

Patient Satisfaction and Medication Adherence with Community Pharmacy Anti-Retroviral Therapy Refill Programme in Rivers State, Nigeria

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ABSTRACT

Background: Traditional hospital-based antiretroviral therapy (ART) delivery systems in Nigeria are burdened by overcrowding, long waiting times, and service inefficiencies. To optimize Human Immunodeficiency Virus (HIV) care, differentiated service delivery (DSD) models, specifically community pharmacy-based ART refill programme, were introduced to decentralize routine medication refill for stable patients.

Objectives: This study assessed patient satisfaction, medication adherence, and their associated determinants among stable People Living with HIV (PLHIV) enrolled in the community pharmacy ART refill programme across Rivers State, Nigeria.

Method: A descriptive cross-sectional design with a correlational component was adopted. A total of 284 people living with HIV enrolled in community pharmacy ART refill programs participated in the study. Data were analyzed using Advanced Microsoft Excel 365 for descriptive statistics and WINPEPI version 11.65 for inferential statistics at $p < 0.05$.

Result: The socio-demographic findings showed that most participants were aged 38–47 years (38.4%), female (58.5%), had secondary education (45.4%), were married (58.1%), and unemployed (83.1%). The majority had been on ART for 11–15 years (47.2%) and had used community pharmacy refill services for 5–6 years (58.8%). Findings further revealed that 68.0% of respondents were satisfied and 28.2% were highly satisfied with the services provided. ART adherence was generally good, as 97.5% of participants demonstrated good adherence, while 1.4% and 1.1% showed fair and poor adherence, respectively. Chi-square analysis showed significant associations between satisfaction and ART duration ($\chi^2 = 8.276$, $p = 0.041$) as well as community pharmacy refill duration ($\chi^2 = 10.375$, $p = 0.016$). However, no significant relationships were observed between satisfaction and socio-demographic characteristics or ART adherence ($p > 0.05$).

Conclusion: Community pharmacy-based ART refill services provide a highly acceptable model of HIV care among clinically stable PLHIV in Rivers State. The high levels of patient satisfaction observed support the continued implementation and expansion of differentiated service delivery through community pharmacies. Strengthening pharmacist capacity, maintaining service quality, and ensuring uninterrupted ART availability may further improve patient experience and long-term treatment outcomes.

KEYWORDS: HIV, ART adherence, community pharmacy, patient satisfaction, Rivers State, Nigeria.

INTRODUCTION

The management of Human Immunodeficiency Virus (HIV) has undergone a major paradigm shift, transitioning from an acutely fatal condition into a manageable chronic disease (World Health Organization, 2024). Central to this transition is the World Health Organization's universal "test and treat" strategy, which mandates early initiation of antiretroviral therapy (ART) to achieve viral suppression, reduce morbidity, and prevent population-level transmission (Nnadi et al., 2023; World Health Organization, 2024). However, the unprecedented expansion of ART enrollment has severely strained conventional health infrastructure across sub-Saharan Africa (UNAIDS, 2024). In Nigeria, where approximately 1.9 million people live with HIV, traditional hospital-based delivery environments are routinely plagued by systemic congestion, long waiting periods, and operational bottlenecks (Worgu & Ogaji, 2022; Olawepo et al., 2024).

To address these inefficiencies, differentiated service delivery (DSD) models have emerged as critical, patient-centered adaptations (Austine et al., 2024; Sanwo Olusola et al., 2021). DSD models reconfigure HIV services by shifting clinical tasks based on patient stability and institutional capacity (Ekwuofu et al., 2023). A premier manifestation of this strategy is the Community Pharmacy ART Refill Program, which decentralizes routine maintenance care by shifting clinically stable patients from tertiary health networks to accredited private community pharmacies (Asieba et al., 2021). By integrating licensed community pharmacists into

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primary HIV management, the model seeks to minimize geographic, temporal, and financial barriers, thereby securing treatment continuity (Avong et al., 2018; Barnabbas et al., 2020; Oseni & Erhun, 2021).

