Elite Journal of Public Health. Volume 2 issue 4(2024), Pp. 56-74
https://epjournals.com/journals/EJPH

Modulation of L-selectin Expression in Tuberculosis-HIV Coinfection: Implications for Disease Control

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Abstract

Tuberculosis (TB) and human immunodeficiency virus (HIV) coinfection presents a complex challenge in global health, characterized by heightened disease severity and therapeutic complexities. Immune dysregulation plays a pivotal role in the pathogenesis of TB-HIV coinfection, influencing disease progression and clinical outcomes. L-selectin, a key adhesion molecule involved in immune cell trafficking, has emerged as a critical mediator in this interaction. Modulation of L-selectin expression impacts immune cell recruitment, homing, and activation, thereby influencing host immune responses to both TB and HIV. This review explores the modulation of L-selectin expression in TB-HIV coinfection and its implications for disease control. We discuss the mechanisms underlying L-selectin regulation, its role in immune cell trafficking, and the potential therapeutic strategies targeting L-selectin for disease management. Understanding the intricate interplay between L-selectin and TB-HIV coinfection offers promising avenues for the development of novel immunotherapeutic interventions and the optimization of disease control strategies.

Keywords*: L-selectin, Tuberculosis, HIV, Coinfection, Immune modulation, Immune cell trafficking, Disease control, Immunotherapy, Therapeutic targets, Host-pathogen interaction*

Introduction

Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) coinfection represent a formidable challenge to global health, particularly in regions with high disease prevalence and limited healthcare resources. TB remains one of the leading causes of mortality worldwide, exacerbated by the HIV epidemic, which has significantly increased susceptibility to TB infection and disease progression. The intricate interplay between these two pathogens has profound implications for disease control, immune responses, and treatment outcomes. Understanding the underlying immunological mechanisms governing TB-HIV coinfection is paramount for developing effective strategies to mitigate its impact on public health. L-selectin, a cell adhesion molecule crucial for

Citation: Obeagu EI, Onuoha EC. Modulation of L-selectin Expression in Tuberculosis-HIV Coinfection: Implications for Disease Control. Elite Journal of Public Health, 2024; 2 (4): 56-74

leukocyte trafficking and immune surveillance, has garnered increasing attention for its potential role in infectious diseases, including TB-HIV coinfection. Through its interaction with endothelial ligands, L-selectin facilitates the initial tethering and rolling of leukocytes along the blood vessel wall, promoting their extravasation into lymphoid tissues and sites of inflammation. Moreover, L-selectin-mediated adhesion plays a pivotal role in immune cell homing, activation, and effector functions, contributing to host defense against pathogens. However, the modulation of L-selectin expression and activity in the context of TB-HIV coinfection remains incompletely understood.[1-40]

HIV infection is associated with alterations in L-selectin expression on CD4+ T cells, impairing their migration and function within lymphoid tissues. Conversely, TB infection may induce upregulation of L-selectin expression as part of the host immune response to enhance leukocyte recruitment to the site of infection. However, the combined effects of TB and HIV on L-selectin modulation and its implications for disease progression remain poorly defined, warranting further investigation. Understanding the role of L-selectin in TB-HIV coinfection holds significant promise for elucidating the complex immunological dynamics underlying disease pathogenesis and progression. Dysregulated L-selectin expression may contribute to immune dysfunction, impaired host defense mechanisms, and increased susceptibility to opportunistic infections, exacerbating disease severity and treatment challenges. Clarifying the mechanisms by which TB and HIV modulate L-selectin expression and function on immune cells is essential for identifying novel therapeutic targets and developing interventions to improve disease control and patient outcomes in TB-HIV coinfection. This review aims to provide a comprehensive overview of current knowledge regarding L-selectin modulation in TB-HIV coinfection, highlighting its implications for immune function, disease severity, and therapeutic interventions.[41-80]

L-selectin: Role in Immune Function and Leukocyte Trafficking

L-selectin, also known as CD62L, stands as a critical cell adhesion molecule pivotal for immune function and leukocyte trafficking within the human body. Its expression is primarily observed on the surface of leukocytes, including lymphocytes, monocytes, and neutrophils. This molecule plays a fundamental role in initiating leukocyte tethering and rolling along the endothelium, thus facilitating their migration from the bloodstream into secondary lymphoid tissues and sites of inflammation. L-selectin-mediated adhesion is paramount for immune surveillance and the homing of lymphocytes to lymphoid organs, fostering interactions between leukocytes and antigen-presenting cells. Moreover, L-selectin engagement is intricately involved in the activation and effector functions of immune cells, contributing significantly to host defense mechanisms against various pathogens. The process of leukocyte trafficking orchestrated by L-selectin is a cornerstone of the immune response, enabling immune cells to navigate through the complex microenvironments of the body and orchestrate appropriate immune responses against invading pathogens. Through its interaction with endothelial ligands such as peripheral node addressin (PNAd) and mucosal addressin cell adhesion molecule-1 (MAdCAM-1), L-selectin facilitates the recruitment of leukocytes to specific tissues and sites of inflammation, thus ensuring an effective

immune response. Furthermore, L-selectin plays a crucial role in the formation of immune synapses between leukocytes and antigen-presenting cells, promoting antigen recognition, and subsequent immune activation. Beyond its role in leukocyte trafficking, L-selectin contributes to the regulation of immune cell activation and effector functions. Engagement of L-selectin with its ligands triggers intracellular signaling cascades that modulate the adhesive properties and functional responses of leukocytes. This includes the activation of integrins and other adhesion molecules, which further enhance leukocyte adhesion and migration. Additionally, L-selectin-mediated signaling events can influence the activation state and cytokine secretion profiles of immune cells, thereby shaping the nature and magnitude of immune responses. Consequently, dysregulation of L-selectin expression or function can have profound implications for immune homeostasis and host defense mechanisms, predisposing individuals to infections, autoimmune disorders, and inflammatory diseases.[81-130]

