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Catalyzing Quality Improvement in the HIV Control Programme of Rivers State: Evidence of the Impact of Clinical Mentorship Programme

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Authors' contributions

This work was carried out in collaboration among all authors. Authors GCO, PSD, CM and OKO managed the conceptualization. Author GCO wrote the original draft. Authors PSD, CM, OKO, RBK, EOAJ and UE contributed to data analysis, visualization, and review of the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Background: Rivers State had a huge burden of PLHIV, and the UNAIDS Spectrum 2019 model projected the total number of PLHIV in the State in 2020 to be 184,551. The semblance of HIV treatment care and support program, commencing after the diagnosis of the first reported case of HIV, dates as far back as 1989 when HIV was first diagnosed in the State. However, thirty years later, the treatment coverage had remained poor, despite the support of development partners. So, there was a strong need to strengthen the capacity of all critical actors in the program to achieve the objectives around the *three-95s* of the End AIDS Strategy, using strategic yet novel interventions

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such as the CMP. This research aims to determine how much of an effect a clinical mentorship program has had on enhancing Rivers State's HIV control efforts.

Methodology: The clinical mentorship framework was implemented and amortized to strengthen all layers of ongoing interventions to catalyze better quality improvement. Clinical Mentors were recruited as indigenous medical experts knowledgeable in HIV service delivery and trained on quality improvement strategies and the use of virtual audiovisual systems, data management, team command system, and problem-solving models for the timeous impact of achieving key programme targets.

Results: The Clinical Mentorship Programme (CMP) supported the achievement of a 690% & 23% increase in TX_CURR & PVLS, respectively, 27 months after its introduction. The TX_CURR improved by a factor of 7.9, and the PVLS increased by a factor of 1.23. The TX_CURR and PVLS achieved >100% of the target. The CMP was a success in the Rivers State HIV Control Programme.

Conclusion: Though other ongoing cross-cutting interventions may mask any reported advances in key performance indicators, the introduction of the CMP appears to have corresponded with and largely (but not entirely) stimulated the observed achievements and impact on the monitored key program metrics. It is recommended for similar contexts and public health programs in places with limited resources and significant unmet needs.

Keywords: Clinical mentorship; HIV; unmet needs; team building.

1. INTRODUCTION

According to the Federal Ministry of Health, Nigeria, the prevalence of HIV in Nigeria in 2012 was 3.4% [1]. HIV prevalence among pregnant women in Nigeria was 3.0% [2], with the UNAIDS modelling six states – Kaduna, Akwa Ibom, Benue, Lagos, Oyo, and Kano – accounting for 41% of people living with HIV in Nigeria. Together with Rivers, Sokoto, Taraba, Nasarawa, Imo, and Cross River, these 12 states and the FCT (12+1 priority states) account for 62% of the HIV burden in Nigeria. However, these survey reports were widely regarded as insufficient for precise epidemiological decision-making in the present; thus, a new comprehensive review was deemed necessary to address the shortcomings of previous surveys and gain a better understanding and precision of the granularity of the epidemic in Nigeria [3]. This led to the 2018 Nigeria HIV/ AIDS Indicator & Impact Survey (NAIIS). The survey showed the prevalence of HIV in Nigeria for persons aged 15-64 years is 1.4 (95% confidence interval [CI] 1.3–1.4%). By spectrum analysis, the number of People Living with HIV in Nigeria (PLHIV) was estimated to be 1,900,000 persons at the end of the survey in 2018 [4]. It further showed that the prevalence of HIV in Rivers State for a similar age band is 3.6 (95% confidence interval [CI] 2.9-4.3%), which is more than double the national average [5].

The semblance of HIV treatment care and support program, commencing after the diagnosis of the first reported case of HIV in Rivers State, dates as far back as 1989, when HIV was first diagnosed in the State. Rivers State had a huge burden of PLHIV, and the UNAIDS Spectrum 2019 model projected the total number of PLHIV in the State in 2020 to be 184,551. However, despite decades of programming, closing the gap in treatment coverage had remained relatively poor before this time and far from the targets of epidemic control despite the support of the US President's Emergency Plan for AIDS Relief (PEPFAR) and other development partners [6].

