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Evaluation of the paediatric human immunodeficiency virus care and treatment program in Bulawayo City, Zimbabwe, 2023

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Abstract

Introduction: HIV is a major public health priority with disparities in its response between adults and children. On review of the Demographic Health Information System data of Bulawayo City, ART initiation in newly HIV diagnosed children was below the target of 95%, with 80% in 2022 and 84% in 2020. Of the children who received viral load results,12% were virally unsuppressed. We therefore evaluated the pediatric HIV care and treatment program.

Methods: We conducted a descriptive cross-sectional study. Fifty-six health workers and 30 caregivers of HIV positive children participated in the study. Interviewer-administered questionnaires, checklists and records reviews were used to collect data on knowledge of health workers on the program, reasons for low treatment initiation and viral load suppression, program inputs, processes, outputs and caregiver reasons for non-adherence. Epi Info 7 was used to analyse the data.

Results: Health workers (83.9%) had good knowledge of HIV care and treatment in children. A shortage of nurses, counsellors and doctors was noted, with 61%, 50% and 72.8% of the expected available, respectively. Defaulter tracking was not done at the stipulated timelines. Of all children who tested HIV positive, 96 % were initiated on ART. Most children (93.9%) had viral load tests done. Of those, 12.2% had high viral loads, and 86.6% of them received enhanced adherence counselling. Reasons for non-adherence to treatment included forgetfulness and the child's refusal to take medication.

Conclusions: The pediatric HIV care and treatment program showed optimal treatment coverage with defaulter tracking and viral load monitoring, and management below target.

Keywords: HIV, pediatric, care and treatment program

Citation

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Introduction

Human Immunodeficiency Virus (HIV) is a major global public health priority with around 39 million people living with the virus in 2022, 1.5 million being children aged 0-14 years. While 3 million children have been protected from HIV since 2000 by expanding access to antiretroviral treatment for mothers living with HIV, there were 110 000 new infections among children in Africa in 2022. Progress has been made in expanding access to antiretroviral treatment globally, however many people are not accessing HIV treatment, including 4.7 million people living with HIV in Africa. Children remain disproportionately affected globally, with 43% of children living with HIV not receiving treatment. In 2022, 84 000 children died of advanced HIV related conditions worldwide [1]. Gaps have been noted between adults and children, with only 55% of children living with HIV having access to antiretroviral therapy in 2022, compared with 83% of adults. In 2022, in Zimbabwe, there were 75 000 children living with HIV and 4200 new infections in children in 2022. There were 2700 AIDS related deaths in children in 2022 [2].

The 95-95-95 targets were established by the Joint United Nations Program on HIV/AIDS to address the high burden of HIV, whereby 95% of people living with HIV should be diagnosed, 95% of those diagnosed should receive ART and 95% of those on ART should achieve viral suppression [1]. The Global Alliance for Ending AIDS in children by 2030 was set up to address the noted disparities in the HIV/AIDS response. Zimbabwe is one of the countries which had achieved the 95-95-95 targets by 2022, but children have been noted to be lagging. Data from the HIV testing and treatment cascade in Zimbabwe shows that 65% of children living with HIV know their status, 69% of children living with HIV are on treatment, and 60% are virally suppressed [2].

Lifesaving anti-retroviral therapy was hard to obtain in low- and middle-income countries two decades ago. Availability and provision of effective HIV treatment have reduced the number of AIDS related deaths by 51% globally from 2010 to 2022 [3]. Expanded ART access in all regions and extensive adoption of the treat-all guidelines with wider use of ART have improved outcomes of people living with HIV. All children under five years of age, not already on ART, are considered to have advanced HIV disease, as evidence shows that 80% of children initiating ART already have severe immunosuppression.

