

Barriers and Experiences of Caregivers in Accessing Viral Load Testing and Supporting ART Adherence for Paediatric HIV Patients in Eastern Province, Zambia

Patrick Mzyece¹, Esther Munalula²

^{1,2}Department of Public Health, School of Post Graduate, University of Lusaka, Lusaka, Zambia.

Corresponding Author: Patrick Mzyece

DOI: <https://doi.org/10.52403/ijhsr.20250508>

ABSTRACT

Background: Routine HIV viral load (VL) testing is essential for monitoring treatment effectiveness in paediatric patients on antiretroviral therapy (ART). However, in low-resource settings like Zambia, caregivers' perspectives on barriers to accessing VL testing remain underexplored. This study aimed to explore caregiver-reported challenges in accessing HIV VL testing and supporting ART adherence for children living with HIV in Eastern Province, Zambia.

Methods: A qualitative descriptive exploratory design was used, incorporating in-depth interviews, and focus group discussions to gain a deeper understanding of caregiver experiences. A purposive sample of 36 caregivers of HIV-positive children aged 0–10 years receiving ART participated in the study. Interviews were recorded, transcribed, coded, and analysed thematically. Ethical approval was obtained, and informed consent ensured confidentiality and voluntary participation.

Results: Thematic analysis revealed several barriers to accessing paediatric VL testing. Long turnaround times for test results, high transportation costs, long distances to health facilities, limited knowledge about VL testing, stigma, frequent stockouts of test kits, and extended waiting times at clinics. Cultural beliefs and religious were also obstacles. Caregivers recognized its importance in monitoring treatment and supporting adherence.

Conclusions: Caregivers face in accessing VL testing for children living with HIV, including socioeconomic hardship, healthcare system limitations, and sociocultural factors. Strengthening paediatric HIV care will require decentralizing VL testing services, extending clinic hours, implementing community-based education, reducing stigma, and promoting child-friendly, culturally sensitive practices. These strategies can enhance caregiver engagement, improve adherence, and ensure better treatment outcomes for children on ART.

Keywords: Viral load testing, paediatric HIV, ART adherence, caregivers, Zambia.

1. INTRODUCTION

1.1 Background

Viral load (VL) testing is essential for monitoring treatment success and optimizing antiretroviral therapy (ART) outcomes in

paediatric patients living with HIV. However, in Eastern Province in Zambia, caregivers play a crucial role in ensuring children access viral load testing, often encounter various challenges. Limited

healthcare access, socio-economic constraints, and systemic inefficiencies can hinder timely testing, while certain facilitators, such as community support and health education, may enhance uptake. This study identifies key barriers faced by caregivers to viral load testing services for paediatric HIV patients in Eastern province.

Barriers to Accessing HIV Viral Load Testing

One of the major barriers faced by caregivers is stigma and confidentiality concerns. HIV-related stigma remains pervasive, deterring caregivers from seeking testing services due to fear of discrimination and social ostracism. Concerns about unintended disclosure, especially in healthcare settings lacking privacy, exacerbate this issue. A study highlighted that adolescents and their caregivers often avoid clinics to prevent inadvertent status disclosure, which could lead to stigma (Nabunya et al., 2024).

Apart from this, healthcare infrastructure challenges such as limited availability of paediatric-specific HIV services, coupled with inadequate training for healthcare providers have also been identified to hamper effective viral load testing. Delays in processing and communicating test results are common, particularly in rural settings. For instance, research in rural Zambia reported a median delay of 92 days from sample collection to result communication (Sutcliffe et al., 2021).

According to Nabunya et al. (2024) cultural norms and communication barriers really affect access to health services especially viral load testing. Prevailing cultural norms often discourage open discussions about HIV, especially with children. Caregivers may struggle with disclosing a child's HIV status, fearing psychological harm or social repercussions. A study in Zambia found that local norms deterring conversations about sexuality and HIV significantly impede disclosure to adolescents, affecting their engagement in care.

