

# **Factors Associated with Adherence to Scheduled Medical Appointment Among HIV Infected Children Attending HIV Care Services at Kenyatta National Hospital, Kenya**

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## **Abstract:**

Globally there is urgent need for HIV infected children to adhere to attendance of scheduled HIV medical appointment to maximize the benefits of HIV treatment. This study determined factors associated with adherence to scheduled medical appointment among HIV infected children attending HIV care services at Kenyatta National Hospital, Kenya: at Baseline

This study is a prospective cohort survey, Data collection was done at baseline between the month of March, 2017 to June 2017. The sample size was 221 participants among HIV infected children aged 18 months to nine years and their primary care givers seeking care in Comprehensive Care Centre. Data collection involved use of pretested questionnaire, review of standardized clinical notes on HIV medical clinic attendance and factors associated with adherence to scheduled medical appointment. Children who have been on care for three years were 35 times (95% CI 3.15—390.99) more likely to miss the scheduled clinic appointments when compared to those who have been on care for >1 years. Similar trend was observed among those aged >5 years. Children with a high viral load ( $\geq 10\,000$  copies/ml) were 9 times (95% CI 2.63- 30.78) more likely to miss scheduled clinic appointments when compared to those with 0-99 viral load. The significant factors were; Child who had been on care for more than three years and children with high viral load. There is urgent need for Intervention focusing on reducing missing scheduled appointment among children who had been on care for more than three years and those with high viral load .

**Key Words:** Adherence, scheduled appointment, HIV infected children

## **I INTRODUCTION**

Worldwide about 38 million people were HIV infected in 2019. Of these 1.8 million were children younger than 15 years of whom approximately 90% lived in sub-Saharan Africa. An estimated 1.7 million individuals worldwide acquired new HIV infection in 2019 .Of these new infections: 150,000 infections were among children (<15 years old) and 95000 AIDS related death in 2019 (UNAIDS, 2020). Globally there is urgent need for HIV infected children to adhere to attendance of scheduled HIV medical appointment to maximize the benefits of HIV treatment. Adherence of children in attendance of scheduled medical appointment for HIV care and treatment improves the quality of life in children infected with HIV Rosen and Fox, (2011) decreasing morbidity and mortality associated with HIV (Caroline et al.,2014, Kunutsur et al .,2010) and increasing the likelihood of suppressing the virus and postponing the disease progression (Bastard, 2012). Globally, studies have found out that 25%-44% of HIV positive children are missing clinic attendance in HIV care programme in many developed countries (Kunutsur et al .,2010). Adherence to HIV clinic appointment among children is a public health issue and it affects multiple populations (Massavon et al., 2014). Primary care givers are responsible for ensuring their children adhere to attendance of all clinic appointment for HIV care and treatment. (Sunguya et al., 2018). Caregiver and children clinical factors influence caregiver decision to take their children to scheduled medical appointment (Mugevero et al., 2010.,Mchugh et al., 2017). Primary caregivers are responsible for ensuring children are retained in HIV care ( Mwiti et al., 2020., Vreeman et al., 2009). Progress has been made in treating HIV-infected children in recent years, especially in developing settings; children have unacceptably high rates of HIV treatment failure and drug resistance. ( Haberer and Mellins, 2009). More locally data is needed to generate more data on factors associated with adherence to scheduled medical appointment among HIV infected children