Zimbabwe rolled out the public pediatric ART program in 2004 and has currently adopted the treat-all recommendation, where all children with a confirmed HIV diagnosis are eligible for ART, irrespective of WHO clinical stage or CD4 count. HIV Testing Services (HTS) remain the critical entry point for children to care and treatment programs. HTS are guided by six principles which include consent, confidentiality, counselling, correct and accurate results, comfort and connection to HIV prevention treatment, care and support. According to the Zimbabwe guidelines for HIV prevention, testing and treatment of HIV, every child testing HIV positive must be appropriately linked to HIV treatment services. The goal of the Ministry of Health and Child Care of Zimbabwe is to reduce HIV related morbidity and mortality through early diagnosis and linkage to treatment for those who test HIV positive. Linkage is a process of actions and activities that support children testing for HIV and children diagnosed with HIV to engage with treatment and care services. For children with HIV, it refers to the period beginning with HIV diagnosis and ending with ART initiation.

The goals of ART in children include maximal and durable suppression of HIV replication, restoration and preservation of immune function, reduction of HIV related infectious and non-infectious morbidity, prolonged life expectancy, improved quality of life and reduction of HIV related mortality and morbidity. In Zimbabwe, ART should be initiated in all children with HIV. Children are a priority for HIV treatment and should be started on ART the same day of diagnosis whenever possible. Counselling to prepare the caregiver and child for ART is very important, but should not delay ART initiation. Healthcare workers are to initiate ART immediately if the first test result is positive and then offer a retest to confirm the result. ART initiation in children should not be delayed by pending retest results. If untreated, 50% of children living with HIV will die before 2 years of age, and 80% will die before 5 years of age [4].

Once enrolled on the HIV treatment program, children then receive a package of services. Investigation and management of opportunistic infections, including TB, is done in the HIV treatment and care program. Children will also receive Cotrimoxazole prophylaxis, which has been shown to reduce HIV morbidity and mortality. A plan is also developed for age and mental development, appropriate disclosure to children and disclosure assistance is given to caregivers. Once in the ART program, children will also have follow-up visits where the following activities take place: growth monitoring and developmental assessment, monitoring and treatment of opportunistic infections, monitoring for side effects and potential drug interactions, review of adherence to ART, treatment monitoring such as viral load testing, review of infant feeding practices and supportive counselling and review of adherence to routine immunization schedule.

Evaluation of paediatric ART programs provides a measure of how well paediatric and maternal health programs are collaborating to identify HIV exposed children. Studies have shown that lifelong ART provides several benefits, including sustained virologic suppression, restoration and preservation of immune function, reduced morbidity and mortality and improved quality of life [5].

A widening gap in HIV treatment and care has been noted between adults and children. On review of the Demographic Health Information System 2 (DHIS 2) data, in 2022, 96 children aged 0-14 years tested positive for HIV in Bulawayo City and 77 were initiated on ART. The ART coverage in children newly diagnosed was below 95% and on a downward trend, as shown with 84% in 2020, 82% in 2021 and 80% in 2022. In 2022, 86% of children who had viral loads taken received results, and of those, 12% were virally unsuppressed, indicating possible adherence challenges. A total of 9 children were recorded as lost to follow-up. It is therefore crucial to evaluate the HIV treatment and care program in Bulawayo City so as to identify program gaps and challenges and make recommendations so as to improve service delivery and offer quality and comprehensive care to the children living with HIV. It is also essential to evaluate the program so as to improve children's outcomes and achieve the 95-95-95 targets. This study assessed the strengths and weaknesses of the pediatric HIV care and treatment program in the city of Bulawayo, focusing on ART initiation, adherence, and viral load suppression.

Methods

Study design and setting

A descriptive cross-sectional study (with qualitative and quantitative aspects) was done. A process–outcome evaluation logical framework was used to guide the evaluation. The HIV treatment and care program in children in Bulawayo City was evaluated for the period January to December 2023. The study was conducted in Bulawayo City, which is the second largest city in Zimbabwe. It is located in the south west of the country with a total population of 665 952 [6]. Bulawayo has 77 972 people living with HIV, 3 425 (4.4%) being children. The city has three health administrative districts with twenty-one clinics, four of which are maternity centres and one infectious diseases hospital (Thorngrove). All the 21 clinics provide HIV treatment and care services to children and offer paediatric ART to children and were included in the study. The majority (80%) of the clinics in the City are located in the high-density areas.