Furthermore, caregivers were also faced with a lot of economic constraints when it comes

to accessing paediatric viral load testing and ART. Financial hardships limit caregivers' ability to access healthcare services, including transportation costs to clinics and potential loss of income due to time spent seeking care. These economic barriers are particularly pronounced in resource-limited settings.

Facilitators to Accessing HIV Viral Load Testing

Community-Based Interventions is one of the facilitators to improving access to viral load testing at community level. Engaging community health workers and implementing home-based testing initiatives can mitigate stigma and logistical challenges. Such approaches have demonstrated increased acceptance and uptake of HIV testing services. For example, caregiver-assisted HIV self-testing has been proposed to enhance paediatric HIV case finding, though considerations about feasibility and cost remain (McGee et al., 2024).

The second facilitator to accessing a viral load test is through the integration of mobile health technologies that offers promising avenues to improve retention in care and ART adherence among young people living with HIV. According to studies by Arinaitwe et al. (2021) demonstrated that mobile phone-based interventions can address barriers related to stigma and healthcare accessibility (Arinaitwe et al., 2021).

Apart from this, family support and education are very vital in building awareness about the importance of going to the clinic and monitoring viral load among caregivers as they take care of the children. Empowering families through education about HIV and fostering supportive home environments encourage caregivers to seek VL testing for their children. Open family dialogues about HIV have been associated with better acceptance and proactive health-seeking behaviors among adolescents (Nabunya et al., 2024).

In addition, policy and health system strengthening is especially important as it creates a useful environment for access to

health to flourish. Implementing policies that streamline viral load testing processes, reduce result turnaround times, and ensure the availability of paediatric HIV services can significantly improve access. Strengthening health systems to support these policies is essential for sustainable impact.

1.2 Research Objective

1. To explore the experiences of caregivers in accessing viral load testing for paediatric HIV patients, including their perceptions, feelings, and thoughts about the process.
2. To identify the challenges faced by caregivers in accessing viral load testing for paediatric HIV patients, including structural, social, and personal barriers.
3. To explore caregivers' perceptions on the importance of viral load testing in managing paediatric HIV and treatment adherence.

Research Question

1. What are the experiences of caregivers in accessing viral load testing for paediatric HIV patients?
2. What challenges do caregivers face in accessing viral load testing for paediatric HIV patients?
3. How do caregivers perceive the role of viral load testing in managing their child's HIV treatment?

2.0 RESEARCH METHODOLOGY

2.1 Study Design

This qualitative study used a descriptive exploratory study design. Data collection was complemented by triangulation and member checking to enhance credibility. It used thematic analysis to provide in-depth understanding of caregiver experiences in accessing paediatric HIV viral load testing in Eastern province, Zambia.

2.2 Study Population and Sampling

2.2.1 Target Population

Caregivers of paediatric HIV patients (0-10 years) receiving ART in selected health facilities in Eastern Province, Zambia.

2.2.2 Qualitative Sampling

A purposive sample of caregivers were selected for an in-depth interview. A sample size of 36 caregivers from selected healthcare facilities was picked for the study.

2.3 Data Collection Methods

In-depth interviews (IDIs) were conducted with caregivers to explore personal experiences and challenges until saturation at 36 participants. All interviews and discussions were recorded, reviewed and initial familiarization with the data was conducted before coding.

2.4 Data Analysis

Thematic analysis was to identify emerging themes related to barriers, facilitators, and proposed interventions.

2.5 Inclusion and Exclusion Criteria

Inclusion Criteria.

1. Primary caregiver of a child living with HIV

The individual must have primary responsibility whether formal or informal for a child under 10 years old who has been diagnosed with HIV.

2. Age of caregiver and capability

The caregiver must be at least 18 years old or of legal adult age in Zambian set up and capable of providing informed consent.

3. Active engagement in the care of the child

The caregiver should be involved in the routine HIV care of the child, such as attending clinic appointments including viral load, administering medications, or providing day-to-day support.

