

Determinants of Demand for Community Differentiated Service Delivery among People Living with HIV in Kakamega County

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Abstract

Community differentiated service delivery model (CDSD) is community level health system strengthening intervention that addresses barriers to accessing health services. Increased number of stable people living with human immunodeficiency virus (PLHIV) has prompted more emphasis to promoting CDSD model utilization as a significant policy to improve health outcomes and meet the international commitment to make health services accessible. However, key health systems policy makers have put more emphasis on improving physical access rather than its patterns of utilization. This study seeks to understand demand for CDSD model and its determinants among PLHIV in order to device appropriate strategies that will encourage better utilization. The objectives were to assess CDSD model of choice, and factors that determine its demand among PLHIV. A quantitative design was conducted in Kakamega County, Kenya. Systematic random sampling was used to select 402 participants from facilities with high number of stable patients. A pretested interview schedule, and structured questionnaire was used to collect data using an open data kit app. Non parametric test was used to determine determinants for demand for CDSD model. A total of 402 (depicting a response rate of 100%) participants took part in the study. The tests revealed 66 % (264) of participants prefers the family model, 25 % (100) community anti-retroviral treatment groups, 8% (30) community drug distribution points, and 2% (8) community pharmacies. Determinants of demand were awareness 76% (307), acceptability 44% (176), service availability 78% (314), and service cost 78% (315). The findings indicate that the model of choice is the family model. Determinants for demand that affect utilization of the model include awareness, service availability and cost of the services. Policy makers in the ministry of health need to use these key determinants of demand to estimate its impact on health service delivery and health outcomes.

Keywords: Access to health services, *Community Differentiated Service, Determinants of demand, People Living with HIV, utilization*

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1.0 Introduction

Demand for health services is derived from the direct value of improved health engendered by the health system (Agranal & Kosgi, 2021). A health system is an instrument of originality that promotes advanced health service delivery models (Bellow, 2005). The key role of health service delivery models is to increase access and provide high quality services. Improved access motivates clients to seek treatment early, leading to better health outcomes with profound social and benefits (Kabongo & economic Mbonigaba, 2017). The importance of improved access to health services is reflected in better health status related to ability to seek treatment on time (Gonzalez et al., 2020). Research indicates a strong relationship between better health status and economic development prompted by enhanced productivity (Ali & Sayed, 2020).

Community differentiated service delivery (CDSD) model is an innovative health service delivery method that increases access to health and improves quality of care for PLHIV (The World Health Organization, [WHO], 2017). CDSD model is an evidence based patient centered service delivery that responds to health needs, as well as client's expectation of receiving high quality health services. Research has shown that this model is able to reduce the cost (time and transport), increase peer support, and enhance community participation (Agranal & Kosgi, 2021). There is reduced work load for the health care workers, thereby giving them enough time to attend to patients with advanced HIV disease (AHD), and

subsequently leading to improved quality of care to patients (Brooke et al. , 2021).WHO recommended DSD with reverence to the design of HIV programmes in low and middle income countries with high HIV burden to support "test and treat" strategy (Kintu et al., 2021).

Studies have been done to evaluate the impact of DSD, but little has been done to assess factors attached to utilization of community models by the recipients of care. According to the joint nations development programmes on HIV/AIDs (UNIADs) 2022, global statistics indicate that 39 million people are living with HIV, and out of this 29.8% are accessing ART. Eastern and Southern Africa had 20.8 PLHIV with 83% accessing care. In 2020, South Africa reported 273,000 PLHIV who were getting ART and drugs comorbidities from DSD models while Uganda reported 61.6% of PLHIV were accessing ART from community models.

> "The key role of health service delivery models is to increase access and provide high quality services"

Despite the benefits that CDSD produces in improving access to health, the model has been underutilized (Muzeyi et al., 2023). Kenya has a coverage of 20% of CDSD compared to 86% of the facility fast tract methods (The ministry of health in



kenya, [MoHKe], 2019). More emphasis has been on promoting physical access in order to decongest health facilities, rather than focusing on patterns of utilization (MoHKe, 2018). HIV services are provided at Zero or low monetary prices because they are heavily donor funded; hence, the demand should be infinite or at least extremely high. As such, the underutilization of community differentiated service delivery is a concern (Ehrenkranz et al., 2021).

