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The bottleneck is the programme: "when, not whom" in the retrospective acceptability of community-based ART initiation among criminalised key populations living with HIV in Cameroon

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Abstract

Background.

Key populations (KP) — including men who have sex with men (MSM) and female sex workers (FSW) — carry a disproportionate HIV burden yet remain underserved, especially where their identities and practices are criminalised. Community-based ART initiation (CBARTI) delivered by KP-serving community-based organisations (CBOs) could reach them, but whether they find it acceptable, and what drives that acceptability, is poorly documented.

Methods.

Analytical cross-sectional study with an embedded qualitative component among MSM and FSW living with HIV who initiated ART during the first ten months (February–November 2024) of Cameroon's national community-based ART initiation programme. We evaluated its entire pilot — the three KP-serving CBOs then implementing the modality, in two cities — and interviewed participants after at least twelve months on treatment. Acceptability was operationalised as uptake of community versus facility initiation and as free-text reasons mapped to the Theoretical Framework of Acceptability (TFA). Associations were examined with a Firth-penalised modified Poisson model with small-sample-corrected robust variance.

Results.

Of 135 participants, 116 (85.9%; 95% CI 78.9–91.3) initiated in the community, with no difference between MSM and FSW. Uptake was governed by *when* initiation occurred, not *whom* it involved: it rose from 33.3% in February to 100% from July onward (adjusted prevalence ratio 1.065 per month, 1.029–1.102; $p < 0.001$), while no individual characteristic was associated with it, and all 19 facility initiations occurred at a single site in the opening months. Reasons clustered into four TFA constructs — affective attitude (belonging), opportunity cost (proximity) and ethicality (confidentiality, discretion, safety), with burden — whereas intervention coherence, perceived effectiveness and self-efficacy never arose; the few facility initiators cited only logistics.

Conclusion.

Among criminalised key populations in urban Cameroon, community-based ART initiation was highly and almost uniformly acceptable, valued for belonging, privacy and proximity. What limited was the time the programme and its users took to trust a new modality, not any reluctance of the patient: even the few who chose a facility did so for convenience, not because they rejected community care. Programme should scale community initiation while preserving its discreet, peer-led character and domestic funding so that it endures beyond a single donor.

Background

Key populations — female sex workers (FSW), gay men and other men who have sex with men (MSM), people who inject drugs (PWID), and transgender people — carry a share of the HIV epidemic that is far out of proportion to their numbers. Across sub-Saharan Africa, they make up only about 1% of adults aged 15–49 [1]. Yet they carry a strikingly disproportionate share of the region's HIV burden. In West and Central Africa, KP, their clients and sexual partners accounted for 64% of new infections and for 25% of new HIV infections in East and Southern Africa [2]. Their coverage of antiretroviral therapy (ART) also remains persistently lower than that of the general population [1]. This gap owes little to individual choice. Rather, it reflects a tangle of intersecting biological and sociostructural forces, including pervasive stigma, discrimination, and the criminalisation of their identities and practices [1]. The Global AIDS Strategy's call for equitable access to prevention and treatment cannot be met without service models that reach these groups on their own terms [3].

Differentiated service delivery (DSD) reorganises HIV care around the needs of those who receive it, rather than the constraints of the facilities that provide it. Community-based ART is among its most developed expressions for key populations. It covers both treatment initiation and ongoing delivery outside conventional clinics. Much of this work is carried out by peer educators and community-based organisations (CBOs) [2]. The evidence is encouraging. A scoping review of KP-focused community-based ART across sub-Saharan Africa examined programmes throughout the region [2]. Depending on the setting, 54.7 and 100% clients who tested positive began treatment in community settings. Retention and viral suppression matched, and at times exceeded, what facility-based care achieved [2]. In a comparative study among FSW in Tanzania, community-based delivery raised six-month ART initiation to 100% versus 72% in facilities and was associated with markedly higher odds of initiation and lower internalised stigma [4]. Evidence of this kind underpins WHO's recommendation that community ART models be incorporated into national programmes [5].

Cameroon exemplifies the conditions these models are meant to address. Recent biobehavioural surveillance places adjusted HIV prevalence at 28.0% (95% CI 27.5–28.3) among men who have sex with men and 14.9% (14.6–15.2) among female sex workers in Cameroon [6]. The burden is not spread evenly across the country. Among MSM, adjusted prevalence reaches 48.2% (46.1–50.2) in Yaoundé but 17.4% (16.8–18.0) in Douala [6]. Among FSW, the two cities sit closer together: 15.8% (9.4–21.4) in Douala and 12.8% (8.1–17.6) in Yaoundé [6]. Both are the settings in which this study will be conducted. Prevalence in the general adult population stands at roughly 3% [7], the gap is therefore close to tenfold for MSM, and around fivefold for FSW. Such gaps do not arise in a legal vacuum. Both consensual same-sex conduct and sex work are criminalised [8], and both groups must therefore weigh the benefits of care against the risk of exposure. Key populations living with HIV in Douala and Yaoundé report high levels of intersecting HIV- and identity-related stigma [9], and national programme documents identify legal and policy barriers that directly constrain community ART initiation for these groups [10]. Against this backdrop, the Ministry of Public Health has, since 2017, formally recognised community-based

organisations of people living with or affected by HIV as actors in the care cascade [11], creating the community structures within which the present study is situated.

Demonstrated effectiveness, however, does not guarantee that key populations will accept a community-based modality when it is offered. The evidence on preferences is mixed and strongly context-dependent: in Kampala, HIV-positive FSW rated community DSD models as the *least* preferred option, citing concerns about privacy, confidentiality, and exposure to stigma in shared community spaces [12]; and in Nigerian community programmes offering same-day initiation, rapid uptake was sometimes followed by early attrition, suggesting that personal readiness can lag behind the speed of the offer [13]. Whether an individual takes up community-based initiation therefore reflects a personal appraisal of the option, not merely its availability — in other words, its *acceptability*.

Acceptability has too often been treated as self-evident in HIV implementation research. The Theoretical Framework of Acceptability (TFA) developed by Sekhon and colleagues offers an explicit definition and structure [14].Acceptability is a multi-faceted construct reflecting the extent to which those receiving (or delivering) an intervention judge it to be appropriate, on the basis of their anticipated or experienced cognitive and emotional responses, and it comprises seven constructs — affective attitude, burden, ethicality, intervention coherence, opportunity costs, perceived effectiveness, and self-efficacy [14]. Crucially, the framework distinguishes acceptability assessed *before* exposure (prospective), *during* exposure (concurrent), and *after* exposure (retrospective) [14, 15]. The participants in the present study had already been offered, and had either taken up or declined, community-based initiation; what can be observed is therefore their retrospective (experienced) acceptability, not an anticipated preference. We accordingly treat uptake of community versus facility initiation as the behavioural expression of that retrospective acceptability, and the reasons participants gave for their initiation setting — recorded as free text — as a qualitative window onto its underlying constructs.

Evidence from criminalised settings in sub-Saharan Africa remains thin. Few studies have measured the retrospective acceptability of community-based ART initiation among key populations already engaged with KP-serving CBOs, tracked whether it holds as implementation matures, or set the figures alongside the reasons participants give themselves. The present study addresses this gap. Among key populations living with HIV who initiated ART through KP-serving CBOs in Yaoundé and Douala during the first ten months of the national community initiation programme, we aimed to (i) measure the retrospective acceptability of community-based ART initiation — quantitatively, as uptake of community rather than facility initiation, describing its distribution across key-population group, city and implementing organisation, and qualitatively, by characterising through the lens of the TFA the constructs underlying the reasons participants gave for their initiation setting; (ii) describe how this uptake evolved over the course of the roll-out period; and (iii) examine whether individual characteristics antecedent to the decision accounted for any of the variation in uptake.

Methods

Study design

We conducted an analytical cross-sectional study with an embedded qualitative component): qualitative data were nested within a predominantly quantitative instrument rather than collected as a separate strand.

Setting

The study took place in Yaoundé and Douala, Cameroon's two largest cities, which together concentrate the greatest share of the national key population (KP) HIV burden [6].

Study period and observation window

The study was conducted between February 2024 and November 2025. Eligibility was anchored to an observation window running from February 2024 (the month CBARTI began in Cameroon) to November 2024. Data collection took place from October to November 2025. This deliberate twelve-month lag between the close of the observation window and the start of data collection ensured that every participant had been on ART for at least twelve months at the time of interview, and that both the initiation decision and its immediate aftermath could be reported retrospectively.

