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Research Article

An Evaluation of Antiretroviral Therapy Adherence in a Community-Based Multi-Month Dispensing Model in Dodoma City Council

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Abstract

Background: This study evaluates the effects of the community-based multi-month dispensing model on adherence to antiretroviral therapy among youth living with HIV in Dodoma City Council. It compares adherence rates between three- and six-month dispensing intervals led by either Community Antiretroviral therapy peers or healthcare workers.

Methods: This case-control study was used whereby questionnaire and verification of data from the CTC2 database was used to evaluate the effects of community-based multi-month dispensing of antiretroviral therapy. It compares adherence rates between three- and six-month dispensing intervals led by either community antiretroviral therapy peers and those led by health workers. A total of 390 participants participated in the survey. These participants were categorized into two groups: those enrolled in community-based ART multi-month dispensing (case group) and those not in community-based ART multi-month dispensing (control group). Interquartile range were imposed to determine the level of adherence between health facilities, and logistic regression was performed to ascertain the associations between communities based muti-months dispensing and adherence and viral suppression.

Results: The study found that community-based multi-month ART dispensing was associated with higher adherence; those who disliked it also had lower adherence rates. Dispensing intervals and clinical appointment schedules improved adherence. Other factors influenced adherence, including shorter clinic wait times, preferences, adhering to clinical appointments, and reduced stigma.

Conclusion: Community-based multi-month dispensing of Anti-retroviral therapy significantly improves adherence among youth living with HIV. Peer-led programs show higher adherence rates, emphasising the importance of leadership and medication delivery frequency in HIV treatment programs. Addressing logistical obstacles and rationalising medication administration through multi-months can enhance adherence, improve health outcomes, and reduce HIV transmission.

Keywords: Community Multi-months Dispensing, Antiretroviral Therapy, Adherence.

1. Introduction

Background: Addressing the global challenges of HIV/AIDs is paramount, with UNAIDs setting ambitious 2030 targets ensuring 95% diagnosis, 95% sustained antiretroviral therapy, and 95% viral load suppression [1]. Currently, the global scenario involves 38.4 million people living with HIV/AIDs, with 58% comprising youth aged 18-45 [2]. However, adherence rates among the global youth (18-45 years) are 55.8%, indicating a crucial gap in meeting the defined targets [3]. Factors such as fear of disclosure, depression, and family discouragement play a significant role in these low adherence rates [3]. Analyzing psychosocial aspects is essential for formulating accurate interventions and policies that can bridge the adherence gap, contributing to achieving UNAIDS's ambitious goals and advancing global health research in the context of HIV/AIDs.

In the African context, the HIV/AIDs situation is marked by substantial numbers, with 28.7 million people living with HIV/AIDs out of a total population of 1.46 billion [4]. Among those affected, 59% are youth aged 18-45, accounting for approximately 16,933,000 individuals [3]. However, there is a concerning adherence gap, with only 0.65% of African youth in this age range adhering to their prescribed HIV/AIDs treatments, totaling 11,006,450 individuals [3]. Issues like lack of transportation funds, distant healthcare facilities, negative attitudes from health workers, and inadequate support from partners and parents significantly contribute to low adherence rates [2]. This calls for concerted efforts from governments, healthcare systems, and communities to bridge the adherence gap and improve general health outcomes [3].

In Tanzania, HIV/AIDs have a significant impact on the population, with 3.2 million individuals living with HIV/AIDs, accounting for 4.7% of the total population of 66.46 million [1]. Among those affected, 64% are youth aged 18-45, totaling around 1,999,116 individuals [5]. Despite efforts, there is a notable adherence gap, as approximately 73.2% of youth aged 18-45 adhere to antiretroviral therapy, with variations between genders (27% for males, 46.2% for females), representing around 1,463,352 individuals [6]. However, this leaves a concerning gap of 535,763 (26.8%) youth not adhering to ART [6]. This analysis stresses the need to address gender-specific adherence disparities and identify factors contributing to the substantial gap, ensuring that targeted interventions address the unique challenges faced by Tanzanian youth in adhering to HIV/AIDs treatments.