Study population

The study population comprised Bulawayo City health workers in the Opportunistic Infections (OI) Department and Family and Child Health (FCH) Department, key informants and caregivers of children attending FCH and OI services.

Sample size determination and sampling frame

The sample size of 59 was calculated using the Dobson formula

$$n = \frac{z^2\, p(1-p)}{d^2}$$

based on a study by Rosen et al. in South Africa [7] where 96% of eligible patients were initiated on ART within a month and z = 1.96 at 95% level of confidence, p = 0.96, d = 0.05 margin of error. A total of 59 health workers were interviewed.

A sample size of 30 caregivers was calculated based on a study by Matambo et al [8], where 2 % of patients enrolled in the ART program were found to be part of a support group with z = 1.96 at 95% level of confidence, p = 0.96, d = 0.05 margin of error. A sampling frame of health workers on duty in the OI and FCH departments on the day of data collection was created, and the Microsoft Excel random number generator was used to randomly select participants. Health workers with less than a month of work at the health facility were excluded from the study. Systematic sampling using the ART register was done to select caregivers of children living with HIV to be included in the study. Random sampling was done to control for selection bias. Key informants were purposely selected for the study because of their knowledge and experience with the program.

Data collection

An interview guide with pretested interviewers-administered questionnaires was used to collect data from health workers and caregivers with children who tested HIV positive. A 3-point Likert scale was used to assess health worker knowledge. The following were also reviewed: ART registers, HIV testing registers, defaulter tracking registers, patient ART booklets, checklists and program guidelines. Data from multiple sources were collected and triangulated to minimise information bias.

Study variables

Data on health workers' knowledge of the program was collected. Health workers were asked questions and assessed if they could correctly state the age group of children in the program, target for ART initiation, components of care to be offered to children with HIV, the defaulter tracking process, VL suppression definition and management and low viremia definition and management. Checklists were used to collect data on the availability of ART guidelines, ART registers, HIV testing registers, OI registers, HIV test kits, availability of counselling rooms, drug availability, staff establishment and staff training. Registers were reviewed to collect data on the number of children tested for HIV, the number of children tested HIV positive, the number initiated on ART, the number had VL done, the number received enhanced adherence counselling (EAC) and the number lost to follow-up. Data was collected from caregivers on whether they ever received counselling, the counselling process, whether they found the information from counselling useful and child ART

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Table 1. Health worker knowledge of the HIV treatment and care program in Bulawayo City, Zimbabwe, 2023

Variable	Frequency (%) (n=56)
Age (years)	
0–5	5 (8.9)
6–14	26 (46.4)
15–19	25 (44.6)
Target for ART initiation for HIV positive patients	
90%	5 (8.9)
100%	51 (91.1)
Correctly state defaulter tracking process	
Yes	52 (92.9)
No	4 (7.1)
Define viral load suppression	56 (100)
Correctly define low level viremia	
Yes	45 (80.3)
No	11 (19.6)
Correctly state management of high viral load	56 (100)
Correctly state management of low level viremia	
Yes	50 (89.3)
No	6 (10.7)
Do you know components of care to be offered to children with HIV	
Yes	45 (80.4)
No	11 (19.6)
Components of care for children with HIV (n=45)	
Counselling	31 (68.9)
HIV treatment (ART)	45 (100)
OI screening and management	5 (11.1)
Treatment monitoring	17 (37.8)
Nutritional assessment	9 (20.0)
Support groups	2 (4.4)
Sexual and reproductive health services	5 (11.1)
Challenges in linking children to HIV treatment and care services (n=56)	
Caregiver refusal	4 (7.1)
No challenges	52 (92.9)
Reasons for non-initiation of patients on ART	
Caregiver not ready	24 (42.9)
Presence of comorbidities and OIs	5 (8.9)
Patients lost in linkage to care	1 (1.8)
Religious objectors	1 (1.8)
No reasons highlighted	25 (44.6)
Challenges in doing EAC for children	
Caregiver not available	20 (35.7)
Inconsistent/changing caregivers	12 (21.4)
Patients lost to follow up	5 (8.9)
Child at school	3 (5.4)
No challenges	16 (28.6)

adherence. Child ART booklets were reviewed to assess for TB screening and weight monitoring.

