Social Demographic Factors Associated With Retention ToScheduled Medical Appointment among HIV Infected Children Attending HIV Care Services at KNH, Kenya

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Abstract: *Retaining human immunodeficiency virus (HIV)–infected children in medical care at regular clinic attendance has been shown to be linked to positive health outcome. This study was conducted to determine social demographicfactors associated with retention to scheduled medical appointment among HIV infected children attending HIV care services at KNH, Kenya. This is a repeatedcross sectional surveydone at six month interval following the first oneinvolving 221 participants whom were primary care givers and their HIV infected children aged 18 months to nine years attending Comprehensive Care Centre in the year 2017 and 2018. Data collection involved use of pretested questionnaire, review of standardized clinical notes on HIV clinic attendance and factors influencing clinic attendance. There was an increasing trend for higher odds of missing scheduled clinic attendance with an increase in CD4 counts adjusted Odds Ratio) (aOR 3.14 (95% CI 0.99 – 9.93) CD4 500 – 999; 16.27 (95% CI 2.36 – 111.97) CD4 1000 – 1499; 19.40 (95% CI 3.33 – 111.19) CD4 >=1500 when compared to children with <500 CD4 count. When compared to children who had missed treatment because drugs had finished, children who had never missed treatment were significantly less likely to miss scheduled clinic appointments. Thesocial demographic factor associated with retention to scheduled medical appointment were: Children with high CD4 count being more likely to miss scheduled clinic appointments, while those who had not missed HIV drugs because drug had finished having a lower risk of missing scheduled clinic appointments. Children who are less severely ill (high CD4 count) should be targeted to ensure they adhere to all scheduled clinic appointments as they are at the highest risk of missing appointment.*

Key words: *HIV, retention, scheduled appointment, infected children*

I. Introduction

HIV in children remains a major public health problem of concern (1).The retention of children on regular medical appointment on HIV care is critical to maximizing children outcome and the success of HIV pediatrics care and treatment programme(2). Globally, multiple cohort studies have found out that 25%-44% of HIV infected children are lost to follow up in HIV care in many developed countries. In Kenya the retention rate of children on regular HIV care is higher in the first 12 months about 82% and reduces to about 61% at month 60. (3). Retention of children in regular HIV care and treatment increases the likelihood of suppressing the virus, decreasing morbidity associated with HIV(4) postponing the disease progression and improving the quality of life in children infected with HIV (5).Improving retention also helps reduce drug resistance thus reduces exposure to resistant strains of HIV virus and the need for expensive second line treatment (2) .Primary caregiver related factors and child factors on HIV services provided makes retention to HIV medical care among children very challenging (6) .In Kenya more emphasis is put on strategies to increase early infant diagnosis, good linkage and early initiation of HIV treatment and completely lost to care among the children. In Kenya little is known on adherence to standard scheduled medical appointment among children in HIV care. More focus is needed to generate more data on children clinical outcome and predictors of the retention on regular medical appointment of care among children in HIV care before their completely lost to care.

II. Methods:

The study was conducted at Comprehensive Care Center (CCC) of Kenyatta National Hospital in Kenya. The Centre provides free comprehensive HIV care services. This study is a repeated cross section survey conducted at six months interval during the month of January, 2018 to June 2018. 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 retention to HIV care services. Data was abstracted from standardized case record forms completed by trainedclinicians. The dependent variable was retention of children to scheduled medical appointment which was defined as a child not missing any scheduled medical appointments (allowing for ±5 days of the appointment date) the children are rescheduled for refilling drug before their drugs are over. This included appointments for drug refills, medical review, nutritional counseling, psychosocial support and diagnostic/laboratory work-up. This study ensured restricted access to the information collected and coding of questionnaires were observed. 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 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. Result

Demographics Characteristics of Participants - Caregivers

The study recruited 221 participants where majority of child caregivers were female 190 (86%) most of them married 139 (62.9%). Source of income of majority were self-employed 87 (39.4).   Monthly income of majority was 160 (72.5%). Majority had secondary education and above 148 (66.9%).   Table 1