In Dodoma, HIV/AIDs statistics indicate that 89,483 individuals, representing 2.9% of the total population of 3,085,625, are living with HIV/AIDs [7]. Among those affected, 14.6% are youth aged 18-45, totaling around 13,065 individuals [5]. Despite this, there is a notable adherence rate among ART users in this demographic, with 80% of youth aged 18-45 in Dodoma adhering to antiretroviral therapy, totaling 10,574 individuals [6]. While the adherence rate seems relatively high, there is a concerning annual gap of 2,490 ART users becoming non-adherent [6]. This poses a challenge to fulfilling the ambitious target of viral suppression by the end of 2030.

Innovative service delivery models custom-made to individual patient needs are essential for improving coverage and retention in healthcare [2]. The Differentiated Service Delivery model (DSD) has emerged as a key framework to enhance access and quality of HIV care and treatment, addressing the diverse needs of various client populations [6]. This paradigm shift from a one-size-fits-all approach acknowledges that patient requirements vary, necessitating different levels of engagement with clinical teams [5]. Differentiated care encompasses various strategies such as reduced clinic visits, task shifting from physicians to other healthcare providers, multi-month prescriptions, participation in community or facility adherence groups, and involvement in community ART distribution groups [5].

In 2021 the Tanzania Ministry of Health encompassed multi-month prescriptions in differentiated service delivery and guided the document titled "Improving the Quality and Efficiency of Health Services in Tanzania" [6]. Subsequently, in August 2021, the MOH updated the clinical encounter form to include information on the patient's status (stable versus unstable) and the type of differentiated service delivery received at each visit [6]. The options include standard care, the facility-based fast-track system, participation in Community ART Groups for ART refills and multi-month prescriptions [6]. The Differentiated Care Operational Guide is specifically crafted to offer healthcare workers strategies for implementing differentiated care, utilizing varied terminology for clarity and comprehension [6].

However, sustaining optimal adherence to ART regimens remains a challenge, particularly among youth populations. Poor adherence can result in treatment failure drug resistance and an increased risk of HIV transmission [8]. Differentiated service delivery models, such as the Community-based Multi-month Dispensing model, have emerged in response to these challenges [9]. These models aim to decentralize HIV care and medication access, thereby reducing the burden of frequent clinic visits and promoting adherence to ART.

Previous studies have demonstrated the potential benefits of community-based ART delivery models. A study by found that community-based ART delivery significantly improved retention in care and viral suppression among HIV-positive individuals in South Africa [10]. Similarly, a study by that focused on pregnant women living with HIV emphasized the effectiveness of community-based ART initiation in increasing treatment uptake and reducing loss to follow-up among key populations in sub-Saharan Africa [11]. Despite these various initiatives to increase youth enrolment in antiretroviral there remains a need to assess the specific effects of community-based multi-month dispensing on adherence among youth living with HIV. The present study builds upon existing literature by evaluating the effects of the community-based multi-month model on antiretroviral therapy adherence and health outcomes in Dodoma City Council.

2. Methods

2.1 Study Design and Settings

The study employed a case control study was used to evaluate the community-based multi-month dispensing model's contribution to adherence to antiretroviral therapy among youth living with HIV in Dodoma City Council. To facilitate data gathering a questionnaire with specific indicators was created.

2.2 Sampling and Sample Size

This evaluation used Yamane's formula to determine the sample size. The sample consisted of 390 youth living with HIV. This sample represented almost ninety-four percent (94%) of the population serviced by the project. The study focused on patients aged 18 to 45 years who receive their Antiretroviral Therapy in community-based services.