attending HIV care services at Kenyatta National Hospital, Kenya

## **II. METHODS AND MATERIALS**

This study was conducted at Comprehensive Care Center (CCC) of Kenyatta National Hospital Kenya. The CCC acts as a HIV referral hospital providing free comprehensive HIV care services. This study is a prospective cohort survey. Data collection was done at baseline between the Month of March, 2017 to June 2017. The target sample size was 221 participants among HIV infected children aged 18 months to nine years and their primary care givers seeking care in Comprehensive Care Centre in KNH, Kenya. Semi-structured questionnaires were pre-tested among care giver in CCC KNH and the results were not included in the analysis of results. After pre-testing the grammatical errors on questionnaires were corrected before administered. Data was collected using semi-structured questionnaires administered to primary care givers to identify factors that might influence adherence to HIV care services. Data was abstracted from standardized case record forms completed by trained clinicians. The dependent variable was adherence of children to scheduled medical appointment which was defined as a child not missing any scheduled medical appointments. The study was approved by the Kenyatta National Hospital / University of Nairobi Ethical Review Committee (KNH/UON ERC) to collect data from consenting primary care givers. The study was sponsored by Kenyatta National Hospital. The informed consent was obtained and signed by primary care givers. Consent forms and filled questionnaires were kept under key and lock to ensure high level of confidentiality and privacy. The data were coded and entered into Statistical Package for Social Sciences (SPSS) version 20 for analysis.

### III. RESULTS

#### A, Children Clinical Characteristic

The study finding shows that the median Interquartile range (IQR) of CD4 count was 1067 (788-1542) and median (IQR) Viral Load 0 (0-374). Majority of children were classified in stage 1 or 2 of World Health Organization (WHO). 212 (95.9). Table 1

**Table 1: Children Clinical Characteristic**

		Baseline n (%)
Child clinical characteristics		
CD4 count	Median (IQR)	1067[788-1542]
Viral load	Median (IQR)	0 [0-372]
WHO staging of child		
	1 or 2	212(95.9)
	3 or 4	9(4.1)

#### B. Factors associated with adherence to scheduled medical appointment among HIV infected children at Baseline

Children who were not treated for opportunistic infections had 0.35 decreased odds of missing scheduled medical appointment (95% CI 0.16 – 0.76) as compared to those treated for opportunistic infections. Children who were not done laboratory test had 0.49 decreased odds of missing scheduled medical appointment (95% CI 0.25 – 0.97) as compared to those who have been done laboratory test. Children who have been on care for three years were 16 times (95% CI 2.00—129.44) more likely to miss the scheduled medical appointments when compared to those who have been on care for >1years. Children with a high viral load (>=10 000 copies/ml) were 5.6 times (95% CI 2.27- 13.84) more likely to miss scheduled medical appointments when compared to those with 0-99 viral load. Other factors: no of medical appointment scheduled, CD4 count, psychosocial support during HIV care, WHO staging of the child and whether caregiver received HIV care were not significantly associated with adhering to HIV care. Table 2

**Table 2: Factors associated with adherence to scheduled medical appointment among HIV infected children at Baseline**

		Baseline: Missed appointment		OR (95% CI)	P value
		Yes (n=54)	No (n=167)		
<b>Medical appointment scheduled</b>					
	One	1(1.9)	1(0.6)	Ref	
	Two	0(0.0)	6(3.6)	—	
	Three	1(1.9)	17(10.2)	0.06(0.00-1.81)	0.105
	Four	36(66.7)	109(65.3)	0.33(0.02-5.42)	0.438
	>5	16(29.6)	34(20.4)	0.47(0.03-8.01)	0.602
<b>CD 4 categories</b>					
	0-499	7(13.0)	15(9.0)	Ref	
	500-999	26(48.1)	47(28.1)	1.19(-)	0.743
	1000-1499	14(25.9)	49(29.3)	0.61(0.21-1.80)	0.371
	1500-1999	3(5.6)	24(14.4)	0.27(0.06-1.20)	0.085
	<2000	4(7.4)	24(14.4)	0.36(0.09-1.43)	0.146
<b>HIV care psychosocial support</b>					
	Yes	7(13.0)	11(6.6)	Ref	
	No	47(87.0)	156(93.4)	0.47(0.17-1.29)	0.144
<b>HIV care treatment OI</b>					
	Yes	14(25.9)	18(10.8)	Ref	
	No	40(74.1)	148(88.6)	0.35(0.16-0.76)	0.008
<b>How long child has been on care</b>					
	<1 year	1(1.9)	25(15.0)	Ref	
	2 years	12(22.2)	40(24.0)	7.50(0.92-61.26)	0.06
	3 years	18(33.3)	28(16.8)	16.07(2.00-129.24)	0.009
	4 years	1(1.9)	15(9.0)	1.67(0.10-28.66)	0.725
	>5 years	21(38.9)	59(35.3)	8.90(1.13-69.81)	0.038
<b>Receive any HIV care service</b>					
	Yes	41(75.9)	143(85.6)	Ref	
	No	13(24.1)	24(14.4)	1.89(0.88-4.04)	0.1

