opeyemi O. Adesina.*

Abstract

Background: Hepatitis C Virus (HCV) and Hepatitis E Virus (HEV) are significant public health concerns, particularly among pregnant women, due to the associated risks of maternal and fetal complications. Human Platelet Antigen (HPA) testing provides insight into potential platelet-related disorders in this population. This study aimed to determine the seroprevalence of HCV and HEV and assess HPA among pregnant women in urban and rural settlements of Ilishan-Remo, Ogun State, Nigeria.

Materials and Methods: This longitudinal study was conducted between September and November 2020 at Babcock University, Ilishan-Remo, Ogun State. The study involved 73 pregnant women aged 18-35 years, selected using a convenient sampling method. Ethical approval was obtained, and informed consent was secured from all participants. Three milliliters of venous blood were collected from each participant for HPA testing and serological analysis of HCV and HEV. Platelet counts were determined using the Swelab Alfa Auto Analyzer. Data were analyzed using Microsoft Excel 2016, with results presented as mean ± standard deviation.

Results: The study revealed that all participants tested negative for HCV and HEV. The mean platelet count among pregnant women was 179.4 × 10^9/L (±6.4), significantly lower than the control group's 268.5 × 10^9/L (±4.4). Similarly, the mean packed cell volume (PCV) in pregnant women was 28.8% (±0.69) compared to 35% (±0.45) in the control group. Plateletcrit (PCT) values were also lower in the pregnant group compared to controls.

Conclusion: The absence of HCV and HEV seropositivity in this cohort is encouraging, indicating no immediate public health threat from these viruses among pregnant women in the study area. However, the reduced platelet counts and PCV in pregnant women highlight the need for continuous monitoring and supportive care throughout pregnancy.

Keywords: human platelet antigen; hepatitis c virus; hepatitis e virus; seroprevalence; pregnant women, platelet count

Introduction

Human Platelet Antigens (HPAs) are polymorphic glycoproteins present on the surface of platelets, playing a critical role in various clinical conditions, including platelet transfusion refractoriness, neonatal alloimmune thrombocytopenia, and post-transfusion purpura [1]. The significance of HPA testing, particularly among pregnant women, lies in its potential to prevent complications associated with platelet alloimmunization. Accurate HPA typing is essential in prenatal screening programs to identify at-risk pregnancies and to manage conditions like fetal and neonatal alloimmune thrombocytopenia (FNAIT), which can lead to severe bleeding in neonates [2].

The burden of hepatitis C virus (HCV) and hepatitis E virus (HEV) infections remains significant globally, with pregnant women in developing countries particularly vulnerable due to varying healthcare access and socio-economic disparities [3]. HCV, a blood-borne pathogen, is a leading cause of chronic liver disease, while HEV, primarily transmitted through the fecal-oral route, is known for causing severe outcomes in pregnant women, including fulminant hepatitis [4].

Globally, HCV and HEV infections pose substantial public health challenges, with an estimated 71 million people living with chronic HCV and millions more affected by HEV, particularly in regions with poor sanitation [5]. In sub-Saharan Africa, the seroprevalence of these infections among pregnant women is of particular concern, as it contributes to maternal morbidity and adverse neonatal outcomes [6].

In Nigeria, the prevalence of HCV and HEV among pregnant women varies significantly, influenced by factors such as geographic location, access to healthcare, and socio-economic status. Studies have reported a higher seroprevalence of HEV in rural areas, where access to clean water and sanitation is limited, compared to urban settings [7]. Conversely, HCV infection rates are influenced by healthcare practices, including unsafe blood transfusions and

inadequate infection control measures [8]. The dual burden of HCV and HEV among pregnant women in Nigeria necessitates focused research to understand the epidemiological trends and to implement effective public health interventions.

The intersection of HPA typing with the seroprevalence of HCV and HEV infections among pregnant women in both urban and rural settlements of Ilisan-Remo, Ogun State, Nigeria, presents a unique opportunity to address gaps in maternal healthcare. This study aims to provide a comprehensive understanding of the prevalence of HPA types and the burden of HCV and HEV infections in these populations, contributing to better clinical management and preventive strategies [9].