2.3 Data Collection Procedure

To accomplish evaluation objectives, a questionnaire with indicators was imposed, whereby the data were retrieved from the CTC2 database from the first of January 2024 to the 30 of April 2024. Specific indicators were defined to direct the process of retrieving data. A total of 390 youth living with HIV aged 18 to 45 participated in this evaluation, whereby indicators of youth living with HIV enrolled in community-based fast-track anti-retroviral therapy services (case group) were identified such that clinical demographics, length of ART, WHO stage and ART regimen were among these metrics. Other demographic traits were also noted including sex, age marital status and employment position. The aim was to find correlations between YLHIV enrolling in community-based multi-month and ART adherence and adherence. The CD4 count was used to categorize adherence; those with a value higher than CD4 counts of 500 CD4/ml are considered adhered, while counts of less than 500 CD4/ml are considered non-adherence

2.4 Variable and Measurement

The research aimed to examine if community-based multi-month dispensing contributed to adherence among youth living with HIV. A questionnaire with indicators was developed to enable data collection. Youths living with HIV aged 18 to 45 who participated in community-based multi-month dispensing and enrolled in community-based antiretroviral therapy services were among these indicators. Furthermore, differences were noted between programs administered by community health workers and peer leaders situated in the community. Along with general demographics like sex, age marital status and job position, clinical demographics were also recorded, including length of time on ART, WHO stage and ART regimen. Finding relationships between YLHIV enrolled in community-based multi-month dispensing and ART adherence was the main objective. The dependent variable in this study is "Adherence to ART" This variable measured the extent to which youth living with HIV in Dodoma City Council. This was measured by a dummy variable whereby (Greater than 500 copies/mL (Adhered) and less than 500 copies/mL (Not-Adhered).

Statistical Test: I used STATA to conduct univariate, bivariate, and multivariate analyses. Odds ratios with 95% confidence intervals (CI) were used to assess the degree of correlation between the variables after frequency distributions and cross-tabulations. For the bivariate analysis, cross-tabulations were performed for each independent variable against the outcome variable (ART adherence). The independent variable was considered significant if a p-value of less than 0.5 was obtained from the cross-tabulation. Furthermore, multivariate analysis was performed to adjust for test effect modification and confounding.

2.5 Data Analysis

After data importation in STATA. Version 18 Pre-analysis data management was performed to recode, encode and create categories, destring and categorize data values, respectively as necessary whereby in step one, the variable age was categorized into three whereby below 20 years, 21-30 years, 31-40 and above 40. Variable marital status was categorized as married=1 and unmarried=0. In addition the variable education level was defined as those who can read=1 and those who cannot read=0. Then, we performed a cross-tabulation to show the detailed demographic description of information of the patients enrolled in community-based multi-month dispensing.

In second stage to identify the reason for enrolment in community-based dispending the variable supply system was identified as =1, patient management was identified=2, time for a refill was identified as =3 Then, we applied cross-tabulation to understand the common reason for enrolment in community-based dispensing. Furthermore, we performed a cross-tabulation to show the range of strategies that influence youth living with HIV to prefer community-based ART dispensing.

In the third stage, the Interquartile range was performed to determine the level of adherence from two groups, which were community-based ART led by health workers and community-based based which peer ART users led. In the last stage, we performed a Logit regression to examine adherence. The odds ratio for the comparison group between those who enrolled in community-based muti-months dispensing and those who did not enrol in community-based ART dispensing whereby the adherence was measured by dummy variable (above 500 CD4 count/Ml were termed as adhered in another way patients with below 500 CD4 count /Ml were termed as non-adherent).

2.6 Data Reliability

The Cronbach's alpha test was used to evaluate the study measures' internal consistency. The purpose of this test was to verify that every updated indication accurately measured the same underlying concept. In line with WHO suggestions for improvement, the evaluator found that strong variables were linked to the best indicator of gold-standard anti-retroviral therapy adherence. Furthermore, correlations between characteristics like community based multi-month Dispensing and other reliable measures of comparable or related variables were found. The alpha coefficient values, ranging from 0 to 1, were used to assess the reliability of factors obtained from dichotomous and Likert scale variables.

Table 1.0 Reliability Statistics for Multi-months Dispensing indicators.

Concept	Cronbach's Alpha	No. of Indicators	Interpretation
Community multi-months Dispensing	0.85	5	Good reliability

Table 1.0 indicates that Cronbach's Alpha for community multi-months dispensing and Multi-month dispensing demonstrate good dependability, with values of 0.85. These suggest a high degree of correlation between the indicators of each idea and one another, pointing to a reliable measurement of the underlying elements. With five indicators for each notion, the high Cronbach's Alpha values indicate strong internal consistency inside the variable. This suggested that reliable and consistent results are obtained from the scales employed to assess these factors.