Study population and eligibility criteria

The source population comprised key populations living with HIV — men who have sex with men (MSM), transgender people, female sex workers (FSW), clients of FSW, and people who inject drugs (PWID) — diagnosed through the participating CBOs during the observation window.

Inclusion criteria.

Eligibility for CBARTI according to national criteria (a member of a key population, receiving an HIV-positive diagnosis through a community-based testing service provided by a community-based organisation (CBO) in community location, having no signs or symptoms suggestive of opportunistic infections at the time of HIV diagnosis, and not being pregnant at the time of diagnosis); ART initiation between February and November 2024; age 21 years or older (the age of majority in Cameroon, and therefore the threshold for independent informed consent); at least twelve months on ART at the time of interview; and provision of written informed consent.

Exclusion criteria

Ineligibility for CBARTI; ART initiation after November 2024; change of follow-up site after initiation, which prevented reliable ascertainment of the initiation setting and of routine clinical data; age under 21

years; and refusal to participate.

Analytical restriction.

Figure 1 summarises participant flow from the CBO diagnosis registers to the analytical sample, from those censused through the 158 participants interviewed to the 135 retained, with the reason for each loss.

Sampling and recruitment

A two-stage sampling strategy was used. At the first stage, study sites were selected purposively [16, 17], on the basis of effective implementation of community-based ART initiation; because only three CBOs across the two cities were implementing CBARTI at the time of the study, all were included, and purposive selection was in practice exhaustive of implementing sites in Yaoundé and Douala. At the second stage, an exhaustive census [18] was made, from the participating CBOs' diagnosis registers, of every key-population member newly diagnosed HIV-positive during the observation window; all were invited to take part, and participation was voluntary. Eligibility criteria (including ART initiation during the observation window) were then applied as specified above.

Participant flow — number censused, number traceable and contacted, number approached, number consenting, number analysed, with reasons for non-participation at each step — is presented in Fig. 1.

Sample size

No a priori sample size calculation was performed: the study set out to enrol the entire eligible source population over the observation window — a complete enumeration rather than a sample [18] — for which prospective sample-size calculation does not apply. The precision actually achieved was therefore characterised post hoc, in terms of confidence-interval width rather than statistical power [19]. For a single proportion, the 135 participants allow the overall proportion to be estimated with a maximum 95% confidence-interval half-width of ± 8.4 percentage points (worst case, at a proportion of 50%; normal approximation) [20]; precision is lower for the city- and organisation-specific estimates, which rest on smaller numbers (e.g. n = 53 in Douala).

Data collection

Data were collected by pairs of community health workers drawn from the participating CBOs, who received a two-day training covering digital data collection, research integrity and ethics.

Each participant took part in a single face-to-face interview. It was based on a structured questionnaire administered on tablets running KoBoToolbox (Supplementary material 1). Interviews were held in a private room on the CBO's premises, in French or English. The form embedded range and consistency

checks, and data were uploaded daily under encryption. Some items were answered by the participant. Others were completed from the CBO registers and medical records: dates of diagnosis, first clinical visit and first ARV dose, initiation setting, and initial and current regimens. A supervisor re-verified 10% of records against source documents, and queries were resolved before database lock. The questionnaire captured socio-demographic characteristics (age, key population identity, education, residence); living conditions (household composition and size, and household access to running water, electricity, a refrigerator and a television); and the HIV care pathway — awareness of CBARTI, free choice of ART initiation site, timing of key events, disclosure of HIV status and of key population identity, and treatment-related information. Reasons for the initiation setting were elicited through two open-ended items, branched on that setting, in which participants were asked in their own words why they had initiated ART where they did. Responses were transcribed verbatim at the time of interview.

Variables of the study

Outcome

The outcome was the retrospective acceptability of community-based ART initiation, measured in two ways. The first was behavioural: the setting where ART was initiated — community versus facility (handshake referral) — coded as a binary variable and taken from CBO registers and medical records. The second was qualitative: two open-ended items, one per setting, asked participants why they had initiated where they did. These free-text reasons were mapped onto the seven constructs of the Theoretical Framework of Acceptability (see *Qualitative analysis*).

Reading uptake as acceptability rests on two conditions, both met by every participant: all reported knowing community initiation was possible and choosing their setting freely. Uptake therefore reflects an appraisal of the modality, not merely its availability.

Explanatory variables

Candidate variables were restricted to characteristics antecedent to the initiation decision: key population identity (MSM / female sex worker); age at initiation; level of education (primary or less / secondary or above); parental survival status (both parents alive / at least one deceased); household economic position. Sex was not retained, being perfectly collinear with key population identity.

Two variables were derived from the recorded dates. “Age at initiation” was computed as the interval between date of birth and date of first ARV dose, in preference to age at interview, which postdates the decision by eleven to twenty-one months. “Period of initiation” was computed as the interval between 1 February 2024 — the month community initiation began nationally — and the date of first ARV dose; it indexes the maturity of the roll-out now of the decision. It was used primarily as an ordered monthly variable (month of initiation, February to November 2024) and, secondarily, dichotomised on 1 July 2024 — the midpoint of the ten-month observation window.

Household economic position was summarised by a Synthetic Economic Well-being Indicator built from household access to running water, a refrigerator and a television. Access to electricity, reported by all households, carried no information and was not retained. Given the dichotomous nature of the variables, Multiple Correspondence Analysis was used [21, 22], with the Benzécri/Greenacre correction applied to the explained inertia; each household's coordinate on the first factorial axis was rescaled from 0 to 100 and classified into tertiles. Robustness was assessed by polychoric PCA and by standard Filmer–Pritchett PCA [23], which yielded convergent results (Supplementary material 2). Although recorded at interview, the three assets used are durable goods unlikely to have changed over the intervening months, and household economic position was therefore treated as an antecedent characteristic and retained as a candidate explanatory variable.

Data management and analysis

Data cleaning and variable recoding were performed using SPSS version 27. Descriptive statistics, the test for trend and all figures were computed in R version 4.6.1 [24]. The multivariable model described below was fitted in Python 3.12 (numpy 2.4, pandas 3.0, scipy 1.17, statsmodels 0.14, pyreadstat 1.3), in which the Firth-penalised modified Poisson estimator [25] and the Morel–Bokossa–Neerchal small-sample variance correction [26] were implemented directly by the authors and verified against statsmodels to numerical precision.

Estimates are reported with 95% confidence intervals. Categorical variables are summarised as counts and percentages, continuous variables as medians with interquartile ranges.

Retrospective acceptability: uptake and reasons

The proportion of participants who initiated ART in the community is reported with an exact (Clopper–Pearson) confidence interval [27], overall and by key population group, city and implementing organisation. Exact intervals were preferred to normal-approximation methods because several subgroup proportions reached 100%, where approximate intervals degenerate to zero width [28].

The second, qualitative component of acceptability was analysed with a combined thematic and lexical co-occurrence approach. Verbatim responses were first standardised for spelling and diacritics. Codes were then developed inductively through repeated reading of the responses, with synonymous and conceptually equivalent expressions harmonised into unified codes to ensure semantic consistency across the corpus; the framework was refined iteratively in team discussions to clarify definitions, merge overlapping categories, and preserve contextual relevance (Supplementary material 3). The resulting themes were mapped deductively onto the seven constructs of the TFA [14]; any theme that did not fit a construct was to be retained as a separate, inductively derived category rather than forced into an ill-fitting one — a hybrid deductive–inductive approach [29]. Coding was performed independently by two researchers, with a third arbitrating unresolved discrepancies; validity rested on this consensus-based process rather than on formal inter-coder reliability statistics, an approach appropriate to the exploratory aim and to the short, open-ended nature of the responses [30]. For each theme we report its groundedness (the number of quotations to which it was assigned); given the marked imbalance in

group size, frequencies are reported overall and any differences between key-population groups are described rather than tested.

Thematic proximity was then examined by lexical co-occurrence [30]. We quantified how often and how consistently two codes co-occurred using the Jaccard coefficient (C), a symmetric, normalised co-occurrence index [30–33] defined as the number of textual units in which both codes occur divided by the number in which either occurs. Values range from 0 (no co-occurrence) to 1 (complete overlap), and in sparse coded corpora coefficients above 0.25 are conventionally taken to mark stronger, non-incidental associations [30, 32, 34]. The coefficient is well suited to sparse coded text and, resting on presence–absence patterns, is conceptually more appropriate here than measures such as Phi that are intended for quantitative binary variables; its purely lexical character was mitigated by the prior harmonisation of synonymous and equivalent expressions during coding [30]. All co-occurrence matrices and C coefficients were computed with the native function of ATLAS.ti version 9, and the lexical patterns were triangulated with the thematic interpretation. Themes and their TFA constructs are displayed against the initiation setting as Sankey diagrams, and theme co-occurrence as a network, the width of each flow being proportional to its frequency.

