

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/377760631>

# Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review

Article · January 2024

DOI: 10.22192/ijcrms.2024.10.01.005

---

CITATIONS

0

---

READS

4

2 authors:



[Emmanuel Ifeanyi Obeagu](#)

Kampala International University (KIU)

1,290 PUBLICATIONS 7,594 CITATIONS

[SEE PROFILE](#)



[Getrude Uzoma Obeagu](#)

Kampala International University (KIU)

299 PUBLICATIONS 2,034 CITATIONS

[SEE PROFILE](#)



## **Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review**

**\*Emmanuel Ifeanyi Obeagu<sup>1</sup> and Getrude Uzoma Obeagu<sup>2</sup>**

<sup>1</sup>Department of Medical Laboratory Science, Kampala International University, Uganda.

<sup>2</sup>School of Nursing Science, Kampala International University, Uganda.

\*Corresponding author: Emmanuel Ifeanyi Obeagu, Department of Medical Laboratory Science,  
Kampala International University, Uganda,

E-mail: [emmanuelobeagu@yahoo.com](mailto:emmanuelobeagu@yahoo.com), ORCID: 0000-0002-4538-0161

### **Abstract**

The co-occurrence of HIV and malaria co-infection presents a considerable health challenge, particularly in regions where both diseases are endemic. Hematocrit, a vital marker reflecting the proportion of red blood cells in circulation, plays a crucial role in understanding the impact of these co-infections on overall health. This comprehensive review examines the intricate relationship between hematocrit fluctuations and the concurrent presence of HIV and malaria parasites, addressing keywords such as anemia, immune response, antiretroviral therapy, and immunomodulation. The review synthesizes existing knowledge, exploring the individual influences of HIV and malaria on hematocrit levels, and delving into the synergistic effects observed in co-infected individuals. Clinical implications, including diagnostic challenges and treatment strategies, are discussed, emphasizing the need for a multidisciplinary approach. Additionally, the review identifies research gaps and proposes future directions, highlighting the importance of longitudinal studies to elucidate the long-term impact of co-infection on hematocrit dynamics. Overall, this review provides a comprehensive understanding of hematocrit fluctuations in the context of HIV-malaria co-infection, aiming to guide clinicians and researchers in developing effective management strategies for this complex and vulnerable population.

**Keywords:** Hematocrit, HIV, Malaria, Co-infection, Anemia, Immune Response, Antiretroviral Therapy, Plasmodium, Parasitemia, Immunomodulation

### **Introduction**

HIV and malaria co-infections present a significant public health challenge, particularly in regions where both diseases are endemic. These two infectious diseases, each with its distinct pathophysiological characteristics, converge on a

common ground - the intricate interplay with the hematopoietic system, notably reflected in hematocrit fluctuations. Hematocrit, representing the proportion of red blood cells in the bloodstream, serves as a valuable indicator of the overall health of an individual. This comprehensive review aims to dissect the

complex relationship between hematocrit dynamics and the co-presence of HIV and malaria parasites, highlighting key keywords such as anemia, immune response, antiretroviral therapy, and immunomodulation.<sup>1-16</sup> HIV and malaria, individually significant contributors to global morbidity and mortality, often coexist in populations, leading to heightened health burdens in affected regions. HIV, a retrovirus that primarily targets immune cells, and malaria, caused by *Plasmodium* parasites with a predilection for red blood cells, pose unique challenges to the hematopoietic system.<sup>17-26</sup>

HIV infection frequently manifests with anemia, marked by alterations in hematocrit levels. Understanding the impact of the virus on red blood cell homeostasis is pivotal. The influence of antiretroviral therapy on hematocrit dynamics, either as a contributing factor or a mitigating agent in HIV-related anemia.<sup>27-36</sup> The intricate relationship between *Plasmodium* parasites and red blood cells during the erythrocytic stage, leading to changes in hematocrit levels. The correlation between parasitemia levels and the severity of hematological complications, including anemia and alterations in hematocrit. The combined impact of HIV and malaria co-infection on hematocrit levels, potentially resulting in more severe anemia than each infection alone. Exploration of the immune responses induced by both infections and their collective influence on hematocrit dynamics, highlighting the potential for immunomodulatory interactions.<sup>37-46</sup> The complexities of interpreting hematocrit fluctuations in the context of co-infection, posing challenges in accurate diagnosis and treatment. The necessity for tailored therapeutic approaches that consider both HIV and malaria components, aiming to mitigate hematological complications and enhance overall patient outcomes.<sup>47-56</sup>

### **Hematocrit Fluctuations in HIV Patients**

HIV infection, a complex viral illness, is associated with a myriad of hematological abnormalities, including alterations in hematocrit levels. Hematocrit, representing the proportion of red blood cells in the blood, is a crucial marker

for assessing the overall health and oxygen-carrying capacity of an individual.<sup>57-66</sup> Anemia is a common hematological complication in individuals with HIV, characterized by a reduction in red blood cell mass and hematocrit levels. HIV-induced anemia is multifactorial, involving direct viral effects on hematopoietic cells, cytokine dysregulation, and the impact of opportunistic infections.<sup>67-76</sup> Initiation of antiretroviral therapy (ART) is associated with improvements in hematocrit levels. The suppression of viral replication and restoration of immune function contribute to the amelioration of anemia. Despite the overall positive impact of ART, certain antiretroviral drugs may have side effects on the bone marrow, potentially influencing hematocrit levels.<sup>77-86</sup>

Persistent immune activation in HIV infection contributes to the dysregulation of erythropoiesis, influencing hematocrit levels. Elevated levels of pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF- $\alpha$ ) and interleukin-6 (IL-6), play a role in the pathogenesis of anemia and hematocrit fluctuations.<sup>87-91</sup> HIV infection can lead to disturbances in iron metabolism, contributing to iron deficiency anemia and impacting hematocrit levels. The chronic inflammatory state associated with HIV may contribute to anemia of chronic disease, further influencing hematocrit.<sup>92-96</sup> Regular monitoring of hematocrit levels is essential in the clinical management of HIV patients to detect anemia early and guide appropriate interventions. Tailoring treatment strategies for anemia in HIV, including the judicious use of ART and addressing underlying causes such as iron deficiency, is crucial for optimizing hematocrit levels.