2.7 Ethical Clarence

The study portal obtained approval from the Mzumbe Directorate of Research, Publications, and Postgraduate Studies from Mzumbe University. In addition, permission for data collection was obtained from the Director Dodoma City Council. Lastly, written consent for participation was obtained from all the respondents before data collection started. Importantly, keeping human rights, protecting privacy and confidentiality by not collecting personally identifiable information, adhering to data collection protocols, and using the appropriate research tools and guidelines were ethical considerations during data collection and avoiding data fabrication and alteration was assured to the respondents.

3. Results

This evaluation aims to determine the effects of community-based multi-month antiretroviral therapy dispensing on adherence, particularly in local communities. The objective of multi-month ART dispensing in community settings is to reduce the frequency of clinic visits by reshuffling medication access over longer timeframes. It is expected that this model will lead to increased adherence rates by lowering logistical challenges and rationalising medicine administration for HIV patients. The evaluation aims to determine if this community-based strategy successfully promotes continued ART adherence, hence improving health outcomes and reducing HIV transmission within the community.

3.1 Demographic Characteristics of Respondents

Three hundred ninety patients (390) participated in the study, which yielded a 98.5% response rate. Of all respondents, 52.1% were female. The mean age was 34.08±10.346 SD. A proportion of participants, of 122(31.8%), are aged 35-44. Regarding their educational status, one hundred twenty-three cannot read or write. (69%) of the total samples, were married, and the others were single, divorced, or widowed. The highest proportion, 278(71.3%), were farmers.

Table 1.1: demographic characteristics of the respondents

Background characteristics	Number	Percentage
Sex		
Male	187	47.9%
Female	203	52.1%
Age in years		
15-24	82	21%
25-34	122	31.3%
35-44	124	31.8%
45+	62	15.9%
Marital status		
Single	96	24.6%
Married	269	69%
Divorced	12	3.1%
Widowed	13	3.3%
Educational Status		
Unable to read and write	123	31.5%
Able to read and write	116	29.7%

Reason for Many Youth to Choose Community Multi-Month Dispensing of Antiretroviral Therapy

The most common reason cited was the improved supply of drugs and equipment, with 102 respondents (26%) selecting this option, and the IQR for this response was [36.4 - 54.5]. Following closely behind, 90 respondents (23%) highlighted the desire to improve patient handling practices, with an IQR of [27.3 - 27.3]. Similarly, 90 respondents (23%) also mentioned the need for an improved management system, with an IQR of [11.3 - 12.3]. 75 respondents (19%) expressed a desire for an increased number and mix of care providers, with an IQR of [9.1 - 27.3]. Finally, 33 respondents (8%) emphasized the importance of reducing waiting times at the clinic, with an IQR of [10.3 - 12.3].The analysis indicated a significant relationship (p=0.002). When compared to the reference group of youth aged 35–44, individuals in the 25–34 age range had considerably lower chances [AOR 0.294, p < 0.001]. The length of time spent receiving services at the facility was also important; those who stayed between two and four hours had reduced chances [AOR 0.352, p = 0.013] than those who stayed for less than two hours. Dispensing medication access was also significant; the odds of not receiving any were much lower for those without access [AOR 0.032, p < 0.001]. It was important that youth could access the facilities easily since those who found it difficult. Had probabilities that were lower than those who found it convenient [AOR 0.402, p = 0.018]. Finally, the amount of time spent travelling was also significant; those who travelled for longer than two hours had a lower chance of returning home [AOR 0.392, p = 0.011] than those who travelled for less than or equal to two hours.

