

Factors Associated with Uptake of Enhanced Adherence Counseling among Viremic Adolescents in Nairobi County, Kenya

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Abstract: *Enhanced adherence counseling (EAC) is a structured method of assessing current adherence levels, exploring barriers, and developing individualized adherence intervention plans to improve viral suppression. EAC has been associated with high re-suppression, yet limited information exists on the uptake of EACs among the adolescent population. The study focused on assessing the uptake of enhanced adherence counseling among ALHIV on HAART with a documented high viremia in selected health facilities in Nairobi City County. A sample of 379 adolescents aged between 10 and 19 years who had a high viremia as of December 2018 from 45 facilities in Nairobi county was selected. Data was collected using a standard questionnaire analysed using, measures of central tendency and chi-square. 379 adolescents interviewed, 41% received EAC and completed the 3 sessions, 55% were females and the median age was 14 years. Treatment supporter was associated with EAC uptake, $p=0.039$, similarly, level of knowledge and compliance ($\chi^2 = 8.1907$, $d.f = 1$, $p=0.004$) and ($\chi^2 = 14.563$, $d.f = 1$, $p=0.000$) respectively. The study concluded there was low uptake of EAC sessions and tailoring strategies for adolescents with high viremia may increase uptake of EAC and improve treatment outcomes among viremic adolescents.*

Keywords: Adolescents, Viremia, Enhanced adherence counseling (EAC).

1. Introduction

Enhanced adherence counseling applies to the assessment given to an HIV positive patient with suspected or confirmed treatment failure to determine likely limitations to optimal adherence in a non-judgemental way. (Guidelines for use of Antiretroviral therapy in Kenya, 2018, (WHO, 2013). Globally, AIDS is still among the top 3 causes of mortality among adolescents. UNAIDS set aggressive goals to be achieved by 2030 which included; 95% of all people living with HIV knowing their HIV status, 95% of those with diagnosed HIV infection achieving prolonged antiretroviral therapy, and 95% of those receiving antiretroviral therapy attaining viral suppression. (UNAIDS data, 2021). In 2020 only 65% of patients living with HIV on ART had achieved viral suppression with children aged 0-14 years performing lower at 41%. WHO recommends enhanced adherence counseling for PLHIV on ART with viremia of above 1000 copies. Routine Viral load monitoring together with enhanced adherence counseling has been shown to improve treatment outcomes for patients with viremia. Studies have shown that EAC leads to >70% re-suppression. (Bonner et al. 2013). However, adolescents and children are likely to have persistently elevated viral load despite undergoing enhanced adherence counseling. (Jobanputra & Parker et al., 2015).

Studies in Sub-Saharan Africa, have shown that adolescents with HIV are particularly at risk for poor adherence (Adejumo, et. al., 2015). Despite the high rates of persistent viremia among children on ART, few studies are focusing on both paediatric and adolescent re-suppression following EAC and this data continues to be limited in Sub-Saharan Africa. (Bernheimer JM et al. 2015). Only 46.1% of patients with an initially increased high VL were able to suppress

after EAC, according to a systemic meta-analysis by FORD N.et al. (Ford N t al.,2019). Children (31.2%) and adolescents (40.4%) attained lower re-suppression rates than adults (50.9%).

In Kenya, according to the NASCOP dashboard, adolescent viral suppression remains below the 95% UNAIDS target at 66%. Hence close to 40% of adolescents on ART needed EAC as a strategy following the WHO guideline to achieve re-suppression.

The study informed on the understanding of enhanced adherence counselling among adolescents as a challenging population and identified insights on the associations of enhanced adherence hence building information for guidelines review in the HIV programming and epidemic control. Therefore, this study formed a basis for further research across the whole nation in the specified age group, which seems to have been ignored yet unique.