### **Malaria Parasites and Hematocrit Dynamics**

Malaria, caused by *Plasmodium* parasites, is a prevalent infectious disease globally, particularly affecting regions with a high incidence of mosquito vectors. The interactions between malaria parasites and the host's hematocrit dynamics are intricate and central to the pathophysiology of the disease.<sup>97-98</sup> *Plasmodium* parasites exhibit a unique tropism for red blood

cells, invading and multiplying within them during the erythrocytic stage of the life cycle. The parasitic invasion leads to the rupture of infected red blood cells, causing hemolysis, a process that contributes significantly to anemia and reductions in hematocrit levels.<sup>99</sup> The degree of parasitemia, representing the quantity of circulating parasites, correlates with the severity of hematological complications, including anemia and reductions in hematocrit. Parasite-induced hemolysis, sequestration of infected red blood cells in microvasculature, and dysregulation of host immune responses collectively contribute to anemia and impact hematocrit.<sup>100</sup> The presence of malaria parasites triggers the release of pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF- $\alpha$ ) and interleukin-1 (IL-1), contributing to the inflammatory response associated with malaria. Inflammatory cytokines, along with immune responses targeting infected red blood cells, play a role in immune-mediated anemia, affecting hematocrit levels.<sup>101</sup> Hematocrit levels serve as a valuable clinical indicator for the severity of malaria infection. Rapid reductions may indicate complicated cases requiring urgent intervention. Monitoring changes in hematocrit levels during and after malaria treatment provides insights into treatment efficacy and the resolution of hematological complications.<sup>99</sup> Successful treatment of malaria is often accompanied by the recovery of hematocrit levels as the parasitic burden diminishes, and erythropoiesis resumes. Post-treatment follow-up, including hematocrit monitoring, is crucial to ensuring complete recovery and preventing relapses or lingering hematological effects.

### **Hematocrit Fluctuations in HIV-Malaria Co-infection**

HIV and malaria co-infection represents a challenging scenario where the synergistic effects of these two diseases can lead to complex hematological complications. Hematocrit, a key indicator of red blood cell mass, becomes a focal point in understanding the interplay between these infections. Co-infected individuals often experience more severe anemia compared to those infected with either HIV or malaria alone, suggesting a synergistic impact on hematocrit

levels. The simultaneous assault on the hematopoietic system by both HIV and malaria parasites intensifies the stress on red blood cell production, exacerbating anemia and leading to pronounced hematocrit fluctuations.<sup>102</sup> The immunomodulatory effects induced by HIV and malaria collectively contribute to dysregulated erythropoiesis, further influencing hematocrit levels. Co-infection amplifies the release of pro-inflammatory cytokines, intensifying the inflammatory milieu and potentially exacerbating immune-mediated anemia.

The interplay between malaria parasites and HIV may lead to increased parasitemia, amplifying the hemolytic effects and contributing to more profound reductions in hematocrit. Co-infected individuals may exhibit altered responses to antimalarial and antiretroviral therapies, influencing the resolution of parasitemia and improvements in hematocrit levels. Co-infected individuals may present with more severe clinical manifestations, including fatigue, weakness, and pallor, indicative of exacerbated hematological compromise. Distinguishing the specific contributions of each infection to hematocrit fluctuations poses diagnostic challenges, requiring a nuanced approach in clinical management.<sup>102</sup> Individualized treatment strategies that consider the unique pathophysiologies of both diseases are essential for optimizing outcomes and mitigating hematological complications. Regular monitoring of hematocrit levels during co-infection treatment allows for the assessment of therapeutic efficacy and the identification of potential treatment-related complications.

### **Clinical Implications**

The complex interplay between HIV and malaria, both individually and in co-infection, gives rise to profound hematocrit fluctuations, which have significant clinical implications. Understanding these implications is crucial for guiding diagnostic and treatment strategies, optimizing patient outcomes, and addressing the unique challenges posed by the dual burden of these infections. Clinicians face challenges in deciphering the specific contributions of HIV and

malaria to hematocrit fluctuations. This complexity necessitates a comprehensive diagnostic approach, considering the overlapping symptoms of anemia in both infections. Implementing integrated diagnostic strategies that include specific tests for both HIV and malaria, along with regular hematocrit monitoring, can enhance diagnostic accuracy and guide appropriate interventions.<sup>103</sup> Hematocrit levels serve as a key indicator for assessing the severity of anemia in co-infected individuals. Rapid reductions in hematocrit may indicate severe complications, requiring urgent clinical attention. Monitoring hematocrit trends aids clinicians in making informed decisions about the intensity and urgency of therapeutic interventions, including the initiation of antimalarial and antiretroviral therapies.

Recognizing the unique pathophysiological mechanisms of HIV and malaria in co-infection prompts the need for tailored treatment strategies that address both infections while considering their impact on hematocrit dynamics. Understanding how specific antiretroviral and antimalarial therapies influence hematocrit is crucial for optimizing treatment regimens, minimizing adverse effects, and enhancing overall treatment efficacy.<sup>103</sup> Co-infected individuals require regular hematocrit monitoring throughout the course of treatment to track changes, assess treatment response, and identify any potential complications. Post-treatment follow-up, including sustained hematocrit monitoring, is essential to ensure complete recovery, detect potential relapses, and address any lingering hematological effects. Implementing malaria prevention strategies, such as insecticide-treated bed nets and antimalarial prophylaxis, becomes particularly crucial in co-infected individuals to reduce the risk of recurrent infections and associated hematocrit fluctuations. Early diagnosis of HIV and initiation of antiretroviral therapy contribute not only to HIV management but also to minimizing its impact on hematocrit levels in co-infected individuals. Educating co-infected individuals about the risks and symptoms associated with hematological complications empowers them to seek timely medical attention,

enhancing overall disease management. Emphasizing the importance of treatment adherence for both HIV and malaria is crucial to achieving sustained viral suppression, preventing relapses, and minimizing hematological complications.

## Conclusion

The co-occurrence of HIV and malaria represents a formidable challenge, with profound implications for hematocrit dynamics and overall health. The intricate interplay between these infections gives rise to complex hematological complications, necessitating a nuanced understanding for effective clinical management. This comprehensive review has explored the multifaceted aspects of hematocrit fluctuations in the context of HIV-malaria co-infection, emphasizing key clinical implications and considerations.