Table 1.2: The Reason for Many Youth Living with HIV Choose Community Multi-Month Dispensing

Reason provided	Respondents (N=390)	IQR
Improved supply of drugs and equipment	102 (26%)	0.12 [36.4 -54.5]
Improved patient handling practice	90(23%)	1.17 [27.3- 27.3]
Improved number and mix of care providers	75(19%)	1.06 [9.1 - 27.3]
Reducing waiting time clinic	33 (8%)	1.01 [10.3 -12.3]
Improve management system	90 (23%)	0.05 [11.3 -12.3]
Time spent in facility to get services		
<2hr	310(79.4%)	0.01 [11.2- 12.8]
2-4hr	80(20.6%)	0.35 [0.15- 0.08]
Accessing prescribed drugs		
Yes get all	169(43.3%)	1.02 [0.41 -0.52]
Somehow I get	175(44.8%)	0.27 [0.16- 0.48]
Not get all drugs	46(11.7%)	0.03 [0.01- 0.09]
Convenience to reach HF		
Easy to reach HF	301(77.1%)	0.23 [0.26-0.38]
Not easy to reach HF	89(22.9%)	0.42 [0.18-0.85]
Able to read and write	116	29.7%

Adherence Between Community-Based Multi-Month Dispensing and Community-Based

The correlation [$\chi 2$ = 12.120, p = 0.005] between the community-based ART and adherence status. More specifically, the community-based health services run by peers of ART have significantly different adherence rates than those run by medical workers. There is a difference in adherence between the 3-month and 6-month Multimonth Dispensing groups in ART peer-led programs [$\chi 2$ = 1.28, p = 0.258]. On the other hand, in programs guided by healthcare workers, adherence rates do not change during multi-month dispensing durations [$\chi 2$ = 0.08, p = 0.774].

Table 1.3. Chi-square test for comparing adherence in community-based multi-months dispensing led by ART peer and Community-based multi-months dispensing Led by health workers.

Variable	Adhered	Not adhered	X^2	Total
Number of Community-based ART				
Number of Community-based (led by ART peers)	101(28%)	209(52%)	1.03	320
Number of Community-based (Led by HCW)	45(11%)	35(9%)	1.08	80
Number of Community-based ART (led by ART peer)				
3 months	170(42.5%)	78(19 %)	1.01	248
6 months	102(25.5%)	40(10%)	1.28	142
Number of Community-based ART (led by ART HCW)				
3 months	85(28%)	91(30%)	1.01	176
6 months	74(25%)	70(23%)	1.17	124

Influences of adherence to community multi-month dispensing among youth living with HIV

One of the key findings is the association between lower clinic wait times and adherence, demonstrated by an adjusted odds ratio (AOR) of 0.352 [95% CI: 0.154-0.802, p = 0.013]. This suggests that reducing wait times at clinics significantly enhances patients' adherence to their ART regimen. Additionally, those who expressed dissatisfaction with multi-month dispensing showed lower adherence rates, with an AOR of 0.279 [95% CI: 0.161-0.484, p < 0.001]. This underscores the importance of patient satisfaction in the success of the dispensing program. Dispensing intervals shows the role in improving adherence, with an AOR of 0.402 [95% CI: 0.189-0.856, p = 0.018]. This indicates that longer intervals between refills positively influence patients' ability to adhere on ART. Moreover, clinical appointment schedules were found to be significantly to improved adherence, with an AOR of 0.392 [95% CI: 0.190-0.808, p = 0.011]. This finding highlights the importance of convenient and flexible scheduling in supporting patients' adherence. Additionally, efforts to reduce stigma and provide longer refill intervals were shown to significantly boost adherence rates, with an AOR of 0.032 [95% CI: 0.011-0.091, p = 0.01].

The most common reason cited for supporting the program was the improved supply of drugs and equipment, selected by 102 respondents (26%), with an interquartile range of [36.4 - 54.5]. This was followed by the desire to improve patient handling practices and the management system, both cited by 90 respondents (23%) with IQRs of [27.3 - 27.3] and [11.3 - 12.3], respectively. Additionally, 75 respondents (19%) emphasized the need for an increased number and mix of care providers (IQR of [9.1 - 27.3]), while 33 respondents (8%) highlighted the importance of reducing waiting times at the clinic IQR of [10.3 - 12.3] **[Table 1.4]**

Table 1.4. Influences of adherence to community multi-month dispensing among youth living with HIV.