Brooke et al. (2021) noted that scaling up community differentiated service delivery can better be achieved if there is a clear understanding of demand. This calls for an investigation into the determinants of demand for CDSD by checking the level of awareness, the acceptance, the availability and the affordability of the model. Doward et al. (2020) established that to promote the model, it is crucial to conduct research on determinants of its demand (Baptiste et al., 2018). Understanding how CDSD is demanded is a useful initial point for evaluating health care system and a health care policy (Brooke et al., 2021). This will help policy makers to identify key determinants of CDSD and estimate its short term and long-term impact on its scale up. To increase demand for health services, we must better understand the perspectives and needs of both the people we are trying to serve and the health workers who provide the services. Moreover, utilization of community differentiated service delivery will improve access to health services. Hence, this study aims to understand the determinants of demand for community differentiated service delivery. The research sought to answer two questions; which community differentiated service delivery models are of choice by people living with HIV?; and what are the determinants of demand for community differentiated service delivery?

2.0 Materials and methods

Study design

This was a quantitative study that sought to determine determinants of demand for community differentiated service delivery. The study site was Kakamega County, which is located in western part of Kenya. As of December 2021, the total number of health facilities in Kakamega County that offer HIV services was 321, those that offered PLHIV were 57,952 PLHIV and 20,020 patients were stable on treatment (MoHKe, 2019).

Two high volume facilities were selected purposively based on the number of clients on antiretroviral therapy. After the selection of facilities, participants were obtained (n=401) using systematic sampling of the clients scheduled to attend clinic in the month of September 2021. This was done after a review of client level on electronic medical records data to identify clients who stable on treatment. The inclusion and exclusion criteria is presented in Table 1.



Inclusion and exclusion criteria

Inclusion	Exclusion
PLHIV	Other chronic diseases
Above 18 years	Children and adolescents living with HIV
More than one year on treatment	Less than one year on treatment
Un detectable viral load	Viral load above 400 copies
Access treatment from the facility	Patients from other areas far from the facility

Data collection procedure

A structured questionnaire was designed in two sections and uploaded on an open data kit (ODK) app. The first section was for participant's characteristics which looked at the age of the participants, the gender, and level of education, type of treatment regimen, duration of treatment, and type of the client. The second section was based on the neoclassical economic theory of rational consumer, and constrained utility maximization used in analysis of demand of modern health care.

According to Doltere et al. (2020) the model is based on the idea that an individual chooses an outcome that maximizes the utility gained from the choice. It focused on factors that affect demand; quality of care, cost of services, patient preferences, waiting time, and income. The second section of the questionnaire was a Likert scale with 10 questions. Data was collected and transmitted electronically into an excel sheet.

Ethical approval

This study was done after obtaining ethical approval from National Council of Science and Technology Innovation (NACOSTI/P/21/12623), the university ethical review team (kemu serch/HSM/35/2021) and the county director of health Kakamega County. Informed consent was obtained from participants after explaining the objectives of the study. The right to withdraw from the study whenever they wanted to do so was also respected. Anonymous interview guide was used in order to protect the identity and confidentiality of the information obtained from the participants.

Data analysis

Data was coded and analyzed using statistical package for the social science (SPSS).The non-parametric goodness of fit test, kolmogorov-smimov (K-S) was used to test for normality. The results of the K-S tests for the study variables; namely, cost of services, awareness, acceptability and availability of comprehensive package of services, established that data was normally



distributed. The responses on Likert scale were transformed into two responses: agree and disagree. The 'agree' and 'strongly agree' responses were summed up into "agree" while those of 'disagree', 'strongly disagree' and 'neutral' were summed up into disagree. After transformation non parametric measures were used to analysis data using the chi-square and p-value. The results are displayed in frequency tables.

3.0 Results and Discussion

The study collected data on demographic characteristics of participants, models of choice by the clients and the factors that determine utilization of CDSD. Results on demographic characteristics are presented in Table 2;

Table 2

Characteristic	Subset	Frequency	Percentage
Age in years	19-28	172	42.9
	29-38	161	40.1
	39-48	31	7.7
	49-58	27	6.7
	> 59	10	2.5
Gender	Female	282	70.3
	Male	119	29.7
Education level	Primary level	162	40.4
	Secondary level	112	27.9
	College	127	31.7
Type of regimen	1 st line ART	331	82.5
	2 nd line ART	67	16.7
	3 rd line ART	3	0.7
Duration on treatment	1-3 years	78	19.5
	4-6 years	175	43.6
	7-9 years	94	23.4
	>10 years	54	13.5
Type of client	Peer educators	19	4.7
	Group leaders	19	4.7
	Mentor mother	11	12.7
	Clients	352	77.9

Demographic analysis of participants

Table 2 shows that majority of participants were predominantly female aged between 19-28 years with primary level education. Most of them were on first line ART regimen for a duration of 4-6 years. Majority of them were clients who had been



on treatment for 4-7 years. The model of choice for community differentiated service delivery. The participant's responses

toward the CDSD model of preference has been presented in Table 3.