The complexities of hematocrit fluctuations in HIV-malaria co-infection underscore the need for a comprehensive and patient-centric approach. By integrating knowledge from diverse disciplines, clinicians can navigate the challenges posed by these co-infections, offering tailored interventions that optimize hematological outcomes and enhance the overall well-being of individuals facing the dual burden of HIV and malaria. As research advances and therapeutic strategies evolve, the quest for improved care and outcomes for co-infected individuals remains a critical endeavor in the global health landscape.

## References

1. Obeagu EI, Okwuanaso CB, Edoho SH, Obeagu GU. Under-nutrition among HIV-exposed Uninfected Children: A Review of African Perspective. *Madonna University journal of Medicine and Health Sciences*. 2022;2(3):120-127.
2. Obeagu EI, Alum EU, Obeagu GU. Factors associated with prevalence of HIV among youths: A review of Africa perspective. *Madonna University journal of Medicine and Health Sciences*. 2023;3(1):13-8.

- <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/93>.
3. Obeagu EI. A Review of Challenges and Coping Strategies Faced by HIV/AIDS Discordant Couples. *Madonna University journal of Medicine and Health Sciences*. 2023 ;3(1):7-12.<https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/91>.
  4. Obeagu EI, Obeagu GU. An update on premalignant cervical lesions and cervical cancer screening services among HIV positive women. *J Pub Health Nutri*. 2023; 6 (2). 2023; 141:1-2.[links/63e538ed64252375639dd0df/An-update-on-premalignant-cervical-lesions-and-cervical-cancer-screening-services-among-HIV-positive-women.pdf](https://doi.org/10.2192/ijcrms.2017.03.01.004).
  5. Ezeoru VC, Enweani IB, Ochiabuto O, Nwachukwu AC, Ogbonna US, Obeagu EI. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(4):10-9.
  6. Omo-Emmanuel UK, Chinedum OK, Obeagu EI. Evaluation of laboratory logistics management information system in HIV/AIDS comprehensive health facilities in Bayelsa State, Nigeria. *Int J Curr Res Med Sci*. 2017;3(1): 21-38.DOI: 10.22192/ijcrms.2017.03.01.004
  7. Obeagu EI, Obeagu GU, Musiimenta E, Bot YS, Hassan AO. Factors contributing to low utilization of HIV counseling and testing services. *Int. J. Curr. Res. Med. Sci*. 2023;9(2): 1-5.DOI: 10.22192/ijcrms.2023.09.02.001
  8. Obeagu EI, Obeagu GU. An update on survival of people living with HIV in Nigeria. *J Pub Health Nutri*. 2022; 5 (6). 2022;129.[links/645b4bfcf3512f1cc5885784/An-update-on-survival-of-people-living-with-HIV-in-Nigeria.pdf](https://doi.org/10.2192/ijcrms.2023.09.02.001).
  9. Obeagu EI, Obeagu GU, Chukwueze CM, Ikpenwa JN, Ramos GF. EVALUATION OF PROTEIN C, PROTEIN S AND FIBRINOGEN OF PREGNANT WOMEN WITH MALARIA IN OWERRI METROPOLIS. *Madonna University journal of Medicine and Health Sciences*. 2022;2(2):1-9.
  10. Obeagu EI, Ibeh NC, Nwobodo HA, Ochei KC, Iwegbulam CP. Haematological indices of malaria patients coinfecting with HIV in Umuahia. *Int. J. Curr. Res. Med. Sci*. 2017;3(5):100-4.
  11. Opeyemi AA, Obeagu EI. Regulations of malaria in children with human immunodeficiency virus infection: A review. *Medicine*. 2023;102(46): e36166.
  12. Obeagu EI, Chijioke UO, Ekelozie IS. Malaria rapid diagnostic test (RDTs). *Ann Clin Lab Res*. 2018;6(4):275.
  13. Obeagu EI, Alum EU, Ugwu OP. Hepcidin: The Gatekeeper of Iron in Malaria Resistance. 2023.
  14. Ogomaka IA, Obeagu EI. Methods of Breast Feeding as Determinants of Malaria Infections among Babies in IMO State, Nigeria. *International Journal of Medical Science and Dental Research*. 2019;2(01):17-24.
  15. Obeagu EI, Obeagu GU, Egba SI, Emeka-Obi OR. Combatting Anemia in Pediatric Malaria: Effective Management Strategies. *Int. J. Curr. Res. Med. Sci*. 2023;9(11):1-7.
  16. Hassan AO, Oso OV, Obeagu EI, Adeyemo AT. Malaria Vaccine: Prospects and Challenges. *Madonna University journal of Medicine and Health Sciences*. 2022;2(2):22-40.
  17. Offie DC, Obeagu EI, Akueshi C, Njab JE, Ekanem EE, Dike PN, Oguh DN. Facilitators and barriers to retention in HIV care among HIV infected MSM attending Community Health Center Yaba, Lagos Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(52B):10-9.
  18. Obeagu EI, Ogbonna US, Nwachukwu AC, Ochiabuto O, Enweani IB, Ezeoru VC. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(4):10-9.
  19. Odo M, Ochei KC, Obeagu EI, Barinaadaa A, Eteng UE, Ikpeme M, Bassey JO, Paul AO. TB Infection Control in TB/HIV Settings in Cross River State, Nigeria: Policy Vs Practice. *Journal of*