Table 1 Demographics Characteristics of Participants - Caregivers

sex of care giver	
Male	31(14.0)
Female	190(86.0)
Marital status	
Single	42(19.0)
Married	139(62.9)
Divorced/separated	25(11.3)
Widow/widower	15(6.8)
Source of income	
Full time formal employment	54(24.4)
Part time employment	40(18.1)
Self employed	87(39.4)
Unemployed	40(18.1)
Average monthly income	
<5000	45(20.4)
5001-10000	64(29.0)
10001-20000	51(23.1)
20001-30000	35(15.8)
30001-40000	9(4.1)
40001-50000	7(3.2)
50001-60000	5(2.3)
>60000	5(2.3)
Highest level of education	

No formal education	2(0.9)
Primary level	71(32.1)
Secondary level	98(44.3)
University/College	50(22.6)

Demographics Characteristics of Participants – Child

This study Male were 113 (51.3%) slightly higher than female, Majority of children were related with the mother 165 (74.7%) Majority of children who were under care of one care giver were 1-3 totaling to 217 (98.2%). Majority of children have been on HIV care for more than five years 80 (36.4%) Table 2.

Table 2 Demographics Characteristics of Participants -Child

Sex of child	
Male	113(51.1)
Female	108(48.9)
Relationship with child	
Parent Mother	165(74.7)
Parent Father	29(13.1)
Grandmother	6(2.7)
Aunt	9(4.1)
Uncle	1(0.5)
Brother/Sister	2(0.9)
Other relative	2(0.9)
Foster care	7(3.2)
Children under your care	
1-3	217(98.2)
>4	4(1.8)
How long child has been on care	
<1 year	26(11.8)
2 years	52(23.6)
3 years	46(20.9)
4 years	16(7.3)
>5 years	80(36.4)

Social demographic factors associated with retention to scheduled medical appointment among HIV infected children at six months

Children who were not treated for opportunistic infections had 0.15 decreased odds of adhering to scheduled clinic appointment (95% CI 0.05 – 0.45) as compared to those treated for opportunistic infections. Children who had not been treated for other illness had 0.42 decreased odds of adhering to scheduled clinic appointment (95% CI 0.19 – 0.92) as compared to those treated for other illness. Children with a high viral load (>=10 000 copies/ml) were 6.38 times (95% CI 2.19- 18.57) more likely to adhere to scheduled clinic appointments when compared to those with undetectable 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 HIVcare were not significantly associated with adhering to HIV care.Table 3

Table 3: Social demographic factors associated with retention to scheduled medical appointment among HIV children at six months

Variable		Yes (n=51)	No (n=166)	OR (95% CI)	P value
		Missed appointment			
CD 4 categories					
	0	3(5.9)	10(6.0)	Ref	
	500	25(49.0)	55(33.1)	1.52(.-.)	0.553
	1000	14(27.5)	55(33.1)	0.85(0.21-3.50)	0.82
	1500	1(2.0)	18(10.8)	0.19(0.02-2.02)	0.167
	2000	8(15.7)	24(14.5)	1.11(0.24-5.07)	0.892
HIV care psychosocial support					
	Yes	6(11.8)	21(12.7)	Ref	
	No	45(88.2)	145(87.3)	1.09(0.41-2.86)	0.867
HIV care treatment OI					
	Yes	10(19.6)	6(3.6)	Ref	
	No	41(80.4)	160(96.4)	0.15(0.05-0.45)	0.001
Child missed HIV treatment drugs finished					
	Yes	3(5.9)	8(4.8)	Ref	
	No	48(94.1)	158(95.2)	0.81(0.21-3.17)	0.763
Received HIV care in other hospital					
	Yes	7(13.7)	10(6.0)	Ref	
	No	44(86.3)	156(94.0)	0.40(0.14-1.12)	0.081
Child treated for other illness OP not HIV					
	Yes	13(25.5)	21(12.7)	Ref	
	No	38(74.5)	145(87.3)	0.42(0.19-0.92)	0.03
Viral load categories					
	0	28(54.9)	139(83.7)	Ref	
	100	6(11.8)	16(9.6)	1.86(.-.)	0.233
	1000	9(17.6)	7(4.2)	6.38(2.19-18.57)	0.001
	10000	8(15.7)	4(2.4)	9.93(2.80-35.25)	<0.001
WHOstag_6	1	49(96.1)	165(99.4)	Ref	
WHOstag_6	2	2(3.9)	1(0.6)	6.73(0.60-75.85)	0.123