As of 2018, only 45,879 were ever on (Anti-retroviral treatment) ART, with about 29,273 (64%) of these retained on ART through PEPFAR support at the end of the fiscal year 2018 [7]. The ART gap was the largest of any State in the country. That is the difference between the estimated PLHIV and the number on ART. Consequently, reaching the *three-95s* of the UNAIDS End AIDS Strategy meant that 81% of all PLHIV are on ART, which required more than tripling the Tx_Curr (Treatment current – No of persons currently active on ART), from 45,879 to 149,486. The effort to accelerate the achievement of this target led to the adoption of a bundle of PEPFAR targeted HIV control program interventions through the United States Centre for Disease Control & Prevention (CDC) and implemented by the Institute of Human Virology of Nigeria (IHVN) as the Rivers ART Surge Project (RSP) to support the Rivers State AIDS/STI Control Programme (Riv-SASCP) of the Rivers State Ministry of Health. The other interventions include strengthening the reporting

systems, providing IT equipment for facilities medical records, transition of patients from antiviral combination containing effavirenz to doulutergravir combination, deployment of differentiated level of care and community treatment services. Amongst these was Clinical Mentorship Programme (CMP), a novel intervention model pioneered for the first time in Rivers State in the HIV Control space in the third quarter of PEPFAR Fiscal Year 2019 (Q3FY19). The objective of the *Surge* in the State was to help close the observed treatment gap in the State HIV Control Programme by finding, initiating, and retaining treatment, for about 100,000 additional PLHIV [7] within 18 months of the initial phase of the project. The Project life to support Rivers State HIV Control Programme was eventually extended to a treatment target of 164,178 PLHIVs on treatment by the end of the PEPFAR Q4 FY21. The growth of the TX_CURR is expected to keep in focus the target of viral load suppression (TX_PVLS – Percentage of eligible ART patients with a documented suppressed viral load result in the reporting period) as set by the UNAIDS *End AIDS Strategy* [8], which is to achieve at least 95% viral load suppression in PLHIVs. So, there was a strong need to strengthen the capacity of all critical actors in the program to achieve the objectives around the *three-95s* of the End AIDS Strategy, using strategic yet novel interventions such as the CMP.

2. METHODOLOGY

2.1 Intervention Area: Rivers State

Rivers State is located in the South-South geopolitical zone of Nigeria, commonly referred to as Niger Delta, with an estimated population of 7,303,924 by 2016 [9]. The State comprises 23 Local Government Areas, 319 political wards with Port Harcourt as the state capital, and many heterogeneous ethnic and linguistic tribes. The Niger Delta, in general, is quite insecure with frequent community unrest, kidnapping, and banditry [10]. The terrain in the State is chiefly characterized by mangroves and thick rainforest inter-spaced with arable land, making many communities only accessible by using marine transport. In 2020, there were 408 public health facilities and 147 registered private health facilities. PEPFAR supports about 117 health facilities to deliver comprehensive HIV services in the State [11]. Working in the State comes with some notable challenges, especially insecurity in some parts of the State [12] and challenges in assessing the terrain of several hard-to-reach areas [13].

2.2 Recruitment of Mentors and Deployment of the Clinical Mentorship Programme

To achieve set objectives in the HIV Control Programme, a clinical mentorship framework was developed and implemented alongside other ongoing interventions like strengthening the reporting systems, providing IT equipment for facilities medical records, transition of patients from antiviral combination containing effavirenz to doulutergravir combination, deployment of differentiated level of care or community treatment services to catalyze quality improvement. Clinical Mentors were recruited as indigenous medical experts knowledgeable in HIV service delivery. They were trained on key program objectives, HIV treatment guidelines, quality improvement strategies, virtual audiovisual evaluation models, data management, and team building. This was done through physical and virtual didactic lecture training models, experience sharing with the Zambian clinical mentor team (virtual), participatory drills, and role play. They learned zoom technology for audio-video conferencing, leveraging the infrastructure already established in the State for Project Extension for Community Health Outcomes (ECHO). The Project ECHO has been tested and used globally for knowledge sharing and peer-to-peer virtual learning for conversations around quality improvement [14,15]. The CMs were also trained on HIV treatment, care, and support using the National Treatment Guideline. The training also covered concepts of continuous quality improvement, especially the utilization of the Plan-Do-Study-Act (PDSA) cycle and other problem-solving techniques like the fishbone analysis and simple analytics for site-level decision making within the core principles of the control program. The goal was to ensure that the clinical mentors could identify program challenges; and, together with the team, co-create an adaptable solution that will guarantee quality improvement around the weak angles of the program cascade.