2. Literature Review

WHO recommends EAC for all clients with detectable viral load. This should be initiated immediately after the results are received. EAC involves monthly sessions with the clinician or adherence counselor to identify barriers and develop actions to address them within 3 months. A repeat viral load is recommended after the 3 EAC sessions. (WHO 2013). The Kenya ART Guidelines 2018 have adopted this recommendation. This is also aligned with the adolescent package of care (APOC) guideline 2014 to achieve viral suppression among adolescents. Globally many studies have been conducted to evaluate the outcomes of EAC. However, EAC implementation and approaches have not been standardized across countries and even with the guidelines in

Kenya the outcomes among adolescents are still low compared to adults' re-suppression rates of 40% and 65% respectively (UNAIDS, 2021).

Regarding Knowledge on EAC, there exist inadequate information on adherence-enhancing interventions that are effective among this age group in developing countries including Kenya (Bain-Brickley & Butler et al, 2011). In building literature, a web has been developed comprising correlates that promote enhanced adherence in different settings but majorly focusing on populations above 18 years. In high-income countries, adolescents are known to have suboptimal medication compliance compared to developing settings in other age groups (AIDS Info, 2014). Some evidence also shows that 15-year-old and older adolescents have an elevated probability of non-satisfactory adherence compared to children and younger adolescents in sub-Saharan Africa, (Bygrave & Mtangirwa, et. al, 2012). This could be a shift in ownership of the treatment by themselves from the caregivers.

A study done in Zimbabwe showed that adolescents had a significantly higher probability to fail treatment compared to adults. (MOHCW Zimbabwe, 2012). This could probably result from suboptimal adherence and agrees with different studies that have demonstrated adolescents have a likelihood of poor adherence to ART (Nachega. & Hislop. et al., 2009). According to studies by Chandwani S, Koenig, et al., possible non-adherence risks in adolescents involve late or delayed disclosure of HIV status, peer support, stigma, and schooling especially boarding schools (Feucht & Kinzer et. al., 2007). On compliance reviewed studies indicated that the transfer of responsibility and ownership is a challenge and has not been clearly defined as an element in enhanced adherence counseling. Literature also showed that the psychosocial area of support on enhanced adherence still poses a challenge to this group, their social and family life the caregivers, and medication complexity. Studies have not been done in Kenya to establish the extent to which poor adherence to treatment among adolescents affects the overall uptake of enhanced adherence support.

3. Methods Used

The study adopted a cross-sectional analytical study design to establish the uptake of enhanced adherence counseling among adolescents with high HIV viremia in selected facilities in Nairobi County. The independent variables included sociodemographic characteristics like age, sex, education level, religion, caregiver, duration of ART, and household capacity other variables included knowledge on ART treatment, viral load, understanding of EAC, clinic appointments, time of medication and reminders, as well as attendance of support groups and adherence sessions of the adolescents. The study's main or dependent variable was the uptake of enhanced adherence counseling determined by achieving three or more adherence sessions as per the ART guidelines.

The location of the study was Nairobi City County (NCC), in 45 facilities purposively selected based on the number of viremic adolescents attending the clinic. The sample included ALHIV aged between 10 and 19 years, on

antiretroviral therapy for over 6 months of treatment, and a documented high HIV viremia of over 1000 viral load copies per milliliter of blood who consented to participate in the study. Following data collection and collation, the data was cleaned coded, and analyzed using Microsoft excel functions and Stata. Descriptive analyses were performed, and inferential analysis was conducted using Chi-square to determine any associations between the predictor and the outcome variables. Study findings were presented using pie charts, frequency tables, and bar graphs.

4. Study Results

4.1 Socio-Demographic Characteristics of the respondents.

Data from 374 respondents were analyzed in this study. The study respondents' socio-demographic characteristics covered age, gender, education, religion, parents, siblings, treatment supporter, and duration on ART as summarized in Table 4.1.

