

Determinants of viral load suppression among orphaned and vulnerable children on antiretroviral treatment in Tanzania



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BACKGROUND

In Tanzania, only 66% children 0-14 years living with HIV know their HIV status, 66% are on treatment while 47% of children on ART are virally suppressed [1]. Although retention on and poor adherence to ART remain a challenge for children living with HIV (CLHIV), Orphans and Vulnerable Children (OVC) face greater limitations in accessing and utilizing comprehensive HIV care and treatment services. Most CLHIV in Tanzania have advanced disease at the time of enrolment [2-4], of which studies suggest delay in linkage to ART, as well as delay in seeking HIV diagnosis are contributing factors. Community-based health workers who routinely visit households are better positioned to partly address these barriers through their early identification of children at risk and support linkage to HIV clinical care.

Supporting the Government of Tanzania to measurably advance towards the global 95-95-95 goals, the USAID Kizazi Kipya project sought to scale up HIV treatment services and eliminate new HIV infections among OVC and their families. The Kizazi Kipya project delivered rapid scale-up of proven, family-centered, impact mitigation efforts for OVC, reinforced with cross-sectoral, evidence-driven interventions to reduce HIV incidence while improving performance across the HIV treatment outcome.

In Tanzania, integration of HIV actions into the community-based interventions was explored as a complementary opportunity to address obstacles to optimal children HIV treatment outcomes. This study aimed to determine successful community-based interventions in improving retention and adherence to ART and ultimately viral load suppression in children living with HIV enrolled in OVC interventions in Tanzania.

METHODS

This study is based on data from the USAID Kizazi Kipya project (2016 – 2021) from 81 councils of Tanzania. Included in this study are 1,980 CLHIV on ART (0-14 years) with valid Care and Treatment (CTC) identification numbers, enrolled and served by the project for 24 months. VLS was defined as viral load <1,000 copies/mL at endline. Retention was measured through CLHIV attendance of all CTC appointments for 24 months. Measuring adherence was done by assessing whether CLHIV has missed her/his ARV medication during the past 30 days. Data analysis involved multivariate logistic regression, with VLS as the outcome of interest and HIV interventions and household characteristics as the main independent variables.

RESULTS

The project enrolled 1,980 CLHIV 0-14 years (51.3% female; mean age 8.9 years). 63.5% of CLHIV were residing rural areas and 63.8% were in-school. The majority of CLHIV (71.9%) had female caregivers and 70.5% are HIV-positive [Table 1].

The overall viral suppression rate among OVC living with HIV was 85.3%. This rate increased with retention on ART: 85.3%, 89.9%, 97.6% to 98.8% after 6, 12, 18 and 24 months of retention on ART and similar increase 85.3%, 85.4%, 95.5% to 99.9% was resulted for 6, 12, 18 and 24 months of adherence to ART respectively [Figure 1 and 2].

In the multivariate analysis, CLHIV attending PLHIV groups were 411 times more likely to be virally suppressed than those not attending (aOR = 411.25, 95% CI 168.2–1005.4). CLHIV with health insurance were 6 times more likely to be virally suppressed than those without (aOR = 6.05, 95% CI 3.28–11.15). CLHIV with >95% adherence to ART were 149 times more likely to be virally suppressed than those not adherent to ART (aOR = 148.96, 95% CI 42.6 – 520.6, p<0.001). CLHIV from food secure households were almost 15 times more likely to be virally suppressed than their food insecure counterparts (aOR = 14.93, 95% CI 8.76–25.45). CLHIV from households with five or more people were more likely to be virally suppressed than those in households with two people (aOR = 2.97, 95% CI 1.25–7.07) [Table 2].

TABLE 1: Profile of Children Living with HIV (CLHIV)

VARIABLE	NUMBER OF CLHIV (N)	PERCENT (%)
OVERALL	1,980	100
CLHIV sex	1,016	51.3
Female	964	48.7
Male		
CLHIV Age		
00-04 years	323	16.3
05-09 years	666	33.6
10-14 years	991	50.1
School enrolment status		
In school	1,264	63.8
Not school aged	244	12.3
Out of school	205	10.4
Unknown	267	13.5
Caregiver sex		
Female	1,424	71.9
Male	556	28.1
Caregiver age		
18-24 years	15	0.8
25-45 years	886	44.8
46-65 years	832	42
66+ years	247	12.5
Caregiver HIV status		
Negative	521	26.3
Positive	1,395	70.5
Undisclosed	28	1.4
Unknown	36	1.8
Household Food Security		
Secured	1,616	81.6
Not secured	364	18.4
Household size		
2 people	706	35.7
3 people	490	24.8
4 people	370	18.7
5 people	414	20.9
Place of residence		
Rural	1,257	63.5
Urban	723	36.5

TABLE 2: Multivariable logistic regression analysis of viral suppression at 24 months among CLHIV on ART in Tanzania