Service encouraging adherence lab					
	Yes	18(33.3)	33(19.8)	Ref	
	No	36(66.7)	134(80.2)	0.49(0.25-0.97)	0.042
Viral load categories					
	0-99	30(55.6)	120(71.9)	Ref	
	100-999	2(3.7)	21(12.6)	0.38(-.)	0.209
		7(13.0)	13(7.8)	2.15(0.79-5.87)	0.133
	1000-9999				
	>10000	14(25.9)	10(6.0)	5.60(2.27-13.84)	<0.001
WHO staging of child					
	1 or 2	50(92.6)	162(97.0)	Ref	
	3 or 4	4(7.4)	5(3.0)	2.59(0.67-10.02)	0.168

### C. Multivariable analysis for Predictors associated with missed clinic appointments at Baseline among HIV infected children

Children who have been on care for three years were 35 times (95% CI 3.15—390.99) more likely to miss the scheduled clinic appointments when compared to those who have been on care for >1years. Children who have been on care for >5years were 18.6 times (95% CI 1.75- 198.2) more likely to miss scheduled clinic appointments when compared to those who have been on care for >1years.similar trend observed among those aged two years. Children who were treated for opportunistic infections or not had the same risk of missing scheduled clinic appointment 0.38 (95% CI 0.14 – 1.0). Children with a high viral load ( $\geq 10$  000 copies/ml) were 9 times (95% CI 2.63- 30.78) more likely to miss scheduled clinic appointments when compared to those with 0-99 viral load. Other factors like encouraging using laboratory services is not a predictor of adherence to scheduled clinic appointment. Table 3

**Table 3 Multivariable analyses for Predictors associated with missed clinic appointments at Baseline among HIV infected children**

	Missed appointment		P value	
	AOR	95% CI		
Treated for opportunistic infection				
Yes	1			
No	0.38	0.14	1	0.05
Encouraged to use lab services				
Yes	1			
No	0.57	0.25	1.27	0.168
Viral load categories				
0- 99	1			
100-999	0.36	0.07	1.76	0.207
1000-9999	2.42	0.76	7.68	0.134
$\geq 10000$	8.99	2.63	30.78	0
Duration in care among children at KNH				
<1 year	1			
2 years	17.54	1.53	201.26	0.021
3 years	35.11	3.15	390.99	0.004
4 years	5.18	0.23	116.45	0.301
>5 years	18.64	1.75	198.2	0.015

## IV. DISCUSSION

### A. Viral Load

The study found out that children with a high viral load were more likely to miss scheduled clinic appointments when compared to those with low viral load. Table 2.Consistent finding by Massavon et al.,2014., Sunguya et al., (2018 ) who found that Children with very high viral load are severely very ill and have higher chances of being admitted hence missing medical appointments. Similar finding was noted by Nabukeera et al., 2021) who noted that missed clinic appointment is a strong predictor for Virological failure.

### B. Duration in care among children

Children who have been on HIV care for more years are likely to miss scheduled clinic appointments when compared to those who have been on care for <1 year. This finding was consistent with Caroline et al., 2014, Kunutsor et al., (2010) who noted that Caregivers who have been attending medical clinic for many years mostly likely their children have improved, leading to perception that there is no need for adhering to medical appointment.

### V. CONCLUSION

This study found out that children who had high viral load were more likely to miss scheduled clinic appointments when compared to those with low viral load. Children who have been on HIV care for more years were more likely to miss scheduled clinic appointments when compared to those who have been on care for >1 year.

Recommended children who had high viral load and those who had been on HIV care for many years should be targeted for intervention to ensure they adhere to all scheduled medical appointments as they are at the highest risk of missing scheduled medical appointment and hence fail to achieve benefits of HIV treatment.

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