- Pharmaceutical Research International. 2020;32(22):101-119.
20. Obeagu EI, Eze VU, Alaebob EA, Ochei KC. Determination of haematocrit level and iron profile study among persons living with HIV in Umuahia, Abia State, Nigeria. *J BioInnovation*. 2016; 5:464-471.[links/592bb4990f7e9b9979a975cf/DETERMINATION-OF-HAEMATOCRIT-LEVEL-AND-IRON-PROFILE-STUDY-AMONG-PERSONS-LIVING-WITH-HIV-IN-UMUAHIA-ABIA-STATE-NIGERIA.pdf](https://www.academia.edu/download/38320140/Obeagu_Emmanuel_Ifeanyi_and_Obeagu_Getrude_Uzoma2.EMMA1.pdf).
  21. Ifeanyi OE, Obeagu GU. The values of prothrombin time among HIV positive patients in FMC owerri. *International Journal of Current Microbiology and Applied Sciences*. 2015;4(4):911-6.[https://www.academia.edu/download/38320140/Obeagu\\_Emmanuel\\_Ifeanyi\\_and\\_Obeagu\\_Getrude\\_Uzoma2.EMMA1.pdf](https://www.academia.edu/download/38320140/Obeagu_Emmanuel_Ifeanyi_and_Obeagu_Getrude_Uzoma2.EMMA1.pdf).
  22. Obeagu EI, Ogonna US, Nwachukwu AC, Ochiabuto O, Enweani IB, Ezeoru VC. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(4):10-9.
  23. Obeagu EI, Busari AI, Uduchi IO, Ogomaka IA, Ibekwe AM, Vincent CC, Chijioke UO, Okafor CJ, Okoroiwu HU, Adike CN. Age-Related Haematological Variations in Patients with Asymptomatic Malaria in Akure, Ondo State, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(42B):218-24.
  24. Ogomaka IA, Obeagu EI. Malaria in Pregnancy Amidst Possession of Insecticide Treated Bed Nets (ITNs) in Orlu LGA of Imo State, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(41B):380-6.
  25. Ogonna CO, Obeagu EI, Ufelle SA, Ogonna LN. Evaluation of haematological alterations in children infected by Plasmodium falciparum Species in Enugu, Enugu State, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(1):38-45.
  26. Okorie HM, Obeagu EI, Obarezi HC, Anyiam AF. Assessment of some inflammatory cytokines in malaria infected pregnant women in Imo State Nigeria. *International Journal of Medical Science and Dental Research*. 2019;2(1):25-36.
  27. Izuchukwu IF, Ozims SJ, Agu GC, Obeagu EI, Onu I, Amah H, Nwosu DC, Nwanjo HU, Edward A, Arunsi MO. Knowledge of preventive measures and management of HIV/AIDS victims among parents in Umuna Orlu community of Imo state Nigeria. *Int. J. Adv. Res. Biol. Sci*. 2016;3(10): 55-65.DOI: 10.22192/ijarbs.2016.03.10.009
  28. Chinedu K, Takim AE, Obeagu EI, Chinazor UD, Eloghosa O, Ojong OE, Odunze U. HIV and TB co-infection among patients who used Directly Observed Treatment Short-course centres in Yenagoa, Nigeria. *IOSR J Pharm Biol Sci*. 2017;12(4):70-5.[links/5988ab6d0f7e9b6c8539f73d/HIV-and-TB-co-infection-among-patients-who-used-Directly-Observed-Treatment-Short-course-centres-in-Yenagoa-Nigeria.pdf](https://www.academia.edu/download/5988ab6d0f7e9b6c8539f73d/HIV-and-TB-co-infection-among-patients-who-used-Directly-Observed-Treatment-Short-course-centres-in-Yenagoa-Nigeria.pdf)
  29. Oloro OH, Oke TO, Obeagu EI. Evaluation of Coagulation Profile Patients with Pulmonary Tuberculosis and Human Immunodeficiency Virus in Owo, Ondo State, Nigeria. *Madonna University journal of Medicine and Health Sciences*. 2022;2(3):110-9.
  30. Nwosu DC, Obeagu EI, Nkwocha BC, Nwanjo CA, Nwanjo HU, Amadike JN, Elendu HN, Ofoedeme CN, Ozims SJ, Nwankpa P. Change in Lipid Peroxidation Marker (MDA) and Non enzymatic Antioxidants (VIT C & E) in HIV Seropositive Children in an Urban Community of Abia State, Nigeria. *J. Bio. Innov*. 2016;5(1):24-30.[links/5ae735e9a6fdcc5b33eb8d6a/CHANGE-IN-LIPID-PEROXIDATION-MARKER-MDAAND-NON-ENZYMATIC-ANTIOXIDANTS-VIT-C-E-IN-HIV-SEROPOSITIVE-CHILDREN-IN-AN-URBAN-COMMUNITY-OF-ABIA-STATE-NIGERIA.pdf](https://www.academia.edu/download/5ae735e9a6fdcc5b33eb8d6a/CHANGE-IN-LIPID-PEROXIDATION-MARKER-MDAAND-NON-ENZYMATIC-ANTIOXIDANTS-VIT-C-E-IN-HIV-SEROPOSITIVE-CHILDREN-IN-AN-URBAN-COMMUNITY-OF-ABIA-STATE-NIGERIA.pdf).