Modulation of L-selectin Expression in TB-HIV Coinfection

The modulation of L-selectin expression in the context of tuberculosis (TB) and human immunodeficiency virus (HIV) coinfection represents a complex interplay between host immune responses and the pathogenic mechanisms of both pathogens. TB-HIV coinfection presents unique challenges due to the synergistic effects of these two infectious agents on immune function and disease progression. L-selectin, a critical mediator of leukocyte trafficking and immune surveillance, may be influenced by TB and HIV infection, potentially impacting disease outcomes and therapeutic strategies. In TB-HIV coinfection, alterations in L-selectin expression on various subsets of immune cells have been observed, although the precise mechanisms underlying these changes remain incompletely understood. HIV infection is associated with a decline in L-selectin expression on CD4+ T cells, impairing their migration and function within lymphoid tissues. This dysregulation of L-selectin expression may compromise immune surveillance and contribute to the impaired host defense mechanisms observed in HIV-infected individuals. Conversely, TB infection may induce the upregulation of L-selectin expression as part of the host immune response to enhance leukocyte recruitment to the site of infection. However, the combined effects of TB and HIV on L-selectin modulation and its implications for disease progression warrant further investigation.[131-160]

The dysregulated expression of L-selectin in TB-HIV coinfection may have significant implications for immune function, disease severity, and treatment responses. Altered L-selectin expression could impact the recruitment, activation, and effector functions of immune cells, influencing the host's ability to control TB infection and mount effective immune responses. Moreover, dysregulated L-selectin expression may contribute to immune dysfunction, immune evasion strategies employed by the pathogens, and increased susceptibility to opportunistic infections. Understanding the role of L-selectin in TB-HIV coinfection is crucial for identifying novel therapeutic targets and developing interventions to improve disease control and patient outcomes. Furthermore, elucidating the mechanisms underlying L-selectin modulation in TB-HIV coinfection may provide valuable insights into disease pathogenesis and immune dysregulation. Targeting L-selectin-mediated immune pathways could offer new avenues for therapeutic intervention, complementing existing treatment regimens for TB and HIV. Strategies aimed at

restoring L-selectin-mediated immune function may enhance immune surveillance, promote immune cell recruitment to sites of infection, and improve antimicrobial responses in TB-HIV coinfection. However, further research is needed to clarify the role of L-selectin in TB-HIV coinfection and evaluate its potential as a therapeutic target for enhancing disease control strategies.[161-180]

Implications of Dysregulated L-selectin Expression on Disease Progression

The dysregulation of L-selectin expression in the context of tuberculosis (TB) and human immunodeficiency virus (HIV) coinfection can have profound implications for disease progression and clinical outcomes. L-selectin, a critical molecule involved in leukocyte trafficking and immune surveillance, plays a pivotal role in orchestrating immune responses against infectious agents. Dysregulated expression of L-selectin in TB-HIV coinfection may disrupt immune cell migration, activation, and effector functions, thereby impacting the host's ability to control TB infection and mount effective immune responses. One of the primary implications of dysregulated L-selectin expression is its potential to compromise immune surveillance and host defense mechanisms. Altered expression levels of L-selectin on immune cells, particularly CD4+ T cells, may impair their ability to migrate to lymphoid tissues and sites of inflammation, where they play crucial roles in antigen recognition and immune activation. This impairment in immune cell trafficking could lead to reduced immune surveillance and delayed or ineffective responses to TB infection, allowing for uncontrolled bacterial replication and disease progression.[181-190]

Furthermore, dysregulated L-selectin expression may contribute to immune dysfunction and exacerbate the severity of TB-HIV coinfection. TB and HIV can induce complex alterations in immune cell function, including dysregulation of cytokine production, impaired antigen presentation, and compromised T cell responses. Dysregulated L-selectin expression may further exacerbate these immune dysfunctions, leading to aberrant immune activation, tissue damage, and exacerbated inflammatory responses. Consequently, individuals with dysregulated L-selectin expression may be at increased risk of developing severe forms of TB-HIV coinfection, including disseminated TB or TB-associated immune reconstitution inflammatory syndrome (TB-IRIS). Moreover, dysregulated L-selectin expression may impact treatment responses and clinical outcomes in TB-HIV coinfection. Effective immune responses are crucial for controlling TB infection and preventing disease progression, and dysregulation of L-selectin expression may compromise the efficacy of standard TB and HIV therapies. Individuals with dysregulated L-selectin expression may exhibit reduced responsiveness to anti-TB medications or antiretroviral therapy, leading to treatment failure, disease relapse, or the emergence of drug-resistant strains of TB or HIV.[191-195]

Therapeutic Targeting of L-selectin in TB-HIV Coinfection

Therapeutic targeting of L-selectin in tuberculosis (TB) and human immunodeficiency virus (HIV) coinfection represents a promising approach to modulate immune responses, enhance host defense mechanisms, and improve disease control strategies. L-selectin, a critical molecule involved in leukocyte trafficking and immune surveillance, plays a central role in orchestrating immune

responses against infectious agents. By modulating L-selectin expression or activity, it may be possible to restore immune cell migration, activation, and effector functions, thereby enhancing the host's ability to control TB infection and mount effective immune responses in the context of HIV coinfection. One potential therapeutic approach involves targeting L-selectin expression on immune cells to enhance their recruitment to sites of infection and inflammation. By promoting the migration of immune cells, particularly CD4+ T cells, to lymphoid tissues and areas of TB infection, it may be possible to enhance immune surveillance and improve the containment of TB bacteria. Strategies aimed at upregulating L-selectin expression or enhancing its activity on immune cells could potentially overcome the immune dysregulation observed in TB-HIV coinfection and restore protective immune responses against TB.[192-194]

