Association Between Child Clinical Characteristics And Retention To Scheduled Medical Appointment Among HIV Infected Children Aged 18 Months To Nine Years Attending HIV Care Services At KNH, Kenya:

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Abstract: Globally there is urgent need to retain children on HIV treatment to maximize the benefits of HIV treatment. This study determined the association between child clinical characteristics and retention to scheduled medical appointment among HIV infected children attending HIV care services at Kenyatta National Hospital, Kenya: This study is a repeated cross section survey conducted at twelve months interval during the month of July, 2018 to December 2018. 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 clinic attendance and factors influencing clinic attendance. Children who had not received HIV care in other hospitals had 0.22 decreased odds of missing scheduled clinic appointment (95% CI 0.05 – 0.96) as compared to those who received HIV care in other hospitals. when children were compared with children who had missed treatment because HIV drugs had finished, children who had never missed treatment were less likely to miss scheduled medical appointments a OR 0.08 (95% CI 0.01 – 0.54). There was increased odds of missing scheduled clinic attendance with an increase in CD4 counts aOR 3.0 (95% CI 0.93 – 9.65) CD4 500 – 999; 19.32 (95% CI 2.73 – 136.78) CD4 1000 – 1499; 21.48 (95% CI 3.64– 126.62) CD4 >=1500 when compared to children with <500 CD4 count. The significant factors were; Child receiving treatment in another hospital, Child who had missed treatment because drugs had finished and CD4 counts. The Intervention focusing on children who miss HIV drugs and ensuring they have drug always by adhering to scheduled appointment are encouraged.

Index Terms: Retention, scheduled appointment, HIV infected children

1. INTRODUCTION

Globally there is urgent need to do follow up and retain children on HIV treatment in order to maximize the benefits of paediatric HIV treatment for example reduction of morbidity and mortality (Caroline et al.,2014, (Kunutsur et al .,2010). These benefits can only be achieved when the children are retained on regular scheduled medical appointment on HIV care where children complication can be identified early and intervention initiated early for example correction of anemia and nutritional support (Wamalwa et al., 2010). Retention of children in regular HIV care and treatment improves the quality of life in children infected with HIV Rosen and Fox, (2011) decreasing morbidity associated with HIV and increasing the likelihood of suppressing the virus and postponing the disease progression **(**Bastard, 2012).

Retention rate of children in Kenya on regular HIV care is approximately 61% at month 60. (Brainstein etal., 2011). In Kenya many strategies have been implemented and this has resulted to increased early diagnosis, good linkage and early initiation of HIV treatment and care among the children. (Brainstein etal., 2011). Retaining (HIV)–infected children in medical care at regular intervals

has been shown to be linked to positive health outcomes (Van der Kop , 2018). While most studies have focused on adherence to treatment (drugs), it is essential to provide holistic care to achieve good outcome. (Brennan etal., 2010).

The need to ensure that HIV-infected children are retained in regular care is a pressing public health issue and it affects multiple populations (Massavon et al., 2014). Studies has pointed out that it is the responsibility of the primary care giver to ensure their children are retained on HIV care and treatment. (Sunguya et al., 2018). Many factors influence caregiver decision to take their children to scheduled medical clinic (Mugevero et al., 2010). Little is known in Kenya on the association between children clinical characteristics and retention to scheduled medical appointments which this study addresses.

II. METHODS

This study was carried out at Kenyatta National Hospital, Comprehensive Care Center (CCC) in Kenya. The Centre provides free comprehensive HIV care services. This study is a repeated cross section survey conducted at twelve months interval during the month of July, 2018 to December 2018. 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 in KNH, Kenya. Pre-testing of semi-structured questionnaires was done among care giver in CCC KNH and the results were never included in the analysis. The grammatical errors found on questionnaires after pre-testing were corrected before being administered. Semi-structured questionnaires were 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 trained clinicians. 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 was 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 written informed consent was obtained and signed by primary care givers. The signed consent forms and filled questionnaires were stored under lock and key to ensure high level of confidentiality and privacy. The data collected was coded and entered into Statistical Package for Social Sciences (SPSS) version 20 for analysis. Part of methodology was published in my paper one by International organization of Scientific Research Journal. (Mwiti et al, 2020).