Differentiated Service Delivery (DSD) in HIV is a client-centered approach recommended by the World Health Organization that adapts, simplifies, and tailors HIV prevention, testing, care, and treatment across the continuum of care to better serve individual needs (WHO, 2021). According to the Federal Ministry of Health (FMOH), Nigeria, HIV Differentiated Service Delivery (DSD) models are divided into facility-based and community-based approaches. Facility-based models include: Fast-Track (FT) Refill, Appointment Spacing / Multi-Month Dispensing (MMD), Facility ART Support / Adherence Groups, and One-Stop-Shops (OSS) & Drop-In Centers (DIC). Community-based models include: Community Pharmacy ART Refill Programmes (CPARPs), Community ART Refill Groups (CARGs) / Clubs (CARCs), and Out-of-Facility / Mobile Outreach. The key models include Fast-Track ART Refills, Community Pharmacy ART Refill Programme (CPARPs), and Community/Facility ART Groups.

Evidence from Nigeria and other low- and middle-income countries suggests that community pharmacy-based ART refill model achieve excellent clinical outcomes, including high retention in care, improved medication adherence, and sustained viral suppression (Avong et al., 2018; Asieba et al., 2021; Ibiloje et al., 2022 Kwaghe, 2023). In addition to clinical effectiveness, these programmes have demonstrated high patient acceptability by reducing waiting times, improving accessibility, enhancing confidentiality, and strengthening pharmacist–patient relationships (Molas et al., 2021; Nnadi et al., 2023). Such patient-centred benefits are particularly important in HIV care, where lifelong treatment requires sustained engagement with healthcare services.

Patient satisfaction is widely recognised as a fundamental indicator of healthcare quality and an important predictor of treatment adherence, retention in care, and long-term clinical outcomes. Satisfaction reflects patients' perceptions of whether healthcare services meet or exceed their expectations regarding accessibility, communication, interpersonal relationships, confidentiality, technical competence, and overall quality of care (Ajobgor et al., 2022). Studies have consistently demonstrated that patients who report greater satisfaction with HIV services are more likely to adhere to ART, remain engaged in care, and achieve durable viral suppression (Kwaghe, 2023; Olawepo et al., 2024).

Patient satisfaction remains a central construct in healthcare quality assessment, particularly in chronic disease management such as HIV care, where long-term service engagement and therapeutic continuity are essential for optimal outcomes (Nnadi et al., 2023; Austine et al., 2024).

ART adherence refers to the extent to which people living with HIV (PLHIV) consistently take antiretroviral medications in accordance with prescribed dosing schedules, timing, and clinical instructions required to achieve optimal therapeutic outcomes. Conceptually, it represents a behavioural and clinical construct that reflects sustained engagement with lifelong HIV treatment and continuous participation in care systems that support viral suppression and long-term disease management (Uzoma, 2024).

Within HIV treatment frameworks, adherence is central to achieving virological control and preventing disease progression.

Despite strong operational data demonstrating the clinical efficacy of decentralized care, national programmatic retention in Nigeria remains suboptimal, at approximately 72%, significantly trailing the UNAIDS 95% target (Olawepo et al., 2024). While pilot studies show localized successes—such as retention rates up to 98% and viral suppression exceeding 99% among select cohorts—the behavioral and structural drivers of long-term retention remain fragmented (Asieba et al., 2021).

Patient satisfaction acts as an essential precursor to continuous treatment engagement and medication compliance (Ajobgor et al., 2022). In Rivers State, past evaluations noted localized satisfaction rates as high as 93.85% (Nnadi et al., 2023). However, existing research heavily favors basic operational benchmarks over comprehensive assessments of how patient demographics, service durations, and programmatic features interact (Austine et al., 2024). Furthermore, although community pharmacy models have demonstrated strong clinical and operational outcomes, systematic evidence linking satisfaction levels with behavioral and structural determinants remains inconsistent and fragmented across studies (Ekwuofu et al., 2023). This lack of integrated evidence creates a knowledge gap that limits the optimization of patient-centered HIV service delivery, particularly in understanding how satisfaction influences or is influenced by adherence and long-term engagement in care within decentralized ART systems in Rivers State, Nigeria. Failing to address this structural blind spot limits the optimization of patient-centered care and threatens the long-term viability of decentralized health models