The clinical mentor, the implementing partner, the State Government program staff, and other key actors formed the core teams at each level of the cluster or Local Government Area. This basic concept was adopted to enable a Team-Command Structure and collective consciousness and responsibility toward desired

program goals at all levels. The mentors were deployed to various LGAs in the State – One mentor per LGA. The main objective was to inject indigenous experts into the existing implementation team in the LGAs to co-create ownership and build the capacity of the local teams for quality improvement. To promote sustainability, synchrony, program ownership, and indigenous leadership, the Chief Clinical Mentor (CCM) was the Director of Public Health and Disease Control in the Rivers State Ministry of Health [7]. The CCM's coordinating effort was greatly aided by the weekly routine reviews attended by all teams to discuss priorities, best practices, challenges, and recommendations using the audiovisual (zoom) infrastructure already deployed at the various comprehensive treatment sites State in State HIV Control Programme by the RSP. The PDSA Model was conventionally promoted to achieve Continuous Quality Improvement.

For instance, the recurrent security challenges often meant that testing teams couldn't gain physical access to the affected communities at such times. In this circumstance, the CMs encourage mainly index testing strategies to improve case findings. The elicited sexual contacts of diagnosed positive cases were generated from the electronic database into a line list. The contacts were called up and offered HTS anonymously at any safe and convenient area close to them while maintaining confidentiality and linkage. This *snowballing* method continues to grow the overall program yield for case finding in the State despite the security challenges limiting staff access. The PDSA cycle was prioritized as a valuable problem-solving model for building bridges over common challenges to achieve better outcomes.

The clinical mentors were allowed to co-create team-level innovations in consonance with program standards using practical and adaptive solutions and strategies to overcome limitations and improve services indices within the State HIV program.

2.3 Development and use of CM Data Collection Tools

To track quality improvement, the CMP cluster data was monitored using special virtual datasheet tools in addition to the regular program data tool. The CMP monitored selected critical process indicators in the HIV Control Programme. Some effort sensitive process indicators were monitored by comparison in the domains of the *three-95s* of the UNAIDS End AIDS Strategy [8]. For instance, the HIV Testing Services with positive results (HTS POS) may vary weekly for a particular cluster depending on the deployed strategies. The HTS POS outcomes for the LGAs are compared weekly against program targets to assess the efficiency of case finding.

The CMs derive and share weekly and daily targets for the locality from the target already set by the State HIV Control Programme and the PEPFAR implementing Partner for the period of interest. Boyd et al. [7] describes the TX_CURR targets at the onset of the programme as an additional 100,000 PLHIVs to be added to the State treatment programme within 18 months of the PEPFAR RSP. This required at least 100,000 HTS POS as the testing outcome, good retention, f and >95% viral load suppression for efficiency in the stipulated period. An internet-based real-time excel sheet (Google excel sheet) was set up and used in the CMP as data collection tool to monitor the progress of these critical indicators towards the target. The data achievements were populated weekly on the Google excel sheet, popularly referred to as the "*clinical mentors' tracker*". Each week, the clinical mentor fills then data for their LGA/cluster to reflect the previous week's achievements.

The CM Tracker is a 4-section formularized google excel sheet. The first Tab of the google sheet (Table 1) show the definition of indicators being monitored (most of which are process indicators), while the other three tabs show the achievement of teams along these process indicators being *tracked* as populated by the CMs. They are grouped into sections of case finding, interruption in treatment (IIT) (defaulters, lost to follow up and stopped treatment), and viral load suppression tabs on the google excel sheet. The google excel sheet is formulated to automatically describe progress rates towards reaching desired targets, often in percentages as the weeks progress.