Table 4.1: Socio Demographic characteristics

Variable		Frequency (n)	Percentage (%)
Age	Mean (SD)	14.65 (2.74)	
	Median (IQR)	14 (4)	
	10 - 14 Years	188	50%
	15 - 19 Years	186	50%
Gender	Female	204	55%
	Male	170	45%
Highest Education attained	None	12	3%
	Primary	226	60%
	Secondary	136	36%
Religion	Christian	361	97%
	Muslim	12	3%
	Not reported	1	0%
Parents	Both alive	244	65%
	Both deceased	72	19%
	One Alive	58	16%
Number of siblings in the household	1-2 Sibling	210	43%
	3-5 Siblings	162	56%
	6 Siblings	2	1%
Treatment supporter	Teacher	6	2 %
	Friend	1	0%
	Grandparent	8	2%
	Guardian	41	11%
	Parent	264	71%
	Other relative	40	11%
	Sibling	14	4%
Time on ART	12 - 24 months	29	8%
	25 - 48 months	46	12%
	49 - 60months	45	12%
	>60 months	254	68%

4.1.1 The respondents' Age

From the analysis table, 4.1 shows that 50% (188) of the respondents were aged 10-14 years while the remaining half were aged between 15 – 19 years.

4.1.2 Gender of the respondents

Table 4.1 demonstrates that 55% (204) of the respondents were female and 45% (170) were male.

4.1.3 Education and Religion of the respondents

From the study, as illustrated in Table 4.1, 60% of the respondents attained Primary education at the time of the study while only 36% had attained secondary education. However, 3% reported no education. Notably 97% (361) of the respondents were found to be Christians with only 3% (12) reporting to be Muslims.

4.1.4 Parents and number of siblings

Table 4.1 illustrated that 65% (244) of the respondents had both their parents alive, 19% (72) had both parents deceased and 16% (58) had one parent alive. The analysis further showed from the table that 86% (321) of the respondents had between one and three siblings, 13% (51) had between four and five siblings, and (2) had more than five siblings.

4.1.5 Treatment Supporter

Table 4.1 illustrates that 71% (264) of the respondents had their parents as the treatment supporter, 16% (62) had either their sibling, grandmother, or another relative as their treatment supporter, 11% (41) had a guardian while 2% (6) had the teacher as their treatment supporter. Only one reported a friend to be a treatment supporter.

4.1.6 Time on ART

Summary in table 4.1 shows that 8% of the respondents were on ART for one year or less, 12% were on ART for a period between 25 and 48 months, 12% between 19 months and 60 months, and 68% of the respondents were on treatment for over 5 years.

4.2 Uptake of EAC among adolescents with high viremia

The study established that 41% of the respondents received EAC. Most of the respondents had attended only 1 EAC session (27%), while 22% attended 2 sessions and 10% did not attend any session after reporting high viremia as illustrated in figure 2.

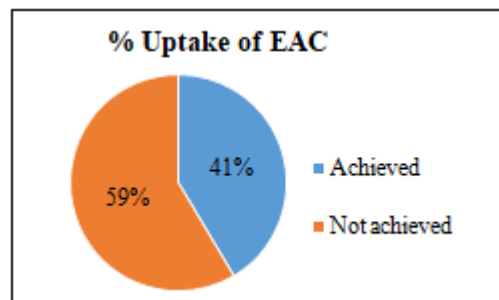


Figure 1: EAC Uptake among ALHIV

4.2.1 Frequency of EAC sessions attended by ALHIV with high Viremia

EAC uptake was determined using a dichotomous scale, clients who attended at least 3 EAC sessions post their high VL as per the national guidelines on EAC uptake were assigned a value of 1 and those who had attended none or less than 3 were assigned a 0, implying they did not successfully take up EACs as per the national ART guidelines. The results are shown in Table 2

Table 4.2: Frequency of EAC sessions attended

EAC category	EAC sessions attendance	Frequency	Percentage (%)
Achieved	Three or more sessions	155	41%
	Two sessions	83	22%
Not achieved	One session	99	27%
	None	37	10%
Total		374	100%

Table 4.2 illustrates that only 41% (155) of the respondents achieved the three sessions as recommended by the Kenya ART guidelines 2018, 22% (83) attended two sessions while 27% (99) only managed one session. Notably, 10 % (37) of the respondents had no EAC session following a detectable viral load.

4.2.2 EAC Uptake and Socio-demographic characteristics of the respondents

Chi-square tests and Fisher's exact tests were run to assess the association between EAC uptake and socio-demographic characteristics. Odds ratios were calculated for variables with significant Fisher's exact test results to ascertain the direction and strength of the association. The study established that type of treatment supporter (Fisher's exact P=0.039) significantly associated with EAC uptake, as summarized in table 4.2.