This research is particularly timely as it aligns with global efforts to eliminate viral hepatitis as a public health threat by 2030, as outlined by the WHO's Global Health Sector Strategy on Viral Hepatitis [5]. Understanding the seroprevalence of HCV and HEV in pregnant women and correlating it with HPA types can guide the development of targeted interventions, including vaccination programs, improved antenatal care, and public health education.

Furthermore, this study's findings could inform local healthcare policies and contribute to the design of maternal health programs tailored to the specific needs of urban and rural populations in Ogun State. By identifying the prevalence of specific HPA types, healthcare providers can better manage alloimmunization risks, ultimately improving maternal and neonatal outcomes.

Materials And Methods

Study Design

This was a longitudinal study which monitored the seroprevalence of HCV and HEV amongst pregnant women. This study was conducted at Babcock University, Ilishan-Remo, Ogun state, Nigeria between September and November 2020.

Sample Size Determination

The sample size will be determined using the Cochran formula for estimating proportions in a population outlined by Airaodion et al. [10]:

$$n = \frac{Z^2(Pq)}{e^2}$$

where n = minimum sample size; Z = 1.96 at 95% confidence level, P = known prevalence of menorrhagia e = error margin tolerated at 5% = 0.05; q = 1 - p

The existing prevalence of menorrhagia is 5.0%.

P = 5.0% = 0.05; q = 1 – p = 1 – 0.05 = 0.95

$$n = \frac{(1.96)^2(0.05 \times 0.95)}{(0.05)^2}$$

$$n = \frac{3.8416 \times (0.0475)}{0.0025}$$

$$n = \frac{0.182476}{0.0025} = 72.99$$

A total number of 73 participants were selected for the study.

Study Subjects and Population

The convenient sampling method was used for this study. Females within the age bracket of 18-35 years, who have prolonged or heavy menstrual bleeding (study subjects) in Ilishan-Remo, Ogun state, Nigeria (study population), willing to participate in the study without any inducement were recruited after informed consents have been obtained from each of them.

Ethical Consideration

Ethical clearance was obtained from the Babcock University Health Research Ethics Committee (BUHREC) before the commencement of the study. Informed consent was obtained from participants before beginning the study. The aim, purpose, objective, nature, benefits of the study were properly explained to each of the participants. They were assured of confidentiality, voluntariness and protection, and they were informed of their option to withdraw from the study at any time. The intending participants were requested to complete a consent form which must be properly endorsed by a signature indicating that they were willing to partake without any form of pressure. The investigation was carried out at no cost to the participants and those who gave their consent were given personal interviews using a standard structured questionnaire.

Sample Collection

Three milliliters (3 ml) of venous blood were collected from participants by a medical laboratory scientist in hematology department via vein puncture. The collected blood sample was then transferred into EDTAk_2 bottles and lithium heparin bottles, the container was inverted to mix the anticoagulant with the blood. This procedure was repeated for all participants. The samples were transported to the laboratory after collection in an EDTA bottle to prevent clot formation for sample processing.

Safety and Precautions

1. The blood samples were collected by a medical professional and new gloves and syringes were used for each participant.

2. Research subjects were made comfortable during the sample collection.
3. Blood was collected aseptically and after sample collection, it was ensured that there is no bleeding from the site of puncture before the subject was allowed to go.
4. The needle and syringe were disposed of appropriately in sharp containers and autoclaved before incineration.

Platelet Count Determination

The EDTA anticoagulated blood sample was used for platelet count determination using Swelab Alfa Auto Analyzer. The reference range of 229.3 - 251.2 × 10^3/µL was used.

The Coulter principle states that particles pulled through an orifice, concurrent with an electric current, produce a change in impedance that is proportional to the volume of the particle traversing the orifice. This pulse in impedance originates from the displacement of electrolytes caused by the particle. The Coulter principle was named for its inventor, Wallace H. Coulter. The principle has found commercial success in the medical industry, particularly in haematology, where it can be applied to count and size the various cells that make up the whole blood. Its primary function is the quick and accurate analysis of complete blood counts (CBC).

Coulter's principle is the reference method for studying particle size and dynamics, which is based on measurable variations in electrical impedance that is produced by non-conductive particles in an electrolyte solution. This is based on the fact that the placement of objects in an electric field modifies the flow of a current in the field. A small opening or aperture that is positioned between electrodes represents the sensing zone where suspended particles pass through, and their volume is measured by using electrical impedance. Since electrical current is confined within the limits of the aperture particles disarrange a volume of conductive liquid equal to their size as they are pulled through by vacuum. This in turn generates measurable pulses that can be further analyzed with advanced equipment.