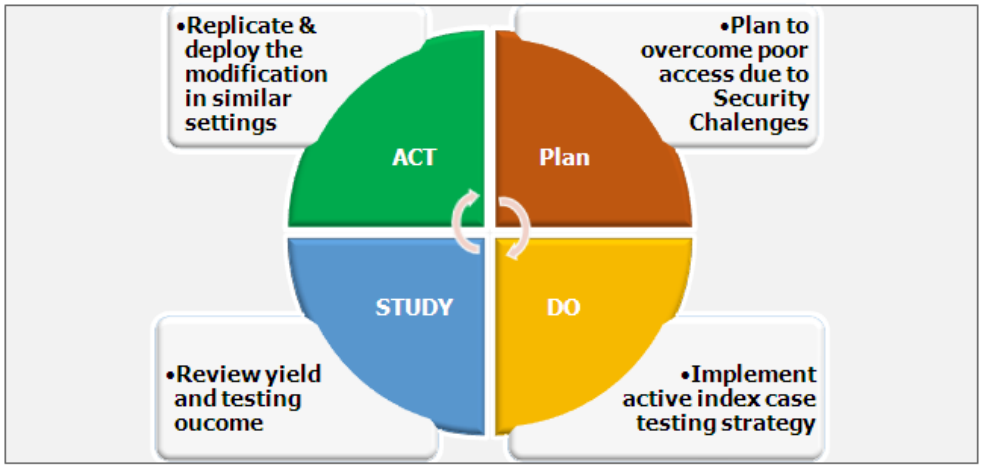

Fig. 1. The PDSA cycle

Table 1. A cross-section of the first Tab of the google excel sheet (The CM Tracker Tool) used in the CMP showing some of the indicators being monitored

Column	1st 95 Tracker Domain – (Case finding)		
C to G	**Baseline Data**		**All baseline data should be the beginning of the quarter**
C	**No of Wards**		This is the total number of wards in the LGA
D	**Total Number of Communities**		Input the total number of communities within the LGA
E	**Reached with Community HTS**		Input the total number of communities reached with HTS
F	**Total Unreached**		Input the total number of communities unreached at the beginning of the quarter
G	**CURRent LGA Coverage**		Percentage of communities reached with HTS at the beginning of the quarter
H	**Community coverage**		Number of New communities reached within the week (Excluding revisited communities)
I	**Percentage Coverage**		Percentage of communities reached within the week (Denominator – Total communities unreached, Numerator – number reached within the week)
J	**HTS TST**		Total number of persons tested for the week under review
	HTS POS		Total number of positives for the week under review
	HTS-POS% (Case finding yield)		% Number of positive yield (HTS_TST/HTS_POS)
Column	**2nd 95 Tracker Domain - (LTFU and Missed Appointment tracking)**		
D to E	**BASELINE DATA**		**All baseline data should be populated at the beginning of the quarter**
D	**Number of Missed Appointments**		Total number of missed appointments from PLHIV on ART in the facility
E	**Number of LTFU**		Total number of PLHIV no longer being seen in a clinical care program, including HIV treatment programs
F	**Total Losses for the Week (CTI patients)**	Missed Appt	Total number of missed appointments from PLHIV on ART for the reporting week
G		LTFU	Total number of PLHIV on ART for the reporting week
H	**Tracked**	Missed Appt	Total number of missed appointments from PLHIV on ART tracked for the reporting week
I		LTFU	Total number of PLHIV on ART tracked for the reporting week