The overarching aim of this study was to evaluate patient satisfaction with the community pharmacy antiretroviral therapy refill program in Rivers State. The specific objectives were to: (1) determine the level of satisfaction with services provided by community-pharmacy ART programs; (2) determine the level of ART adherence among participants; and (3) identify the specific sociodemographic, clinical, and service-related factors that influence ART satisfaction levels among participants.

THEORETICAL FRAMEWORK: THE DONABEDIAN MODEL

This study uses Avedis Donabedian's Structure-Process-Outcome Model of Healthcare Quality to systematically map out service delivery dynamics (Ajobgor et al., 2022). The framework posits that high-quality structural resources optimize care delivery processes, which directly maximize positive patient and clinical outcomes (Donabedian, 1988, as cited in Ajobgor et al., 2022).

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- **Structure:** Evaluates institutional capacities, including private counseling areas, pharmacist competencies, medication logistics, and programmatic linkages between clinics and pharmacies (Asieba et al., 2021; Oseni & Erhun, 2021).
- **Process:** Analyzes the actual execution of care, focusing on drug dispensing efficiency, waiting times, information clarity, and the maintenance of privacy during pharmacy visits (Molas et al., 2021; Nnadi et al., 2023).
- **Outcome:** Documents the downstream impacts of care, specifically focusing on patient satisfaction, medication adherence, and long-term retention (Kwaghe, 2023; Uzoma, 2024).

METHODOLOGY

Research Design and Scope

This study used a quantitative, descriptive cross-sectional correlational research design to assess patient satisfaction, antiretroviral therapy (ART) adherence, and associated influencing factors among people living with HIV enrolled in community pharmacy refill programs in Rivers State. The correlational component allowed examination of relationships between satisfaction levels and selected socio-demographic and treatment-related variables, providing empirical evidence of real-world service delivery experiences.

Study Setting

The study was conducted among PLHIV receiving ARV refills at 28 accredited community pharmacies participating in the Community Pharmacy ART refill programme in Rivers State, Nigeria. Rivers State has an estimated population of 7.4 million and an HIV prevalence of 3.6% (NAIIS, 2018). There were forty community pharmacies involved in the decentralized service delivery model as at 2024. The programme forms part of Nigeria's differentiated service delivery (DSD) model for HIV care, under which clinically stable PLHIV receive routine ART refills, adherence counselling, medication monitoring, and referral services through licensed community pharmacies. The participating pharmacies collaborate with designated HIV treatment facilities within the state. The Community Pharmacy ART Refill Programme, a form of HIV DSD model in Rivers State, is supported by non-governmental organizations through PEPFAR/USAID and Global Fund-funded projects in partnership with Rivers State Ministry of Health (RMOH) and the Association of Community Pharmacists of Nigeria (ACPN). and the Association of Community Pharmacists of Nigeria (ACPN).

Study Population

The target cohort comprised stable HIV-positive adult patients (>18 years old) devolved from high-burden public health facilities to participating community pharmacies in Rivers State. Clinical criteria required participants to have been maintained on first-line ART regimens for over six months, with baseline CD4 counts exceeding 200 cells/mm³, viral loads under 1000 copies/mL, and absence of opportunistic infections at transition. Eligible participants must have consistently utilized community pharmacy ART refill for at least one full year. As of 2024, there were about 1750 stable PLHIV who were devolved from five high-burden public healthcare facilities to community pharmacies in Rivers State.

Sample Size

The sample size was calculated using Cochran's formula for a single proportion based on an expected satisfaction proportion of 93.85% ($p = 0.9385$) from previous regional literature (Nnadi et al., 2023). After applying a design effect of 1.5 to adjust for clustering across multi-site health service points and a 10% non-response adjustment, the final minimum sample size was rounded to 150 participants. Ultimately, a total of 284 eligible participants were recruited to ensure maximum statistical power.