Data analysis

Data was captured and analysed using the Epi Info 7 statistical package. Cleaning of data was done before analysis. Epi Info 7 was used to generate frequencies, means and proportions. Thematic analysis was done for qualitative data after the quantitative analysis to further explain the findings of the quantitative analysis.

Ethical considerations

Voluntary written informed consent was obtained from study participants, and they were assured of confidentiality by excluding their names from the data collected. The participants were informed that participation was voluntary and they could withdraw from the study at any time during the study. Privacy was maintained by conducting the

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Table 2. Inputs for HIV treatment and care program in Bulawayo City, 2023

Variable	n (%)	Target	Comment
ART guidelines	19 (100)	19	Available
HIV testing register	19 (100)	19	Available
OI register	19 (100)	19	Available
ART register	19 (100)	19	Available
HIV test kits	19 (100)	19	Available
Paediatric ARVs	19 (100)	19	Available
Paediatric Cotrimoxazole	19 (100)	19	Stock outs noted in 2023, resolved in quarter 4 2023
Venipuncture sets	19 (100)	19	Available
Blood sample collection tubes	19 (100)	19	Available
Landline	19 (100)	19	Available
Cellphone	19 (100)	19	Available
Counselling room	19 (100)	19	Available
Registered general nurses	213 (61)	349	Shortage of nurses noted
Primary counsellors	21 (50)	42	Shortage of primary counsellors noted
Doctors	8 (72.8)	11	Shortage of doctors noted

interviews in a favourable environment. By conducting the interviews when the participants are least busy, as well as observing interview time, disruption of work and other activities of participants was minimised. Authorisation to conduct the study was given by the Director of Health Services and the Health Studies Office. The city's institutional ethics committee reviewed and authorised the study (BYO/EC/14/2023). Records of the data and the consent forms were kept safe under lock and key.

Results

Demographic characteristics of health workers

A total of 56 health workers were interviewed in the study. A total of 25 (44.6%) were Registered General Nurses, 21 (37.5%) were counsellors, 6 (10.7%) were Sisters In Charge, and 4 (7.1%) were Community Health Sisters. The median age was 45 (Interquartile range (IQR): 40 – 51.5) years, with a median years of service in Bulawayo City being 8.5 (IQR: 5.5 – 15) years.

Health workers' knowledge of the HIV treatment and care program

The majority of the health workers could not correctly state the correct age group referred to as children in the HIV treatment and care program, with 8.9% (n=5) stating the 0 to 5 age group and 44.6% (n=25) stating the 0 to 19 age group, which includes adolescents (Table 1). ART was the most commonly cited component of care (n=45), and the least cited component of care was peer support groups (n=2). All 56 health workers reported referring children for ART immediately after getting a positive result. Caregiver refusal of care was the only challenge highlighted in linking children to HIV treatment and care. Majority of health workers (83.9%) had good knowledge of the program, 8.9% of health workers had fair knowledge, and 7.1% had poor knowledge of the program.

Inputs for the HIV treatment and care program

Majority of the inputs for the program were available during the evaluation, with the exception of staff resources (Table 2). In all facilities, there was an additional nurse in the OI department to assist in the department and ensure good data quality and quality health delivery sponsored by a partner in the program. In the first 3 quarters of 2023, there was an erratic supply of pediatric Cotrimoxazole, with 84% of facilities (n=16) having stockouts and resorting to breaking the adult Cotrimoxazole tablet for children. There were no stockouts of adult Cotrimoxazole tablets noted, and no stockouts of pediatric Cotrimoxazole were noted in the main pharmacy.