Column	1st 95 Tracker Domain – (Case finding)		
J	**Reached**	Missed Appt	The total number of missed appointments from PLHIV on ART reached for the reporting week
K		LTFU	The total number of PLHIV on ART reached for the reporting week
L	**Return to Care**	Missed Appt	Total number of missed appointments from PLHIV on Community ART returned to care for the reporting week
M		LTFU	The total number of PLHIV on ART returned to care for the reporting week
N	**Dead**	Missed Appt	The total number of missed appointments from PLHIV on ART reported as dead for the reporting week
O		LTFU	The total number of PLHIV on ART reported as dead for the reporting week
P	**Transferred Out**	Missed Appt	The total number of missed appointments from PLHIV on ART reported as TO for the reporting week
Q		LTFU	The total number of PLHIV on ART reported as TO for the reporting week
R	**% Return**	Missed Appt	Percentage of Missed Appointment returned to care for the reporting week
S		LTFU	Percentage of LTFU returned to care for the reporting week
Column	**3rd 95 Tracker Domain - (Viral Load section)**		
D to G	**Baseline data**		**All baseline data should be as at the beginning of the quarter**
D	Total Eligible for VL for the Quarter		This is the total number of PLHIV eligible for VL for the FY – TX_CURR
E	Valid Results		Total number of PLHIV with a valid result
F	Total samples Collected Baseline		Total number of samples collected
G	VL coverage Gap		Pending Samples to be collected for quarter
H	VL Weekly Target		Weekly VL Sample collection target
I	Total Samples Collected for the week		Number of VL samples collected for the week under review
J	% TOTAL Sample collection Rate		Percentage of samples collected based on the VL Coverage gap at the beginning of the review period

2.4 The Data Review Processes

The indicators were reviewed and compared against the weekly targets set in the HIV Control programme analysis. To enable collective engagement, the *mentor's tracker* was reviewed every Friday of the week for about two hours, live, using the audiovisual zoom technology and the facilities established on the Project ECHO platform for the State HIV control programme. This is popularly referred to as the *Friday mentor's call*. Attendance is mandatory for all mentors, key officers of the State control program, and senior program staff of the implementing partner and sub-grantees (technical officers, program leads, and supervisors of the implementation teams). The facility and community teams often joined the meetings. The idea was to ensure that the cluster/LGA *team of teams* was present to have conversations around work progress in their respective clusters. The members of the CDC Incident Command System (ICS), RSP Project Director, and State AIDS/STI Program coordinator (SAPC) at the State level, collectively steer and give direction to the review process to ensure improved outcomes. The *Chief Clinical Mentor chiefly facilitates the mentor's call*. The CCM reviews program data ahead of the meeting and identifies the program's strengths, weaknesses, opportunities, and threats (SWOT). The CCM raises key talking points around performance interest during the call and makes relevant comparisons in percentages, colour codes, or diagrams. The *Friday Mentors Call* is scheduled to recurrently review the previous week's effort.

The methodology of the *Friday mentors review call* is as follows:

All key program staff, including mentors and officers involved in decision-making, receive an early invitation (with agenda) to attend the

meeting on the Project ECHO platform on Friday at 1100hours. The teams at State, LGA and facility levels join the call at the appointed time. The CDC ICS, RSP Project Director and the SAPC make general remarks and set the direction for the discussions. The CCM makes a 20-minute presentation of the work progress for the previous week under review on the various process indicators cluster by cluster. He raises talking points around the SWOT for each team supported by a mentor based on observations of the data analyzed from the *mentor's tracker*. The presentation of the CCM highlights the progress of the State Control Program to reaching the overall targets in colour codes, rates, charts and other narratives which elucidate a sense of direction. The clinical mentors and teams are put on notice to explain the observed changes in the process variables and indicators regarding what strategies are being deployed for the achieved output/outcome.

The process outcome for each cluster/LGA or facility is then compared with *self* (previous effort), compared with contiguous LGA, assessed in time perspective (historical trend), and compared with assigned targets in relation to resource input; measuring it against expectations, acceptable benchmarks, and standard models. The mentor-supported teams are allowed time to respond to queries and suggestions, and in some circumstances, they are requested to share best practices, innovations as well as challenges that may require intervention from the State level teams. The concerned mentors and teams take full responsibility for their achievements, and local problem-solving innovativeness is promoted in each scenario.A short section of the call reminds the teams of the best practices, program updates, and areas to focus more effort. Therefore, apart from the review of progress towards objectives, the Friday mentors call aims to ensure capacity building and team building, encourage the local team to take responsibility, and promote a problem-solving culture.