31. Igwe CM, Obeagu IE, Ogbuabor OA. Clinical characteristics of people living with HIV/AIDS on ART in 2014 at tertiary health institutions in Enugu, Nigeria. *J Pub Health Nutri.* 2022; 5 (6). 2022;130.links/645a166f5762c95ac3817d32/Clinical-characteristics-of-people-living-with-HIV-AIDS-on-ART-in-2014-at-tertiary-health-institutions-in-Enugu.pdf.
32. Ifeanyi OE, Obeagu GU, Ijeoma FO, Chioma UI. The values of activated partial thromboplastin time (APTT) among HIV positive patients in FMC Owerri. *Int J Curr Res Aca Rev.* 2015; 3:139-144.[https://www.academia.edu/download/38320159/Obeagu\\_Emmanuel\\_Ifeanyi3\\_\\_et\\_a1.IJCRAR.pdf](https://www.academia.edu/download/38320159/Obeagu_Emmanuel_Ifeanyi3__et_a1.IJCRAR.pdf).
33. Obiomah CF, Obeagu EI, Ochei KC, Swem CA, Amachukwu BO. Hematological indices o HIV seropositive subjects in Nnamdi Azikiwe University teaching hospital (NAUTH), Nnewi. *Ann Clin Lab Res.* 2018;6(1):1-4.links/5aa2bb17a6fdccd544b7526e/Haematological-Indices-of-HIV-Seropositive-Subjects-at-Nnamdi-Azikiwe.pdf
34. Omo-Emmanuel UK, Ochei KC, Osuala EO, Obeagu EI, Onwuasoanya UF. Impact of prevention of mother to child transmission (PMTCT) of HIV on positivity rate in Kafanchan, Nigeria. *Int. J. Curr. Res. Med. Sci.* 2017;3(2): 28-34.DOI: 10.22192/ijcrms.2017.03.02.005
35. Aizaz M, Abbas FA, Abbas A, Tabassum S, Obeagu EI. Alarming rise in HIV cases in Pakistan: Challenges and future recommendations at hand. *Health Science Reports.* 2023;6(8):e1450.
36. Obeagu EI, Amekpor F, Scott GY. An update of human immunodeficiency virus infection: Bleeding disorders. *J Pub Health Nutri.* 2023; 6 (1). 2023;139.links/645b4a6c2edb8e5f094d9bd9/An-update-of-human-immunodeficiency-virus-infection-Bleeding.pdf.
37. Obeagu EI, Scott GY, Amekpor F, Ofodile AC, Edoho SH, Ahamefula C. Prevention of New Cases of Human Immunodeficiency Virus: Pragmatic Approaches of Saving Life in Developing Countries. *Madonna University journal of Medicine and Health Sciences.* 2022;2(3):128-34.<https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/86>.
38. Walter O, Anaebo QB, Obeagu EI, Okoroiwu IL. Evaluation of Activated Partial Thromboplastin Time and Prothrombin Time in HIV and TB Patients in Owerri Metropolis. *Journal of Pharmaceutical Research International.* 2022:29-34.
39. Odo M, Ochei KC, Obeagu EI, Barinaadaa A, Eteng EU, Ikpeme M, Bassey JO, Paul AO. Cascade variabilities in TB case finding among people living with HIV and the use of IPT: assessment in three levels of care in cross River State, Nigeria. *Journal of Pharmaceutical Research International.* 2020;32(24):9-18.
40. Jakheng SP, Obeagu EI. Seroprevalence of human immunodeficiency virus based on demographic and risk factors among pregnant women attending clinics in Zaria Metropolis, Nigeria. *J Pub Health Nutri.* 2022; 5 (8). 2022;137.links/6317a6b1acd814437f0ad268/Seroprevalence-of-human-immunodeficiency-virus-based-on-demographic-and-risk-factors-among-pregnant-women-attending-clinics-in-Zaria-Metropolis-Nigeria.pdf.
41. Obeagu EI, Obeagu GU. A Review of knowledge, attitudes and socio-demographic factors associated with non-adherence to antiretroviral therapy among people living with HIV/AIDS. *Int. J. Adv. Res. Biol. Sci.* 2023;10(9):135-42.DOI: 10.22192/ijarbs.2023.10.09.015 links/6516faa61e2386049de5e828/A-Review-of-knowledge-attitudes-and-socio-demographic-factors-associated-with-non-adherence-to-antiretroviral-therapy-among-people-living-with-HIV-AIDS.pdf
42. Ezeoru VC, Enweani IB, Ochiabuto O, Nwachukwu AC, Ogbonna US, Obeagu EI. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International.* 2021;33(4):10-9.



43. Okorie HM, Obeagu EI, Eze EN, Jeremiah ZA. Assessment of some haematological parameters in malaria infected pregnant women in Imo state Nigeria. *Int. J. Curr. Res. Biol. Med.* 2018;3(9):1-4.
44. Nwosu DC, Obeagu EI, Ezenwuba C, Agu GC, Amah H, Ozims SJ, Nwanjo HU, Edward A, Izuchukwu IF, Amadike JN, Nwagwu AJ. Antioxidant status of children with Plasmodium falciparum malaria in Owerri municipal council of Imo state. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2016;3(8):40-6.
45. Okamgba OC, Nwosu DC, Nwobodo EI, Agu GC, Ozims SJ, Obeagu EI, Ibanga IE, Obioma-Elemba IE, Ihekaire DE, Obasi CC, Amah HC. Iron Status of Pregnant and Post-Partum Women with Malaria Parasitaemia in Aba Abia State, Nigeria. *Annals of Clinical and Laboratory Research.* 2017;5(4):206.
46. Anyiam AF, Arinze-Anyiam OC, Omosigho PO, Ibrahim M, Irondi EA, Obeagu EI, Obi E. Blood Group, Genotype, Malaria, Blood Pressure and Blood Glucose Screening Among Selected Adults of a Community in Kwara State: Implications to Public Health. *Asian Hematology Research Journal.* 2022;6(3):9-17.
47. Obeagu EI, Onuoha EC. Tuberculosis among HIV Patients: A review of Prevalence and Associated Factors. *Int. J. Adv. Res. Biol. Sci.* 2023;10(9):128-34. DOI: 10.22192/ijarbs.2023.10.09.014 links/6516f938b0df2f20a2f8b0e0/Tuberculosis-among-HIV-Patients-A-review-of-Prevalence-and-Associated-Factors.pdf.
48. Obeagu EI, Ibeh NC, Nwobodo HA, Ochei KC, Iwegbulam CP. Haematological indices of malaria patients coinfecting with HIV in Umuahia. *Int. J. Curr. Res. Med. Sci.* 2017;3(5):100-4. DOI: 10.22192/ijcrms.2017.03.05.014 [https://www.academia.edu/download/54317126/Haematological\\_indices\\_of\\_malaria\\_patients\\_coinfected\\_with\\_HIV.pdf](https://www.academia.edu/download/54317126/Haematological_indices_of_malaria_patients_coinfected_with_HIV.pdf)
49. Jakheng SP, Obeagu EI, Abdullahi IO, Jakheng EW, Chukwueze CM, Eze GC, Essien UC, Madekwe CC, Madekwe CC, Vidya S, Kumar S. Distribution Rate of Chlamydial Infection According to Demographic Factors among Pregnant Women Attending Clinics in Zaria Metropolis, Kaduna State, Nigeria. *South Asian Journal of Research in Microbiology.* 2022;13(2):26-31.
50. Viola N, Kimono E, Nuru N, Obeagu EI. Factors Hindering Elimination of Mother to Child Transmission of HIV Service Uptake among HIV Positive Women at Comboni Hospital Kyamuhunga Bushenyi District. *Asian Journal of Dental and Health Sciences.* 2023;3(2):7-14. <http://ajdhs.com/index.php/journal/article/view/39>.
51. Okorie HM, Obeagu Emmanuel I, Okpoli Henry CH, Chukwu Stella N. Comparative study of enzyme linked immunosorbent assay (Elisa) and rapid test screening methods on HIV, Hbsag, Hcv and Syphilis among voluntary donors in Owerri, Nigeria. *J Clin Commun Med.* 2020;2(3):180-83. DOI: DOI: 10.32474/JCCM.2020.02.000137links/5f344530458515b7291bd95f/Comparative-Study-of-Enzyme-Linked-Immunosorbent-Assay-ElISA-and-Rapid-Test-Screening-Methods-on-HIV-HBsAg-HCV-and-Syphilis-among-Voluntary-Donors-in-Owerri-Nigeria.pdf.
52. Obeagu EI, Nimo OM, Bunu UO, Ugwu OP, Alum EU. Anaemia in children under five years: African perspectives. *Int. J. Curr. Res. Biol. Med.* 2023; 1:1-7.
53. Madekwe CC, Madekwe CC, Obeagu EI. Inequality of monitoring in Human Immunodeficiency Virus, Tuberculosis and Malaria: A Review. *Madonna University journal of Medicine and Health Sciences.* 2022;2(3):6-15.
54. Offie DC, Ibekwe AM, Agu CC, Esimai BN, Okpala PU, Obeagu EI, Ufelle SA, Ogbonna LN. Fibrinogen and C-Reactive Protein Significance in Children Infected by Plasmodium falciparum Species in Enugu, Enugu State, Nigeria. *Journal of Pharmaceutical Research International.* 2021;33(15):1-8.
55. Okorie HM, Obeagu EI, Eze EN, Jeremiah ZA. Assessment of coagulation parameters in malaria infected pregnant women in Imo