Variable	EAC Uptake		Level of Significance
	No	Yes	
Age	10 - 14 Years	107(57%)	$\chi^2 = 0.4196, df=1, p=0.517$
	15 - 19 Years	112(60%)	
Gender	Female	124(61%)	$\chi^2 = 0.9182, df = 1, p=0.338$
	Male	95(56%)	
Level of education	None	6(50%)	$\chi^2 = 0.5639, df = 2, p=0.754$
	Primary	131(58%)	
	Secondary	82(60%)	
Religion	Christian	210(58%)	Fisher's exact test, p=0.865
	Muslim	8(67%)	
	Not reported	1(100%)	
Parents	Both alive	149(61%)	$\chi^2 = 1.8974, df = 2, p=0.387$
	Both deceased	38(53%)	
	One Alive	32(55%)	
Number of siblings	1	23(62%)	$\chi^2 = 9.9105, df = 5, p=0.078$

in the household	2	104(60%)	69(40%)	Fisher's exact P= 0.039	
	3	54(49%)	57(51%)		
	4	30(70%)	13(30%)		
	5	7(88%)	1(13%)		
	6	1(50%)	1(50%)		
Treatment supporter	Aunt	0(0%)	1(100%)		
	Friend	0(0%)	1(100%)		
	Grandparent	5(63%)	3(38%)		
	Guardian	15(37%)	26(63%)		
	Parent	163(62%)	101(38%)		
	Relative	23(59%)	16(41%)		
	Sibling	8(57%)	6(43%)		
Time on ART	Teacher	5(83%)	1(17%)		
	12 - 24 months	13(45%)	16(55%)		$\chi^2 = 5.4185, d.f = 3, p=0.144$
	25 - 48 months	32(70%)	14(30%)		
	49 - 60months	29(64%)	16(36%)		
>60 months	145(57%)	109(43%)			

4.3 EAC uptake and Sociodemographic Characteristics

Table 4.3 also shows no association between EAC uptake and age, gender, education, parent, number of siblings, and time on treatment. They all have P-values of more than 0.05 except type of treatment supporter which indicates there is an association between treatment supporter and EAC uptake, p value= 0.039.

4.4 Knowledge levels among ALHIV with high Viremia

The knowledge levels of participants were determined using a dichotomous scale. A total of 5 knowledge statements about viral load and adherence to ART medication were put to the respondents ; A score of 1 and 0 was assigned to correct answers and wrong, respectively. The scores were summed across the 5 statements and a total score of 0 – 2 was rated as inadequate knowledge while 3 – 5 was rated as adequate knowledge. The Knowledge statements scores rating has been shown in Tables, 4.4 below.

Table 4.4: Knowledge level Ratings 1

Knowledge rating	Frequency	Percentage (%)
Adequate knowledge	299	80%
Inadequate knowledge	75	20%
Total	374	100%

From the inferential analysis in table 4.7, there is a significant relationship between knowledge levels and EAC uptake ($\chi^2 = 8.1907, d.f = 1, p=0.004$). Respondents with adequate knowledge scoring are less likely to take up EAC compared to those with inadequate knowledge (Odds ratio: 0.477, C.I: 0.286 – 0.797).

Table 4.5: Association of EAC and Knowledge Levels

Knowledge level	EAC Uptake		Significance
	No	Yes	
Inadequate knowledge	33(44%)	42(56%)	$\chi^2 = 8.1907, d.f = 1, p=0.004$
Adequate knowledge	186(62%)	113(38%)	

4.5 Compliance levels to EAC sessions among ALHIV with high HIV viremia

The compliance levels of respondents were determined using a dichotomous scale. A total of 5 compliance statements about appointment follow-up and adherence after

detectable viral load were put to respondents; correct responses for desired compliance were assigned a score of 1 and wrong answers a score of 0. The scores were summed across the 5 statements and a total score of 0 – 2 was rated as inadequate compliance while 3 – 5 was rated as adequate compliance.