Table 1

Type of the model	Agree	Disagree	p-value
Community ART Groups	100 (25%)	302 (76%)	.000
Community ART drug distribution points	33.3 (134)	268(67%)	.014
Community pharmacies	30 (8%)	372 (93%)	.000
Family care model	34.3 (138)	(264)	.000

The choice for Community differentiated service delivery model

Table 3 reveals that majority (34.3%) of clients prefer the family model, followed by 33.3%, community ART distribution points. The community Pharmacies was the least with 7.5%. The results indicate that most of the participants would prefer the family model of care compared to other models. This result suggests that clients are reluctant to join other models due either fear of inadvertent disclosure of their HIV status to members outside the family circle. Stigma may be another reason why clients prefer family model of care. These results are similar to those by Abelman et al.

(2020) who identified that most of clients were not comfortable in enrolling in community ART groups due to fear of their HIV status being known to other people. However, Adjetey et al. (2019), established that most clients did not prefer family model because there was no experience sharing that will motivate them to take ART.

Determinants of demand for community differentiated service delivery

The responses on determinant of CDSD model is presented in Table 4.

Table 4

Determinants of demand for community differentiated service delivery among people living

Agree	Disagree	Chi square	p-value	
307 (76%)	94 (23%)	113.140 ^a	.000	
	Agree 307 (76%)	Agree Disagree 307 (76%) 94 (23%)	Agree Disagree Chi square 307 (76%) 94 (23%) 113.140 ^a	Agree Disagree Chi square p-value 307 (76%) 94 (23%) 113.140 ^a .000

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CDSD is acceptable	176 (44%)	225 (56%)	5.988 ^a	.014
CDSD is less expensive	314 (78%)	21.6 (87)	128.501 ^a	.000
Comprehensive package for CDSD is available	315(78%)	86 (21%)	130.776 ^a	.000

Note n=401, CDSD refers to community differentiated service delivery.Table 4 shows that 76.2% of the participants agreed to have been educated on CDSD model, at a p-value 0.000 and chi-square of 113.140^a; 77.9% services were available and there was no cost attached to services in CDSD model. However, 55.8% disagreed that community differentiated service delivery was acceptable.

The results showed that awareness of CDSD model was statistically significant to its demand. Awareness seems to determine demand for the model and can be attributed to a lot of advocacy and demand creation. However, the underutilization of model points out to stigma and fear of accidental disclosure of the HIV status. These findings are almost similar with the findings of a study conducted by Okere et al. (2022), Kurkla et al. (2017) and Larson et al. (2020) which found out that awareness about health services being provided is likely to increase demand for those service, leading to improved access to health service delivery.

Mhanga et al. (2021), Burger et al. (2020) and Grossman (2021) also identified that increasing the knowledge of people about dental services increased the likelihood of utilization and improvement of access to the services. These findings point to low acceptability of the model, which might be due lack of confidence in the lay health providers. These findings are similar to Mhanga et al (2020), Gonzalez et al. (2020) and Jobarteh et al. (2017) who found low acceptability level for community based models due to fear of stigma and discrimination, and also fear of not getting thorough and quality care from the clinicians. However, findings by Kurkla et al. (2017) contradicts these findings. They established a high acceptability in clients for obstetric. Successful implementation of community differentiated service delivery depends on acceptability of the model by both the clients and the health care providers. Acceptability should be considered when designing any health care intervention at the community level. If an intervention is considered acceptable, the patients are more likely to utilize it and benefit from improved access.

The results show that 77.9% of participants agreed on availability of CDSD. Availability of community differentiated service delivery was significant with pvalue of 0.000 and Chi-square 128.501^a. There is a significant relationship between availability and demand for community



differentiated service delivery. This means that there is a high probability of demand for CDSD if the services were available. These results resonate with findings by Mubian et al. (2022), Harvey et al. (2021) and Matsuoka et al. (2017) who established that non availability of obstetric health service significantly affected demand for the services. In a similar study, Nimako et al. (2017), Nyambura (2018) and Nichols et al. (2021) identified a mismatch between demand of services and its supply. They established that non-availability of health services had negatively impacted on demand.