Change in community-based initiation over the roll-out period

The monthly proportion of community initiation was computed with exact confidence intervals from February to November 2024, overall and separately for each implementing organisation. Monotonic change across the ordered months was tested using the Cochran–Armitage test for trend [35–37].

Factors associated with community-based initiation: model specification and estimation

Community-based initiation was a common outcome, so odds ratios would have overstated the corresponding prevalence ratio; the data were also sparse and separated, no facility-based initiation having occurred after June 2024. The multivariable model was therefore fitted as a modified Poisson regression (log link, robust variance) with Firth-type penalisation and the Morel–Bokossa–Neerchal small-sample bias-corrected sandwich variance estimator [25, 26], which yields finite, interpretable adjusted prevalence ratios under these conditions. Wald p-values were derived from the bias-corrected sandwich standard errors. The model was specified a priori and comprised key-population identity, age at initiation, level of education, parental survival status, household economic position and period of initiation (ordered month since 1 February 2024). No variable was screened in or out on the basis of a univariable test.

The robustness of this specification was examined in pre-specified sensitivity analyses: household economic position was re-entered as a continuous well-being score in place of tertiles; period of initiation was re-expressed as a binary contrast about the midpoint of the observation window (before versus on or after 1 July 2024); and the model was refitted without the Firth penalty to confirm that

penalisation was not driving the estimates. A summary of the estimation procedure is provided in the supplementary material 4.

City is fully determined by implementing organisation: the single Douala organisation accounts for every Douala participant, so the two cannot share a model. All facility-based initiations arose there, and none occurred after June 2024. Period, organisation and city thus mark the same events and cannot be told apart at this sample size. We kept period in the primary model, as it tracks how far the roll-out had progressed (objective ii), and refitted with organisation in its place as a secondary check in Table 5.

Handling of missing data

Missing values were rare: three across the 135 participants. Descriptive statistics were therefore computed on available cases (pairwise deletion), and the denominator is reported for each variable affected [36, 37]. The multivariable model was fitted on complete cases (listwise deletion, n = 133) [38, 39].

Ethical considerations

The study was approved by the Cameroonian National Ethics Committee for Human Health Research (No. 2025/09/168/CE/CNERSH/SP) and the Institutional Ethics Committee of the Catholic University of Central Africa – School of Health Sciences (No. 2025/02055/CEIRSH/ESS/MSP). Administrative authorization was granted by the Cameroonian Ministry of Public Health (No. 631–4425). Written authorisation from each participating CBO was obtained. The study complied with the Declaration of Helsinki [40] and International ethical guidelines for health-related research involving humans [41]. All participants provided written informed consent after an explanation delivered in their preferred language by a trained interviewer; all were aged 21 years or older. Given the criminalisation of same-sex conduct and of sex work in Cameroon, additional protections were applied: no names or direct identifiers were recorded on study instruments, each participant being assigned a numeric code; interviews were conducted in a private room without third parties present; devices were password-protected and encrypted, and data were transferred to a secure server accessible only to the investigators; no individual-level data were shared with any administrative or judicial authority. Participants were informed that they could decline any question or withdraw at any time without any consequence for their care and received no compensation for their time.

Results

Recruitment and participant characteristics

The analysis was further restricted to MSM and FSW. Clients of sex workers (n = 17) were excluded because UNAIDS classifies them as sexual partners of key populations rather than as a key population in their own right. Transgender people (n = 3) and PWID (n = 3) were excluded because their numbers were too small to support meaningful stratified analysis. Of the 158 participants interviewed, 135 were retained in the analytical sample (Fig. 1).

Of the 135 participants, 71 were MSM (52.6%) and 64 FSW (47.4%); 82 (60.7%) were enrolled in Yaoundé (Table 1). Age set the groups apart: median age at initiation was 24.8 years among MSM (IQR 22.4–30.7) and 36.8 years among FSW (30.9–44.5). Schooling followed the same divide, with 54 MSM (76.1%) reaching secondary level or above against 38 FSW (59.4%). Both parents were alive for 85 participants (63.0%), and median household size was four in each group. Every household had electricity, so the item was dropped from the index. Piped water again separated the groups: 93.0% of MSM households against 55.6% of FSW households. On the synthetic index, MSM clustered in the middle and upper tertiles (40.8% and 46.5%), whereas FSW fell at both extremes (41.3% lowest, 42.9% highest). Three values were missing: age for one MSM participant, piped water and the index for one FSW participant (Table 1).

Table 1
Sociodemographic characteristics and household living conditions of participants, overall and by key-population group (N = 135)

Characteristic	Overall (N = 135)	MSM (n = 71)	FSW (n = 64)
Sociodemographic characteristics			
Age at ART initiation (years) median [IQR]	30.4 [24.4–37.9]	24.8 [22.4–30.7]	36.8 [30.9–44.5]
City, n (%)			
Yaoundé	82 (60.7)	49 (69.0)	33 (51.6)
Douala	53 (39.3)	22 (31.0)	31 (48.4)
Level of education, n (%)			
Primary or less	43 (31.9)	17 (23.9)	26 (40.6)
Secondary or above	92 (68.1)	54 (76.1)	38 (59.4)
Parental survival status, n (%)			
Both parents alive	85 (63.0)	47 (66.2)	38 (59.4)
At least one parent deceased	50 (37.0)	24 (33.8)	26 (40.6)
Household living conditions			
Household size, median [IQR]	4 [2–6]	4 [1–7.5]	4 [2–5]
Piped water, n (%)	101 (75.4)	66 (93.0)	35 (55.6)
Electricity, n (%)	135 (100)	71 (100)	64 (100)
Refrigerator / freezer, n (%)	71 (52.6)	36 (50.7)	35 (54.7)
Television, n (%)	112 (83.0)	62 (87.3)	50 (78.1)
Household economic position (SEWI), n (%)			
T1 — low	35 (26.1)	9 (12.7)	26 (41.3)
T2 — middle	39 (29.1)	29 (40.8)	10 (15.9)
T3 — high	60 (44.8)	33 (46.5)	27 (42.9)

IQR, interquartile range; SEWI, Synthetic Economic Well-being Indicator (axis 1 of multiple correspondence analysis, in tertiles); MSM, men who have sex with men; FSW, female sex workers. Percentages are column percentages computed on non-missing values. No between-group tests are reported: the groups are defined populations and the table is descriptive.

 Age at initiation missing for 1 MSM participant (MSM: n = 70). Piped water missing for 1 FSW participant (FSW: n = 63).

 Electricity, reported by all households, carried no discriminating information and was not retained in the SEWI. SEWI missing for 1 FSW participant (FSW: n = 63).

Retrospective acceptability of community-based initiation: uptake and reasons

Uptake of community-based initiation

Overall, 116 of the 135 participants-initiated ART in the community rather than in a health facility (85.9%, 95% CI 78.9–91.3). The two key-population groups did not differ. Among MSM the proportion was 88.7% (79.0–95.0), and among female sex workers 82.8% (71.3–91.1); the intervals overlap widely. The difference lay elsewhere. In Yaoundé, every participant initiated in the community (100%, 95.6–100). In Douala, 34 of 53 did so (64.2%, 49.8–76.9). The two intervals do not overlap. Stratification by implementing organisation reproduced this divide exactly. Both the MSM organisation and the FSW organisation initiated every participant in the community (100%, 92.7–100 and 100%, 89.4–100 respectively). The mixed-population organisation initiated 64.2% (49.8–76.9). All 19 facility-based initiations recorded in the study therefore occurred at a single site.Three of the eight estimates reached 100%. Their lower bounds remained informative, ranging from 89.4% to 95.6%, and varied only with the size of the denominator (Fig. 2).

Reasons for the initiation setting

Twelve themes emerged (Fig. 3), applied 137 times across the 133 participants who gave at least one reason, and mapped onto four of the seven constructs of the Theoretical Framework of Acceptability (Fig. 4); intervention coherence, perceived effectiveness and self-efficacy did not appear (Table 2).