Processes for the HIV treatment and care program in Bulawayo City, 2023

On job trainings were done in all facilities in 2023, and no training workshops on HIV care and treatment in children were done in the City of Bulawayo (Table 3). All facilities offered HIV counselling, treatment and care services to children. A defaulter tracking system was available in all health facilities. All facilities reviewed HIV statistics and data monthly, and four HIV quarterly review meetings were held in the City in 2023. No community mobilisation and sensitisation campaigns specific to HIV in children were held by the City, but HIV key messages were integrated into other health campaigns, such as TB and EPI campaigns. Peer support for children and adolescents was present in 12 facilities. On review of the defaulter tracking register, not all children were tracked on time as per the defaulter tracking algorithm, with six children, three children, three children, six children, and six children missed on day 6, day 7, day 8, day 15 and day 22 follow-up days, respectively. A total of 97 children were tracked in 2023, and four children were lost to follow-up.

Outputs for the HIV treatment and care program

Only 40.1% (n=97) of health workers had received training in HIV treatment and care for children (Table 4). The majority of children (96%) were initiated on ART, surpassing the target. Viral load testing was below target, with 93.9% of children having viral loads done. Of the children who had high viral loads and were eligible for EAC, 13.4% (n=13) did not receive EAC.

Demographic characteristics of caregivers and children in the HIV treatment and care program

A total of 30 caregivers were interviewed in the study, 2 (6.7%) being male and 28 (93.3%) being female. Caregiver median age was 28.5 years (IQR: 25.5 – 37). The majority of the children were male (n=17), and 13 children were female. The median age of the children was 4.5 years (IQR: 3 – 12.5).

Caregiver and patient experience in the HIV treatment and care program

All the caregivers interviewed had HIV positive children already on ART. Of all the caregivers, 2 (6.7%) reported not receiving pretest counselling and only received counselling after the HIV testing process (Table 5). All the 30 caregivers (100%) reported not having challenges accessing HIV care and treatment, thought ART was safe in children and helpful in improving the children's quality of life. All the caregivers reported finding the information from counselling sessions useful and reported being satisfied with the overall care provided in the program. On review of ART booklets, all children were noted to have regular weights documented. Only 2 children (6.7%) had no documented TB screening.

Table 3. Processes for HIV treatment and care program in Bulawayo City, 2023

Variable	Facilities n (%)
Training of health workers	19 (100)
Counselling services to HIV positive children and caregivers	19 (100)
ART initiation services to HIV positive children	19 (100)
Health education to children and caregivers	19 (100)
Sexuality education to children and caregivers	19 (100)
Defaulter tracking of children	19 (100)
Viral load testing services for children	19 (100)
Facility HIV data review meetings	19 (100)
Quarterly HIV review meetings	19 (100)
Community sensitization campaigns	0 (0)
Peer support groups for children	12 (63.2)

Table 4. Outputs for HIV treatment and care program in Bulawayo City, 2023

Variable	Target	Achieved (n)	Achieved (%)
Number of children tested for HIV	–	1342	–
Number of children tested HIV positive	–	75	–
Number of children initiated on ART	75	72	96
Number of children who had CD4 done	75	71	94.7
Number of children started on Cotrimoxazole prophylaxis	75	46	61.3
Number of children who had viral load done	850	798	93.9
Number of children with high viral load	0	97	–
Number of children with high viral load who had EAC done	97	84	86.6
Number of children lost to follow up	0	4	–
Number of health workers trained	242	97	40.1

Discussion

We evaluated the HIV treatment and care program in children in facilities in Bulawayo City for the period January to December 2023. Health workers were noted to have good knowledge of the program despite the majority of them not having received formal training. The good knowledge could be attributed to on job training in the health facilities. There was evidence of data use in the health facilities, with HIV data being analysed every month and reports generated.

The program was well resourced, with the majority of the resources required in place, with the exception of staff. This could be due to the efflux of nurses and other health workers to other job opportunities, resulting in high staff turnover. Despite the majority of resources being in place, not all targets were met. This is similar to findings in a study done in Ethiopia that found that the availability of resources does not always result in attained outputs [9]. A shortage of Cotrimoxazole paediatric formulations was noted in some of the facilities despite adequate stocks in the City's main pharmacy. This could be due to inefficient communication between the pharmacy and facilities to

Table 5. Caregiver and patient experience in the HIV treatment and care program, Bulawayo City, 2023