	ADJUSTED ODDS RATIO (AOR)	95% CONFIDENCE INTERVAL (CI)		P-VALUE
		Lower limit	Upper limit	
Attending PLHIV Group				
No	1.00	—	—	—
Yes	411.25	168.2	1005.4	<0.001
CLHIV household with health insurance				
No	1.00	—	—	—
Yes	6.05	3.28	11.15	<0.001
CLHIV adherence to ART in the last 6 months				
Not adherent	1.00	—	—	—
Adherent	148.96	42.6	520.6	<0.001
CLHIV sex				
Female	1.00	—	—	—
Male	1.20	0.73	1.96	.473
CLHIV Age				
00-04 years	1.00	—	—	—
05-09 years	0.26	0.05	1.25	0.092
10-14 years	0.22	0.05	1.07	0.061
School enrolment status				
In school	1.00	—	—	—
Not school aged	0.53	0.1	2.91	0.467
Out of school	0.60	0.28	1.29	0.19
Unknown	0.81	0.4	1.63	0.545
Caregiver sex				
Female	1.00	—	—	—
Male	0.86	0.5	1.49	0.586
Household food security				
Not secured	1.00	—	—	—
Secured	14.93	8.76	25.45	<0.001
Household size				
2 people	1.00	—	—	—
3 people	0.83	0.42	1.67	0.609
4 people	1.23	0.54	2.8	0.618
5 people	2.97	1.25	7.07	0.014
Place of residence				
Rural	1.00	—	—	—
Urban	0.90	0.53	1.53	0.699