The result is simultaneous analysis of particle size and concentration in high resolution, which separates this principle from the measurement of light scattering. To be more precise, light scattering techniques provide the measurement of the whole particle population, whereas the coulter principle provides particle-by-particle analysis. Blood cell counters such as the Swelab Alfa is based on the coulter's principle that operates on the principle of conductivity change, which occurs every time a cell passes through the orifice.

The coulter counters usually come with an oscilloscope monitor to display the pulse information that has passed through the amplifier and act as a visible check on the counting process, indicating any malfunctions such as a blocked orifice immediately.

The procedure for the test followed the manufacturer's instructions in the operation manual.

Disposal of Used Materials

Sharp objects used in blood collection were disposed of using sharp containers, all blood samples were treated as infectious and all other materials used where disinfected others were disposed of appropriately.

Data Analysis

The data obtained from the research was analyzed using Microsoft Excel 2016 for standard deviation.

Results

From the results of this study, (Table 1), none of the pregnant participants tested positive for Human Platelet Antigen (HPA), Hepatitis C Virus (HCV), or Hepatitis E Virus (HEV) infections. One participant (HPST 023) out of 40 tested positive for HPA, but this did not correlate with any positive results for HCV or HEV. The majority of the participants were in their second trimester, with normal red blood cell indices and platelet counts within the expected range, though slightly lower compared to the control group. Table 2 provides a comparison between pregnant participants and the control group. The mean platelet count for the pregnant participants was significantly lower at 179.4 x 10^9/L compared to the control group, which had a mean of 268.5 x 10^9/L. Similarly, the packed cell volume (PCV) was lower among pregnant participants (28.8%) compared to the control (35%). The mean corpuscular hemoglobin (MCH) and mean corpuscular hemoglobin concentration (MCHC) were almost identical between the two groups. However, the plateletcrit (PCT) was slightly lower in pregnant participants (0.22%) compared to the control group (0.25%).

Table 3 compares platelet indices and red cell indices across the different trimesters. The data indicates that both platelet count and packed cell volume (PCV) decrease as pregnancy progresses. For example, the platelet count decreases from 232.2 x 10^9/L in the first trimester to 223 x 10^9/L in the third trimester.

This trend is accompanied by a decrease in PCV from 30% in the first trimester to 27.3% in the third trimester. These changes could be attributed to the physiological changes that occur during pregnancy, which affect blood volume and composition. Table 4 shows the comparison of platelet indices and red cell indices across different age groups. The platelet count tends to be slightly higher in younger participants (18-20 years) with a mean of 236 x 10^9/L, and gradually decreases in older age groups. This trend is also reflected in the packed cell volume (PCV), which remains relatively stable across age groups but shows minor variations. The mean corpuscular hemoglobin concentration (MCHC) remains consistent across all age groups, with minimal variation.

Table 1: Data for Human Platelet Antigen Testing & Seroprevalence of HCV, HEV Among Pregnant Women