Variables	N (%)	AOR at 95% CI	P-value
Presence of Short Waiting			
Yes	310	1	
No	80	0.35 [0.15-0.80]	0.013*
Preference for Multi-month Dispensing:			
Yes	169	1	
No	175	0.27[0.16-0.48]	000*
Impact on Adherence Due to Dispensing			
Yes	301	1	
No	89	0.40 [0.18-0.85]	0.018*
Adherence to Clinical Appointment Schedule:			
Yes	218	1	
No	172	0.392[0.19-0.80]	0.011*
Reduction of Stigma with Longer Refill			
Yes	354	1	
No	46	0.032[0.01-0.09]	0.01*
Motivation to Take ART Due to Longer Refill			
Yes	176	1	
No	124	0.62[0.19-1.97]	0.005
Confidence in Medication Supply System:			
Yes		1	
No	21	0.96[0.27-3.34]	0.995
community-based ART supply of drugs			
Yes	88	1	
No	14	0.17 [36.4 - 54.5]	0.052
Improve patient handling practice			
Yes	42	1	
No	48	0.34 [25.3 - 27.3]	0.042
Improved number and mix of care providers			
Yes	40	1	
No	35	0.26 [9.1 - 27.3]	0.05

Reducing waiting time clinic			
Yes	18	1	
No	15	0.53[10.3 - 12.3]	0.12
Improve management system			
Yes	45	1	
No	45	0.21 [11.3 - 12.3]	0.023

Association Between Community-Based Multi-Month Dispensing and Adherence to Anti-Retroviral Therapy

The association between community-based multi-month dispensing and adherence to antiretroviral therapy. Though, women had lower odds of adhering to ART than men [COR = 0.687, 95% CI = 0.459-1.028, p = 0.068]. When compared to the reference group [15–24 years old], age groups 25–34 and 35–44 showed significantly reduced odds of adherence [COR = 0.398, 95% CI = 0.2 0.672, p = 0.001; COR = 0.386, 95% CI = 0.216-0.689, p = 0.001, respectively]. Regarding occupation, students' adherence probabilities were significantly lower than government workers [COR = 0.345, 95% CI = 0.179-0.606, p < 0.001]. Furthermore, compared to those on multi-month dispensing, those not on MMD had a much lower probability of experiencing viral suppression. This was especially noticeable six months after the start of the treatment [COR = 0.391, 95% CI].

Table 1.5: Logistic Regression Showing the Association Between Community-Based Multi-Month Dispensing and Adherence to Anti-Retroviral Therapy

Variables	Number (n=390)	on Community based refills	Not on Community based ART refills	95%CI of COR	P-value
Sex					
Male	187(47.9)	89	98	1	
Female	203(52.1)	78	125	0.68 [0.45-1.02]	0.068
Age in years					
15-24	82(21)	43	39	1	
25-34	122(31.3)	63	59	0.39 [0.23-0.72]	0.001
35-44	124(31.8)	37	87	0.38 [0.21-0.68]	0.001
45+	62(15.9)	24	38	0.67[0.35-1.27]	0.226
Marital status					
Single	96(24.6)	46	50	1	
Married	269(69)	110	159	0.75[0.47-1.20]	0.233
Divorced	12(3.1)	5	7	0.69[0.21-2.20]	0.533
Widowed	13(3.3)	5	8	1.10[0.35-343]	0.862
Educational Status					
Unable to read and write	123(31.5)	50	73	1	
Able to read and write	116(29.7)	41	75	1.25[0.74-2.11]	0.399
Occupational status					
Gov. employee	24(6.2)	13	11	1	
Merchant	21(5.4)	12	9	0.52 [0.22- 1.22]	0.137
Farmer	278(71.3)	107	171	0.68[0.28-1.67]	0.411
Student	45(11.5)	29	16	0.34[0.17-0.60]	0.001
Other	22(5.6)	8	14	1.09[0.44-2.69]	0.844
6 after initiation Outcome: Target not detected (VL<50)					
on MMD	117(30)	13	11	1	
not on MMD	283(70)	12	9	0.67[0.35-1.27]	0.003
Undetectable (VL>50 copies/Ml)					
on MMD	200(51.2)	15	14	1	
not on MMD	190(48.8)	14	8	0.68[0.75-2.02]	0.001