Data Collection Instrument and Collection Procedure

Data were collected using a validated, structured, interviewer-administered questionnaire developed for the study. The questionnaire captured detailed information on socio-demographic characteristics, patient satisfaction domains (including accessibility, waiting time, organization, and confidentiality), and ART adherence levels. Eligible participants were approached by trained research personnel during scheduled refill visits. Following written informed consent, participants completed the questionnaire in a private setting to ensure confidentiality and reduce interviewer bias.

Study Variables

The primary outcome variable was patient satisfaction with community pharmacy ART refill services, measured as a composite score from individual service items. Secondary outcome measures included the level of ART adherence and various sociodemographic and treatment-related characteristics

Data Analysis

Data were entered, cleaned, and analyzed using Advanced Microsoft Excel 365 and WINPEPI version 11.65. Descriptive statistics (frequencies and percentages) were used to summarize participant characteristics. Inferential statistical analyses, specifically Chi-square tests of independence, were conducted to determine associations between patient satisfaction and the selected independent variables. Statistical significance was set a priori at $p < 0.05$.

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Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of the Rivers State Government before the study commenced, under approval number RSHMB/RSHREC/2023/061. Administrative permission was also obtained from relevant agencies, including the Network of People Living With HIV. Participation was voluntary, and written informed consent was obtained from all participants before enrolment. Confidentiality and anonymity were strictly maintained throughout the study, and all data were used solely for research purposes.

RESULT

Participant characteristics: A total of 284 PLHIV receiving community pharmacy ART refill services participated in the study. Most respondents were aged 38–47 years (38.4%), female (58.5%), had secondary education (45.4%), were married (58.1%), and were unemployed (83.1%). Nearly half (47.2%) had received ART for 11–15 years, while 58.8% had participated in the community pharmacy refill programme for 5–6 years.

Satisfaction with community pharmacy ART services: Overall, 96.2% of participants reported being either satisfied (68.0%) or highly satisfied (28.2%) with community pharmacy ART refill services, whereas only 3.9% expressed dissatisfaction. Satisfaction was consistently high across measures of service organisation and confidentiality.

ART adherence: Good adherence was observed in 97.5% of respondents, while fair and poor adherence were reported by 1.4% and 1.1%, respectively.

Factors associated with satisfaction: Chi-square analysis showed no statistically significant associations between socio-demographic variables and satisfaction (all $p > 0.05$). However, duration on ART ($\chi^2 = 8.276$, $p = 0.041$) and duration of enrolment in the community pharmacy refill programme ($\chi^2 = 10.375$, $p = 0.016$) were significantly associated with satisfaction. ART adherence, travel distance, and waiting time were not significantly associated with satisfaction.

Table I Socio-Demographic Characteristics and Treatment Duration

Socio-Demographic		N=284	%
Age	18-27yrs	8	2.8
	28-37yrs	62	21.8
	38-47yrs	109	38.4
	48-57yrs	83	29.2
	58yrs+	22	7.7
Gender	Male	118	41.5
	Female	166	58.5
Education level	No formal education	5	1.8
	Primary	41	14.4
	Secondary	129	45.4
	Tertiary	109	38.4
Marital status	Married	165	58.1
	Separated/Divorced	14	4.9
	Single	82	28.9
	Widow/Widower	23	8.1
Employment status	Formal employment	48	16.9
	Unemployed	236	83.1

Table I presents the socio-demographic characteristics of the respondents. The majority of participants were aged 38–47 years; they accounted for 38.4%, followed by those aged 48–57 years with 29.2%, while respondents aged 18–27 years constituted the least proportion with 2.8%. Female respondents accounted for 58.5% of the participants, whereas males represented 41.5%. In terms of educational attainment, most respondents had secondary education 45.4%, followed by tertiary education 38.4%, while only 1.8% had no formal education. Regarding marital status, more than half of the respondents were married 58.1%, while singles accounted for 28.9%. A large proportion of the participants were unemployed 83.1%, whereas only 16.9% were formally employed.