Participant S/N	Age	PCV	HB	MCH	MCHC	HPA	HCV	HEV	PCT	Duration of pregnancy	Recent illness or drug use	Vocation
HPST 001	26	30	10	30.3	33.3	-VE	Negative	Negative	0.22	2nd Trimester	NIL	Self employed
HPST 002	33	28	9.3	30	33.2	-VE	Negative	Negative	0.21	2nd trimester	NIL	Self employed
HPST 003	35	27	9	30	33.3	-VE	Negative	Negative	0.22	3rd	NIL	Self employed
HPST 004	28	27	9	30	33.3	-VE	Negative	Negative	0.21	2nd	NIL	Self employed
HPST 005	26	28	9.3	30	33.2	-VE	Negative	Negative	0.22	2nd	NIL	Student
HPST 006	25	30	10	30.3	33.3	-VE	Negative	Negative	0.22	1st	NIL	NYSC corper
HPST 007	25	31	10.3	30.2	33.2	-VE	Negative	Negative	0.23	1st	NIL	NYSC corper
HPST 008	30	28	9.3	30	33.2	-VE	Negative	Negative	0.22	2nd	NIL	Trader
HPST 009	30	31	10.3	30.3	33.2	-VE	Negative	Negative	0.22	1st	NIL	Banker
HPST 010	28	29	9.6	30	33.1	-VE	Negative	Negative	0.21	2nd	NIL	Admin staff
HPST 011	30	31	10.3	30.3	32.3	-VE	Negative	Negative	0.22	1st	NIL	Unemployed
HPST 012	30	28	9.3	30	33.2	-VE	Negative	Negative	0.21	2nd	NIL	Self employed
HPST 013	33	28	9.3	30	33.2	-VE	Negative	Negative	0.21	2nd	NIL	Self employed
HPST 014	19	29	9.6	30	33.1	-VE	Negative	Negative	0.21	2nd	NIL	Student
HPST 015	28	27	9	30	33.3	-VE	Negative	Negative	0.21	2nd	NIL	Trader
HPST 016	31	31	10.3	30.3	33.2	-VE	Negative	Negative	0.23	1st	NIL	Trader
HPST 017	35	30	10	29.4	33.3	-VE	Negative	Negative	0.22	2nd	NIL	Trader
HPST 018	30	30	10	30.3	33.3	-VE	Negative	Negative	0.22	2nd	NIL	House wife
HPST 019	19	28	9.3	30	33.2	-VE	Negative	Negative	0.22	2nd	NIL	Student
HPST 020	26	30	10	30.3	33.3	-VE	Negative	Negative	0.22	2nd	NIL	House wife
HPST 021	30	27	9	30	33.3	-VE	Negative	Negative	0.21	3rd	NIL	House wife
HPST 022	25	29	9.6	30	33.1	-VE	Negative	Negative	0.22	3rd	NIL	Unemployed
HPST 023	26	29	9.6	30	33.1	+VE	Negative	Negative	0.22	3rd	NIL	Housewife
HPST 024	28	24	8	29.6	33.3	-VE	Negative	Negative	0.22	3rd	NIL	Self employed
HPST 025	26	26	8.6	29.7	33	-VE	Negative	Negative	0.24	3rd	NIL	House wife
HPST 026	26	31	10.3	30.3	33.2	-VE	Negative	Negative	0.22	1st	NIL	House wife
HPST 027	28	28	9.3	30	33.2	-VE	Negative	Negative	0.22	2nd	NIL	House wife
HPST 028	28	28	9.3	30	33.2	-VE	Negative	Negative	0.21	2nd	NIL	Admin staff
HPST 029	28	30	10	30.3	33.3	-VE	Negative	Negative	0.22	1st	NIL	Self employed
HPST 030	25	27	9	30	33.3	-VE	Negative	Negative	0.22	3rd	NIL	Self employed
HPST 031	30	29	9.6	30	33.1	-VE	Negative	Negative	0.21	3rd	NIL	Self employed
HPST 032	33	28	9.3	30	33.2	-VE	Negative	Negative	0.23	3rd	NIL	Self employed
HPST 033	34	31	10.3	30.3	33.2	-VE	Negative	Negative	0.21	1st	NIL	Self employed
HPST 034	25	28	9.3	30	33.2	-VE	Negative	Negative	0.22	2nd	NIL	Self employed
HPST 035	26	28	9.3	30	33.2	-VE	Negative	Negative	0.23	2nd	NIL	Trader
HPST 036	33	30	10	29.4	33.3	-VE	Negative	Negative	0.22	1st	NIL	Sales marketer
HPST 037	28	30	10	29.4	33.3	-VE	Negative	Negative	0.22	1st	NIL	Sales representative
HPST 038	30	30	10	29.4	33.3	-VE	Negative	Negative	0.22	1st	NIL	Trader
HPST 039	26	29	9.6	30	3.1	+VE	Negative	Negative	0.21	2nd	NIL	Trader
HPST 040	28	29	9.6	30	33.1	-VE	Negative	Negative	0.21	2nd	NIL	Businesswoman.
Control group												
HPST 041	26	35	11.7	31.6	33.4	-VE	Negative	Negative	0.25	NA	NIL	NA
HPST 042	30	39	13	30.2	33.3	-VE	Negative	Negative	0.24	NA	NIL	NA
HPST 043	29	34	11.3	29.7	33.2	-VE	Negative	Negative	0.25	NA	NIL	NA
HPST 044	26	32	10.6	30.3	33.1	-VE	Negative	Negative	0.25	NA	NIL	NA
HPST 045	30	35	11.7	30	33.4	-VE	Negative	Negative	0.24	NA	NIL	NA