Affective attitude was the most frequently cited construct overall (45 applications, 32.8%), ahead of burden (38, 27.7%) and then ethicality and opportunity costs (27 each, 19.7%) (Table 2). Among the 114 community initiators who gave reasons for site initiation, all four constructs featured (Fig. 3, Fig. 4): a sense of community support and belonging was the single commonest reason (28), proximity to home the next (27), and confidentiality, discretion and personal safety together the third (24); speed of service and no time lost was also prominent (11 of its 22 mentions came from this group) (Fig. 3). The combination — belonging, proximity, and privacy — is precisely what a discreet, trusted, neighbourhood-based service would be expected to elicit. The 19 participants who initiated at a facility through a handshake referral gave a narrower, more practical set of reasons (Fig. 3). Burden predominated (11 of 19), essentially speed of service and no time lost, alongside a few mentions of trust in the setting (5) and confidentiality (3) (Fig. 3). None cited proximity, and none framed the facility as offering belonging or freedom from stigma. Facility initiation was thus chosen for logistical reasons rather than preferred over

community care on relational or privacy grounds — a pattern that, if anything, underlines the acceptability of the community modality.

For participant who gave at least one reason for their initiation setting, reasons were almost always singular: only three pairs of themes ever co-occurred, each in a single response, with Jaccard coefficients between 0.02 and 0.04 (Fig. 5), so participants typically named one dominant consideration.

Table 2
Reasons given for the initiation setting: themes and their Theoretical Framework of Acceptability (TFA) constructs, by frequency (137 theme applications across 133 participants).

TFA construct and theme	**n**	**%**
Affective attitude	**45**	**32.8**
TH01 Community support and sense of belonging	28	20.4
TH02 Absence of stigma or discrimination	6	4.4
TH03 Feeling at ease or personal well-being at the site	6	4.4
TH04 Trust in the setting	5	3.6
Burden	**38**	**27.7**
TH08 Speed of service, no time lost	22	16.1
TH06 Ease of access and fewer practical constraints	8	5.8
TH09 Flexible or extended opening hours	6	4.4
TH07 Availability of peer navigators	2	1.5
Ethicality	**27**	**19.7**
TH10 Confidentiality	13	9.5
TH11 Discretion	13	9.5
TH12 Personal safety	1	0.7
Opportunity costs	**27**	**19.7**
TH05 Proximity to home	27	19.7
Total	**137**	**100**

Values are groundedness (the number of quotations coded with each theme); percentages are of the 137 theme applications. Themes are grouped under the four TFA constructs they represent; three constructs — intervention coherence, perceived effectiveness and self-efficacy — did not arise and are omitted. Because three responses were coded with two themes each (Jaccard 0.02–0.04; Fig. 6), theme-level counts within a construct may exceed the number of distinct responses shown for that construct in Fig. 5 by up to one. There was 2 missing values

Change in community-based initiation over the roll-out period

Month of initiation was recorded for 134 of the 135 participants. Community initiation was the minority route in the opening month alone: 4 of 12 participants in February 2024 (33.3%, 95% CI 9.9–65.1). It reached 100% in April, fell back across May and June (66.7%, 38.4–88.2 and 58.3%, 27.7–84.8), then held at 100% in every month from July to November (Fig. 6, panel A; Table 3, overall columns). Across the ordered months the increase was significant (Cochran–Armitage $\chi^2(1) = 21.5$, $p < 0.001$); an exact permutation version of the test led to the same conclusion. The shift was abrupt rather than gradual. All 19 facility-based initiations fell between February and June — eight in February, one in March, five in May and five in June — and none occurred thereafter. Grouped either side of 1 July, the midpoint of the observation window, the proportion rose from 44 of 63 (69.8%, 57.0–80.8) to 71 of 71 (100%, 94.9–100; Fisher exact $p < 0.001$) (Table 3, overall columns).

Stratification by implementing organisation placed this change at one site (Fig. 6, panel B). Both Yaoundé organisations initiated every participant in the community in every month in which they recruited, leaving no variation from which to estimate a trend. The mixed-population organisation in Douala carried all 19 facility-based initiations, and there the trend held ($\chi^2(1) = 12.0$, $p < 0.001$), rising from 13 of 32 before July (40.6%, 23.7–59.4) to 21 of 21 from July onwards (100%, 83.9–100) (Table 3, Douala columns). The two Yaoundé organisations began enrolling in March 2024, so all twelve February participants came from Douala.

Table 3
Monthly proportion of community-based ART initiation over the roll-out period, overall and at the mixed-population organisation, February–November 2024

Month of ART initiation, 2024	Overall (n = 134)		Mixed-population CBO, Douala (n = 53)	
	Community / total	% (95% CI)	Community / total	% (95% CI)
February	4/12	33.3 (9.9–65.1)	4/12	33.3 (9.9–65.1)
March	8/9	88.9 (51.8–99.7)	1/2	50.0 (1.3–98.7)
April	15/15	100.0 (78.2–100.0)	7/7	100.0 (59.0–100.0)
May	10/15	66.7 (38.4–88.2)	0/5	0.0 (0.0–52.2)
June	7/12	58.3 (27.7–84.8)	1/6	16.7 (0.4–64.1)
July	16/16	100.0 (79.4–100.0)	4/4	100.0 (39.8–100.0)
August	20/20	100.0 (83.2–100.0)	6/6	100.0 (54.1–100.0)
September	12/12	100.0 (73.5–100.0)	4/4	100.0 (39.8–100.0)
October	10/10	100.0 (69.2–100.0)	4/4	100.0 (39.8–100.0)
November	13/13	100.0 (75.3–100.0)	3/3	100.0 (29.2–100.0)
February–June	**44/63**	**69.8 (57.0–80.8)**	**13/32**	**40.6 (23.7–59.4)**
July–November	**71/71**	**100.0 (94.9–100.0)**	**21/21**	**100.0 (83.9–100.0)**

CI, confidence interval; CBO, community-based organisation. Proportions are shown with exact (Clopper–Pearson) 95% confidence intervals.

Month of ART initiation was recorded for 134 of the 135 participants. The two Yaoundé organisations initiated every participant in the community in every month in which they recruited (48/48 and 33/33 participants with a recorded initiation date), so no trend could be estimated for either and they are not shown separately; all 19 facility-based initiations occurred at the mixed-population organisation. The final two rows group the months either side of 1 July 2024, the midpoint of the observation window.

Factors associated with community-based initiation

Primary model: roll-out timing, not individual characteristics

In the multivariable model, the setting of ART initiation was determined far more by *when* initiation occurred than by *whom* it involved. Each additional month of the national roll-out was associated with a higher prevalence of community-based initiation (adjusted prevalence ratio [aPR] 1.065 per month, 95% CI 1.029–1.102; p < 0.001) (Table 4), corresponding to a community-initiation prevalence roughly 1.4 times higher in the second half of the observation window than in the first (aPR for initiation on or after 1 July 2024, 1.44; 1.19–1.75) (Table 5, panel B).

None of the individual characteristics antecedent to the decision was clearly associated with the initiation setting (Table 4): key-population identity (female sex worker versus MSM, aPR 0.89; 0.71–1.12), age at initiation (1.005 per year; 0.996–1.014), level of education (secondary or above versus primary or less, 0.97; 0.81–1.16) and parental survival (at least one parent deceased versus both alive, 1.06; 0.89–1.26) all had confidence intervals spanning the null. Household economic position showed a weak inverse gradient that reached significance only when the indicator was modelled as a continuous score (0.97 per 10-point increment; 0.95–1.00; p = 0.029) (Table 5, panel A), the highest tertile being only borderline relative to the lowest (0.82; 0.66–1.02; p = 0.069) (Table 3). Results were materially unchanged when the model was fitted without the Firth penalty (period aPR 1.065; p < 0.001) (Table 5, panel C).

Table 4
Adjusted prevalence ratios for community-based (versus facility-based) ART initiation among key populations living with HIV, Yaoundé and Douala, 2024 (N = 133).

Characteristic	aPR (95% CI)	p-value
Key population		
MSM	1 (reference)	
Female sex worker	0.89 (0.71–1.12)	0.336
Age at initiation		
Per 1-year increment	1.005 (0.996–1.014)	0.311
Level of education		
Primary or less	1 (reference)	
Secondary or above	0.97 (0.81–1.16)	0.761
Parental survival		
Both parents alive	1 (reference)	
At least one parent deceased	1.06 (0.89–1.26)	0.523
Household economic position (SEWI)		
T1 – low	1 (reference)	
T2 – middle	0.84 (0.67–1.05)	0.127
T3 – high	0.82 (0.66–1.02)	0.069
Period of initiation		
Per month (Feb–Nov 2024)	**1.065 (1.029–1.102)**	**< 0.001**

Estimates are adjusted prevalence ratios (aPR) from a Firth-penalised modified Poisson regression (log link) with Morel–Bokossa–Neerchal small-sample corrected robust variance; all characteristics were entered simultaneously and specified a priori. Reference categories are shown in italic. p-values are from Wald tests based on the bias-corrected robust standard errors.