Table 4.6: Compliance Level Scores

Compliance question/Statement	Frequency	Percentage
Are you enrolled in viremia clinics	374	
Yes	335	90%
No	39	10%
Have identified a reminder to take medication	374	
Yes	194	52%
No	180	48%
Taking medication as prescribed by a clinician	374	
Yes	264	71%
No	110	29%
Attending a support group for adolescents	374	
Yes	101	27%
No	273	73%
Visited at home for DOTs by treatment supporter/case manager	374	
Yes	96	26%
No	278	74%

Table 4.6 illustrates that the majority, 90%, of the respondents were enrolled in the viremia clinic, 52% had identified a reminder to take their medication and 7% were taking medication as prescribed. However, only 27% were attending adolescent support groups for viremia sessions and 26% had a case manager or treatment supporter to support DOTs at home. Compliance level rating after aggregate scores is illustrated in figure 3.

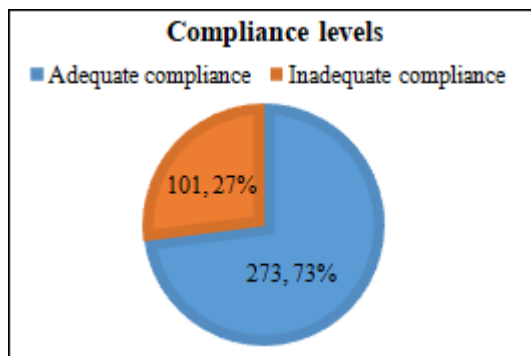


Figure 2: Level of compliance to EAC among adolescents with high viremia

Figure 3 demonstrates that majority of the respondents had adequate compliance score (73%) while 27% had inadequate compliance.

4.5.1 Association between Uptake of EAC sessions against Compliance levels

As shown in table 10, compliance levels played a significant role in whether the respondents were likely to take up EAC sessions or not ($\chi^2 = 14.563$, d.f = 1, p=0.000).

Respondents with adequate compliance ratings were less likely than those with inadequate compliance to take up EAC sessions (Odds ratio: 0.409, C.I 0.256 – 0.651).

Table 4.10: EAC uptake and compliance levels

	EAC Uptake		Chi-Square Value
	No	Yes	
Inadequate compliance	43(43%)	58(57%)	$\chi^2 = 14.563$, d.f = 1, p=0.000
Adequate compliance	176(64%)	97(36%)	

5. Discussion and Conclusions

From the analysis conducted the study findings revealed that a majority (59%) of the adolescents did not complete 3 or more EAC sessions within 3 months of high VL as per the recommendations in 2018 Kenya national ART guidelines and only 41% of them achieved three or more sessions. The likelihood of achieving the 3 or more EAC sessions increased with knowledge of EAC including assigning a case manager, home visits, and enrolment in a viremia clinic support group. The study also revealed that age, gender, level of education, and knowledge of viremia do not increase the likelihood of completing the EACs. This chapter brings discussions of these findings, the conclusion of the study and recommendations based on the study objectives.

The study established that 41% (155/374) of the ALHIV received and completed three or more EAC sessions as per the WHO recommendations similar to findings from an Ethiopian study where 46.8% of the respondents completed EAC within 3 months as per recommended guidelines. This implied that 63.2% of the adolescents never complete the EAC sessions following a detectable viral load as recommended in the WHO guidelines which are adopted nationally. A similar study conducted in Swaziland showed lower rates of uptake of enhanced adherence counseling at 20% among children, adolescents, and adults. A related study done in Zimbabwe showed 63% of the patients enrolled in EAC after a detectable viral load completed three

sessions of EACs as per the national guidelines. However, the two studies did not separate adult and adolescent population and thus may not conclude how different was the prevalence among adolescents. A Ugandan study to evaluate Viral load outcomes after EAC also revealed that 77% of the respondents in the study had all the 3 EAC sessions while 16% and 7% received one or two sessions and no session after high VL respectively (Nasuuna et al., 2018)

In this study 10% of the respondents were not initiated on any EAC, this could result from the complex nature of this age group. Constraints like schooling, caregiver status, and delayed communication of results to the adolescents by healthcare workers could result in this delayed intervention. The capacity of the healthcare worker to explore and manage adolescent treatment barriers could also have contributed to some attending less than 3 sessions Casual evidence according to the Zimbabwe study shows there could be inadequacies in the process of linking the clients from the clinician to the counsellor for initiation/enrolment into the EAC sessions. The suboptimal uptake of enhanced adherence counseling among this subpopulation could explain why they have low resuppression rates even after the viral load is repeated. This also could imply that the majority of adolescents are prematurely switched to a second treatment option following a high HIV Viremia due to unsuccessful and delayed enhanced adherence sessions.