Variable	n (%)
Did you receive pretest counselling (n=30)	
Yes	25 (83.3)
No	2 (6.7)
I don't know/remember	3 (10)
Did you receive post test counselling	
Yes	27 (90)
I don't know/remember	3 (10)
Did you receive pre ART counselling	
Yes	27 (90)
I don't know/remember	3 (10)
Number of pre ART sessions received (n=27)	
1	9 (33.3)
2	8 (29.6)
3	9 (33.3)
More than 3	1 (3.7)
Ever been referred to a peer support group (n=30)	
Yes	10 (33.3)
No	20 (66.7)
Have caregiver and/or patient ever missed any counselling sessions	
No	23 (76.7)
Yes	4 (13.3)
I don't know/remember	3 (10)
Reason for missing counselling sessions	
Busy schedule	3 (75)
Did not think it was urgent and important	1 (24)
How did you find the counselling process and sessions	
Sessions thorough and helpful	22 (73.3)
Sessions sometimes rushed	7 (23.3)
Sessions sometimes had interruptions during the sessions	11 (36.7)
Has caregiver and/or patient missed any follow up visit	
Yes	12 (40)
No	18 (60)
Reasons for missing follow up visits	
Caregiver busy schedule	10 (33.3)
Child at school	8 (26.7)
Child in rural area	1 (3.3)
Does child take ART everyday as prescribed	
Yes	16 (53.3)
No	7 (23.3)
I don't know	7 (23.3)
Reasons for missing ART doses	
Sometimes forget	7 (23.3)
Child sometimes refuses	3 (10)

communicate the availability of drugs and facilitate facility ordering. The program was noted to be also supported by other private partners, resulting in adequate resources being in place for the program.

ART coverage in newly diagnosed HIV positive children was above the target. This could be attributed to the good health workers' knowledge of the program. In all facilities, the HIV counselling and testing rooms were separate from OI rooms and in close proximity to the OI rooms, making it easy for the testing health worker to physically escort the patient to the OI department, ensuring linkage of the patient to treatment and care services and effectively implement the test and treat approach. This intervention could have contributed to the minimisation of leakages during linkage to care. Defaulter tracking was noted not to be meeting targets, with failure to track defaulters during the stipulated timelines. The reason could be due to a high workload on staff, resulting in failure to track all defaulters and update tracking outcomes on time. Similarly, a study by Matambo et al in Zimbabwe found a high workload strain on inadequate health workers who had to use a paper-based record system, resulting in reduced capacity to trace defaulters [8].

All children diagnosed with HIV are supposed to be started on Cotrimoxazole prophylaxis. Erratic supply of paediatric Cotrimoxazole was experienced in health facilities in the first 3 quarters of 2023, possibly resulting in some children not being initiated on Cotrimoxazole. Viral load testing was below target, the main reason highlighted being that caregivers and children were missing appointments and reporting late for viral load testing. Not all children eligible for enhanced adherence counselling had it done. Health workers cited challenges with unavailable caregivers and inconsistent caregivers reporting for counselling, making efficient adherence counselling difficult, and caregivers cited having busy schedules, making it sometimes difficult to go to the health facility for counselling. This is contrary to a study in South Africa that found the major challenge to be financial constraints in accessing health facilities for counselling and care [10].

Peer support groups were available in 63% of facilities, with the majority of caregivers reporting never having been referred to a peer support group. Treatment and support groups play an important role in patient care and management, and studies have found peer models resulting in high rates of HIV testing, ART uptake, retention in care, viral load testing and viral load suppression [11]. A study by Chirambo et al found clients who received psychosocial support in peer groups felt accepted and non-discriminated, which promoted ART adherence [12].

Majority of the caregivers found counselling sessions useful. However, some reported the sessions to be rushed and with interruptions during sessions, resulting in compromised client privacy and confidentiality. Adequate counselling is required both before and after ART initiation to ensure caregiver commitment and adherence to care. A

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shortage of staff, including counsellors, was noted in the study, and this could affect the provision and quality of counselling services rendered due to overwhelming workloads. This results in rushed counselling sessions to accommodate competing services and large numbers of clients. Similar findings were found in Uganda [13] and South Africa [14], where poor quality of counselling sessions was caused by shortages of trained workers. Despite all health facilities having a counselling room, there was a noted shortage of infrastructure in some facilities, resulting in the sharing of rooms. This can therefore result in interrupted counselling sessions with compromised client privacy and confidentiality. Similar findings were found in studies by Azanaw et al [15] and Kyobutungi et al [13].