Additionally, therapeutic targeting of L-selectin may involve modulating its interactions with endothelial ligands and other adhesion molecules to promote immune cell trafficking and activation. By targeting L-selectin-mediated adhesion pathways, it may be possible to enhance the recruitment and activation of immune cells at sites of TB infection, thereby improving the efficacy of immune responses against TB bacteria. Furthermore, targeting L-selectin-mediated signaling pathways could potentially modulate immune cell activation and cytokine production, leading to enhanced antimicrobial responses and improved disease outcomes in TB-HIV coinfection. Moreover, therapeutic strategies aimed at targeting L-selectin in TB-HIV coinfection may involve the development of novel immunomodulatory agents or biologics designed to specifically modulate L-selectin expression or activity. These agents could be administered either alone or in combination with existing TB and HIV therapies to enhance immune responses and improve treatment outcomes. Furthermore, targeted delivery of immunomodulatory agents to specific tissues or sites of infection could enhance their efficacy while minimizing systemic side effects.[194-195]

Conclusion

TB-HIV coinfection poses significant challenges to global health, requiring comprehensive strategies to improve disease control and patient outcomes. The modulation of L-selectin expression in TB-HIV coinfection represents a complex interplay between host immune responses and pathogen-induced immune dysregulation. Understanding the role of L-selectin in TB-HIV coinfection may provide valuable insights into disease pathogenesis and identify novel therapeutic targets for intervention. Further research is warranted to unravel the mechanisms underlying L-selectin modulation and its implications for immune function, disease severity, and treatment responses in TB-HIV coinfection. Efforts aimed at targeting L-selectin-mediated immune pathways hold promise for enhancing the effectiveness of current TB and HIV therapies and ultimately reducing the burden of TB-HIV coinfection on global health.

References

1. Mann Z, Sengar M, Verma YK, Rajalingam R, Raghav PK. Hematopoietic stem cell factors: their functional role in self-renewal and clinical aspects. Frontiers in Cell and Developmental Biology. 2022; 10:664261.
2. Sezaki M, Hayashi Y, Wang Y, Johansson A, Umemoto T, Takizawa H. Immuno-modulation of hematopoietic stem and progenitor cells in inflammation. Frontiers in immunology. 2020; 11:585367.
3. Okeke C, Silas U, Okeke C, Chikwendu C. Current trends on hemopoietic stem cells. Current Stem Cell Research & Therapy. 2021;16(2):199-208.
4. Lee J, Yoon SR, Choi I, Jung H. Causes and mechanisms of hematopoietic stem cell aging. International Journal of Molecular Sciences. 2019;20(6):1272.
5. Govindarajah V, Reynaud D. Tuning of the hematopoietic stem cell compartment in its inflammatory environment. Current stem cell reports. 2018; 4:189-200.
6. Abunimye DA, Okafor IM, Okorowo H, Obeagu EI. The role of GATA family transcriptional factors in haematological malignancies: A review. Medicine. 2024;103(12): e37487.
7. Obeagu EI, Okoroiwu IL, Azuonwu O. An update on hypoxic regulation of iron homeostasis and bone marrow environment. Int. J. Curr. Res. Med. Sci. 2018;4(10):42-8.
8. Obeagu EI, Okoroiwu IL, Obeagu G. Molecular mechanism and systemic response of erythropoietin: A Review. Int. J. Adv. Res. Biol. Sci. 2015;2(7):58-62.
9. Ifeanyi OE. Acute Leukaemia: A Sudden Killer to Human Beings. EC Emergency Medicine and Critical Care. 2020;4(6):154-67.
10. 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.
11. 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.
12. 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.
13. 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):10-19.
14. 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
15. 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

16. 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.
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):10-19.
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):10-19.
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, Alaeboh 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.
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):911-916. https://www.academia.edu/download/38320140/Obeagu_Emmanuel_Ifeanyi_and_Obeagu__Getrude_Uzoma2.EMMA1.pdf.
22. 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
23. 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):70-75. links/5988ab6d0f7e9b6c8539f73d/HIV-and-TB-co-infection-among-patients-who-used-Directly-Observed-Treatment-Short-course-centres-in-Yenagoa-Nigeria.pdf
24. 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):110-119.
25. Nwosu DC, Obeagu EI, Nkwocha BC, Nwanna 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.

26. 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.
27. 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_al.IJCRAR.pdf.
28. 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
29. 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
30. 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.
31. 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.
32. 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):128-134. https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/86.
33. 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.
34. 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.
35. 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.

Citation: Obeagu EI, Onuoha EC. Modulation of L-selectin Expression in Tuberculosis-HIV Coinfection: Implications for Disease Control. Elite Journal of Public Health, 2024; 2 (4): 56-74

36. 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):135-142.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
37. Obeagu EI, Onuoha EC. Tuberculosis among HIV Patients: A review of Prevalence and Associated Factors. Int. J. Adv. Res. Biol. Sci. 2023;10(9):128-134.DOI: 10.22192/ijarbs.2023.10.09.014 links/6516f938b0df2f20a2f8b0e0/Tuberculosis-among-HIV-Patients-A-review-of-Prevalence-and-Associated-Factors.pdf.
38. Obeagu EI, Ibeh NC, Nwobodo HA, Ochei KC, Iwegbulam CP. Haematological indices of malaria patients coinfected with HIV in Umuahia. Int. J. Curr. Res. Med. Sci. 2017;3(5):100-104.DOI: 10.22192/ijcrms.2017.03.05.014 https://www.academia.edu/download/54317126/Haematological_indices_of_malaria_patients_coinfected_with_HIV.pdf
39. 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.
40. 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):180-183.DOI: **DOI:** 10.32474/JCCM.2020.02.000137 links/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.
41. 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.
42. Emannuel 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):203-211. http://research.sdpublishers.net/id/eprint/2819/.
43. Igwe MC, Obeagu EI, Ogbuabor AO, Eze GC, Ikpenwa JN, Eze-Steven 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.
44. 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):360-368.