4. Clinic attendance

The caregiver and child must have visited the HIV care facility or relevant healthcare service within a specified recent period such as the last 6–12

months and ensuring up-to-date experiences.

5. Willingness to participate.

The caregiver must consent to participate in the study and be willing to share personal experiences in an interview or focus group setting.

6. Language proficiency

The caregiver was supposed to be sufficiently fluent in the languages used for the data collection or have access to an interpreter.

Exclusion Criteria

1. Not the primary caregiver

Individuals who did not have regular responsibility for the child's daily care or medical decisions for example, distant relatives, neighbours, or friends were excluded unless they were recognized by the child and family as the primary caregiver.

2. Child not diagnosed with HIV

Caregivers of children who were HIV-negative or had an unknown status were not eligible to participate in this study.

3. Inability to provide informed consent.

Individuals with significant cognitive impairment or other conditions that prevent them from understanding the study and providing informed consent are excluded.

4. Lack of recent clinic involvement

Caregivers who have not attended the clinic or any HIV-related healthcare service for the child within the defined timeframe such as last 6–12 months may be excluded to ensure current relevance of experiences.

5. Language barriers (if no interpreter available)

If the caregiver does not speak the language of data collection and if no interpreter or translation support was available by the study, the participant were excluded to avoid compromising data quality.

6. Refusal to participate or withdrawal.

Caregivers who declined to participate at any point or who withdrew their consent

during the study were excluded from further data collection.

2.6 Ethical Considerations

The study was conducted following ethical guidelines and received approval from the University of Lusaka Research Review Board, National Health Research Authority (NHRA) and Chipata Central Hospital. Participation in the study posed no potential risks to the participants. Informed consent was obtained from all participants prior to data collection, ensuring they were fully informed about the objectives of the study, procedures, and their rights. Participants were assured of confidentiality and anonymity, and they were given the option to withdraw from the study at any time without any repercussions.

RESULTS

3.1.1 Socioeconomic Demographics

The study involved 36 caregivers of children living with HIV in Eastern province in Zambia. The socioeconomic demographics of the participants are summarized below:

Relationship to child: Parent (50%, n = 18), Guardian (47.2%, n = 17).

Caregiver source of income: Farming (27.8%, n = 10), Formal employment (19.4%, n = 12), Secondary (36.1%, n = 13), Tertiary (2.8%, n = 1).

Caregiver estimated monthly income: Less than K1000 (41.7%, n = 15), K1000-K2000 (25%, n = 9), K2000-K5000 (27.8%, n = 10), Above K10,000 (5.6%, n = 2).

Caregiver level of education: No formal education (13.9%, n = 5), Primary (33.3%, n = 12), Secondary (36.1%, n = 9), Tertiary (16.7%, n = 6).

3.1.2 Thematic Analysis

The thematic analysis revealed several barriers to viral load testing services for paediatric HIV services in Eastern Province. The initial step in the process was coding, which involved identifying of key phrases, categorizing responses, and grouping codes into themes by merging similar codes into broader categories, then theme refinement

involved reviewing and defining major themes.

Table 1: Thematic Analysis of Caregiver Experiences and Challenges in Accessing Viral Load Testing
Theme 1: Accessibility to Viral Load Testing Services

Subtheme	Description	Caregiver Quote	Suggested Solution
Turn-around time for viral load test results	Some caregivers face delays and missing test results, causing stress and uncertainty.	<i>"Relieved when I got my child's viral load results."</i>	Improve lab efficiency, introduce SMS result notifications.
Transport Cost	High transport costs make it difficult for caregivers to attend regular appointments.	<i>"Can't afford transport to the hospital every 3 months."</i>	Introduce transport vouchers or decentralized testing.
Geographical Distance	Some caregivers live far from clinics, making access difficult.	<i>"Walk for 3-4 hours to the clinic."</i>	Set up community-based testing or mobile clinics.