Adolescent Socio-demographic characteristics

The study showed no association between patient demographic characteristics in both univariate and bivariate analyses. This result agrees with the study done in Zimbabwe, which showed that no demographic and clinical characteristics that are routinely recorded were independently associated with being enrolled in EAC sessions. (Bvochora et al. 2019). The findings are alike to another study done in Kenya at Kenyatta hospital by Wangui that showed no socio-demographic variable was associated with general adherence

The median age was 14 years, although the age distribution was 50% below 15 and 50% above 15 allowing responses from across the age bracket. These results are also closer to the findings from a study of adolescent viral suppression in Cambodia where the adolescents' median age was 15.9 years (Chhim et al, 2018). In this study, 55% of the adolescents were female and 60% had at least attained some primary education. This corresponds to the age distribution where a majority of the adolescents aged below 15 years are in Primary school and to the fact that HIV impacts negatively on developmental milestones, especially the cognitive behaviour hence delayed schooling. According to national statistics, majority of adolescents in primary schools are not within the normal range of age, and approximately 21% of pupils in primary school are appropriately aged for the grade and this declines even with higher grades (KDHS, 2014). This indicates that 79% are not in their appropriate classes. This study also revealed that 12 adolescents had never attained any level of education, although the number is lower, it poses a challenge in understanding the literacy sessions associated with HIV management.

Of the 374 respondents, 65% had both parents alive and 71% had a parent as a caregiver. Among those whose parents were diseased, 16% were reported to be total orphans while 19% had one parent diseased. However, studies have indicated that orphaned status is not significantly associated with adherence although most studies have dwelled on children below 15 years, and very few focused on the age of 10-19 years.

This study also found that the majority of the adolescents 68% had been on ART for more than 5 years. The study focused on those on ART and had a documented high VL; they must have been in care for more than 6 months after the detectable viral load. This allowed adequate time to assess the EAC sessions since the guidelines indicate that the minimum period to complete 3 EAC sessions was 12 weeks (3 months).

Knowledge Levels on EAC

The association between EAC and knowledge levels was statistically significant. This could be attributed to the level of understanding of adherence and HIV management with cognitive maturity. In addition, the study indicated that respondents with adequate knowledge were 0.47 times less likely to complete EAC sessions (Odds ratio: 0.47). The reason for this, which was also evidenced during support group discussions is that adolescents who had been on care for a longer duration had undergone other adherence sessions and saw this as a repetition or a bother. They had undergone other literacy sessions either at initial viral loads or as a booster adherence that is usually done every 6 months according to the national guidelines. In this study, a substantial proportion of the respondents reported correct information about HIV, viral load, and Enhanced adherence. Of the 374 respondents 87% implied that they are aware of why they take their medication, 85% knew that a high viral load of >1000 copies per milliliter of blood is bad and 82% clearly articulated some barriers that could result in them having a high viral load. Furthermore, 72% responded in agreement that enhanced adherence sessions could positively influence their viral load outcomes. Only 13 respondents disagreed that EAC is not important. Many studies conducted on general adherence have indicated knowledge as a positive facilitator to adherence interventions (Gedefaw et al 2020) but there are very few on EAC to compare this finding among the adolescent population. One study done in Nairobi Korogocho and Kibera slums on knowledge of HIV among adolescents found that the majority of the adolescents understood facts about HIV and why adherence to ART should be intensified. Other findings in the Zambian study indicated that inadequate knowledge about HIV and ART led to a poor understanding of the effectiveness of medication and strategies to enhance adherence hence poor outcomes.