FIGURE 1: Viral suppression rate by ART retention at 6, 12, 18, and 24 months

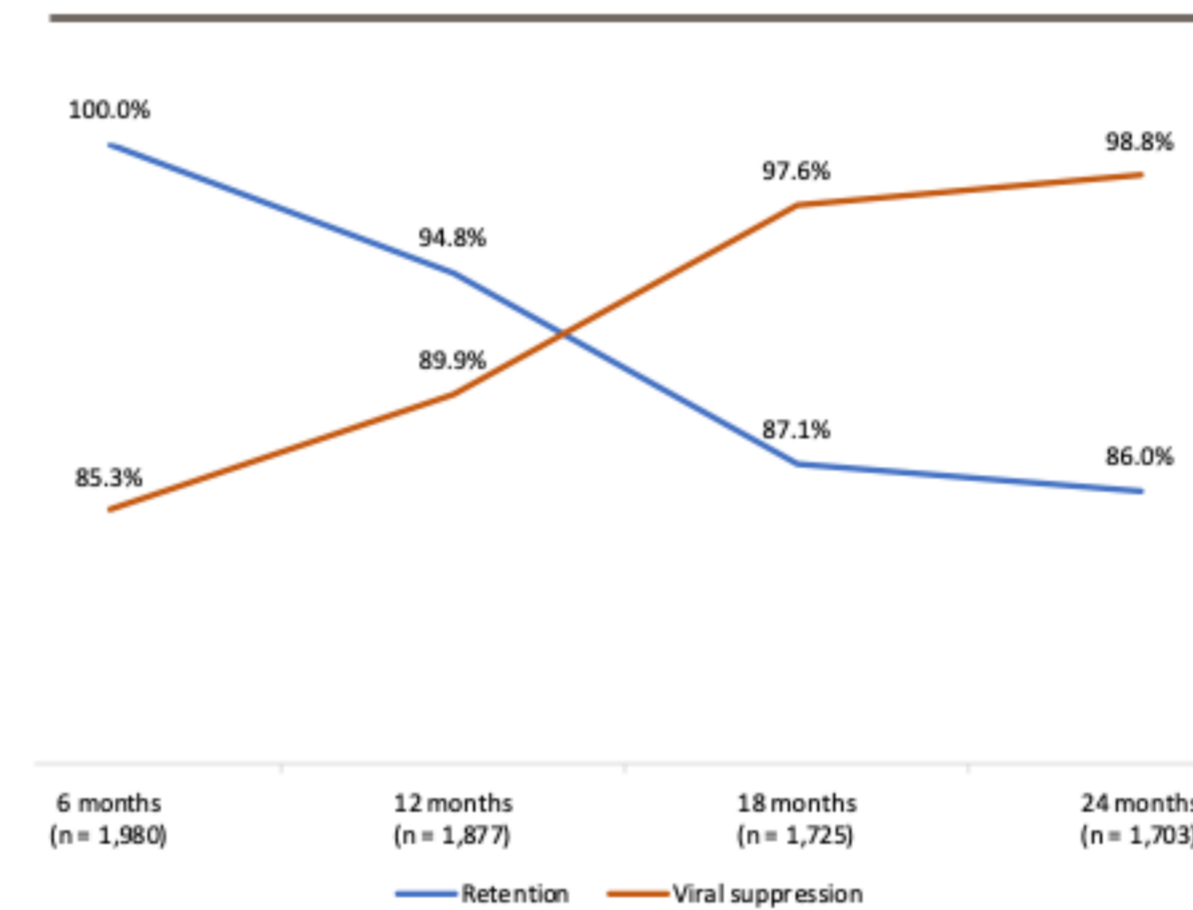
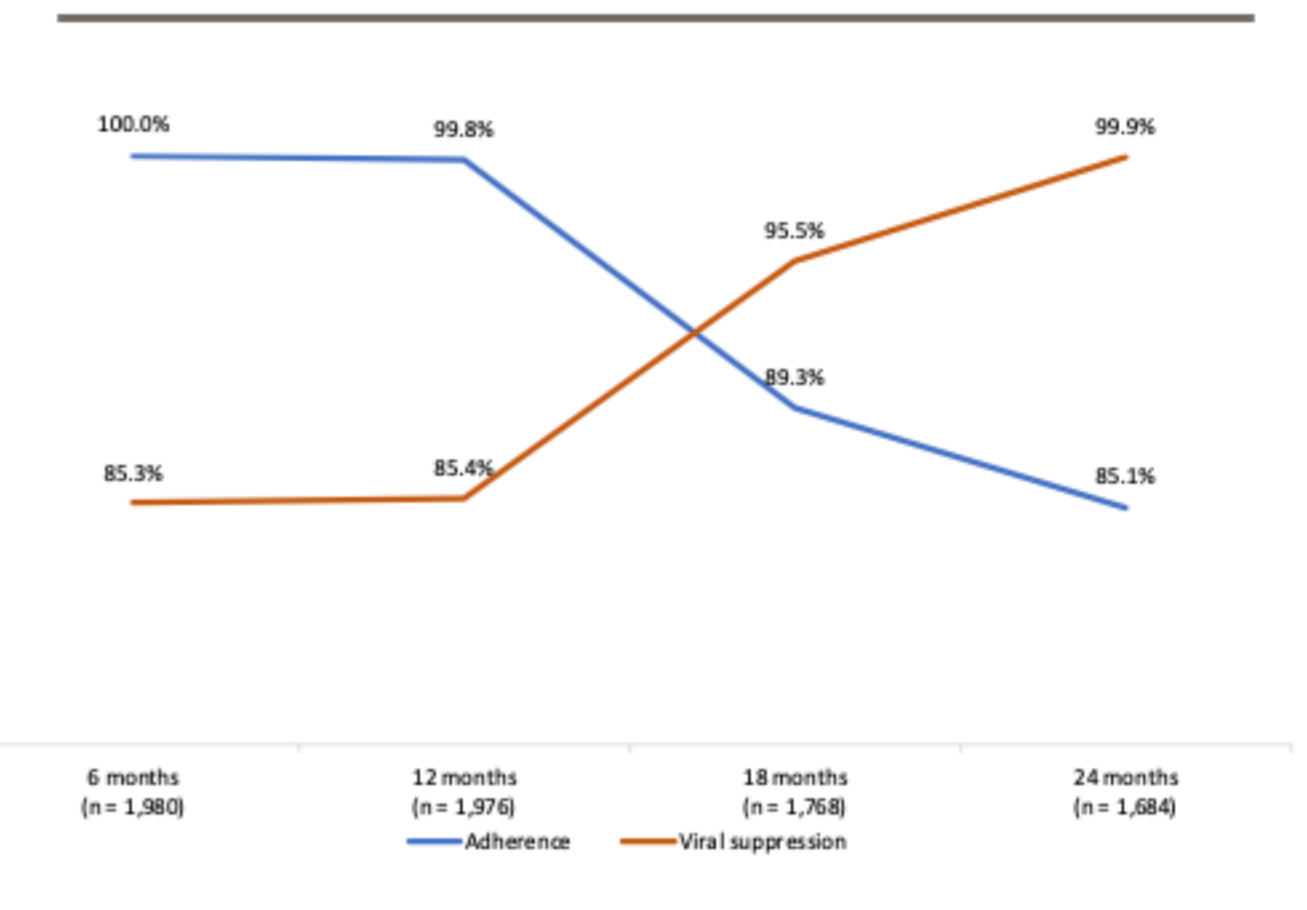


FIGURE 2: Viral suppression rate by ART adherence at 6, 12, 18, and 24 months



CONCLUSIONS & RECOMMENDATIONS

CLHIV reached by the Kizazi Kipya project's HIV community-based interventions were more likely to be virally suppressed than those who were not. To advance viral suppression, efforts should be made to ensure that all CLHIV are reached by HIV community-based interventions as well as integrating food support in HIV treatment interventions. Interestingly, the study found that CLHIV in larger household size were more likely to be virally suppressed than those in smaller households. This could be because households with multiple CLHIV tend to receive more attention and close monitoring by the CCWs, however, the study calls for more research to better understand other reasons.



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