Theme 2: Knowledge and Awareness

Subtheme	Description	Caregiver Quote	Suggested Solution
Lack of knowledge about viral load testing	Some caregivers do not understand the importance of viral load testing.	<i>"Didn't know my child needed a viral load test regularly."</i>	Strengthen community health education programs.
Misconceptions about HIV treatment	Some believe viral load testing is only for adults.	<i>"I thought that HIV treatment was only for adults, and not children."</i>	Conduct caregiver-targeted HIV treatment awareness campaigns.
Stigma and discrimination	Fear of being judged prevents caregivers from seeking care.	<i>"People in my compound gossip when they see me at the hospital."</i>	Implement confidential testing options and community sensitization.

Theme 3: Healthcare System Experiences

Subtheme	Description	Caregiver Quote	Suggested Solution
Long waiting time at clinics	Caregivers report extended wait times for services.	<i>"Had to wait for hours during the viral load test appointment, but the staff were friendly"</i>	Introduce appointment scheduling to reduce congestion.
Stockouts of viral load test kits	Some caregivers face delays due to test kit shortages.	<i>"Took my 8-year-old daughter for viral load testing in January 2025, but the VL machine was down."</i>	Strengthen supply chain management for uninterrupted availability.
Flexible clinic hours	Some caregivers struggle to attend clinics due to work schedules.	<i>"Always busy during the week, but Saturdays are convenient for my nephew's hospital visits"</i>	Extend clinic hours to include evenings and weekends.
Supportive healthcare workers	Caregivers appreciate kind and informative staff.	<i>"The nurses are very kind and always explain everything clearly."</i>	Maintain staff training on patient-centered care

Theme 4: Cultural and Religious Beliefs

Subtheme	Description	Caregiver Quote	Suggested Solution
Religious prohibitions on blood tests	Some caregivers refuse viral load testing due to religious beliefs.	<i>"In my faith, we only allow blood tests if absolutely necessary."</i>	Engage religious leaders in HIV awareness campaigns.
Traditional medicine beliefs	Some caregivers prefer traditional remedies over medical treatment.	<i>"I believe traditional medicine can cure HIV, so I rarely take my child unless he is very sick."</i>	Community engagement on the importance of modern treatment.

Table 2: Caregivers' Perceived Role of Viral Load Testing in Paediatric HIV Treatment

Theme	Subtheme	Description	Caregiver Quote
Positive Perceptions	VL testing as a treatment monitoring tool	Caregivers see VL testing as essential for tracking treatment progress.	<i>"Knowing my child's viral load makes me feel more in control of their health."</i>

	Encouragement for adherence	VL results influence caregivers' commitment to ensuring ART adherence.	<i>"I was happy to hear that my child's viral load was low. It gave me hope."</i>
	Increased caregiver confidence	Understanding VL testing helps caregivers feel empowered to manage their child's treatment.	<i>"The healthcare worker explained everything clearly, and I felt empowered."</i>
Neutral Perceptions	Limited understanding of VL testing	Some caregivers comply with testing but do not fully understand its significance.	<i>"I take my child for viral load testing because the clinic tells me to, but I don't really understand what it means."</i>
Negative Perceptions & Challenges	Long waiting times & stockouts	Some caregivers find VL testing frustrating due to healthcare system inefficiencies.	<i>"Took my child for testing, but the machine was down. It was frustrating."</i>
	Financial & distance barriers	Transport costs and long travel distances make routine VL testing difficult.	<i>"The clinic is too far, and I cannot afford transport every three months."</i>
	Stigma & social barriers	Fear of community stigma prevents caregivers from accessing VL testing.	<i>"People gossip when they see me at the hospital. I sometimes miss appointments because of this."</i>

Caregivers who are well-informed about viral load testing see it as a crucial part of their child's treatment. However, barriers like cost, access, and stigma negatively impact their ability to seek testing consistently. Addressing these challenges through community education, healthcare system improvements, and support services can enhance caregivers' ability to manage paediatric HIV treatment effectively.