- state, Nigeria. *International Journal of Current Research in Medical Sciences*. 2018;4(9):41-9.
56. Ogbonna LN, Ezeoru VC, Ofodile AC, Ochiabuto OM, Obi-Ezeani CN, Okpala PU, Okafor CJ, Obeagu GU, Busari AI, Obeagu EI. Gender Based Variations of Haematological Parameters of Patients with Asymptomatic Malaria in Akure, Ondo State, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(8):75-80.
  57. Ezugwu UM, Onyenekwe CC, Ukibe NR, Ahaneku JE, Onah CE, Obeagu EI, Emeje PI, Awalu JC, Igbokwe GE. Use of ATP, GTP, ADP and AMP as an Index of Energy Utilization and Storage in HIV Infected Individuals at NAUTH, Nigeria: A Longitudinal, Prospective, Case-Controlled Study. *Journal of Pharmaceutical Research International*. 2021;33(47A):78-84.
  58. Emmanuel G, Martin O, Peter OS, Obeagu EI, Daniel K. Factors Influencing Early Neonatal Adverse Outcomes among Women with HIV with Post Dated Pregnancies Delivering at Kampala International University Teaching Hospital, Uganda. *Asian Journal of Pregnancy and Childbirth*. 2023 Jul 29;6(1):203-11. <http://research.sdpublishers.net/id/eprint/2819/>.
  59. Igwe MC, Obeagu EI, Ogbuabor AO, Eze GC, Ikpenwa JN, Eze-Stephen PE. Socio-Demographic Variables of People Living with HIV/AIDS Initiated on ART in 2014 at Tertiary Health Institution in Enugu State. *Asian Journal of Research in Infectious Diseases*. 2022;10(4):1-7.
  60. Vincent CC, Obeagu EI, Agu IS, Ukeagu NC, Onyekachi-Chigbu AC. Adherence to Antiretroviral Therapy among HIV/AIDS in Federal Medical Centre, Owerri. *Journal of Pharmaceutical Research International*. 2021;33(57A):360-8.
  61. Igwe MC, Obeagu EI, Ogbuabor AO. ANALYSIS OF THE FACTORS AND PREDICTORS OF ADHERENCE TO HEALTHCARE OF PEOPLE LIVING WITH HIV/AIDS IN TERTIARY HEALTH INSTITUTIONS IN ENUGU STATE. *Madonna University journal of Medicine and Health Sciences*. 2022;2(3):42-57. <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/75>.
  62. Madekwe CC, Madekwe CC, Obeagu EI. Inequality of monitoring in Human Immunodeficiency Virus, Tuberculosis and Malaria: A Review. *Madonna University journal of Medicine and Health Sciences*. 2022;2(3):6-15. <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/69>
  63. Echendu GE, Vincent CC, Ibebuike J, Asodike M, Naze N, Chinedu EP, Ohale B, Obeagu EI. WEIGHTS OF INFANTS BORN TO HIV INFECTED MOTHERS: A PROSPECTIVE COHORT STUDY IN FEDERAL MEDICAL CENTRE, OWERRI, IMO STATE. *European Journal of Pharmaceutical and Medical Research*, 2023;10(8): 564-568
  64. Nwosu DC, Nwanjo HU, Okolie NJ, Ikeh K, Ajero CM, Dike J, Ojiegbe GC, Oze GO, Obeagu EI, Nnatunanya I, Azuonwu O. BIOCHEMICAL ALTERATIONS IN ADULT HIV PATIENTS ON ANTIRETROVIRAL THERAPY. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2015; 4(3): 153-160. [links/5a4fd0500f7e9bbc10526b38/BIOCHEMICAL-ALTERATIONS-IN-ADULT-HIV-PATIENTS-ON-ANTIRETROVIRAL-THERAPY.pdf](https://www.researchgate.net/publication/311111111/BIOCHEMICAL-ALTERATIONS-IN-ADULT-HIV-PATIENTS-ON-ANTIRETROVIRAL-THERAPY.pdf).
  65. Obeagu EI, Obeagu GU. Effect of CD4 Counts on Coagulation Parameters among HIV Positive Patients in Federal Medical Centre, Owerri, Nigeria. *Int. J. Curr. Res. Biosci. Plant Biol*. 2015;2(4):45-9.
  66. Obeagu EI, Nwosu DC. Adverse drug reactions in HIV/AIDS patients on highly active antiretro viral therapy: a review of prevalence. *Int. J. Curr. Res. Chem. Pharm. Sci*. 2019;6(12):45-8. DOI: 10.22192/ijcrps.2019.06.12.004 [links/650aba1582f01628f0335795/Adverse-drug-reactions-in-HIV-AIDS-patients-on-highly-active-antiretro-viral-therapy-a-review-of-prevalence.pdf](https://www.researchgate.net/publication/345000000/Adverse-drug-reactions-in-HIV-AIDS-patients-on-highly-active-antiretro-viral-therapy-a-review-of-prevalence.pdf).