Objective 1: Satisfaction Level

Table II: Responses on Satisfaction Level among PLHIV on Community Pharmacy

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Item statement		N=284	%
How satisfied are you with community pharmacy ART refill?	Highly satisfied	106	37.3
	Satisfied	171	60.2
	Unsatisfied	3	1.1
	Highly unsatisfied	4	1.4
How satisfied are you with the quality of ART services provided at the community pharmacy in terms of organization level?	Highly Satisfied	78	27.5
	Satisfied	195	68.7
	Unsatisfied	3	1.1
	Highly unsatisfied	8	2.8
How satisfied are you with the quality of ART services provided at the community pharmacy in terms of confidential level?	Highly Satisfied	83	29.2
	Satisfied	199	70.1
	Unsatisfied	1	0.4
	Highly unsatisfied	1	0.4

Table II presents respondents' level of satisfaction with community pharmacy ART refill services. Findings revealed that most participants were satisfied with the community pharmacy ART refill program (60.2%), while 37.3% were highly satisfied. Only 1.1% and 1.4% reported dissatisfaction and high dissatisfaction, respectively. Regarding the organization of ART services, 68.7% of respondents were satisfied, and 27.5% were highly satisfied. Concerning confidentiality of services, 70.1% were satisfied, and 29.2% were highly satisfied, indicating a generally high level of satisfaction with the quality of services provided in community pharmacies.

Table III: Composite Satisfaction Level

Variable		N=284	%
Satisfaction level	Highly Satisfied	80	28.2
	Satisfied	193	68.0
	Unsatisfied	10	3.5
	Highly unsatisfied	1	0.4

Objective 2: Adherence Level

Table IV: ART Adherence Level

Adherence Level	Criteria	N=284	%
Good adherence	None + <3 missed doses	277	97.5
Fair adherence	3–8 missed doses	4	1.4
Poor adherence	>8 missed doses	3	1.1

Table IV shows the ART adherence level among respondents. The findings indicate that good adherence, defined as no missed doses or fewer than three missed doses, was reported by 277(97.5%) of respondents. Participants who missed three to eight doses 4(1.4%) reported fair adherence, while only 3(1.1%) demonstrated poor adherence

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Objective 3: Factors Associated with ART Satisfaction Level among PLHIV on Community Pharmacy

Table V: Socio-Demographic Characteristics and Satisfaction Level

Socio-Demographic Characteristics		High Satisfaction	Low Satisfaction	X ² (p-value)
Age	18-27yrs	7	1	8.904 (0.064)
	28-37yrs	57	5	
	38-47yrs	104	5	
	48-57yrs	83	0	
	58yrs+	22	0	
Gender	Male	116	2	2.573 (0.109)
	Female	157	9	
Education level	No formal education	5	0	0.650 (0.885)
	Primary	40	1	
	Secondary	123	6	
	Tertiary	105	4	
Marital status	Married	155	10	5.162 (0.160)
	Separated/Divorced	14	0	
	Single	81	1	
	Widow/Widower	23	0	
Employment status	Formal employment	48	0	2.327 (0.127)
	Unemployed	225	11	

Table V presents the relationship between socio-demographic characteristics and satisfaction level among respondents. The results showed that there was no statistically significant association between satisfaction level and age ($\chi^2 = 8.904$, $p = 0.064$), gender ($\chi^2 = 2.573$, $p = 0.109$), education level ($\chi^2 = 0.650$, $p = 0.885$), marital status ($\chi^2 = 5.162$, $p = 0.160$), or employment status ($\chi^2 = 2.327$, $p = 0.127$). Across the different socio-demographic groups, most respondents reported high satisfaction.