2.5 Impact Analysis

Data was sourced from the Rivers State AIDS/STI Control Programme database for HIV services delivery. Summary statistics were used to describe data, including percentages and percentage differences; quarterly and yearly data reporting was used for the inferential statistic. Outcome variables were aggregated and categorized into yearly quarters, and trend analysis was done to determine quarterly trends after the introduction of the intervention. The null hypothesis stated there was no difference in means before and after the introduction of the CMP. A p-value less than 0.05 was considered statistically significant. R programming v 4.1.0 was used for significance testing. Two major variables: Number of adults and children currently receiving antiretroviral therapy (ART) (TX_CURR) and the Percentage of ART patients with a suppressed viral load (VL) result (TX_PVLS) were assessed for impact on quality improvement in consonance with the effort at achieving the global standards.

3. RESULTS

3.1 Case Finding: (Sustained Increase in Case Finding)

The chart shows that there is an improvement in the domains of case finding (growth in the number of patients placed on treatment) with the introduction of the CMP in the State HIV control program in Q3FY19 (3rd Quarter of PEPFAR year, 2019), the TX_CURR (Number of adults and children currently receiving antiretroviral therapy (ART) rose steadily at an average quarterly rate of 16,810 new cases to of 99,733 at the end of Q4FY20. By the end of Q4FY21, the State TX_CURR was 173,212 from a baseline data of 21,914 in Q3FY19 with additional 151,298 PLHIVs added to the treatment program in the State.

3.2 Viral Load Collection and Suppression: Sustained Increase in Rates

The trend of Viral load suppression rate (TX_PVLS) shows an increase from 78% to 96% between Q3FY19 and Q4FY21 at an average rate of 2% quarterly. This represents a 23% change in PVLS as compared with the Baseline. Although the viral load collection rate also increased progressively from 51% in Q3FY19 to 95% in Q3FY21, it dipped to 86% in Q4FY21 but still shows a remarkable 86% in Q3FY21 and 69% change in Q4FY21, respectively, as compared with the baseline coverage.

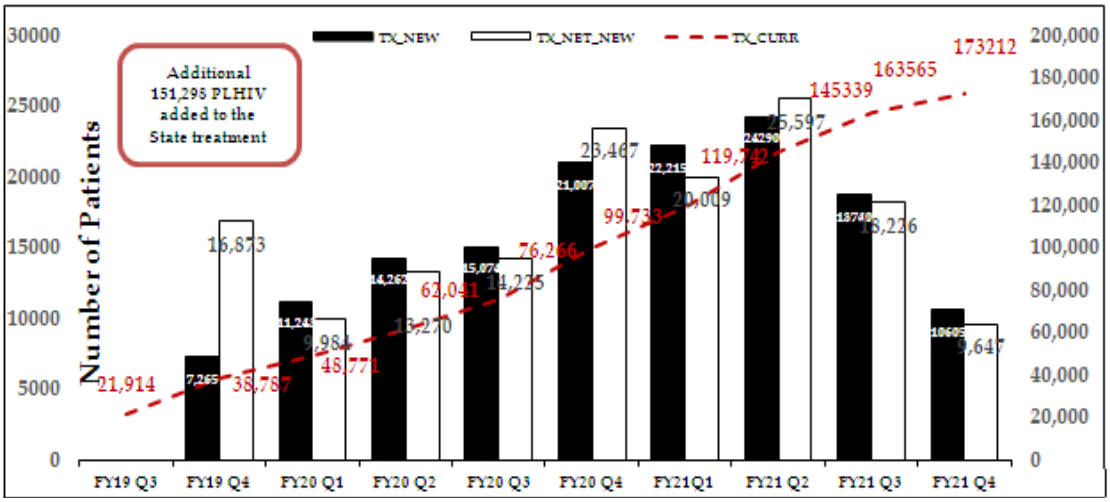

Fig. 2. Outcome of quarterly case finding in the State HIV Control Programme following the introduction of CMP in the Third Quarter of PEPFAR Fiscal Year, 2019 (FY19Q3) to FY21Q4