Complete-case analysis: 133 of 135 participants (2 excluded for missing covariates); 19 facility-based and 114 community-based initiations.

SEWI, Synthetic Economic Well-being Indicator (first Multiple Correspondence Analysis axis, tertiles). Age at initiation is modelled per one-year increment.

Because every facility-based initiation occurred in Douala and in the earlier months, period of initiation, city and implementing site are collinear and cannot be distinguished at this sample size; the period

estimate should be read as a joint time–site–city gradient.

Table 5
Robustness / sensitivity analyses

A. SEWI modelled as continuous score (per 10 points) instead of tertiles		
Term	**aPR (95% CI)**	**p-value**
FSW	0.90 (0.73–1.12)	0.346
Age (per year)	1.01 (1.00–1.01)	0.244
Secondary or above	0.98 (0.83–1.17)	0.856
At least one parent deceased	1.04 (0.88–1.23)	0.627
SEWI (per 10 points)	**0.97 (0.95–1.00)**	**0.029***
Period (per month)	**1.07 (1.03–1.11)**	**< 0.001*****
B. Period dichotomised at 1 July 2024 (secondary specification)		
Term	**aPR (95% CI)**	**p-value**
FSW	0.92 (0.74–1.16)	0.484
Age (per year)	1.00 (1.00–1.01)	0.307
Secondary or above	0.96 (0.81–1.15)	0.685
At least one parent deceased	1.00 (0.85–1.19)	0.958
T2 middle	0.85 (0.68–1.06)	0.151
T3 high	0.82 (0.66–1.01)	0.056
Period on/after 1 Jul 2024	**1.44 (1.19–1.75)**	**< 0.001*****
C. Ordinary (non-Firth) modified Poisson + MBN — primary specification		
Term	**aPR (95% CI)**	**p-value**
FSW	0.89 (0.71–1.12)	0.328
Age at initiation (per year)	1.00 (1.00–1.01)	0.347
Secondary or above	0.97 (0.81–1.17)	0.788
At least one parent deceased	1.06 (0.88–1.26)	0.557
T2 middle	0.84 (0.67–1.05)	0.134
T3 high	0.82 (0.66–1.02)	0.082

Findings are stable across specifications: the roll-out period is the dominant predictor in every model; Firth and ordinary estimates are near-identical (period aPR 1.065 vs 1.065), confirming that penalisation does not distort the estimates. aPR. adjusted Prevalence Ratio; CI. Confidence Interval; ; ***:< 0.1%; *:<5%;

A. SEWI modelled as continuous score (per 10 points) instead of tertiles		
Term	**aPR (95% CI)**	**p-value**
Period (per month)	**1.07 (1.03–1.10)**	**< 0.001*** **
Findings are stable across specifications: the roll-out period is the dominant predictor in every model; Firth and ordinary estimates are near-identical (period aPR 1.065 vs 1.065), confirming that penalisation does not distort the estimates. aPR. adjusted Prevalence Ratio; CI. Confidence Interval; ; ***:< 0.1%; *:<5%;		

Secondary model: implementing organisation in place of period

When implementing organisation was substituted for period of initiation, the two Yaoundé organisations serving a single key population were associated with a markedly higher prevalence of community-based initiation than the mixed-population organisation in Douala (MSM organisation, aPR 1.74; 95% CI 1.22–2.49; FSW organisation, 1.59; 1.18–2.15; both p = 0.002), the latter being the only site at which any facility-based initiation took place (Table 6). The remaining covariates were essentially unchanged: none of key-population identity (aPR 0.95; 0.62–1.48), age at initiation (1.008 per year; 0.999–1.017), level of education (1.06; 0.90–1.26) or parental survival (0.99; 0.84–1.18) was clearly associated with the initiation setting, and the weak inverse economic gradient seen in the primary model attenuated (highest versus lowest well-being tertile, 1.03; 0.83–1.28) (Table 6).

Table 6
Adjusted prevalence ratios for community-based (versus facility-based) ART initiation, with implementing organisation entered in place of period of initiation, key populations living with HIV, Yaoundé and Douala, 2024 (N = 133).

Characteristic	aPR (95% CI)	p-value
Key population		
MSM	1 (reference)	
Female sex worker	0.95 (0.62–1.48)	0.830
Age at initiation		
Per 1-year increment	1.008 (0.999–1.017)	0.066
Level of education		
Primary or less	1 (reference)	
Secondary or above	1.06 (0.90–1.26)	0.474
Parental survival		
Both parents alive	1 (reference)	
At least one parent deceased	0.99 (0.84–1.18)	0.938
Household economic position (SEWI)		
T1 – low	1 (reference)	
T2 – middle	0.85 (0.69–1.04)	0.119
T3 – high	1.03 (0.83–1.28)	0.777
Implementing organisation		
Mixed-population organisation	1 (reference)	
MSM organisation	**1.74 (1.22–2.49)**	**0.002****
FSW organisation	**1.59 (1.18–2.15)**	**0.002****
CI. Confidence Interval; ; **:< 1%; *;		

Estimates are adjusted prevalence ratios (aPR) from a Firth-penalised modified Poisson regression (log link) with Morel–Bokossa–Neerchal small-sample corrected robust variance; all characteristics were entered simultaneously and specified a priori. Reference categories are shown in italic. p-values are from Wald tests based on the bias-corrected robust standard errors.

This model is identical to the primary model except that implementing organisation replaces period of initiation. Complete-case analysis: 133 participants; 19 facility-based and 114 community-based

initiations. The same two participants were excluded for missing covariates as in the primary model, so the two models are directly comparable.

Organisations are identified by the key population they serve. The mixed-population organisation — the reference category — was the only participating organisation in Douala and the only site at which any facility-based initiation occurred; the MSM and FSW organisations, both in Yaoundé, initiated every participant in the community. Because implementing organisation, city and period of initiation explain the same events, the two organisation contrasts should be read as the same joint site–city–time signal carried by period of initiation in the primary model, not as an independent effect of organisation. Key-population identity is near-collinear with organisation (two of the three organisations serve a single key population) and is therefore identified almost entirely within the mixed-population organisation, which widens its confidence interval relative to the primary model.

SEWI, Synthetic Economic Well-being Indicator (first Multiple Correspondence Analysis axis, tertiles). Age at initiation is modelled per one-year increment.

Discussion

Principal findings

Among MSM and FSW living with HIV who started treatment through key-population-serving CBOs in Yaoundé and Douala, community-based initiation was the rule, not the exception: 116 of 135 (85.9%) began in the community, with no gap between the two groups. What decided the setting was when treatment started, not who started it. Each further month of the roll-out raised community initiation (adjusted prevalence ratio 1.065 per month), and by July 2024 it was near-universal. No prior individual trait predicted it. The only other signal was a weak inverse economic gradient, and all 19 facility initiations sat at one Douala organisation in the opening months. The reasons participants gave matched this. They fell into just four of the seven constructs of the TFA: affective attitude, burden, ethicality and opportunity costs. Intervention coherence, perceived effectiveness and self-efficacy never surfaced. Community initiators spoke of belonging, proximity, and confidentiality, discretion and safety; the few who chose a facility gave narrow practical reasons. Read through the TFA, near-universal uptake of a freely chosen option, and these reasons, mark high retrospective acceptability [14, 15].

Meaning

The "when, not whom" pattern reframes our question. What held community initiation back was not reluctance but the readiness of the modality itself: wherever a settled CBO offered it, almost everyone took it. Demand was high and even across both groups; what varied lay with time and site. The reasons show what that acceptability was made of. Participants voiced a warm affective attitude, belonging foremost; a lower opportunity cost, namely proximity; and an ethicality of confidentiality, discretion and safety. Less burden, above all speed, completed the set. The three cognitive constructs never appeared. For a decision entrusted to a CBO this fits: people weighed how the service felt, what it shielded, and

what it cost them, not the efficacy of ART or their own capability, which they seem to have taken on trust. We did not merely assume free choice; the questionnaire asked each participant whether they knew community initiation was on offer and whether they chose their site freely, so uptake reads as acceptability with unusual confidence. That the reasons ignored education, age and key-population identity, and were nearly always singular, one motive apiece, confirms that acceptability was broad, shared, and hinged on one salient feature of the service.