Table VI: ART Duration and Satisfaction Level

Treatment Variables		High Satisfaction	Low Satisfaction	X ² (p-value)
ART duration	1-5yrs	5	0	8.276 (0.041)*
	6-10yrs	30	0	
	11-15yrs	132	2	
	16yrs and above	106	9	
Community pharmacy refill duration	1-2yrs	6	2	10.375 (0.016)*
	3-4yrs	90	3	
	5-6yrs	161	6	
	7yrs and above	16	0	

Table VI presents the relationship between treatment duration variables and satisfaction level. The findings revealed a statistically significant association between ART duration and satisfaction level ($\chi^2 = 8.276$, $p = 0.041$). Respondents who had been on ART for 11–15 years recorded high satisfaction among 132 participants compared to only 2 with low satisfaction. Similarly, community pharmacy refill duration was significantly associated with satisfaction level ($\chi^2 = 10.375$, $p = 0.016$), with respondents enrolled for 5–6 years recording 161 with high satisfaction and 6 with low satisfaction.

Table VII: ART Adherence and Satisfaction Level

Adherence Level		High Satisfaction	Low Satisfaction	X ² (p-value)
Good adherence	None + <3 missed doses	267	10	4.968 (0.083)
Fair adherence	3–8 missed doses	3	1	
Poor adherence	>8 missed doses	3	0	

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Table VII shows the relationship between ART adherence level and satisfaction level among respondents. However, the association between adherence level and satisfaction was not statistically significant ($\chi^2 = 4.968$, $p = 0.083$), implying that adherence level did not significantly influence satisfaction among respondents in the current study.

Table VIII: Patient-centered service factors and Satisfaction Level

Patient-centered service factors		High Satisfaction	Low Satisfaction	X ² (p-value)
Distance	Shorter	269	11	0.163 (0.686)
	Longer	4	0	
Waiting Time	Yes	264	10	1.045 (0.307)
	No	9	1	

Table VIII presents the relationship between patient-centered service factors and satisfaction level. Distance to the pharmacy was not significantly associated with satisfaction level ($\chi^2 = 0.163$, $p = 0.686$). Waiting time was also not significantly associated with satisfaction level ($\chi^2 = 1.045$, $p = 0.307$).

DISCUSSION

The high overall satisfaction rate (96.2%) observed from the Rivers State community pharmacy refill model reflects the success of patient-centered differentiated service delivery. This outcome supports the expectation-disconfirmation theory, which posits that specialized community pharmacies routinely outperform conventional, overcrowded outpatient clinics by eliminating long queues, minimizing waiting times, and lowering indirect costs such as transportation (Asieba et al., 2021; Molas et al., 2021). Shorter waiting times and accessible care environments directly translate into improved patient experiences and superior satisfaction scores (Olorunsola et al., 2019). Furthermore, the retail layout of private community pharmacies often shifts provider-client dynamics toward open, individual communication, thereby enhancing the quality of customized counseling and compassionate personal care (Nnadi et al., 2023). This high level of satisfaction aligns closely with Nnadi et al. (2023) and Worgu and Ogaji (2022), who previously demonstrated that HIV clients managed through decentralized community pharmacy networks experienced significantly more favorable patient experiences than those attending specialist tertiary clinics in Rivers State.

The high rate of good compliance (97.5%) demonstrates that removing physical, structural, and logistical barriers directly preserves patient compliance (Asieba et al., 2021; Avong et al., 2018). Within the Donabedian framework, medication adherence behaves as a downstream consequence of structural and process quality (Ajobgor et al., 2022). By reducing travel burden and providing flexible multi-month dispensing schedules, the program helps patients seamlessly incorporate lifelong medication routines into their daily schedules with minimal functional disruption (Shabani et al., 2024; Uzoma, 2024). This high adherence rate is consistent with findings by Avong et al. (2018) in Abuja and Shabani et al. (2024) in Tanzania, confirming that decentralized service models facilitate retention and near-perfect compliance.