III. RESULT

Child Clinical Characteristic

The finding of this study show that the median Interquartile range (IQR) of CD4 count was 1077 (780-1592) and median (IQR) viral load 0 (0-47).Majority of children were classified in stage 1 or 2 of World Health Organization (WHO). 209 (96.8). Table 1

Factors associated with retention to scheduled medical appointment among HIV infected children at 12 months

Children who were not treated for opportunistic infections had 0.09 decreased odds of adhering to scheduled clinic appointment (95% CI 0.03 – 0.21) as compared to those treated for opportunistic infections. 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 (0.05 (95% CI 0.01-0.26). Children who had not received HIV care in other hospitals had 0.16 decreased odds of adhering to scheduled clinic appointment (95% CI 0.05 – 0.51) as compared to those who received HIV care in other hospitals.

Compared to those who had a low viral load (0-99 copies/ml) those with a high viral load >1000 had 39 times (95% CI 7.62- 199.58) significantly increased odds of missing a scheduled appointment**.** Children with a high viral load (>=10 000 copies/ml) were 48.7 times (95% CI 9.81- 242.18) more likely to miss the scheduled clinic appointments when compared to those with low viral load (0-99 copies/ml). Children who were on WHO stage 3 and 4 had 12.87 decreased odds of adhering to scheduled clinic appointment (95% CI 2.4 – 69.07) as compared to those who WHO stage 3 and 4. Other factors: CD4 count, psychosocial support during HIV care were not significantly associated with adhering to HIV care. Table 2

Multivariate analysis on Missed Appointment at 12 months

Factors that predict adherence to clinic appointment were CD4 count, if child had missed treatment because drugs had finished and child receiving treatment in another hospital. At 12 months, there was an increasing trend for higher odds of missing scheduled clinic attendance with an increase in CD4 counts aOR 3.0 (95% CI 0.93 – 9.65) CD4 500 – 999; 19.32 (95% CI 2.73 – 136.78) CD4 1000 – 1499; 21.48 (95% CI 3.64– 126.62) 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 a OR 0.08 (95% CI 0.01 – 0.54) as compared to those who missed HIV treatment because drug got finished. Children who had not been treated for an opportunistic infection had a 0.32 (95% CI 0.09 – 1.17) decreased odds of missing a clinic appointment. Children who had not received HIV care in other hospitals had 0.22 decreased odds of missing scheduled clinic appointment (95% CI 0.05 – 0.96) as compared to those who received HIV care in other hospitals. HIV care treatment of opportunistic infection were not significantly associated with missing scheduled clinic appointment Table 3

IV. DISCUSSION

Predictors for retention to scheduled medical appointment among HIV positive children

Child receiving treatment in another hospital

Children who had not received HIV care in other hospitals had 0.22 decreased odds of missing scheduled clinic appointment (95% CI 0.05 – 0.96) as compared to those who received HIV care in other hospitals. The caregivers who utilize more than one HIV clinic for services are likely to fail to adhere to scheduled medical appointments hence difficult in assessing attrition (van der Kop et al. (2018). Study done by van der Kop et al., (2018) pointed out that it is important for health care workers to encourage care givers to utilize one medical Centre. The study result demonstrates that attending one clinic regularly reduces chances of missing scheduled appointment. Similar results were also reported by (Bastard et al, 2012).

Child had missed treatment because drugs had finished

The study pointed out that when children were compared with children who had missed treatment because HIV drugs had finished, children who had never missed treatment were less likely to miss scheduled medical appointments a OR 0.08 (95% CI 0.01 – 0.54). Children adhering to all scheduled clinic appointment are very essential in ensuring use of ART drugs (Brenman et al., 2010). Child caregivers are encouraged to take their children to scheduled medical appointments to have their HIV drugs and get other services. The study done by MChugh et al, (2017) pointed out that Missing clinic appointment is associated with missing treatment and hence a strong predictor for Virological failure.