4.0 DISCUSSIONS

The findings of this study highlight the complex barriers that caregivers face in accessing viral load testing services for paediatric HIV patients in Eastern Province, Zambia. The results show that accessibility barriers, knowledge, and awareness barriers, healthcare system barriers, and cultural and religious barriers are significant obstacles to viral load testing in paediatric HIV patients. The accessibility barriers identified in this study, such as geographical distance and transportation costs create significant challenges for caregivers and are consistent with previous research (Moylan et al., 2020; Tolle et al., 2020). These barriers can be addressed through the implementation of community-based viral load testing services, which have been shown to increase access to HIV testing and treatment (Groves et al.,

2022). Further, this aligns with WHO (2021) recommendations, which emphasize the importance of implementing community mobile clinics to help the community access antiretroviral therapy closer to their homes as much as possible. To enhance paediatric VL testing, targeted interventions such as transport subsidies, decentralized testing, and stigma reduction programs must be prioritized to ensure equitable access to HIV care (UNAIDS, 2022).

On the other hand, the knowledge and awareness barriers identified in this study, such as lack of knowledge about viral load testing services, and misconceptions about HIV treatment, highlight the need for targeted health education and awareness programs. This study finding is in line with the WHO (2022) guideline that emphasizes that most programs should focus on educating caregivers about the importance of viral load testing services, and the benefits of HIV treatment for children (WHO, 2020).

The findings in the study unveils the crucial role of positive interactions between caregivers and healthcare providers in fostering adherence to clinic visits. Empathy, clear communication, and a friendly healthcare environment were identified as key facilitators, leading to greater trust and engagement among caregivers. This aligns

with the findings of Biadgilign et al. (2009), who emphasized the need to strengthen caregiver-provider relationships to achieve better treatment outcomes. Moreover, their study reinforced the importance of financial and social support in improving adherence, suggesting that a holistic approach that integrates respectful healthcare interactions with broader systemic support could significantly enhance patient retention and health outcomes. These insights highlight the necessity of patient-centred strategies in healthcare settings to optimize adherence and improve long-term treatment success.

The study identified caregiver disclosure, stigma, and lack of counselling as a critical barrier in paediatric HIV management. For example, accepting that your child is HIV-positive is often emotionally challenging, compounded by self-stigma, fear of disclosure, and inadequate knowledge of treatment protocols among new caregivers, leading to inconsistent follow-ups. Rigid clinic schedules further hinder caregivers' ability to attend necessary counselling sessions, compromising adherence to antiretroviral therapy (ART). A cross-sectional study in Malawi by Kim et al. (2021) found that consistent disclosure of caregiver HIV status and structured counselling for new caregivers significantly improve treatment continuity and paediatric HIV care outcomes. Ensuring that new caregivers receive adequate training and support can help mitigate disruptions in care, enhancing viral suppression rates and long-term health outcomes for children living with HIV.

Cultural and religious beliefs significantly influence healthcare access and uptake, particularly in rural settings where deeply rooted norms shape perceptions of medical procedures. In Eastern Province, misconceptions surrounding blood draws for viral load testing deter caregivers from consenting to essential monitoring, thereby compromising the effectiveness of paediatric HIV treatment plans. Some cultural or religious groups associate blood extraction with a loss of vitality or spiritual harm,

reinforcing resistance to medical interventions. Ashaba et al. (2019) highlight similar challenges in rural Uganda, where HIV stigma, community beliefs, and depression among people living with HIV negatively impact caregivers' willingness to engage in routine viral load testing. This reluctance not only delays timely clinical interventions but also contributes to poor treatment adherence and suboptimal health outcomes for children. Addressing these barriers requires culturally sensitive health education and community engagement strategies to dispel myths, reduce stigma, and enhance trust in healthcare services.

The cultural and religious barriers identified in this study, such as stigma and discrimination and traditional beliefs and practices, highlight the need for culturally sensitive and community-based interventions. These interventions should focus on addressing the social and cultural factors that drive HIV-related stigma and discrimination (UNAIDS, 2020).