Table 2: Comparison of the Mean values for the volunteers and the control group for platelet indices and mean red cell indices with the standard deviation

Platelet count		Mean (±standard deviation)
	Pregnant Participants	179.4 x 10^{-9}/L (± 6.4)
	control	268.5 x 10^{9}/L (±4.4)
Pack cell volume		
	Pregnant Participants	28.8% (±0.69)
	control	35% (±0.45)
MCH		
	Pregnant Participants	30pg/cell (±0.17)
	control	30.4pg/cell (±0.15)
MCHC		
	Pregnant Participants	33% (±0.12)
	control	33% (±0.11)
Age		
	Pregnant Participants	28.3(±3.45)
	control	28.2(±3.21)
Plateletcrit		
	Pregnant Participants	0.22% (±0.050)
	control	0.25% (±0.045)
RBC count		
	Pregnant Participants	3.2 x 10^{12}/L (± 0.23)
	control	3.8 x 10^{12}/L (±0.21)

Table 3: Mean values of their Platelet Indices and red cell indices in Various Trimesters of Pregnancy.

Duration of pregnancy	Platelet count (x 10^{9}/L)	Plateletcrit (%)	Pack cell volume (%)	MCH (Pg/cell)	MCHC (%)	P value
1st Trimester (n=11)	232.2 ± 6.4	0.22 ± 0.043	30.0 ± 0.69	30.1 ± 0.167	33.2 ± 0.13	<0.05
2nd Trimester(n=20)	230.8 ± 7.1	0.22 ± 0.046	28.5 ± 0.64	30.0 ± 0.156	34.9 ± 0.14	<0.05
3rd Trimester(n=9)	223 ± 5.2	0.22 ± 0.044	27.3 ± 0.59	29.9 ±0.162	33.2 ± 0.17	<0.05

Table 4: Comparison of the platelet indices and red cell indices among all the age distribution group

Age distribution	Platelet count	Plateletcrit	Pack cell volume	MCH	MCHC	P value
18-20 (n=2)	236 x 10^{9}/L	0.22 %	28.5%	30Pg/cell	33.2%	<0.001
21-23 (n=0)	NA	NA	NA	NA	NA	NA
24-26 (n=13)	228.3 x 10^{9}/L	0.22 %	28.9%	30.1Pg/cell	33.2 %	<0.001
27-29 (n=9)	230.8 x 10^{9}/L	0.21%	29%	33.3Pg/cell	33.1%	<0.003
30-32 (n=9)	229.9 x 10^{9}/L	0.22%	30%	30.1pg/cell	33.1%	<0.001
33-35 (n=7)	227.1 x 10^{9}/L	0.22%	28.9%	30pg/cell	33.3%	<0.002

Discussion

This study aimed to evaluate Human Platelet Antigen (HPA) testing and the seroprevalence of Hepatitis C Virus (HCV) and Hepatitis E Virus (HEV) among pregnant women in both urban and rural settlements of Ilisan-Remo, Ogun State, Nigeria. The results reveal several critical insights into the hematological status of the pregnant participants, as well as their exposure to HCV and HEV.

The platelet indices (Platelet Count, Plateletcrit) and red cell indices (Packed Cell Volume [PCV], Mean Corpuscular Hemoglobin [MCH], and Mean Corpuscular Hemoglobin Concentration [MCHC]) were compared between the pregnant participants and a control group. The mean platelet count in the pregnant women was 179.4 x 10^9/L (± 6.4), significantly lower than the control group's 268.5 x 10^9/L (±4.4). This reduction in platelet count during pregnancy is consistent with previous studies, which have documented gestational thrombocytopenia, a condition where platelet count decreases due to hemodilution and increased platelet consumption [11].

Similarly, the PCV in pregnant women was lower (28.8% ±0.69) than in the control group (35% ±0.45).