Social demographic predictor for retention to scheduled medical appointment among HIV infected children

Factors that predict adherence to clinic appointment were CD4 count and treatment for an opportunistic infection, if child had missed treatment because drugs had finished. At 6 months, there was an increasing trend for higher odds of missing scheduled clinic attendance with an increase in CD4 counts aOR 3.14 (95% CI 0.99 – 9.93) CD4 500 – 999; 16.27 (95% CI 2.36 – 111.97) CD4 1000 – 1499; 19.40 (95% CI 3.33 – 111.19) CD4 >=1500 when compared to children with <500 CD4 count. When compared to children who had missed treatment because drugs had finished, children who had never missed treatment were significantly less likely to miss scheduled clinic appointments. 0.09 (95% CI 0.01 – 0.6)**.**Other factors were not significantly associated with missing scheduled clinic appointment for example HIV care treatment of opportunistic infection among children.Table 5.

Table 5: Multivariable analysis for factors associated with missed clinic appointments at 6 month among HIV infected children

Missed appointment

Missed appointment   at six month

	Odds Ratio	95% Confidence interval		P value	LRT 0.013
CD 4 categories					
0- 499	1.00				
500- 999	3.14	0.99	9.93	0.051	
1000- 1499	16.27	2.36	111.97	0.005	
>1500	19.40	3.33	113.19	0.001	
Child missed HIV treatment drugs finished					
Yes	1.00				
No	0.09	0.01	0.60	0.013	
HIV care treatment OI					
Yes	1				
No	0.32	0.09	1.17	0.086	

IV. Discussion

Social demographic predictors associated with retention to scheduled medical appointment among HIV positive children
Child CD4 count

Caregiver may not take their children to scheduled clinic appointments because their feel sick, but they also may attend because they feel sick. (1)**.**Factors that predict adherence to clinic appointment were CD4 count. This study shown an increasing trend for higher odds of missing scheduled clinic attendance with an increase in CD4 counts aOR 3.14 (95% CI 0.99 – 9.93) CD4 500 – 999; 16.27 (95% CI 2.36 – 111.97) CD4 1000 – 1499; 19.40 (95% CI 3.33 – 111.19) CD4 >=1500 when compared to children with <500 CD4 count. Similar estimates and trends were observed at 12 months follow-up. This shows as the child improves while on care the CD4 Counts increases which trigger some caregiver to fail to take their children to clinic as they perceive their children has healed. Study done by (3,7) pointed out that being health is a risk factor of missing scheduled medical appointment. In contrast those children with low CD4 count are severely very ill and have higher chances of being admitted hence missing appointments **(8)**. Additionally these might be patients who are defaulters or non-adhering to treatment or might have some social issues.

Child had missed treatment because drugs had finished

In this study when children were compared with those who had missed treatment because drugs had finished, children who had never missed treatment were significantly less likely to miss scheduled clinic appointments. This shows commitment of the caregivers to their children care to ensure their take drug as prescribed and this trigger them to attend all scheduled appointment so that they can have all drugs. Caregivers are encouraged to take their children to all scheduled medical appointment to refill their HIV drugs among other services. Attending all clinic appointment is crucial in ensuring uptake of ART drugs (9). Missed clinic appointment has been shown to be a strong predictor for Virological failure (10).

V. Conclusion

The social demographic factor associated with retention to scheduled medical appointment were: Children with high CD4 count being more likely to miss scheduled clinic appointments, while those who had not missed HIV drugs because drug had finished having a lower risk of missing scheduled clinic appointments.

VI. Recommendations

Children who are less severely ill (high CD4 count) should be targeted to ensure they adhere to all scheduled clinic appoinfents as they are at the highest risk of missing appointment.

Individualized Interventionfocusing on those who misses HIV drugs and ensuring they have drug alwaysby adhering to scheduled appointment hence achievement of UNAIDS 90:90:90 target.

The results from this study may be used as a baseline in future studies to enable KNH and MOH health care providers and policy makers to make informed decisions in formulating appropriate children retention programme on HIV care and treatment policies among the children at high risk of getting lost to care.

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