67. Obeagu EI, Scott GY, Amekpor F, Obeagu GU. Implications of CD4/CD8 ratios in Human Immunodeficiency Virus infections. *Int. J. Curr. Res. Med. Sci.* 2023;9(2):6-13. DOI: 10.22192/ijcrms.2023.09.02.002 links/645a4a462edb8e5f094ad37c/Implications-of-CD4-CD8-ratios-in-Human-Immunodeficiency-Virus-infections.pdf.
68. Obeagu EI, Ochei KC, Okeke EI, Anode AC. Assessment of the level of haemoglobin and erythropoietin in persons living with HIV in Umuahia. *Int. J. Curr. Res. Med. Sci.* 2016;2(4):29-33. links/5711c47508aeebe07c02496b/Assesment-of-the-level-of-haemoglobin-and-erythropoietin-in-persons-living-with-HIV-in-Umuahia.pdf.
69. Ifeanyi OE, Obeagu GU. The Values of CD4 Count, among HIV Positive Patients in FMC Owerri. *Int. J. Curr. Microbiol. App. Sci.* 2015;4(4):906-10. [https://www.academia.edu/download/38320134/Obeagu\\_Emmanuel\\_Ifeanyi\\_and\\_Obeagu\\_Getrude\\_Uzoma.EMMA2.pdf](https://www.academia.edu/download/38320134/Obeagu_Emmanuel_Ifeanyi_and_Obeagu_Getrude_Uzoma.EMMA2.pdf).
70. Obeagu EI, Okeke EI, Anonde Andrew C. Evaluation of haemoglobin and iron profile study among persons living with HIV in Umuahia, Abia state, Nigeria. *Int. J. Curr. Res. Biol. Med.* 2016;1(2):1-5.
71. Alum EU, Ugwu OP, Obeagu EI, Okon MB. Curtailing HIV/AIDS Spread: Impact of Religious Leaders. *Newport International Journal of Research in Medical Sciences (NIJRMS)*. 2023;3(2):28-31.
72. Obeagu EI, Obeagu GU, Paul-Chima UO. Stigma Associated With HIV. *AIDS: A Review. Newport International Journal of Public Health and Pharmacy (NIJPP)*. 2023;3(2):64-7.
73. Alum EU, Obeagu EI, Ugwu OP, Aja PM, Okon MB. HIV Infection and Cardiovascular diseases: The obnoxious Duos. *Newport International Journal of Research in Medical Sciences (NIJRMS)*. 2023;3(2):95-9.
74. Ibebuike JE, Nwokike GI, Nwosu DC, Obeagu EI. A Retrospective Study on Human Immune Deficiency Virus among Pregnant Women Attending Antenatal Clinic in Imo State University Teaching Hospital. *International Journal of Medical Science and Dental Research*, 2018; 1 (2):08-14. <https://www.ijmsdr.org/published%20paper/li1i2/A%20Retrospective%20Study%20on%20Human%20Immune%20Deficiency%20Virus%20among%20Pregnant%20Women%20Attending%20Antenatal%20Clinic%20in%20Imo%20State%20University%20Teaching%20Hospital.pdf>.
75. Obeagu EI, Obarezi TN, Omeh YN, Okoro NK, Eze OB. Assessment of some haematological and biochemical parametrs in HIV patients before receiving treatment in Aba, Abia State, Nigeria. *Res J Pharma Biol Chem Sci.* 2014; 5:825-30.
76. Obeagu EI, Obarezi TN, Ogbuabor BN, Anaebo QB, Eze GC. Pattern of total white blood cell and differential count values in HIV positive patients receiving treatment in Federal Teaching Hospital Abakaliki, Ebonyi State, Nigeria. *International Journal of Life Science, Biotechnology and Pharama Research.* 2014; 391:186-189.
77. Obeagu EI. A Review of Challenges and Coping Strategies Faced by HIV/AIDS Discordant Couples. *Madonna University journal of Medicine and Health Sciences.* 2023; 3 (1): 7-12.
78. Oloro OH, Obeagu EI. A Systematic Review on Some Coagulation Profile in HIV Infection. *International Journal of Innovative and Applied Research.* 2022;10(5):1-11.
79. Nwosu DC, Obeagu EI, Nkwuocha BC, Nwanne CA, Nwanjo HU, Amadike JN, Eemma MC, Okpomeshine EA, Ozims SJ, Agu GC. Alterations in superoxide dismutiase, vitamins C and E in HIV infected children in Umuahia, Abia state. *International Journal of Advanced Research in Biological Sciences.* 2015;2(11):268-271.
80. Obeagu EI, Malot S, Obeagu GU, Ugwu OP. HIV resistance in patients with Sickle Cell Anaemia. *Newport International Journal of Scientific and Experimental Sciences (NIJSES)*. 2023;3(2):56-59.
81. Ifeanyi OE, Uzoma OG, Stella EI, Chinedum OK, Abum SC. Vitamin D and insulin resistance in HIV sero positive