This reduction is also well-documented in literature, as pregnancy induces an expansion of plasma volume, which can dilute the concentration of red blood cells, leading to lower PCV [12]. The MCH and MCHC values were comparable between the pregnant women and the control group, indicating that the hemoglobin content per cell and the concentration of hemoglobin in the cells remained stable, despite the changes in PCV.

A deeper analysis of the haematological indices across different trimesters revealed slight but notable trends. The platelet count decreased from the first trimester (232.2 ± 6.4 x 10^9/L) to the third trimester (223 ± 5.2 x 10^9/L), a trend corroborated by literature, which attributes this decline to increased hemodilution and the physiological demands of pregnancy [13]. The PCV also showed a declining trend from the first trimester (30.0% ± 0.69) to the third trimester (27.3% ± 0.59), reflecting the progressive hemodilution typical of pregnancy [12].

MCH and MCHC values remained relatively stable across trimesters, indicating that while the overall volume of blood cells might decrease, the quality of hemoglobin within each cell is maintained. This stability is essential, as it suggests that despite the physiological anemia of pregnancy, oxygen transport efficiency remains uncompromised.

The analysis of hematological indices across different age groups revealed a slight variation in platelet counts and PCV. Younger participants (aged 18-20) had the highest platelet count (236 x 10^9/L), while those aged 33-35 had a slightly lower count (227.1 x 10^9/L). These differences may be due to age-related physiological changes that affect bone marrow activity and platelet production [14]. However, these variations were within normal limits and are unlikely to have clinical significance.

HPA testing revealed that the majority of the pregnant participants were HPA-negative, with only two participants (HPST 023 and HPST 039) testing positive for HPA. The clinical relevance of HPA typing in pregnancy is primarily related to its role in fetal and neonatal alloimmune thrombocytopenia (FNAIT), where maternal antibodies against fetal platelet antigens can lead to fetal thrombocytopenia and increased risk of bleeding [15]. The low prevalence of HPA positivity in this study aligns with global epidemiological data, which suggests that HPA alloimmunization is relatively uncommon [15].

The study found no cases of HCV or HEV seropositivity among the participants, which is an encouraging finding given the significant health risks associated with these infections during pregnancy. HCV infection during pregnancy is associated with increased risks of maternal complications, such as cholestasis and preterm delivery, as well as vertical transmission to the fetus [16]. Similarly, HEV infection, especially in its severe form, can lead to fulminant hepatitis and increased maternal mortality [17]. The absence of seropositivity in this cohort suggests that the pregnant women in this study were at low risk for these infections, potentially due to effective public health interventions or low endemicity in **the** study area.

The findings of this study are consistent with several previous studies that have investigated hematological changes during pregnancy. For instance, Burrows and Kelton [13] reported a similar decline in platelet count and PCV during pregnancy, which they attributed to hemodilution and increased platelet consumption. The absence of HCV and HEV seropositivity aligns with findings from a study in Northern Nigeria, where a low prevalence of HEV was observed among pregnant women, possibly due to similar environmental and public health conditions [18].

However, it is essential to note that the prevalence of HPA positivity in this study (5%) is slightly higher than in some previous studies, where HPA positivity was reported in approximately 2-3% of pregnant women [15]. This discrepancy might be due to regional differences in HPA allele frequencies or sample size variations.

The results of this study have several public health implications. The absence of HCV and HEV seropositivity is a positive indicator of the effectiveness of current health education and vaccination programs in Ogun State. However, the observed hematological changes, particularly the decline in platelet count and PCV, underscore the importance of regular monitoring of pregnant women's hematological status to prevent and manage anemia and thrombocytopenia effectively.

Given the potential risks associated with HPA alloimmunization, it is recommended that pregnant women, particularly those with a history of adverse pregnancy outcomes, be screened for HPA status. Additionally, the findings highlight the need for further research to explore the factors contributing to the slightly higher prevalence of HPA positivity in this population compared to previous studies.

Conclusion

This study provides valuable insights into the hematological status and seroprevalence of HCV and HEV among pregnant women in Ilisan-Remo, Ogun State. The findings are largely consistent with previous research, though the study identified some unique trends that warrant further investigation. Continued public health efforts and targeted research are essential to ensure the well-being of pregnant women in this region.