Compliance levels to EAC among adolescents with high HIV viremia

The study found that age was significantly associated with compliance with EAC. This finding implies that older adolescents were more likely to complete EAC sessions and adhere to the EAC strategies that included monthly clinic visits for an intensified adherence session with an adherence counsellor including barrier analysis. A systemic review of

studies in sub-Saharan Africa indicated that literacy levels are high in older adolescents as well as compliance to adherence interventions. These interventions include keeping clinic and drug appointments, attending support groups, observing DOTs among others, and attending a clinic with a treatment supporter or buddy. The findings in this study having been conducted in an urban set up could imply enhanced structures that support older adolescents e.g., youth-friendly services and peer support, (Mukumbang, 2017). A study in Zambia showed that what the patients knew about HIV and adherence even before ART initiation was not necessarily dispelled by the literacy sessions attended. Unless enhanced adherence is structured and packaged in an easy to understand for adolescents, it does not occur as additional information.

Secondly, on compliance, the study showed that compliance level was significantly associated with the uptake of EAC. The respondents who had good compliance were less likely to complete EAC. This meant that these patients were initially keeping appointments and may have missed treatment for some reason that is well known to them. Identifying their barrier during their first session would make them feel they do not need frequent monthly follow-ups. These findings correlate to the MSF programmatic strategies 2016, which show that the level of viral load at initial testing predicts treatment failure in patients with good adherence meaning they are unlikely to benefit from EAC. From the study, we established that 316/374 respondents had initially kept their appointments. However, only 129(34%) respondents reported not to have missed drugs in the past 6 months, which was a period after their detectable viral load. Thus 66% missed at least once after a detectable viral load. This depicts the inadequacy of adherence information that they receive leading to delayed intervention. These findings support results from a study in South Africa on barriers to adherence among clients on ART. The study findings showed that clients missed schedules due to poor or inadequate follow-up by the healthcare provider. This would imply that patients who were initially compliant and did not have frequent schedules might need to be frequently reminded about their restructured clinic visits. They could be used to a long appointment but with a high viral load, they need shorter monthly appointments. (Azia et al. 2016)

In summary, the study findings showed that uptake of EAC among adolescents with high Viremia in health facilities in NACC is sub-optimal at 41% below the WHO recommendations of 3 complete sessions in 120 days. Secondly, the study established that socio-demographic characteristics were not associated with the uptake of EAC among ALHIV who had high viremia in the selected facilities in Nairobi County. Thirdly, on knowledge levels, the study depicted that adequate knowledge of HIV, viral load, and adherence impacted negatively on the uptake of EAC, however, age was significantly associated with both knowledge and compliance. Fourthly, the study findings realized a significant association between compliance levels and EAC uptake where those respondents who had high compliance in the previous period were less likely to complete EAC sessions. Lastly, in the study, the first null hypothesis was true while the second and third were not true and this is evidenced in related studies.

6. Conclusion

Overall, the study established that EAC uptake among ALHIV with high viremia in selected facilities in NCC is still suboptimal at 41%. The study also established that the majority (80%) of the adolescents with high viremia have adequate knowledge of viremia and EAC and have good compliance to taking prescribed medication. However, adolescents who had adequate knowledge and optimal compliance levels had a less likelihood of completing the three EAC sessions as outlined in the national ART guidelines. In addition, the study found out that a treatment supporter is critical in ensuring the uptake of EAC among adolescents aged 10-19 years in NCC. Therefore the study rejects the null hypothesis and concludes there is an association between treatment supporter, knowledge and compliance levels with EAC uptake.

7. Recommendations

This study recommends the following the ministry of health in Kenya and stakeholders to consider reviewing the number of sessions considered adequate for EAC for adolescents with viremia. The most critical session may be the MDT to establish barriers and plan of intervention with the adolescents. Further assessment mechanisms need to be implemented to achieve compliance with EAC, some interventions are strenuous for this population, especially the DOTs. The study also recommends further research on impact of EAC on viral load outcomes among adolescents with high viremia and to conduct qualitative analysis among the treatment supporters on facilitators of EAC uptake

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