3 months initiation Outcome: Viral Suppression (CD4 copies/mil >500)					
on MMD	187(47.9)	13	11	1	
not on MMD	203(52.1)	12	9	0.63[0.98-2.44]	0.05
Outcome: 6 months initiation Undetectable Target not detected (VL<50)					
on MMD	75(19)	15	14	1	
not on MMD	315(80.7)	14	8	0.39[0.34-6.21]	0.001*

Case Comparison Average Adherence Within Community Based Multi-Months Dispensing

Notably, Community-based multi-months dispensing stands adherence, which make an average adherence of 3.08 and an IQR of 1.17 also show significant adherence, with an average of 1.36 and an IQR of 1.5. Among facility types, Health Centres show the highest adherence, with an average of 0.17 and an IQR of 0.14, closely followed by dispensaries with an average of 0.14 and an IQR of 0.13. Community-based programs led by ART peers notably surpass those led by community health workers, with average adherence values of 0.31 [IQR: 0.17] and 0.04 [IQR: 0.04], respectively. However, adherence varies across different ART dispensing durations: 1-Month [Average: 0.35, IQR: 0.87], 3-Months [Average: 1.22, IQR: 1.71], and 6-Months [Average: 1.15, IQR: 1.09].

Table 1.6: Average Aadherence Within Community Based Multi-Months Dispensing

Indicators	IQR (Number of youth)
Average adherence for Regional Referral Hospital	0.09 [0.03-0.15]
Average adherence for District hospital	1.08 [0.07-0.15]
Average adherence for Health centre	0.14 [0.05-0.19]
Average adherence for Dispensary	0.13 [0.06-0.19]
Average adherence for community based MMD	3.08 [2.13-3.30]
Average adherence in Community based led by CHW	0.04 [0.02-0.06]
Average adherence in community based led by ART peer	0.17 [0.20-0.37]
1 Month ART dispensing	1.02 [0.23-1.1]
3 Months ART dispensing	1.22 [0.39-2.10]
6 Months ART dispensing	1.15 [1.10-2.19]
IQR-Interquartile range	

4. Discussion

Adherence to ART is necessary for youth living with HIV to preserve their health, avoid transmission, ensure program effectiveness, and empower themselves to actively control their HIV [12]. ART regimens that are consistently followed result in better health outcomes, such as viral suppression, lower risk of transmission, and an improved quality of life [13]. Youth living with HIV contribute to the sustainability of community-based multi-month dispensing programs by following their drug schedule, reducing resource waste, and improving treatment outcomes [14]. Factors such as shorter clinic wait times, favorable attitudes towards multi-months dispensing, longer dispensing intervals, and consistent attendance at clinical appointments, alongside efforts to lessen stigma, highlight the significance of patient preferences, logistical barriers, and social factors in improving health outcomes for those living with HIV and increasing engagement with treatment.

According to a study conducted by, emphasis on social support significantly impacts HIV-positive patients' adherence to antiretroviral medication. Strong social networks, which include assistance from friends, family, and medical workers, were linked to better adherence rates [10, 15]. On the other hand, the study by shows that adherence rates were negatively associated with a lack of social support or a sense of stigma from social groups [16].

The value of social determinants influencing treatment adherence to HIV regimens is shown by both studies [9]. Creating social support networks and addressing stigma become important elements of comprehensive HIV care [10]. HIV stigma can make treatment adherence difficult by promoting feelings of dread and isolation [17]. Furthermore, social support networks can offer psychological and physical help, motivating youth to take their prescribed drugs as directed [18]. Healthcare workers and communities can enable youth living with HIV to actively participate in their care by lowering stigma and increasing social support, which helps improve treatment outcomes and general well-being [19].