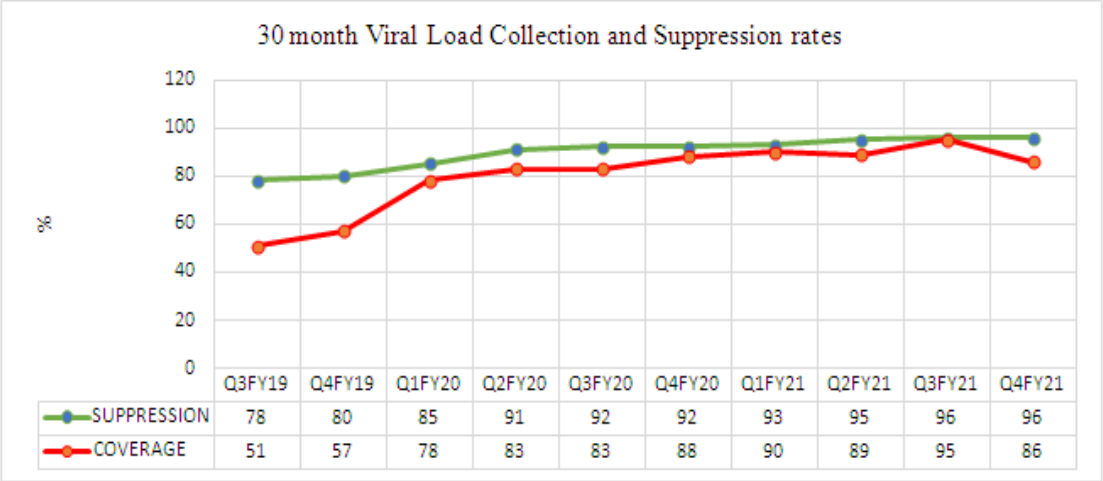

Fig. 3. Viral load collection and suppression rate in the State HIV Control Programme

3.3 Before and After Comparison

Tables (2-4) show a 690% and 23% increase in TX_CURR (Table 2) and PVLS (Table 3), respectively, after the introduction of the CMP. The TX_CURR improved by a factor of 7.9, and the PVLS increased by a factor of 1.23. The TX_CURR and PVLS achieved >100% of the target for Q4FY21 (Table 4).

Table 2. Change in TX_CURR before and after clinical mentorship program

Period	TX_Curr	Relative Change	Change factor
Initial Status before introduction of the clinical mentorship programme. Q3FY19	21,914	690%	7.9
Twenty-seven months after the introduction of the clinical mentorship programme. Q4FY21	173,212		

Table 3. Test for difference in PVLS before and after clinical mentorship program

Period	PVLS	Relative Change	Change factor
Initial Status before introduction of the clinical mentorship programme. Q3FY19	78.5%	23%	1.23
Twenty-seven months after the introduction of the clinical mentorship programme. Q4FY21	96.2%		

Table 4. Comparison Between Targets and Achievements before and after clinical mentorship program

Indicator	TX-Curr	Achievement (%)	PVLS	Achievement (%)
Targets for Q4FY21	164,178	106	95%	101
Achievements for Q4FY21	173,212		96.2%	

4. DISCUSSION - THE SUCCESS OF CMP

The HIV control program in Rivers State, through the IHVN RSP, deployed several strategies, including regular cross-cutting interventions for person-centred care, active case search for surveillance, and community services delivery models commonly used in HIV programming [7]. Many of these strategies, in addition to other specific models deployed, like the user fee waiver for PLHIVs or modifications to the differentiated models of service delivery in HIV control programs, are also practised in some other states of the country or had somewhat been in use earlier in Rivers State except the additional interphase of the clinical mentorship program. Therefore, the remarkable improvement in all monitored key performance indicators can be considered as evidence that CMP in Rivers State HIV Control Program catalysed the operating bundles of program interventions for a better impact. Boyd et al. [7] report that between the fiscal year 2017 to 2020, PWHIV on ART in the PEPFAR programme in Rivers State only grew from 21 862 in Q1FY17 to 29 273 in Q4FY2018, which reflects only a net gain of 7411 PLHIV over two fiscal years as compared to a TX_NET_NEW (which is a measure of the increase in the number of clients on ART over a period of time) during the RSP of 141,651 between Q4FY19 and Q4FY21 in an equivalent period with the additional strategy of the CMP.