Apart from this, this study found that children also feared injections when collecting blood for viral load testing and emerged as a significant barrier in Eastern Province. The paediatric HIV patients suffered emotional distress linked to needles often leads caregivers to delay or skip clinic visits to avoid causing anxiety to the child. This avoidance undermines adherence and continuity of care, ultimately affecting viral load suppression. Chapuma et al. (2024) emphasizes the need for health providers to be trained in phlebotomy and different approaches to distract children when they come for viral load testing services such as use of toys. These studies also highlight that child-friendly services and supportive healthcare staff can play a crucial role in mitigating these challenges by creating a more reassuring clinical environment, using distraction techniques, and fostering medication adherence.

The healthcare system barriers identified in this study included long waiting times and stockouts of HIV testing kits, which are consistent with previous research (Chapuma

et al., 2024). These barriers can be addressed through the strengthening of healthcare systems, including the provision of adequate resources and infrastructure (USAID, 2020). The findings of this study highlight the complex barriers that caregivers face in accessing viral load testing services for paediatric HIV services in Eastern Province, Zambia. Addressing these barriers will require a multifaceted approach that includes the implementation of community-based viral load testing services, targeted health education and awareness programs, strengthening of healthcare systems, and culturally sensitive and community-based interventions.

5. CONCLUSION

This study provides crucial insights into the caregiver experiences and challenges influencing access to viral load testing among paediatric HIV patients on antiretroviral therapy in Eastern province. The findings highlight that financial constraints, geographical inaccessibility, stigma, and cultural beliefs significantly hinder caregivers' ability to ensure timely viral load testing for their children. Additionally, the fear of injections among children further complicates adherence, leading to delayed monitoring and suboptimal treatment outcomes. However, the study also underscores the positive role that supportive healthcare providers and effective communication play in improving caregiver engagement and health-seeking behaviors.

Addressing these barriers requires a multifaceted approach that integrates financial, structural, and psychosocial support. Interventions such as decentralized viral load testing, and flexible clinic hours can alleviate logistical challenges, while targeted stigma-reduction programs and culturally sensitive health education can enhance caregiver acceptance and participation in viral load monitoring. Additionally, training healthcare workers to use child-friendly approaches, including distraction techniques and counselling, can

help reduce paediatric patients' fear of injections and encourage consistent clinic visits.

The study reinforces the importance of patient-centred care in paediatric HIV management. By fostering a supportive healthcare environment where caregivers feel respected, informed, and empowered, viral load testing adherence can be significantly improved. Future research should explore scalable intervention models that integrate community-based solutions, digital health tools for appointment reminders, and caregiver support networks to enhance the sustainability of viral load testing programs.

Ultimately, bridging these gaps will not only improve viral suppression rates among children but also enhance overall caregiver experiences, and ensuring that paediatric HIV patients receive the comprehensive care they need for long-term health and well-being.

6.0 RECOMMENDATIONS

Based on the findings of this study, several strategies are proposed to address the challenges hindering viral load testing among paediatric HIV patients in Eastern Province, Zambia. A comprehensive approach includes, enhancing accessibility, improving knowledge and awareness, strengthening healthcare systems, addressing stigma and disclosure challenges, and considering cultural and religious contexts is essential for ensuring equitable access to paediatric HIV services.

6.1 Enhancing Accessibility and Reducing Financial Barriers

To alleviate financial and logistical challenges, it is recommended to introduce community-based viral load testing services. This brings testing closer to caregivers and reducing the burden of transportation costs and long travel distances. Providing transport subsidies or travel vouchers to caregivers residing far from healthcare facilities can further facilitate regular clinic visits but might not be sustainable. Additionally,

expanding mobile health clinics to reach remote areas will ensure that paediatric HIV patients have better access to essential testing services. Implementing weekend or flexible clinic hours can accommodate caregivers with work commitments, thereby improving accessibility to viral load testing services.