45. 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.
46. 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
47. 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
48. 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 ANTIRETRQVIRAL THERAPY. World Journal of Pharmacy and Pharmaceutical Sciences, 2015; 4(3): 153-160**.** links/5a4fd0500f7e9bbc10526b38/BIOCHEMICAL-ALTERATIONS-IN-ADULT-HIV-PATIENTS-ON-ANTIRETRQVIRAL-THERAPY.pdf.
49. 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):45-49.
50. Lionberger JM, Stirewalt DL. Gene expression changes in normal haematopoietic cells. Best Practice & Research Clinical Haematology. 2009;22(2):249-269.
51. 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/ijcrcps.2019.06.12.004 links/650aba1582f01628f0335795/Adverse-drug-reactions-in-HIV-AIDS-patients-on-highly-active-antiretro-viral-therapy-a-review-of-prevalence.pdf.
52. 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.
53. 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/Assessment-of-the-level-of-haemoglobin-and-erythropoietin-in-persons-living-with-HIV-in-Umuahia.pdf.
54. 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):906-910. https://www.academia.edu/download/38320134/Obeagu_Emmanuel_Ifeanyi_and_Obeagu__Getrude_Uzoma.EMMA2.pdf.
55. 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.

56. 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.
57. 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; 5:825-830.
58. 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.
59. 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.
60. 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.
61. Alvarez F, Fritz JH, Piccirillo CA. Pleiotropic effects of IL-33 on CD4+ T cell differentiation and effector functions. Frontiers in immunology. 2019; 10:438556.
62. Chirumbolo S, Bjørklund G, Sboarina A, Vella A. The role of basophils as innate immune regulatory cells in allergy and immunotherapy. Human vaccines & immunotherapeutics. 2018;14(4):815-831.
63. Nwosu DC, Obeagu EI, Nkwuocha BC, Nwanna CA, Nwanjo HU, Amadike JN, Ezemma 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.
64. 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.
65. 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):60-66.
66. 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).
67. 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):70-75.
68. 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):10-19.

69. 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.0000000000036599. PMID: 38065920; PMCID: PMC10713174.
70. 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.0000000000036342. PMID: 38013335; PMCID: PMC10681551.
71. 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.0000000000035910. PMID: 38013350; PMCID: PMC10681510.
72. 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.0000000000036166. PMID: 37986340; PMCID: PMC10659731.
73. Obeagu EI, Obeagu GU, Obiezu J, Ezeonwumelu C, Ogunnaya FU, Ngwoke AO, Emeka-Obi OR,
74. 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.
75. 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.
76. Obeagu EI, Obeagu GU. Unmasking the Truth: Addressing Stigma in the Fight Against HIV. Elite Journal of Public Health. 2024;2(1):8-22.
77. Obeagu EI, Obeagu GU, Okwuanaso CB. Optimizing Immune Health in HIV Patients through Nutrition: A Review. Elite Journal of Immunology. 2024;2(1):14-33.
78. Obeagu EI, Obeagu GU. Utilization of immunological ratios in HIV: Implications for monitoring and therapeutic strategies. Medicine. 2024;103(9): e37354.
79. Obeagu EI, Obeagu GU. CD8 Dynamics in HIV Infection: A Synoptic Review. Elite Journal of Immunology. 2024;2(1):1-3.
80. Obeagu EI, Obeagu GU. Implications of B Lymphocyte Dysfunction in HIV/AIDS. Elite Journal of Immunology. 2024;2(1):34-46.
81. Obeagu EI, Obeagu GU. Maternal Influence on Infant Immunological Responses to HIV: A Review. Elite Journal of Laboratory Medicine. 2024;2(1):46-58.
82. Obeagu EI, Obeagu GU. Understanding B Lymphocyte Functions in HIV Infection: Implications for Immune Dysfunction and Therapeutic Strategies. Elite Journal of Medicine. 2024;2(1):35-46.
83. Obeagu EI, Obeagu GU. Platelet-Driven Modulation of HIV: Unraveling Interactions and Implications. Journal home page: http://www. journalijiar. com.;12(01).
84. Obeagu EI, Anyiam AF, Obeagu GU. Managing Hematological Complications in HIV: Erythropoietin Considerations. Elite Journal of HIV. 2024;2(1):65-78.

85. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Hematocrit Variations in HIV Patients Co-infected with Malaria: A Comprehensive Review. Journal home page: http://www. journalijiar. com.;12(01).
86. ObeaguEI AA, Obeagu GU. Synergistic Effects of Blood Transfusion and HIV in Children Under 5 Years with Severe Malaria: A Review. Elite Journal of HIV. 2024;2(1):31-50.
87. Obeagu EI, Anyiam AF, Obeagu GU. Unveiling B Cell Mediated Immunity in HIV Infection: Insights, Challenges, and Potential Therapeutic Avenues. Elite Journal of HIV. 2024;2(1):1-5.
88. Obeagu EI, Obeagu GU. Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review. Int. J. Curr. Res. Med. Sci. 2024;10(1):25-36.
89. Obeagu EI, Obeagu GU. Transfusion Therapy in HIV: Risk Mitigation and Benefits for Improved Patient Outcomes. Sciences. 2024;4(1):32-7.
90. Obeagu EI, Obeagu GU. Mental Health and Psychosocial Effects of natural disaster on HIV Patients. Sciences. 2024;4(1):38-44.
91. Obeagu EI, Obeagu GU. Eosinophil-Associated Changes in Neonatal Thymic T Regulatory Cell Populations in HIV-Infected Pregnancies. Elite Journal of Health Science. 2024;2(1):33-42.
92. Obeagu EI, Obeagu GU. Advances in Understanding the Impact of Blood Transfusion on Anemia Resolution in HIV-Positive Children with Severe Malaria: A Comprehensive Review. Elite Journal of Haematology. 2024;2(1):26-41.
93. Obeagu EI, Ayogu EE, Obeagu GU. Interactions between Blood Transfusion and Antiretroviral Medications: Implications for Patient Care. Elite Journal of Medicine. 2024;2(2):104-15.
94. Obeagu EI, Obeagu GU. Maternal Eosinophilic Responses in HIV-Positive Pregnant Women: Unraveling Immunological Dynamics for Improved Maternal-Fetal Health. Elite Journal of Immunology. 2024;2(1):47-64.
95. Obeagu EI, Anyanwu CN, Obeagu GU. Challenges and Considerations in Managing Blood Transfusion for Individuals with HIV. Elite Journal of HIV. 2024;2(2):1-7.
96. Obeagu EI, Ubosi NI, Obeagu GU, Akram M. Early Infant Diagnosis: Key to Breaking the Chain of HIV Transmission. Elite Journal of Public Health. 2024;2(1):52-61.
97. Obeagu EI, Obeagu GU. Understanding Hematocrit Fluctuations in HIV-Malaria Coinfection for Improved Management. Elite Journal of Public Health. 2024;2(1):22-34.
98. Obeagu EI, Obeagu GU. The Impact of Erythropoietin on Preeclampsia in HIV-Positive Women: A Review. Elite Journal of Nursing and Health Science. 2024;2(1):21-31.
99. Obeagu EI, Obeagu GU. Platelet Distribution Width (PDW) as a Prognostic Marker for Anemia Severity in HIV Patients: A Comprehensive Review. Journal home page: http://www. journalijiar. com.;12(01).
100. Obeagu EI, Obeagu GU. Neonatal Outcomes in Children Born to Mothers with Severe Malaria, HIV, and Transfusion History: A Review. Elite Journal of Nursing and Health Science. 2024;2(3):38-58.
101. Obeagu EI, Obeagu GU. Assessing Platelet Functionality in HIV Patients Receiving Antiretroviral Therapy: Implications for Risk Assessment. Elite Journal of HIV. 2024;2(3):14-26.

102. Obeagu EI, Obeagu GU. Advancements in HIV Prevention: Africa's Trailblazing Initiatives and Breakthroughs. Elite Journal of Public Health. 2024;2(1):52-63.
103. Obeagu EI, Obeagu GU. Maternal Influence on Infant Immunological Responses to HIV: A Review. Elite Journal of Laboratory Medicine. 2024;2(1):46-58.
104. Obeagu EI, Obeagu GU. Counting Cells, Shaping Fates: CD4/CD8 Ratios in HIV. Elite Journal of Scientific Research and Review. 2024;2(1):37-50.
105. Obeagu EI, Anyiam AF, Obeagu GU. Managing Hematological Complications in HIV: Erythropoietin Considerations. Elite Journal of HIV. 2024;2(1):65-78.
106. Obeagu EI, Obeagu GU. Immune Modulation in HIV-Positive Neonates: Insights and Implications for Clinical Management. Elite Journal of Nursing and Health Science. 2024;2(3):59-72.
107. Obeagu EI, Ayogu EE, Obeagu GU. Impact on Viral Load Dynamics: Understanding the Interplay between Blood Transfusion and Antiretroviral Therapy in HIV Management. Elite Journal of Nursing and Health Science. 2024;2(2):5-15.
108. Obeagu EI, Obeagu GU. Understanding B Lymphocyte Functions in HIV Infection: Implications for Immune Dysfunction and Therapeutic Strategies. Elite Journal of Medicine. 2024;2(1):35-46.
109. Obeagu EI, Anyanwu CN, Obeagu GU. Challenges and Considerations in Managing Blood Transfusion for Individuals with HIV. Elite Journal of HIV. 2024;2(2):1-7.
110. Obeagu EI, Obeagu GU. Understanding ART and Platelet Functionality: Implications for HIV Patients. Elite Journal of HIV. 2024;2(2):60-73.
111. Obeagu EI, Obeagu GU. The Role of Blood Transfusion Strategies in HIV Management: Current Insights and Future Directions. Elite Journal of Medicine. 2024;2(1):10-22.
112. Obeagu EI, AmaezeAA O, Obeagu GU. B Cell Deficiency and Implications in HIV Pathogenesis: Unraveling the Complex Interplay. Elite Journal of Nursing and Health Science. 2024;2(2):33-46.
113. Obeagu EI, Obeagu GU. Eosinophil Dynamics in Pregnancy among Women Living with HIV: A Comprehensive Review. Int. J. Curr. Res. Med. Sci. 2024;10(1):11-24.
114. Obeagu EI, Obeagu GU. Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review. Int. J. Curr. Res. Med. Sci. 2024;10(1):25-36.
115. Obeagu EI, Obeagu GU. Unveiling the Role of Innate Immune Activation in Pediatric HIV: A Review. Elite Journal of Immunology. 2024;2(3):33-44.
116. Obeagu EI, Obeagu GU. Harnessing B Cell Responses for Personalized Approaches in HIV Management. Elite Journal of Immunology. 2024;2(2):15-28.
117. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Neutrophil Dynamics: Unveiling Their Role in HIV Progression within Malaria Patients. Journal home page: http://www. journalijiar. com.;12(01).
118. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Hematocrit Variations in HIV Patients Co-infected with Malaria: A Comprehensive Review. Journal home page: http://www. journalijiar. com.;12(01).