- individuals in Umudike. *Int. J. Curr. Res. Med. Sci.* 2018;4(2):104-108.
82. Ifeanyi OE, Leticia OI, Nwosu D, Chinedum OK. A Review on blood borne viral infections: universal precautions. *Int. J. Adv. Res. Biol. Sci.* 2018;5(6):60-6.
  83. Nwovu AI, Ifeanyi OE, Uzoma OG, Nwebonyi NS. Occurrence of Some Blood Borne Viral Infection and Adherence to Universal Precautions among Laboratory Staff in Federal Teaching Hospital Abakaliki Ebonyi State. *Arch Blood Transfus Disord.* 2018;1(2).
  84. Chinedu K, Takim AE, Obeagu EI, Chinazor UD, Eloghosa O, Ojong OE, Odunze U. HIV and TB co-infection among patients who used Directly Observed Treatment Short-course centres in Yenagoa, Nigeria. *IOSR J Pharm Biol Sci.* 2017;12(4):70-5.
  85. Offie DC, Obeagu EI, Akueshi C, Njab JE, Ekanem EE, Dike PN, Oguh DN. Facilitators and barriers to retention in HIV care among HIV infected MSM attending Community Health Center Yaba, Lagos Nigeria. *Journal of Pharmaceutical Research International.* 2021;33(52B):10-9.
  86. Obeagu EI, Obeagu GU, Ede MO, Odo EO, Buhari HA. Translation of HIV/AIDS knowledge into behavior change among secondary school adolescents in Uganda: A review. *Medicine (Baltimore).* 2023;102(49): e36599. doi: 10.1097/MD.00000000000036599. PMID: 38065920; PMCID: PMC10713174.
  87. Anyiam AF, Arinze-Anyiam OC, Irondi EA, Obeagu EI. Distribution of ABO and rhesus blood grouping with HIV infection among blood donors in Ekiti State Nigeria. *Medicine (Baltimore).* 2023;102(47): e36342. doi: 10.1097/MD.00000000000036342. PMID: 38013335; PMCID: PMC10681551.
  88. Echefu SN, Udosen JE, Akwiwu EC, Akpotuzor JO, Obeagu EI. Effect of Dolutegravir regimen against other regimens on some hematological parameters, CD4 count and viral load of people living with HIV infection in South Eastern Nigeria. *Medicine (Baltimore).* 2023;102(47): e35910. doi: 10.1097/MD.00000000000035910. PMID: 38013350; PMCID: PMC10681510.
  89. Opeyemi AA, Obeagu EI. Regulations of malaria in children with human immunodeficiency virus infection: A review. *Medicine (Baltimore).* 2023;102(46): e36166. doi: 10.1097/MD.00000000000036166. PMID: 37986340; PMCID: PMC10659731.
  90. Alum EU, Obeagu EI, Ugwu OPC, Samson AO, Adepoju AO, Amusa MO. Inclusion of nutritional counseling and mental health services in HIV/AIDS management: A paradigm shift. *Medicine (Baltimore).* 2023;102(41): e35673. doi: 10.1097/MD.00000000000035673. PMID: 37832059; PMCID: PMC10578718.
  91. Aizaz M, Abbas FA, Abbas A, Tabassum S, Obeagu EI. Alarming rise in HIV cases in Pakistan: Challenges and future recommendations at hand. *Health Sci Rep.* 2023;6(8): e1450. doi: 10.1002/hsr2.1450. PMID: 37520460; PMCID: PMC10375546.
  92. Obeagu EI, Obeagu GU, Obiezu J, Ezeonwumelu C, Ogunnaya FU, Ngwoke AO, Emeka-Obi OR, Ugwu OP. Hematologic Support in HIV Patients: Blood Transfusion Strategies and Immunological Considerations. *APPLIED SCIENCES (NIJBAS).* 2023;3(3).
  93. Obeagu EI, Ubosi NI, Uzoma G. Storms and Struggles: Managing HIV Amid Natural Disasters. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2023;10(11):14-25.
  94. Obeagu EI, Obeagu GU. Human Immunodeficiency Virus and tuberculosis infection: A review of prevalence of associated factors. *Int. J. Adv. Multidiscip. Res.* 2023;10(10):56-62.
  95. Obeagu EI, Malot S, Obeagu GU, Ugwu OP. HIV resistance in patients with Sick Cell Anaemia. *Newport International Journal of Scientific and Experimental Sciences (NIJSES).* 2023;3(2):56-9.
  96. Alum EU, Ugwu OP, Obeagu EI, Aja PM, Okon MB, Uti DE. Reducing HIV Infection Rate in Women: A Catalyst to reducing HIV Infection pervasiveness in Africa.

- International Journal of Innovative and Applied Research. 2023;11(10):01-6.
97. Eberendu IF, Ozims SJ, Agu GC, Amah HC, Obasi CC, Obioma-Elemba JE, Ihekaire DE, Ibanga IE, Amah CC, Obeagu EI, Nwosu DC. Impact of human activities on the breeding of mosquitoes of human disease in Owerri metropolis, Imo state. Int J Adv Res Biol Sci IJARBS. 2017;4(12):98-106.
  98. Obeagu EI, Ofodile AC, Okwuanaso CB. A review on socio economic and behavioral aspects of malaria and its control among children under 5 years of age in Africa. J Pub Health Nutri. 2023; 6 (1): 136.
  99. Lim C, Dankwa S, Paul AS, Duraisingh MT. Host cell tropism and adaptation of blood-stage malaria parasites: Challenges for malaria elimination. Cold Spring Harbor Perspectives in Medicine. 2017;7(11):a025494.
  100. Djokic V, Rocha SC, Parveen N. Lessons learned for pathogenesis, immunology, and disease of erythrocytic parasites: Plasmodium and Babesia. Frontiers in Cellular and Infection Microbiology. 2021 Aug 3;11:685239.
  101. Cowman AF, Tonkin CJ, Tham WH, Duraisingh MT. The molecular basis of erythrocyte invasion by malaria parasites. Cell host & microbe. 2017 Aug 9;22(2):232-45.
  102. Layland LE, Specht S. Helpful or a hindrance: co-infections with helminths during malaria. How Helminths Alter Immunity to Infection. 2014:99-129.
  103. Garcia Casal MN, Dary O, Jefferds ME, Pasricha SR. Diagnosing anemia: Challenges selecting methods, addressing underlying causes, and implementing actions at the public health level. Annals of the New York Academy of Sciences. 2023;1524(1):37-50.

<b>Access this Article in Online</b>	
	Website: <a href="http://www.ijcrims.com" style="color: blue;">www.ijcrims.com</a>
	Subject: <a href="#" style="color: blue;">Medical Sciences</a>
<b>Quick Response Code</b>	

**How to cite this article:**

Emmanuel Ifeanyi Obeagu and Getrude Uzoma Obeagu. (2024). Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review. Int. J. Curr. Res. Med. Sci. 10(1): 25-36.

DOI: <http://dx.doi.org/10.22192/ijcrms.2024.10.01.005>