Advocacy and community sensitisation are strategies that are implemented to enhance community participation in a program. Lack of community sensitisation campaigns was noted in the study, and this can result in poor participation of caregivers in the program, which ultimately affects the child's adherence and treatment outcomes.

Inadequate caregiver supervision was noted in the study, where some caregivers did not know whether the child was taking ART every day. This was mainly in the older children who took their medication by themselves with no supervision. Reasons for not adhering to ART included forgetting to take medications and the child's refusal to take medication. Similar findings were found in Malawi, where forgetfulness was one of the barriers to adherence, particularly in clients who had no one to remind them to take medication [12]. This is in contrast to findings by Mafune et al., where challenges with adherence were because caregivers were not given clear instructions on how to administer ART to the children [10]. Non-adherence to ART can result in poor viral load suppression, leading to poor health outcomes.

Limitation

The study included caregivers of children already initiated on ART, as caregivers of HIV positive children not initiated on ART were not available; hence, caregiver reasons for non-initiation of children on ART could not be determined. Medical officers' and direct responses from the children were not included in the study. A descriptive cross-sectional study was carried out, and causality could not be established. Only quantitative methodology was utilised in this study.

Conclusions

The findings of our study show optimal ART initiation coverage in HIV positive children with closure of the treatment initiation gap. Defaulter tracking, viral load testing and enhanced adherence counselling were noted to be below target with subsequent failure to meet the viral suppression target. The HIV treatment and care program in children in Bulawayo City is generally well-resourced, with the exception of staff and infrastructure. There was inadequate community sensitisation in the program. Caregiver reasons for non-adherence to ART included forgetfulness and the child's refusal to take ART. Addressing these challenges is essential to closing the HIV treatment gap in children and achieving the global 95-95-95 targets. Integrating community-based education-based programs to raise awareness, reduce stigma and encourage families to seek and adhere to treatment, as well as a family-centred mode of service delivery, can improve treatment uptake and adherence, leading to better health outcomes and a more effective response to paediatric HIV.

Recommendations

Capacitation and continued support for peer support groups are recommended for the program to more effectively cater for children's needs. Community engagement, mobilisation and sensitisation of HIV in children is essential to ensure timely testing, treatment, adherence and regular follow-ups for children. Strengthening of integrated and family-centred service delivery is recommended. Improving caregiver education is crucial in the management of HIV in children. Strengthening digital monitoring tools, such as the Electronic Health Record, can ensure timely follow-up. Integrating tele-counselling for caregivers into service provision is recommended to ensure counselling takes place, and weekly distribution of pharmacy inventory lists to facilities is recommended to ensure availability of drugs in stock in the facilities.

What is Already Known About this Topic

- ART is essential in averting mortality and improving the quality of life in children with HIV
- Children have been lagging behind in the HIV response compared to adults

What This Study Adds

- An evaluation of the HIV treatment and care program, highlighting gaps and areas of improvement in the program
- Reasons for non-adherence to ART in children, which could contribute to viral non-suppression in children

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Authors' Contributions

EZN, ENS, GS, AC, TPJ, NTG, GM and MT were responsible for the conceptualisation of the study. EZN, ENS and GS were responsible for study protocol development, data collection, analysis of results and drafting of the manuscript. All authors reviewed, provided input and approved the final version of the manuscript. All authors agree to be accountable for the content and integrity of the article.

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Conflict of Interest Statement

The authors declare no competing interests. Addmore Chadambuka is an Associate Editor at the Journal of Interventional Epidemiology and Public Health (JIEPH) and a co-author of this manuscript. In line with the journal's conflict of interest policy, he was fully recused from the peer review process and had no involvement in editorial handling or decision-making for this submission. An independent editor oversaw the review and decision-making process.

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