119. Obeagu EI, Igwe MC, Obeagu GU. The Power of Unity: Collective Efforts in Confronting HIV Stigma. Elite Journal of Public Health. 2024;2(3):22-36.
120. Obeagu EI, Anyiam AF, Obeagu GU. Managing Anemia in HIV through Blood Transfusions: Clinical Considerations and Innovations. Elite Journal of HIV. 2024;2(1):16-30.
121. Obeagu EI, Obeagu GU. Maternal Eosinophilic Responses in HIV-Positive Pregnant Women: Unraveling Immunological Dynamics for Improved Maternal-Fetal Health. Elite Journal of Immunology. 2024;2(1):47-64.
122. Obeagu EI, Obeagu GU. Platelet Aberrations in HIV Patients: Assessing Impacts of ART. Elite Journal of Haematology, 2024; 2 (3).:10-24.
123. Obeagu EI, Obeagu GU. Hematological Changes Following Blood Transfusion in Young Children with Severe Malaria and HIV: A Critical Review. Elite Journal of Laboratory Medicine. 2024;2(1):33-45.
124. Obeagu EI, Anyiam AF, Obeagu GU. Erythropoietin Therapy in HIV-Infected Individuals: A Critical Review. Elite Journal of HIV. 2024;2(1):51-64.
125. Obeagu EI, Ubosi NI, Obeagu GU, Obeagu AA. Nutritional Strategies for Enhancing Immune Resilience in HIV: A Review. Int. J. Curr. Res. Chem. Pharm. Sci. 2024;11(2):41-51.
126. Obeagu EI, Obeagu GU. The Crucial Role of Erythropoietin in Managing Anemia in HIV: A Review. Elite Journal of Scientific Research and Review. 2024;2(1):24-36.
127. Obeagu EI, Obeagu GU. Impact of Maternal Eosinophils on Neonatal Immunity in HIV-Exposed Infants: A Review. Elite Journal of Immunology. 2024;2(3):1-8.
128. Obeagu EI, Anyiam AF, Obeagu GU. Unveiling B Cell Mediated Immunity in HIV Infection: Insights, Challenges, and Potential Therapeutic Avenues. Elite Journal of HIV. 2024;2(1):1-5.
129. Obeagu EI, Obeagu GU. Anemia and Erythropoietin: Key Players in HIV Disease Progression. Elite Journal of Haematology, 2024; 2 (3).:42-57.
130. Obeagu EI, Obeagu GU. Platelet Dysfunction in HIV Patients: Assessing ART Risks. Elite Journal of Scientific Research and Review. 2024;2(1):1-6.
131. Obeagu EI, Ubosi NI, Obeagu GU, Akram M. Early Infant Diagnosis: Key to Breaking the Chain of HIV Transmission. Elite Journal of Public Health. 2024;2(1):52-61.
132. Obeagu EI, Obeagu GU. Transfusion Therapy in HIV: Risk Mitigation and Benefits for Improved Patient Outcomes. Sciences. 2024;4(1):32-7.
133. Obeagu EI, Obeagu GU. P-Selectin and Immune Activation in HIV: Clinical Implications. Elite Journal of Health Science. 2024;2(2):16-29.
134. Obeagu EI, Obeagu GU. Mental Health and Psychosocial Effects of natural disaster on HIV Patients. Sciences. 2024;4(1):38-44.
135. Obeagu EI, Obeagu GU. Optimizing Blood Transfusion Protocols for Breast Cancer Patients Living with HIV: A Comprehensive Review. Elite Journal of Nursing and Health Science. 2024;2(2):1-7.
136. Obeagu EI, Obeagu GU. Advances in Understanding the Impact of Blood Transfusion on Anemia Resolution in HIV-Positive Children with Severe Malaria: A Comprehensive Review. Elite Journal of Haematology. 2024;2(1):26-41.

137. Obeagu EI, Obeagu GU. Transfusion-Related Complications in Children Under 5 with Coexisting HIV and Severe Malaria: A Review. Int. J. Curr. Res. Chem. Pharm. Sci. 2024;11(2):9-19.
138. Obeagu EI, Obeagu GU. Impact of Blood Transfusion on Viral Load Dynamics in HIV-Positive Neonates with Severe Malaria: A Review. Elite Journal of Scientific Research and Review. 2024;2(1):42-60.
139. Obeagu EI, Ayogu EE, Obeagu GU. Interactions between Blood Transfusion and Antiretroviral Medications: Implications for Patient Care. Elite Journal of Medicine. 2024;2(2):104-5.
140. Obeagu EI, Obeagu GU, Odo EO, Igwe MC, Ugwu OP, Alum EU, Racheal P. Combatting Stigma: Essential Steps in Halting HIV Spread. IAA Journal of Applied Sciences. 2024;11(1):22-9.
141. Obeagu EI, Obeagu GU. P-Selectin Expression in HIV-Associated Coagulopathy: Implications for Treatment. Elite Journal of Haematology, 2024; 2 (3).:25-41.
142. Obeagu EI, Obeagu GU. Eosinophil-Associated Changes in Neonatal Thymic T Regulatory Cell Populations in HIV-Infected Pregnancies. Elite Journal of Health Science. 2024;2(1):33-42.
143. Obeagu EI, Obeagu GU. Exploring the Role of L-selectin in HIV-related Immune Exhaustion: Insights and Therapeutic Implications. Elite Journal of HIV. 2024;2(2):43-59.
144. Obeagu EI. Erythropoietin and the Immune System: Relevance in HIV Management. Elite Journal of Health Science. 2024;2(3):23-35.
145. Obeagu EI, Obeagu GU. The Impact of Erythropoietin on Preeclampsia in HIV-Positive Women: A Review. Elite Journal of Nursing and Health Science. 2024;2(1):21-31.
146. Obeagu EI, Obeagu GU. Unraveling the Role of Eosinophil Extracellular Traps (EETs) in HIV-Infected Pregnant Women: A Review. Elite Journal of Nursing and Health Science. 2024;2(3):84-99.
147. Obeagu EI, Obeagu GU. Hematologic Considerations in Breast Cancer Patients with HIV: Insights into Blood Transfusion Strategies. Elite Journal of Health Science. 2024;2(2):20-35.
148. Obeagu EI, Obeagu GU. L-selectin and HIV-Induced Immune Cell Trafficking: Implications for Pathogenesis and Therapeutic Strategies. Elite Journal of Laboratory Medicine. 2024;2(2):30-46.
149. Obeagu EI, Obeagu GU. The Intricate Relationship Between Erythropoietin and HIV-Induced Anemia: Unraveling Pathways for Therapeutic Insights. Int. J. Curr. Res. Chem. Pharm. Sci. 2024;11(2):30-40.
150. Obeagu EI, Obeagu GU. The Role of L-selectin in Tuberculosis and HIV Coinfection: Implications for Disease Diagnosis and Management. Elite Journal of Public Health. 2024;2(1):35-51.
151. Kalu OA, Ukibe NR, Onyenekwe CC, Okoyeagu RC, Nnaemeka WS, Onyenekwe AJ, Ukibe EG, Ukibe BC, Ukibe VE, Obeagu EI. Assessment of Serum Cystatin C, Microalbumin Levels and Egfr in HIV Seropositive Individuals based on Age and Gender in NAUTH, Nnewi, Nigeria. Elite Journal of Medicine. 2024;2(3):48-59.