In both case finding and viral load coverage domains, a trend of improvement in the monitored indices is observed between Q3FY19 and Q3FY21. Some of these improvements have also been seen in the mentor's Zambia HIV Control Programme program reported by Jhinger et al. [16]. The deployment of locally efficient strategies within a trained, cohesive, target conscious, and responsive *team of teams* as described in the framework of the CMP could have enabled the observed changes in these domains, which catalysed a 690% & 23% increase in TX_CURR & PVLS respectively after the introduction of the CMP. The TX_CURR improved by a factor of 7.9, and the PVLS increased by a factor of 1.23. The TX_CURR and PVLS achieved >100% of the target for Q4FY21.

One of the core principles of the CMP was to ensure quality improvement in the tracked indicators. The tracked indicators of viral load collection and suppression rate in the Control program showed significant improvement in both variables, moving from 56 and 78% in FY19Q3 to an all-time high of 96 and 95% by FY21 Q3, respectively ($P<0.05$). The drop-in coverage rate below 95% in FY21Q4 is mainly attributable to challenges of longer turnaround time for the return of VL results due to issues intrinsic to PCR machines at the State molecular laboratory. The prioritization of VL sample collection, especially with target setting and review of outcome in the mentor's weekly call, helped promote efficiency and ensured a better performance. The effort at improvements was sustained within the time frame when the CMP was implemented. The collective review of the weekly program data at the *Friday mentor's Calls helped* consolidate winning strategies. Indeed, critical program reviews have been known to lead to improvements in indicator outcomes [17].

The *Friday Mentor's call* helped in achieving a resilient, adaptive, accountable, responsible, and interconnected cluster of teams with unity of purpose & command towards a single goal of reaching the local unserved/underserved with HIV services. The regular physical meetings for

program management and reviews are expensive and practically challenging to organize, especially during the period of the pandemic. The audio-visual virtual review platform enabled collective data exhibition for evaluation, experience sharing, and peer-peer learning [18,19]. The reviews further allow for shared understanding and strengthen local programming, ensuring connectivity and a shared sense of purpose among various stakeholders [20]. It removes independent siloed operations and unites teams towards a common objective. The reviews provide a platform for indicator and event surveillance, identifying best practices, and disseminating recent information on the acceptable program direction. It offers timely and transparent management of program issues which helps to achieve resilient system synergy and douses complexities that have often limited traditional programming methods.

The paradigm concept of the CMP involved the systematic exercise of capacity building and deployment of locally adapted problem-solving interventions aimed at achieving health system strengthening for sustainability [21,22]. This created opportunities to consistently improve program outcomes in the State using the established team-command structure. The CMP was strategically deployed as a mediating variable that optimized the moderating variables to achieve better outcomes in the monitored domains of the HIV Control Programme in Rivers State, as described by Boyd et al. [6] and Chien et al. [23]. This was facilitated by indigenous program experts (medical doctors) trained in the art of engineering continuous quality improvement at the site/district/LGA level using the advantages of a virtual platform for regular collective program SWOT review towards the desired objective. The State HIV program data sets, 27 months after the introduction of CMP to catalyze quality improvements, shows the impact of meeting program targets with timely improvement in crucial program indicators.

5. CONCLUSION AND RECOMMENDATION

Twenty-seven (27) months after deployment of the CMP in the HIV Control Programme of the State, the case finding, and Viral load suppression rate achieved >100% of the targets of the control programme in the State. Though other ongoing cross-cutting interventions were concurrently operational and could confound any observed improvements in key performance indicators, the introduction of the CMP appears to have coincided and largely (maybe not entirely) catalyzed the observed successes and impact on the monitored key program indicators. It is therefore recommended to other localities in similar settings and other public health programs in low resource settings and localities burdened with high unmet needs.

DATA AVAILABILITY STATEMENT

Data is available upon reasonable request from the State AIDS/STI Control Programme of the Rivers State Ministry of Health.

ETHICS APPROVAL

Permission for publication was sought from the State AIDS/STI Control Programme and the Rivers State Ministry of Health Ethics Committee.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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