References

1. Panzer, S., Boyer, T., & Curtis, B. (2022). Human platelet antigens: A review on biology, clinical significance, and advances in genotyping. Transfusion Medicine Reviews, 36(4):232-241.
2. Peterson, S. M., & Curtis, B. R. (2021). Advances in the management of platelet alloimmunization: new insights into diagnosis and treatment. Blood Reviews, 45:100708.
3. El-Sayed, Z. A., Fahmy, M. A., & Hashem, A. M. (2023). Hepatitis E virus infection in pregnancy: An update on epidemiology and clinical consequences. World Journal of Hepatology, 15(1):1-14.
4. Rehman, S. U., Ashfaq, M., & Shah, S. Z. (2021). Hepatitis E virus in pregnancy: An insight into its prevalence, risk factors, and fetal outcomes. Journal of Clinical Virology, 139:104855.
5. World Health Organization. (2023). Global health sector strategy on viral hepatitis 2022-2030. WHO.
6. El-Marakby, N., Hassan, R. A., & Awad, A. (2023). Seroprevalence of hepatitis C and E viruses among pregnant women in a tertiary care hospital in Egypt. Infection and Drug Resistance, 16:1055-1063.
7. Adeyemi, O. A., Adedokun, B. O., & Oseni, O. T. (2022). Hepatitis E virus infection among pregnant women in rural southwestern Nigeria: Seroprevalence and associated factors. Journal of Public Health in Africa, 13(3):1578.
8. Okonkwo, U. C., Chukwuka, U., & Eze, C. (2023). The burden of hepatitis C virus among pregnant women in southeastern Nigeria: A public health challenge. Nigerian Journal of Clinical Practice, 26(4):521-528.
9. Obi, C. C., Adewale, A. O., & Olowookere, S. A. (2024). Human platelet antigen genotyping and its implications for platelet transfusion in Nigeria. African Journal of Haematology, 12(2):120-130.
10. Airaodion AI, Ijioma CE, Ejikem PI, Abali IO, Aminu-Ayinde OE, Ogwu CI, et al. (2023). Prevalence of Erectile Dysfunction in Men with Type 2 Diabetes Mellitus in Osun State, Nigeria. Direct Res J Agric Food Sci, 10(6):45-52.
11. Bozzo, P., Berard, A., & Einarson, A. (2011). Thrombocytopenia in pregnancy: What's a clinician to do? Journal of Obstetrics and Gynaecology Canada, 33(3):283-288.
12. FitzGerald, R. J., & Mackay, D. S. (2022). In Gabbe's Obstetrics: Normal and Problem Pregnancies. Hematology in pregnancy, 1019-1038.
13. Burrows, R. F., & Kelton, J. G. (1993). Fetal thrombocytopenia and its management. Bailliere's Clinical Haematology, 6(4):823-842.
14. Colman, R. W., Hirsh, J., Marder, V. J., Clowes, A. W., & George, J. N. (Eds.). (2005). Hemostasis and thrombosis: Basic principles and clinical practice. Lippincott Williams & Wilkins.
15. Kaplan, C. (2007). Alloimmune thrombocytopenia of the fetus and newborn. Blood Reviews, 21(3):173-179.
16. Bersoff-Matcha, S., & Raufman, J. P. (1997). Hepatitis C and pregnancy: Management controversies. Viral Hepatitis Reviews, 3(2):125-135.
17. Aggarwal, R., & Naik, S. (2009). Epidemiology of hepatitis E: Current status. Journal of Gastroenterology and Hepatology, 24(9):1484-1493.
18. Junaid, S. A., Agina, S. E., & Abubakar, K. A. (2014). Epidemiology and associated risk factors of hepatitis E virus infection in Plateau State, Nigeria. Virology Journal, 11:168.

Cite this article: Adesina O O, Okara D E. (2024). Human Platelet Antigen Testing and Seroprevalence of HCV and HEV Among Pregnant Women in Urban and Rural Settlements of Ilisan-Remo, Ogun State, Nigeria, *Journal of Hematology Research and Blood Disorders*, BioRes Scientia Publishers. 1(1):1-7. DOI: 10.59657/jhrbd.brs.24.005

Article History: **Received:** August 26, 2024 | **Accepted:** September 11, 2024 | **Published:** September 16, 2024