152. Obeagu EI, Obeagu GU. Understanding Immune Cell Trafficking in Tuberculosis-HIV Coinfection: The Role of L-selectin Pathways. Elite Journal of Immunology. 2024;2(2):43-59.
153. Obeagu EI, Obeagu GU. Eosinophilic Changes in Placental Tissues of HIV-Positive Pregnant Women: A Review. Elite Journal of Laboratory Medicine. 2024;2(1):14-32.
154. Obeagu EI, Obeagu GU. P-Selectin and Platelet Activation in HIV: Implications for Antiviral Therapy. Elite Journal of Scientific Research and Review. 2024;2(1):17-41.
155. Obeagu EI, Obeagu GU. Strength in Unity: Building Support Networks for HIV Patients in Uganda. Elite Journal of Medicine. 2024;2(1):1-6.
156. Obeagu EI, GU EE. Understanding the Intersection of Highly Active Antiretroviral Therapy and Platelets in HIV Patients: A Review. Elite Journal of Haematology, 2024; 2 (3).:111-7.
157. Obeagu EI, Obeagu GU. Anemia in HIV: The Role of Erythropoietin in Disease Progression. *Elite Journal of Haematology, 2024; 2(4):* 51-67
158. Obeagu EI, Obeagu GU. **ART and Platelet Dynamics: Assessing Implications for HIV Patient Care.** *Elite Journal of Haematology, 2024; 2(4):* 68-85
159. Obeagu EI, Obeagu GU. Impact of Breastfeeding on Infant Immune Responses in the Context of HIV**.** Elite Journal of Nursing and Health Science, 2024; 2(4):23-39
160. Obeagu EI, Obeagu GU. HIV-Induced Immune Exhaustion in Neonates: A Review of Mechanisms and Implications. Elite Journal of Immunology, 2024; 2(3): 45-61
161. Obeagu EI, Obeagu GU. Immunodeficiency and Immune Reconstitution in Pediatric HIV: Mechanisms, Challenges, and Therapeutic Strategies. Elite Journal of Immunology, 2024; 2(3): 62-79
162. Obeagu EI, Obeagu GU. Hematological Consequences of Erythropoietin in HIV: Clinical Implications. *Elite Journal of Haematology, 2024; 2(4):* 86-104
163. Obeagu EI, Obeagu GU. GATA-1 and Hematopoietic Stem Cell Dysfunction in HIV-Related Hematological Malignancies: A Review. *Elite Journal of Haematology, 2024; 2(4):* 105-122
164. Obeagu EI, Obeagu GU. Exploration of Intricate Relationship between GATA-1 and Anemia in HIV. *Elite Journal of Haematology, 2024; 2(4):* 123-140
165. Obeagu EI, Obeagu GU. GATA-1 and Immune Dysregulation in HIV/AIDS: Implications for Therapy. Elite Journal of HIV, 2024; 2(3): 69-85
166. Obeagu EI, Obeagu GU. The Role of GATA-1 in Erythropoietin Response and Resistance in HIV/AIDS. Elite Journal of HIV, 2024; 2(4): 1-17
167. Obeagu EI, Obeagu GU. Understanding the Role of GATA-1 in T-Cell Development in the Context of HIV Infection. Elite Journal of HIV, 2024; 2(4): 18-34
168. Obeagu EI, Obeagu GU. Programmed Cell Death Protein 1 (PD-1) Pathway Modulation in HIV/AIDS: From Bench to Bedside. Elite Journal of HIV, 2024; 2(4): 35-53
169. Obeagu EI, Obeagu GU. Programmed Cell Death Protein 1 (PD-1) and Immune Checkpoint Inhibitors in HIV-Related Lymphomas: Current Insights and Future Directions**.** Elite Journal of Immunology, 2024; 2(4): 1-17