Persistent facility initiation reflected early caution, not rejection

The 19 who initiated at a facility might seem to contradict this. On inspection they confirm it. They did not come from a group or place that shunned community care: in Douala, the only city where any facility initiation occurred, the community route still won the majority (34 of 53). They clustered in time, every case between February and June 2024 and none after. Their reasons were practical: mostly speed and no time lost, with a little trust in the facility and confidentiality. Tellingly, none mentioned proximity, and none cast the facility as a place of belonging or safety from stigma. This is early caution towards something new, not rejection of it. When a fresh way of starting treatment appears, a prudent few keep to the familiar clinic, and their number falls as the option proves itself. Even those who stayed away from the community did not find it unacceptable.

Why acceptability was so high, and why the shift was abrupt

That such acceptability should arise among criminalised, stigmatised groups is less strange than it looks, and the reasons explain it. Attending a clinic carries real risk for MSM and FSW where same-sex conduct and sex work are criminalised [1, 8, 42], and intersecting HIV- and identity-related stigma runs high in these cities [9]. A KP-serving CBO moves the encounter into a discreet, trusted space and puts it in the hands of peers. That confidentiality, discretion and safety ranked so high is the fingerprint of this privacy premium, and the weight of belonging echoes the lower internalised stigma seen with community delivery among Tanzanian FSW [4] and the engagement gains reported across the region [2]. This is the client-centred logic of differentiated service delivery made real [5, 43].

The timing tells the same story, with a second mechanism added. The change was a step, not a slope: facility initiations fell entirely in the early months, then vanished. Part of this is supply-side maturation, as referral paths, staff skill and CBO–facility coordination settled. But the shape is also an adoption curve on the demand side: a new option earns collective trust over time, and the cautious few who first prefer the clinic give way as peers take it up and it proves itself [44]. The two work together, and neither points to fixed reluctance; the covariates and the uniformity of reasons show demand was high throughout, varying only in how quickly a novel option was trusted. Because period, site and city move together here, calendar time cannot be teased apart from that one Douala site. Yet on every reading the driver is the modality maturing, in the programme and in collective trust, not the patient.

The economic gradient, reconsidered through the reasons

The one hint of heterogeneity, slightly lower community uptake among better-off households and significant only as a continuous score, gains a mechanism from the reasons. Proximity was among the commonest grounds for community initiation, an opportunity cost. Households with more means, and more ways to travel, may weigh proximity less and find the facility route no dearer. A quantitative economic gradient and a qualitative opportunity-cost theme thus converge, though the gradient was weak and stays exploratory.

Comparison with other studies

Our high acceptability contrasts sharply with Kampala, where HIV-positive FSW ranked community DSD their least preferred option, wary of privacy and stigma in shared community spaces [12]. The reasons make the gap intelligible: what deterred the Kampala women, exposure in shared venues, appears in our data with the opposite sign, as confidentiality, discretion and safety cited for community initiation. The difference is the vehicle, a generic community model against a discreet, KP-competent CBO, and one lived rather than merely imagined, the prospective-versus-retrospective distinction the TFA draws [15]. Our findings therefore describe a particular model, not community DSD at large. Against the wider literature our uptake sits high: a regional review found community initiation in 54.7–100% of those testing positive [2], and community delivery lifted six-month initiation to 100%, against 72% in facilities, among Tanzanian FSW [4]. It also fits the effectiveness evidence: in the DO ART trial, community initiation and monitoring raised viral suppression over clinic care, especially in men [45]. Acceptability and effectiveness now pull the same way. The Nigerian experience checks the optimism: same-day community initiation drew rapid uptake but early attrition, readiness trailing the speed of the offer [13]. Our design did not measure retention, and high initiation acceptability should not be read as lasting engagement.

Public health implications

For Cameroon and settings like it, the message is plain. Community-based ART initiation run by KP-serving CBOs is highly acceptable to the people it aims to reach, and acceptable for reasons that count: belonging, privacy and proximity. It should be scaled. The Ministry of Public Health already recognises organisations of people living with, or affected by, HIV as actors in the care cascade, which gives scale-up a foundation [11]; it also fits WHO guidance on differentiated service delivery [5, 43] and the UNAIDS equity agenda [3].

Since the constraint was how fast the modality matured, not patient reluctance, investment should speed that maturation from both sides. On the supply side, this means staff proficiency, a standard CBO-to-facility referral, and mentoring in the early months. On the demand side, it means building trust early, through peer testimony and visible first successes, because the caution of a prudent minority soon

fades. The reasons carry a further lesson. The confidentiality, discretion and peer delivery that participants prized are not soft extras but the heart of what makes the modality acceptable and must be preserved as programmes grow.

The pilot's resilience is telling. Data collection coincided with the withdrawal of its main external donor. Even so, and even as some tutelary facilities stepped back for want of supervision, all three CBOs kept initiating and following patients in the community, one by moving its workers into the tutelary facility. That resilience rested on local ingenuity and CBO commitment, not on secure domestic funding. Cameroon should therefore anchor community initiation in routine facility supervision and its own budget before expanding it, so that continuity no longer hangs on a single donor or a workaround.

Community models still only soften, rather than remove, the risks that criminalisation creates [1, 42]; legal and policy reform remains the precondition for the enabling environment differentiated care needs [10, 43]. Programmes should also watch the weak economic gradient, so that community delivery reaches, rather than quietly bypasses, those it helps most.

Strengths and limitations

The study's main strength is coverage. It examined the entire national pilot, all three organisations then running community-based initiation in Cameroon, and within them nearly every key-population member diagnosed during the window. This is a census of the pilot, not a convenience group, so the acceptability figure carries little selection bias. We also measured free choice rather than assumed it: the questionnaire asked each participant whether they knew community initiation was available and whether they chose their site freely, so uptake can stand for acceptability with unusual confidence. The evidence also converged. Uptake, the reasons behind it and the way those reasons clustered told one story. Lastly, the statistics fitted the data: a Firth-penalised modified Poisson model with a small-sample-corrected robust variance, specified in advance and checked by sensitivity analyses [25, 26], with safeguards suited to a setting where same-sex relations and sex work are criminalised.

The limits are as clear. The pilot was urban, three organisations in two cities, and period, site and city move together, so the time trend is really a joint time–site–city gradient; whether it holds at rural scale, under different funding, is untested. The study also could not measure retention or compare it between routes, so it speaks to acceptability and medium-term feasibility, not to lasting engagement, the worry the Nigerian attrition raises [13]. The reasons came from brief free text, coded by consensus rather than formal inter-rater statistics; short answers yield one salient motive, so the silence on the three cognitive constructs may reflect the format, not true absence. Interviews fell 11 to 21 months on, inviting recall and social-desirability bias, and people still close to the organisations may overstate warm reasons. With only 19 facility-based events, small associations could go undetected, so a null is not proof of none. Finally, transgender people, people who inject drugs and clients of sex workers were excluded, so the findings hold for MSM and FSW.

Conclusion

Among MSM and FSW living with HIV in urban Cameroon, community-based ART initiation through KP-serving CBOs was highly and almost uniformly acceptable, and the reasons participants gave say why: belonging, privacy and proximity. What varied was not who accepted it but when. A new modality won trust as it matured and proved itself, and even the cautious minority who first chose the clinic did so on practical grounds, not because they found community initiation unacceptable. The constraint, then, is the time a programme and its users take to trust something new, not any fixed reluctance of the patient. Community initiation should be scaled, keeping the discreet, peer-led qualities that make it acceptable and pairing site readiness with early trust-building.

Some questions remain open. Prospective, multi-country work would separate calendar time from site and city, and test whether early demand-side support shortens the adoption curve. Following initiation through to retention and viral suppression, and comparing the two routes, would show whether acceptable initiation becomes lasting treatment. Since brief free text seems to miss the more cognitive constructs, instruments built to probe intervention coherence, perceived effectiveness and self-efficacy would tell us whether these are truly marginal or simply unspoken. And extending the work to transgender people and people who inject drugs would show whether the same drivers hold.

Abbreviations

aPR: adjusted prevalence ratio

ART: antiretroviral therapy

ARV: antiretroviral (drug)

CBARTI: community-based antiretroviral therapy initiation

CBO: community-based organisation

CI: confidence interval

DSD: differentiated service delivery

FSW: female sex worker(s)

HIV: human immunodeficiency virus

IQR: interquartile range

KP: key population(s)

MCA: Multiple Correspondence Analysis

MSM: men who have sex with men

PCA: Principal Component Analysis

PWID: people who inject drugs

SEWI: Synthetic Economic Well-being Indicator

TFA: Theoretical Framework of Acceptability

UNAIDS: Joint United Nations Programme on HIV/AIDS

WHO: World Health Organization

Declarations

Ethics approval and consent to participate

The study was approved by the Cameroonian National Ethics Committee for Human Health Research (No. 2025/09/168/CE/CNERSH/SP) and the Institutional Ethics Committee of the Catholic University of Central Africa – School of Health Sciences (No. 2025/02055/CEIRSH/ESS/MSP). Administrative authorization was granted by the Cameroonian Ministry of Public Health (No. 631-4425). Written informed consent was obtained from all study participants.