Antiretroviral treatment delivery in the community is important for enhancing drug adherence in HIV/AIDS patients [20]. Often through community health centers or pharmacies, this technique provides patients with several months' worth of medication at once, addressing transportation issues, stigma, and the burden of numerous

clinic visits [21, 22]. To suppress the viral load, stop disease progression, lower the incidence of transmission, and ultimately improve the quality of life for those living with HIV/AIDS, better adherence to ART regimens is crucial [17, 23]. Furthermore, encouraging adherence and retention in care, community-based dispensing creates a welcoming environment where patients receive peer support, education, and counseling [21].

Community-based multi-month dispensing for improving antiretroviral medication adherence and attaining viral suppression in HIV/AIDs patients has been repeatedly confirmed by other research [24]. Multi-month dispensing efforts have been demonstrated to increase treatment adherence and health outcomes, especially for marginalized communities, by lowering the frequency of clinic visits and eliminating logistical hurdles to healthcare access [13, 14]. These programs are essential for encouraging patient participation, care retention, and long-term adherence to antiretroviral therapy regimens [25]. They are frequently supplemented with complete HIV care services and adherence counseling [11]. However, community-based multi-month dispensing programs include drawbacks, such as difficulties in successfully launching and maintaining these projects [26]. Significant impediments can be created by logistical challenges like managing pharmaceutical supply chains, ensuring that medications are stored and distributed correctly, and overcoming regulatory constraints [27].

4.1 Strength and Limitation

The results of this study might not apply to areas or contexts other than Dodoma City Council. The unique traits and conditions of Dodoma City Council may have been different from those of other areas, which may have reduced the study's generalizability. Care should be taken when projecting the findings to other circumstances.

Even though the study was thorough, there is a chance that the data on the variables affecting youth living with HIV and adoption of ART adherence may be lacking. The study might have included only some pertinent data or looked into every element that might have. This restriction might have made reaching conclusive results and making thorough recommendations more difficult.

5. Conclusion

This evaluation shows the potential of a community based multi-month model as a strategy for youth adherence to HIV therapy, aiming to improve future generations' health, knowledge, and empowerment. Based on the findings, it can be concluded that multi-month dispensing had a positive effects on the adherence to ART among youths living with HIV in Dodoma City council multi-months dispensing has reduced the clinical visit and cost of transport to health facility but also it has the role in reduce the health facility congestion and this lead to increase the length of doctor and patient, ultimately leading to higher levels of patient to adhere on ART. In facilities funded by USAID Afya Yangu, multi-month dispensing serves to expedite the distribution of antiretroviral therapy. With community based multi-months dispensing, patients receive enough medication for several months at a time, which reduces the need for frequent clinic visits. This helps patients and healthcare professionals save time and money while also encouraging improved adherence to ART treatment schedules, which eventually improves the health of HIV/AIDs patients. The evidence from this study multi-month period has a number of advantageous benefits. These include easier access to medicine, less stigma, more affordable healthcare, and maybe better treatment plan adherence among youth living with HIV. But there are still a lot of obstacles to overcome, like privacy issues and the critical attitudes of healthcare providers. The study's findings emphasise the significance of multi-months dispensing in improving the provision of healthcare to those living with HIV/AIDs.

Abbreviations

CBMD - Community based Multi-month Dispensing
DSD - Differentiated HIV services
ART -Antiretroviral Therapy
YLHIV -Youth Living with HIV

5.1 Ethics Approval and Consent to Participate

An approval letter with reference number MU/DPGS/INT/38/Vol. IV/352 was obtained from the Mzumbe University Directorate of Research, Publications, and Postgraduate Studies (DRPS) to obtain authorization to collect data in the research domain. However, with reference number HJD/A.20/Vol. IV/79, approval from the Director of Dodoma City Council was also obtained. The evaluator connected with the respondents and got their consent before starting the assessment. Keeping human rights, protecting privacy and confidentiality by not collecting personally identifiable information, adhering to data collection protocols, and using the appropriate research tools and guidelines were ethical considerations during data collection and avoiding data fabrication. Data security measures were implemented to prevent unauthorised entry, and cultural sensitivity was maintained.

5.2 Consent for Publication

All authors have reviewed and approved the final manuscript for publication. Participants provided consent for their data to be used in research and for the findings to be published, ensuring that their personal information remains confidential and unidentifiable in any publication arising from this study.

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