170. Obeagu EI, Obeagu, GU. Programmed Cell Death Protein 1 (PD-1) Signaling in HIV-Associated Cardiovascular Disease: Mechanisms and Therapeutic Implications. *Elite Journal of Scientific Research and Review*, 2024; 2(1): 61-77
171. Obeagu EI, Obeagu, GU. Cytotoxic T-Lymphocyte-Associated Protein 4 (CTLA-4) Blockade and HIV-Associated Kaposi Sarcoma: A Promising Therapeutic Strategy. *Elite Journal of Scientific Research and Review*, 2024; 2(1): 78-94
172. Obeagu EI, Obeagu GU. The Impact of Cytotoxic T-Lymphocyte-Associated Protein 4 (CTLA-4) Genetic Variations on HIV Susceptibility and Progression**.** Elite Journal of Immunology, 2024; 2(4): 18-35
173. Obeagu EI, Obeagu, GU. Antacid Use in HIV Patients: Implications for Drug Absorption, Metabolism, and Adverse Effects. *Elite Journal of Scientific Research and Review*, 2024; 2(3): 1-19
174. Obeagu EI, Obeagu GU. Erythropoietin Signaling and its Implications in HIV-Related Anemia: A Comprehensive Review. Elite Journal of HIV, 2024; 2(4): 54-71
175. Obeagu EI, Obeagu, GU. The Role of GATA-1 in Megakaryocyte Function and Platelet Production During HIV Infection: A Review. *Elite Journal of Scientific Research and Review*, 2024; 2(3): 20-36
176. Obeagu EI, Obeagu GU. GATA-1 and Bone Marrow Failure Syndromes in the Context of HIV Infection: A Review of Molecular Mechanisms and Therapeutic Implications. Elite Journal of Laboratory Medicine, 2024; 2(3): 39-56
177. Obeagu EI, Obeagu GU. GATA-1 Mutations and Their Association with HIV-Associated Hematological Disorders: A Review. Elite Journal of Health Science, 2024; 2(4): 7-23
178. Obeagu EI, Obeagu GU. GATA-1 and Hematopoietic Stem Cell Maintenance in HIV: Mechanisms and Implications. Elite Journal of Health Science, 2024; 2(4): 24-40
179. Obeagu EI, Obeagu GU. GATA-1 Regulation of Erythroid Progenitor Cell Differentiation in HIV/AIDS: Molecular Insights and Therapeutic Implications. *Elite Journal of Haematology, 2024; 2(4):* 141-159
180. Obeagu EI, Obeagu GU. Role of GATA-1 in Megakaryopoiesis and Thrombopoiesis During HIV Infection: Molecular Insights and Therapeutic Implications**.** Elite Journal of Nursing and Health Science, 2024; 2(4):40-59
181. Obeagu EI, Obeagu GU. GATA-1 as a Modulator of Immune Responses in HIV-Infected Individuals: Implications for Disease Pathogenesis and Therapeutic Interventions. Elite Journal of Laboratory Medicine, 2024; 2(3): 57-74
182. Obeagu EI, Obeagu GU. GATA-1 and Inflammatory Signaling Pathways in HIV-Related Hematological Disorders: Mechanisms and Therapeutic Implications. Elite Journal of Health Science, 2024; 2(3):27-44
183. Obeagu EI, Obeagu GU. GATA-1 and Coagulation Cascade Regulation in HIV-Associated Hematological Complications: Mechanisms and Therapeutic Implications. Elite Journal of Health Science, 2024; 2(3):45-63
184. Obeagu EI, Obeagu GU. GATA-1 and HIV-Associated Myelodysplastic Syndromes: Pathogenesis and Treatment Strategies. Elite Journal of Medicine, 2024; 2(4): 1-18

185. Obeagu EI, Obeagu GU. GATA-1 and Hematopoietic Stem Cell Quiescence in HIV: Implications for Therapy. Elite Journal of Medicine, 2024; 2(4): 19-36
186. Obeagu EI, Onuoha EC, Hallie EF. GATA-1 Regulation of Coagulation Pathways in HIV-Associated Deep Venous Thrombosis: Molecular Insights and Therapeutic Implications. *Elite Journal of Haematology, 2024; 2(4):* 160-179
187. Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review**.** Elite Journal of Immunology, 2024; 2(4): 54-72
188. Obeagu EI, Onuoha EC. L-Selectin in Tuberculosis-HIV Coinfection: Linking Immune Cell Trafficking to Disease Pathogenesis. Elite Journal of Laboratory Medicine, 2024; 2(4): 7-25
189. Obeagu EI, Obeagu GU. L-selectin and HIV-Induced Immune Cell Trafficking: Implications for Pathogenesis and Therapeutic Strategies. Elite Journal of Laboratory Medicine. 2024;2(2):30-46.
190. Obeagu EI, Obeagu GU. Exploring the Role of L-selectin in HIV-related Immune Exhaustion: Insights and Therapeutic Implications. Elite Journal of HIV. 2024;2(2):43-59.
191. Obeagu EI, Obeagu GU. Understanding Immune Cell Trafficking in Tuberculosis-HIV Coinfection: The Role of L-selectin Pathways. Elite Journal of Immunology. 2024;2(2):43-59.
192. Obeagu EI, Obeagu GU. P-Selectin and Immune Activation in HIV: Clinical Management Strategies. Elite Journal of Immunology. 2024;2(2):29-42.
193. Obeagu EI, Obeagu GU. The Role of L-selectin in Tuberculosis and HIV Coinfection: Implications for Disease Diagnosis and Management. Elite Journal of Public Health. 2024;2(1):35-51.
194. Obeagu EI, Obeagu GU. P-Selectin and Platelet Activation in HIV: Implications for Antiviral Therapy. Elite Journal of Scientific Research and Review. 2024;2(1):17-41.
195. Obeagu EI, Obeagu GU. P-Selectin Expression in HIV-Associated Coagulopathy: Implications for Treatment. Elite Journal of Haematology, 2024; 2 (3).:25-41.