6.2 Strengthening Knowledge and Awareness of Viral Load Testing

Improving caregivers' understanding of viral load testing is crucial in addressing misconceptions and enhancing uptake. Developing and implementing targeted health education programs that emphasize the importance of viral load testing and treatment adherence for paediatric HIV patients is essential. Incorporating viral load testing awareness into routine counselling sessions at healthcare facilities and community gatherings can further enhance caregivers' knowledge. Utilizing mass media, social media platforms, and community radio programs to disseminate accurate information on paediatric HIV care can help dispel myths and misconceptions. Training community health workers to conduct home visits and provide tailored health education to caregivers will also contribute to improved knowledge and adherence to clinic visits.

6.3 Addressing Healthcare System Barriers

To improve service delivery, it is vital to strengthen supply chain management to ensure a continuous supply of viral load test kits, thereby minimizing disruptions in paediatric HIV care. Reducing clinic waiting times through process optimization, increasing staffing levels, and adopting appointment-based scheduling systems can enhance caregivers' experiences at health facilities. Expanding the use of SMS reminders for caregivers can improve adherence to scheduled viral load tests and clinic visits, reducing missed appointments. Additionally, healthcare providers should receive continuous training on patient-centred care to enhance their communication

skills, empathy, and support for caregivers. Incorporating child-friendly approaches into healthcare settings, such as using distraction techniques, toys, and pain-reducing methods, can minimize the fear of injections among paediatric patients.

6.4 Tackling Stigma, Disclosure, and Psychosocial Barriers

Addressing stigma, disclosure challenges, and psychosocial barriers requires comprehensive interventions. Implementing stigma-reduction programs within communities can encourage caregivers to seek healthcare services without fear of discrimination. Introducing structured disclosure counselling can support caregivers in accepting and managing their child's HIV status effectively. Establishing caregiver support groups provides a platform for caregivers to share experiences, receive psychosocial support, and learn best practices for managing paediatric HIV care.

6.5 Addressing Cultural and Religious Barriers

Cultural and religious beliefs significantly influence healthcare-seeking behaviors and must be considered in intervention strategies. Engaging religious and traditional leaders in HIV education and advocacy can challenge harmful beliefs that hinder viral load testing and treatment adherence. Developing culturally sensitive HIV messages that align with community values while emphasizing the importance of viral load testing can foster greater acceptance. Collaborating with local organizations and influential community members can further strengthen efforts to integrate HIV-related healthcare services into culturally diverse settings.

6.6 Future Research and Policy Implications

Future research should explore the impact of decentralized viral load testing models in improving access for paediatric HIV patients in rural settings. Additionally, integrating caregiver-centred interventions into national HIV policies can improve paediatric viral

load testing coverage. Evaluating the effectiveness of digital health interventions, such as mobile health applications and telehealth services, can provide insights into innovative approaches to enhance caregiver engagement and adherence.

Addressing the barriers identified in this study requires a comprehensive and coordinated response involving healthcare providers, policymakers, community leaders, and caregivers. Implementing these recommendations can significantly improve paediatric viral load testing coverage, leading to better health outcomes for children living with HIV.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: NIL