The absence of significant relationships between socio-demographic characteristics and satisfaction indicates that community pharmacy ART services provide equitable, uniform care regardless of patients' background demographics. This supports the principle of equity in healthcare delivery. However, treatment-related variables—specifically duration on ART and duration of participation in the community pharmacy program—were significant drivers of satisfaction. This indicates that patients who have spent longer periods on treatment and within community pharmacy programs have developed greater confidence, familiarity, and trust in the service model over time (Ajobgor et al., 2022). Contrary to initial expectations, distance, waiting time, and adherence levels were not significantly associated with satisfaction in this cohort. This lack of statistical association likely stems from the overwhelmingly high baseline convenience and good adherence rates across the sample, which limited variability and minimized the detected influence of these factors on satisfaction levels.

Strengths and Limitations

Data was collected from selected number of devolved accessing ART refill from almost all the community pharmacies involved in CPARP in Rivers state. Thus, findings were true representation of the programme. Over 90% of the data were collected at standard health care facility when the patients went for their annual viral load test and biometric capturing, reducing the level of bias. However, The research does not cover core health indices of patients such as CD4 count and viral load. Also, the study does not sample the opinions of clients who access care from the facility as a basis for comparison.

CONCLUSION

The achieves excellent Community Pharmacy ART Refill Program in Rivers State represents an effective, high-performing adaptation of differentiated service delivery. By systematically meeting client expectations regarding clinical proximity, speed, and interpersonal respect, the program achieves high medication adherence and high overall satisfaction among stable PLHIV. This

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validation of private pharmaceutical sector integration into public chronic care models offers an empirical, scalable blueprint for the long-term management of HIV and other chronic conditions across resource-limited settings.

RECOMMENDATIONS

Based on the empirical findings, the following recommendations are proposed to enhance policy implementation and service delivery standards:

1. **Sustain and Institutionalize Patient-Centered Care:** Community pharmacists and program coordinators should continuously strengthen patient-centered clinical care practices, focusing on respectful communication, strict maintenance of confidentiality, and consistent drug availability to sustain high satisfaction rates.
2. **Targeted Adherence Support:** HIV care clinicians, community pharmacy providers, and adherence counselors should intensify targeted adherence-support strategies, including routine counseling, structured follow-up, and localized patient education, specifically focusing on monitoring individuals at risk of non-adherence.
3. **Focus on Long-Term Quality Improvement:** Policymakers in HIV program implementation units and the State Ministry of Health should focus on strengthening long-term patient engagement through continuous quality improvement, regular patient experience assessments, and adaptive service models that respond to patients' evolving clinical needs over time.
4. **Future Research:** Future research should conduct a longitudinal comparative analysis evaluating core health indicators; specifically viral load suppression and CD4⁺ counts between community pharmacy refill models and traditional hospital care. Furthermore, investigators must track clinical stability by comparing patient biomarkers at the point of hospital transition against their current community-based status. The empirical data will help determine the safety, efficacy, and scalability of decentralized service delivery.

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Appendix

Patient Satisfaction and Medication Adherence with Community Pharmacy Anti-Retroviral Therapy Refill Programme in Rivers State, Nigeria



GOVERNMENT OF RIVERS STATE OF NIGERIA

HEALTH RESEARCH ETHICS COMMITTEE

RS/HMB/RSHREC/2023/061 27th November 2023.

Ezekoye, Ebele Agnes
Researcher

ETHICAL APPROVAL

Your application for ethical approval of the research proposal titled: **"Patient Satisfaction on Differentiated Model of Care: A Survey of Rivers State Community Pharmacy Anti-Retroviral Therapy Refill"**, refers.

After a critical appraisal of your proposal by the Rivers State Health Research Ethics Committee, full ethical approval is hereby given to you to commence your study.

Note, that the committee reserves the right to withdraw this approval if at any time during the conduct of the study you infringe on the ethical regulations as enshrined in the ethical code.


Dr. Ishinael D. Jaja MBBS, FWACP
Chairman, Health Research Ethics Committee



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MBBS, MSC, FWACP, FMCPH, FCAI
Chief Medical Director (CMD)

Ethical Approval