Child CD4 count

Caregiver may not take their children to scheduled clinic appointments because their feel sick and may also attend because they feel sick (Rosen and Fox, 2011). The study found that at 12 months, there was an increasing trend for higher odds of missing scheduled clinic attendance with an increase in CD4 counts aOR 3.0 (95% CI 0.93 – 9.65) CD4 500 – 999; 19.32 (95% CI 2.73 – 136.78) CD4 1000 – 1499; 21.48 (95% CI 3.64– 126.62) CD4 >=1500 when compared to children with <500 CD4 count. 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 Braintstein et al., (2011), Horstman et al., (2010) 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 (Massavon et al.,2014). Additionally these might be patients who are defaulters or non-adhering to treatment or might have some social issues.

V. CONCLUSION

The study has shown there is significant association between child clinical characteristics and retention to scheduled medical appointment. The significant factors include; Child receiving treatment in another hospital, Child who had missed treatment because drugs had finished and high CD4 counts. Children with high CD4 count and Child who had missed treatment because drugs had finished need to be targeted with intervention to ensure they adhere to scheduled medical appointments as they are at risk of missing medical appointment. Children receiving HIV treatment in more than one hospitals should be discouraged and support adhering to scheduled appointment.

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Table 1 Child Clinical Characteristic

Child Clinical Characteristic	At 12 months n (%)
CD4 Count Median (IOR)	1077 (780-1592)
Viral Load Median (IOR)	0 (0-47)
WHO Stage	
1 OR 2	209 (96.8)

3 OR 4	7 (3.2)

Table 2 : Factors associated with retention to scheduled medical appointment among HIV infected children at 12 months

		Missed appointment			
Variable		**Yes (n=39)**	**No (n=177)**	**OR (95% CI)**	**P value**
CD 4 categories					
	0	3(7.7)	11(6.2)	Ref	
	500	18(46.2)	60(33.9)	1.10(.-.)	0.892
	1000	6(15.4)	56(31.6)	0.39(0.09-1.81)	0.231
	1500	4(10.3)	23(13.0)	0.64(0.12-3.36)	0.595
	2000	7(17.9)	23(13.0)	1.12(0.24-5.16)	0.888
HIV care psychosocial support					
	Yes	8(20.5)	18(10.2)	Ref	
	No	31(79.5)	159(89.8)	0.44(0.18-1.10)	0.078
HIV care treatment OI					
	Yes	16(41.0)	10(5.6)	Ref	
	No	23(59.0)	167(94.4)	0.09(0.03-0.21)	<0.001
Child missed HIV treatment drugs finished					
	Yes	7(17.9)	2(1.1)	Ref	
	No	32(82.1)	175(98.9)	0.05(0.01-0.26)	<0.001
Received HIV care in other hospital					
	Yes	7(17.9)	6(3.4)	Ref	
	No	32(82.1)	171(96.6)	0.16(0.05-0.51)	0.002
Child treated for other illness OP not HIV					
	Yes	21(53.8)	21(11.9)	Ref	
	No	18(46.2)	156(88.1)	0.12(0.05-0.25)	<0.001
Viral load categories					
	0	16(41.0)	156(88.1)	Ref	
	100	5(12.8)	17(9.6)	2.87(.-.)	0.066
	1000	8(20.5)	2(1.1)	39.00(7.62-199.58)	<0.001
	10000	10(25.6)	2(1.1)	48.75(9.81-242.18)	<0.001
WHOstag_6	1	34(87.2)	175(98.9)	Ref	
WHOstag_6	2	5(12.8)	2(1.1)	12.87(2.40-69.07)	0.003

Table 3: Multivariate analysis on Missed Appointment at 12 months

Missed appointment	Odds Ratio	95% Confidence interval		P value	LRT	0.055
CD 4 categories						
0 - 499	1.00					
500- 999	3.00	0.93	9.65	0.066		
1000 -1499	19.32	2.73	136.78	0.003		
>1500	21.48	3.64	126.62	0.001		
Child missed HIV treatment drugs finished						
Yes	1.00					
No	0.08	0.01	0.54	0.01		
HIV care treatment OI						
Yes	1					
No	0.39	0.11	1.47	0.167		
Received HIV care in other hospital						
Yes	1.00					
No	0.22	0.05	0.96	0.044		