On cost of services, 78.2% agreed that it would determine its demand. Affordability of CDSD was significant with p-value 0.000 and Chi-square, 130.776^a. Affordability of services had a statistically significant relationship with demand. This shows that if CDSD is affordable the patients are likely to demand for it; hence, increasing its utilization and subsequently improving access to health services. These findings are related to those by Wesley et al. (2018) Zhou et al. (2022) and Kiligo et al. (2019) who identified that demand for health care was negatively affected by lower income, and high price for health services. However, these results are not supported by Zakamumpa et al. (2020), who noted that low salaries and wages had no significant relationship with demand of health services. They argued that recipients of care demand for services if the services are available, and are of high quality even if they are expensive.

Utilization of community differentiated service delivery model of choice and educational level

The cross tabulation of utilization of community differentiated service delivery model of choice is outlined in Table 5.

Table 5

Cross tab of utilization of community differentiated service delivery model of choice by level

Education	Utilization of	of CDSD	Model of choice			
level	Agree	Disagree	CARGs	CDDP	СР	FM
Primary	102 (25%)	66 (17%)	50 (30%)	13 (8%)	5 (3%)	100
level &<						(60%)
Secondary	63 (16%)	48 (12%)	30 (27%)	60 (54%)	6 (5%)	15 (14%)
level						
College	62 (16%)	60 (15%)	30(25%)	40 (33%)	40 (33%)	12 (10%)

of education

Note. CARGS- community ART groups, CDDP-community ART drug distribution

Points, CP-community pharmacy and FM-family model



Table 5 indicates that majority of participants who agreed to utilize community models were those with education level of up to primary level (25.4%). The model of choice by most participants is the family model followed by community ART distribution points.

The results suggest that education has no impact when it comes to utilizing CDSD model. Majority of participants, irrespective of the level of education, prefer family model. Family model makes it easy for them to attend to other work at home or at their place of work. They felt that the CDSD model was adequate to take care of their health needs. Although there was variation among different levels of education, it is not significant enough to point out that certain levels of education prefers a certain model. These findings are similar to Minas et al. (2021) who noted that acceptance for community health volunteers is based on the fact that they comprise of clinicians, nurses and program managers. They further noted that opposition come from people who had schooled up to primary level. Those who opposed associated use of community health volunteers with privacy issues, lack of confidentiality, lack of competence and stigma.

Duration on treatment versus utilization of community differentiated service delivery

The findings on cross tabulation of duration on treatment versus utilization of community differentiated service delivery is presented in Table 6.

Table 6

Cross tabulation of duration on treatment Vs utilization of community differentiated service

delivery

Age in years	Agree %(n)	Disagree %(n)	p-value
1-3	45 (11%)	33 (8%)	0.040
4-6	96 (24%)	76 (19%)	
7-9	53 (13%)	44 (11%)	
> 10	31 (8%)	23 (6%)	

Table 6 indicates that community differentiated service delivery is utilized by majority 23.9(96) of participants who have been on treatment for 4-6 years, but less utilized by those who have been on treatment for more than 10 years.

Cross tabulation of results suggest that treatment experienced clients would utilize CDSD model more. Treatment-experienced clients are considered expert clients who have undergone more trainings and attended many sensitization sessions. These results are similar to Kaigwa et al. (2022) who identified that treatment experienced



clients adopt intervention an early compared to others. They established that during initial years, clients were uncomfortable with the intervention, but after repeated utilization, they become comfortable. This might explain the reason why patients who had been on ART for 4-6 years agreed to utilize CDSD. It is worth noting that clients who had been on ART for more than ten years had the least number of participants who agreed that community differentiated service delivery was acceptable.

Limitation of the study

Though this study brought new insights on demand for community differentiated service delivery for PLHIV, the study focused on HIV health services delivery. Another focus was on PLHIV and excluded other chronic diseases that can benefit from CDSD model.

4.0 Conclusion

The purpose of this study was to determine demand for community differentiated services and factors that influence patients' demand for the model. The pattern of choice by the patients indicate that clients will prefer family model of CDSD. The study noted that factors such as awareness, comprehensive package of services and cost of the services determined demand for CDSD.

5.0 Recommendation

The study recommends redistribution of resources to increase awareness on community ART groups, community pharmacies and community ART drug distribution points to increase uptake of ART. Policy makers in the ministry of health need to use determinants of demand for CDSD model to estimate its impact on service delivery and health health outcomes. There is need to identify policy opportunities that will enhance availability, affordability, acceptability, affordability of community models. Further studies are needed to extend this study to the demand of CDSD among clients with other chronic diseases like diabetes, hypertension and kidney diseases.

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