Conflict of Interest: NIL

REFERENCES

1. Arinaitwe, J., et al. (2021). Social Support, Food Insecurity, and HIV Stigma Among Men Living with HIV in Rural Southwestern Uganda: A Cross-Sectional Analysis. *AIDS and Behaviour*, 25 (7), 2163-2172.
2. Chapuma CIJ, et al. (2024). Examining barriers to antiretroviral therapy initiation in infants living with HIV in sub-Saharan Africa despite the availability of point-of-care diagnostic testing: a narrative systematic review. *Journal of the International AIDS Society*, 27(S1), e26284.
3. Groves AK, et al. (2022). A systematic review and meta-analysis of the evidence for community-based HIV testing on men's engagement in the HIV care cascade. *International Journal of STD & AIDS*, 33(3), 225-235.
4. Moylan CA, et al. (2020). *Barriers to accessing HIV testing and treatment for children in sub-Saharan Africa: A systematic review*. *Journal of the International AIDS Society*, 22(10), e25362.
5. Nabunya, P., et al. (2024). Group-Based Interventions Potentially Address HIV Stigma Among Adolescents Living with Virus." Brown School at Washington University in St. Louis.
6. Nabunya, P., et al. (2024). Preliminary Impact of Group-Based Interventions on Stigma, Mental Health, and Treatment Adherence Among Adolescents Living with Human Immunodeficiency Virus in Uganda. *The Journal of Paediatrics*, 269, 113983
7. Mofenson, L. M., & Cotton, M. F. (2020). *The Challenges of Success: Adolescents with Perinatal HIV Infection*. *AIDS*, 27(2), 193-204.
8. M. S., Siegfried, N., Radebe, B. M., Barr-DiChiara, M., Baggaley, R., & Johnson, C. (2024). Caregiver-assisted testing with HIV self-test kits for children 18 months and older: A GRADE systematic review. *PLOS Global Public Health*, 4(8), e0003588. <https://doi.org/10.1371/journal.pgph.0003588>
9. Nabunya, P., Bahar, O. S., Chen, B., & Dvalishvili, D. (2020). *Factors associated with HIV disclosure and HIV-related stigma among adolescent girls living with HIV in Uganda*. *Children and Youth Services Review*, 119, 105619.
10. Newell, M. L., Coovadia, H., Cortina-Borja, M., Rollins, N., Gaillard, P., & Dabis, F. (2004). *Mortality of Infected and Uninfected Infants Born to HIV-infected Mothers in Africa: A Pooled Analysis*. *Lancet*, 364(9441), 1236-1243.
11. Okawa, S., Wamulume, C., Mwiya, M., Chishinga, N., Sikota, S., & Ishikawa, N. (2022). *Interventions to improve retention in HIV care for children and adolescents in low- and middle-income countries: A systematic review of the literature*. *Journal of the International AIDS Society*, 25(5), e25919.
12. Phillips TK, et al. (2019). *Health system factors influencing antiretroviral therapy adherence in sub-Saharan Africa: A systematic review*. *AIDS and Behavior*, 23(10), 2831-2844.
13. R., & Lewin, S. R. (2020). HIV Immunopathogenesis in Children: The Need for Special Consideration. *Current Opinion in HIV and AIDS*, 13(2), 123-129.
14. Sutcliffe, C. G., van Dijk, J. H., Hamangaba, F., Mayani, F., & Moss, W. J. (2021). *Turnaround time for early infant HIV diagnosis in rural Zambia: A chart review*. *PLOS ONE*, 9(1), e87028. <https://doi.org/10.1371/journal.pone.0087028>
15. Tolle MA, et al. (2019). *Barriers to accessing HIV testing and treatment for children in Eastern Africa: A qualitative*

- study. *Journal of HIV/AIDS & Social Services*, 18(2), 147-162.
16. UNAIDS. (2022). *Global HIV & AIDS statistics — Fact sheet*.
 17. UNAIDS. (2020). *2020 Global AIDS Update*.
 18. USAID. (2020). *Health System Strengthening*.
 19. Violari, A., Cotton, M. F., Gibb, D. M., et al. (2020). Early Antiretroviral Therapy and Mortality among HIV-Infected Infants. *New England Journal of Medicine*, 359(21), 2233-2244.
 20. World Health Organization. (2021). *Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: Recommendations for a public health approach*
 21. World Health Organization (WHO). (2020). *HIV Diagnosis and ARV Use in HIV-Exposed Infants: A Programmatic Update*. Geneva: WHO.
 22. World Health Organization (WHO). (2021). *Guidelines for Managing Advanced HIV Disease and Rapid Initiation of Antiretroviral Therapy*. Geneva: WHO.
 23. WHO. (2020). *HIV Testing and Treatment: A Guide for Healthcare Providers*.

How to cite this article: Patrick Mzyece, Esther Munalula. Barriers and experiences of caregivers in accessing viral load testing and supporting ART adherence for paediatric HIV patients in Eastern Province, Zambia. *Int J Health Sci Res.* 2025; 15(5):60-70.
DOI: <https://doi.org/10.52403/ijhsr.20250508>