Consent for publication

Not applicable, as no personally identifiable information or individual data is published.

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available because, despite the removal of direct identifiers, the combination of sensitive clinical and sociodemographic variables may pose a risk of participant re-identification. The data may be made available by the corresponding author upon reasonable request, subject to appropriate data-use agreement.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

JPYAN and ELAO conceptualised the study and contributed to its design. JPYAN led data management, data cleaning, quantitative and qualitative coding, statistical analysis and interpretation of the findings, provided technical input into the qualitative analysis, and co-wrote the original draft of the manuscript. ELAO coordinated field activities and data collection, contributed to data analysis and interpretation, and co-wrote the original draft.

JN and RKD contributed to data entry, data cleaning, coding and statistical analysis.

JLNL, JA and ACZKB provided methodological and scientific guidance, supervised the study, contributed to the interpretation of the findings, and critically revised the manuscript.

All authors reviewed and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

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Figures

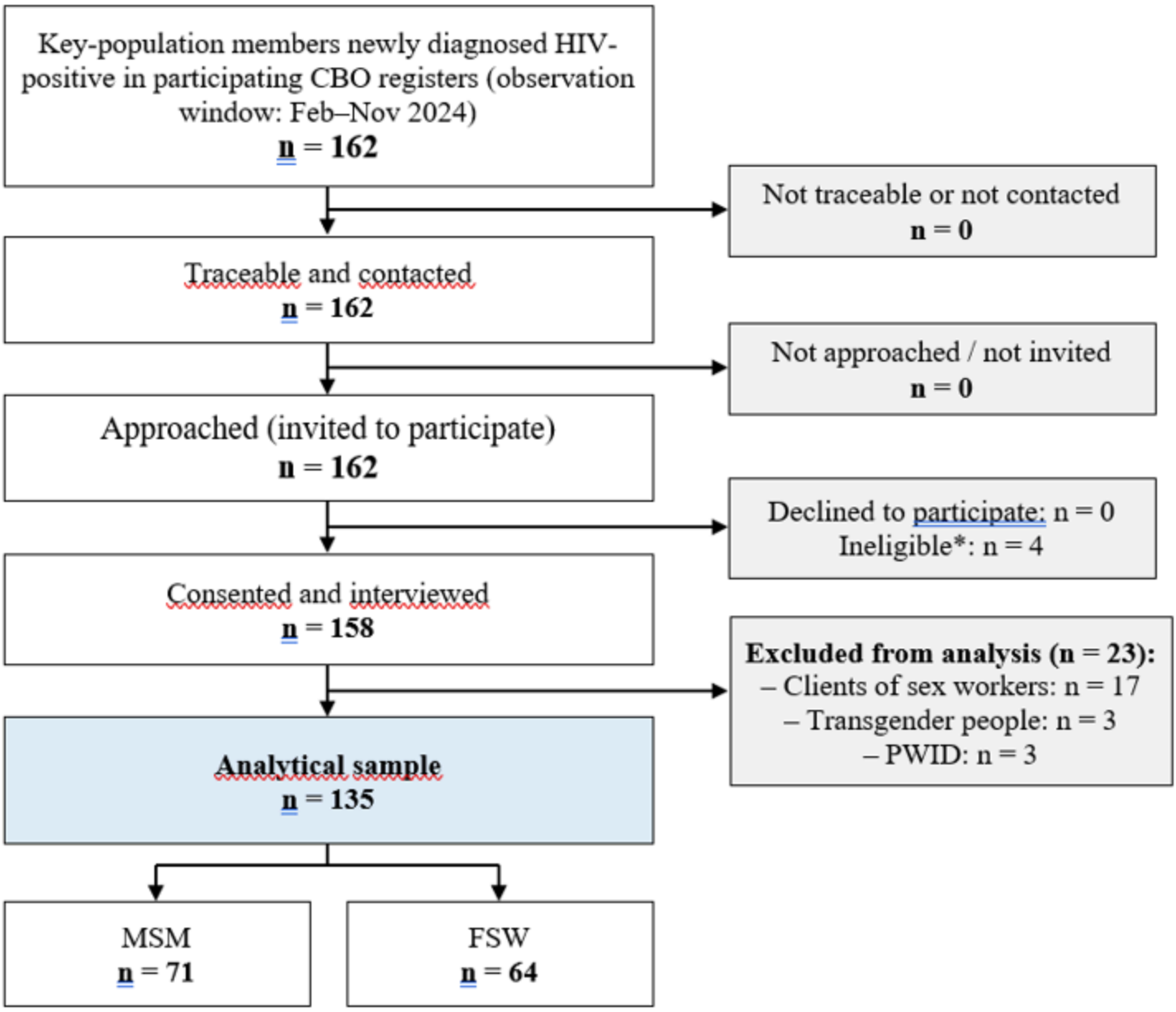


Figure 1

Participant flow diagram

Legend: CBO, community-based organisation; MSM, men who have sex with men; FSW, female sex workers; PWID, people who inject drugs; CBARTI, community-based ART initiation.

**Ineligible: age < 21 years; ART initiation outside the Feb–Nov 2024 window; change of follow-up site after initiation; ineligibility for CBARTI.*

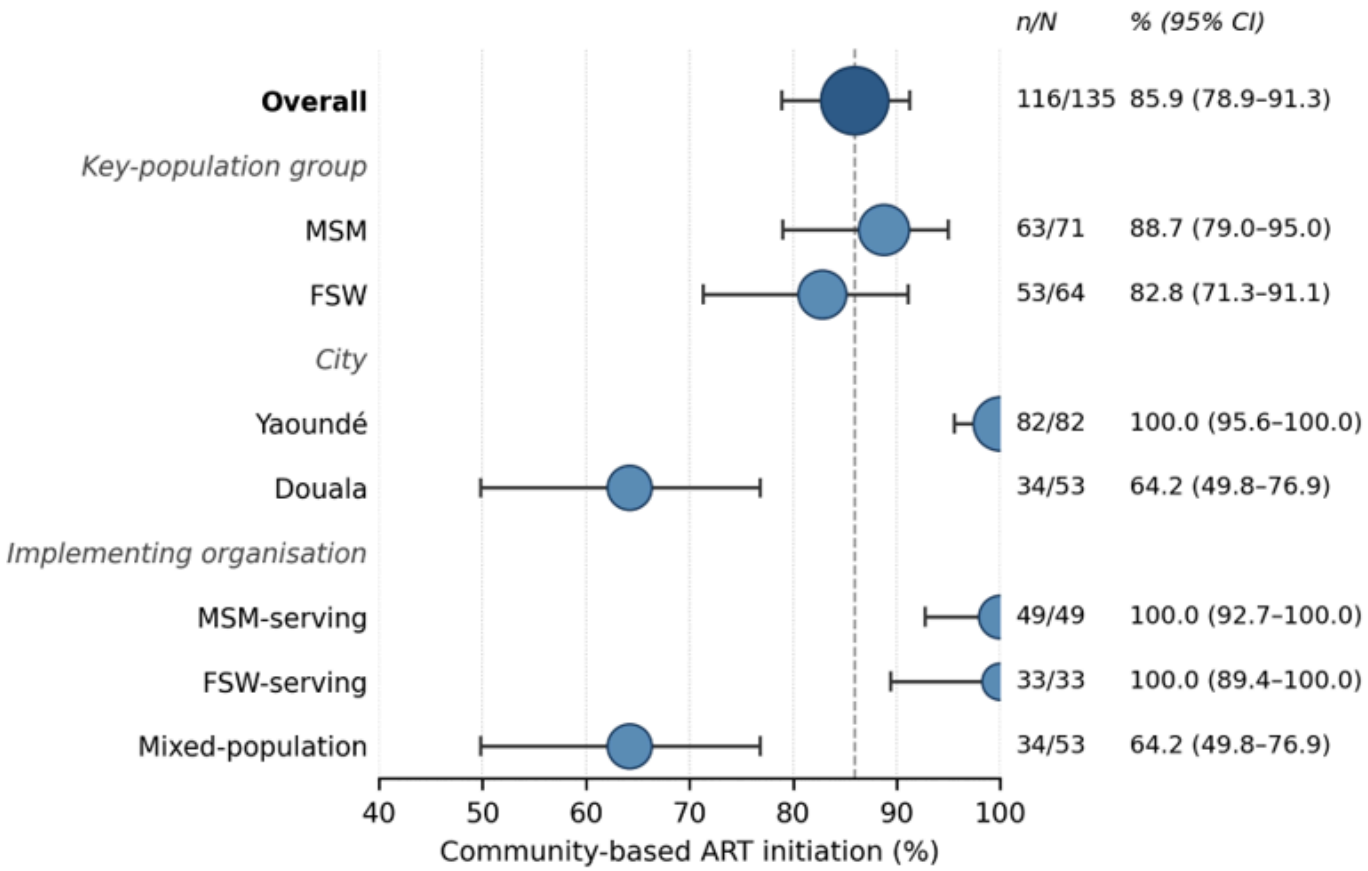


Figure 2

Community-based ART initiation, overall and by key-population group, city and implementing organisation (N = 135)

Legend: Proportions are shown with exact (Clopper–Pearson) 95% confidence intervals. Point area is proportional to the denominator. The dashed vertical line marks the overall estimate. Figures beside each row give the numerator and denominator, followed by the proportion and its confidence interval. Implementing organisations are identified by the key population they serve rather than by name, to avoid identifying the sites at which criminalised populations receive care. The mixed-population organisation was also the only participating organisation in Douala, so organisation type, city and site cannot be distinguished in these data. The horizontal axis begins at 40%. Confidence intervals were computed with binom.test() from the base stats package in R version 4.6.1.

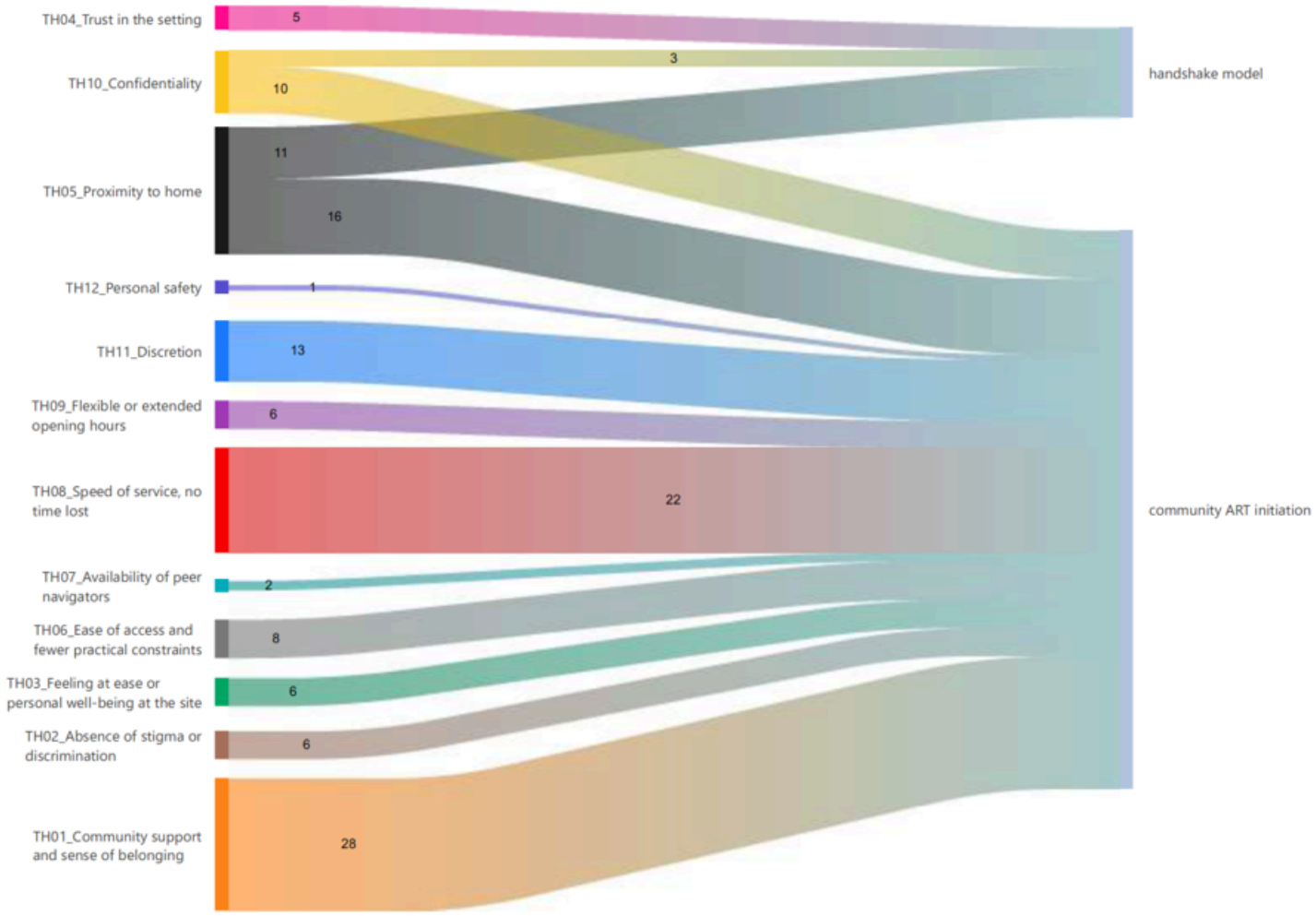


Figure 3

Reasons for the initiation setting: themes by setting.

Legend: Each flow links a theme (TH01–TH12, left) to the initiation setting in which it was given (right, community ART initiation or handshake facility referral); flow width is proportional to the number of coded quotations.

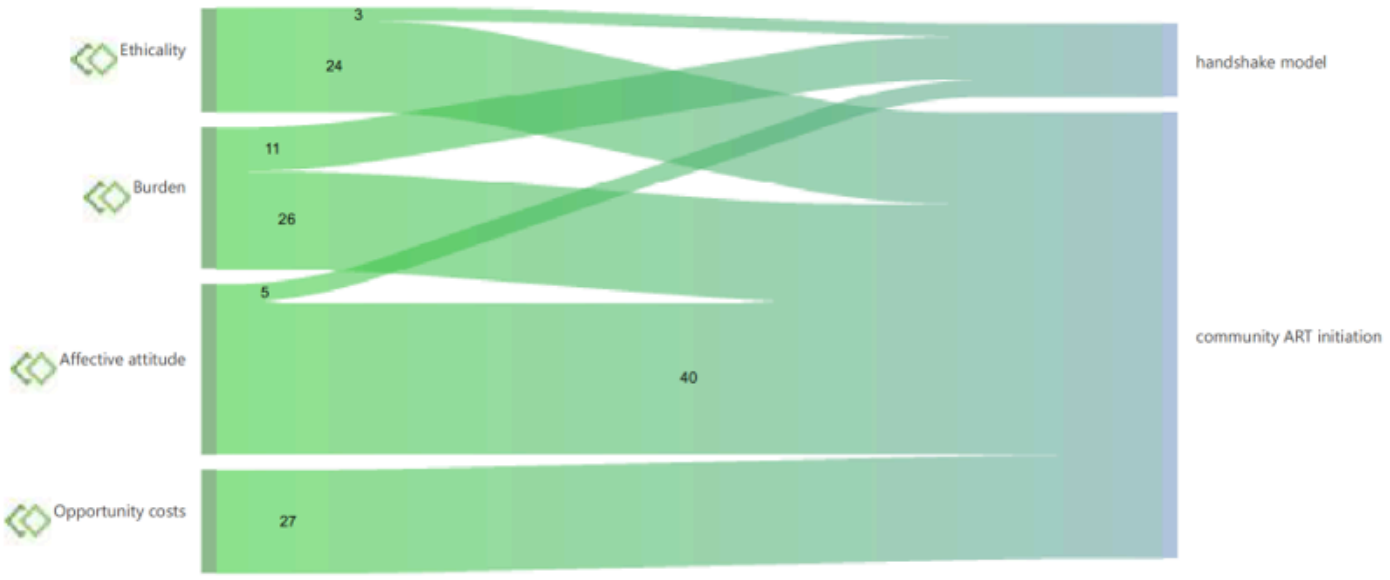


Figure 4

Reasons for the initiation setting: TFA constructs by setting.

Legend: The twelve themes are aggregated into the four TFA constructs they represent (affective attitude, burden, ethicality, opportunity costs); each flow links a construct to the initiation setting, with width proportional to the number of distinct responses. Handshake-referral reasons (n = 19) were dominated by burden

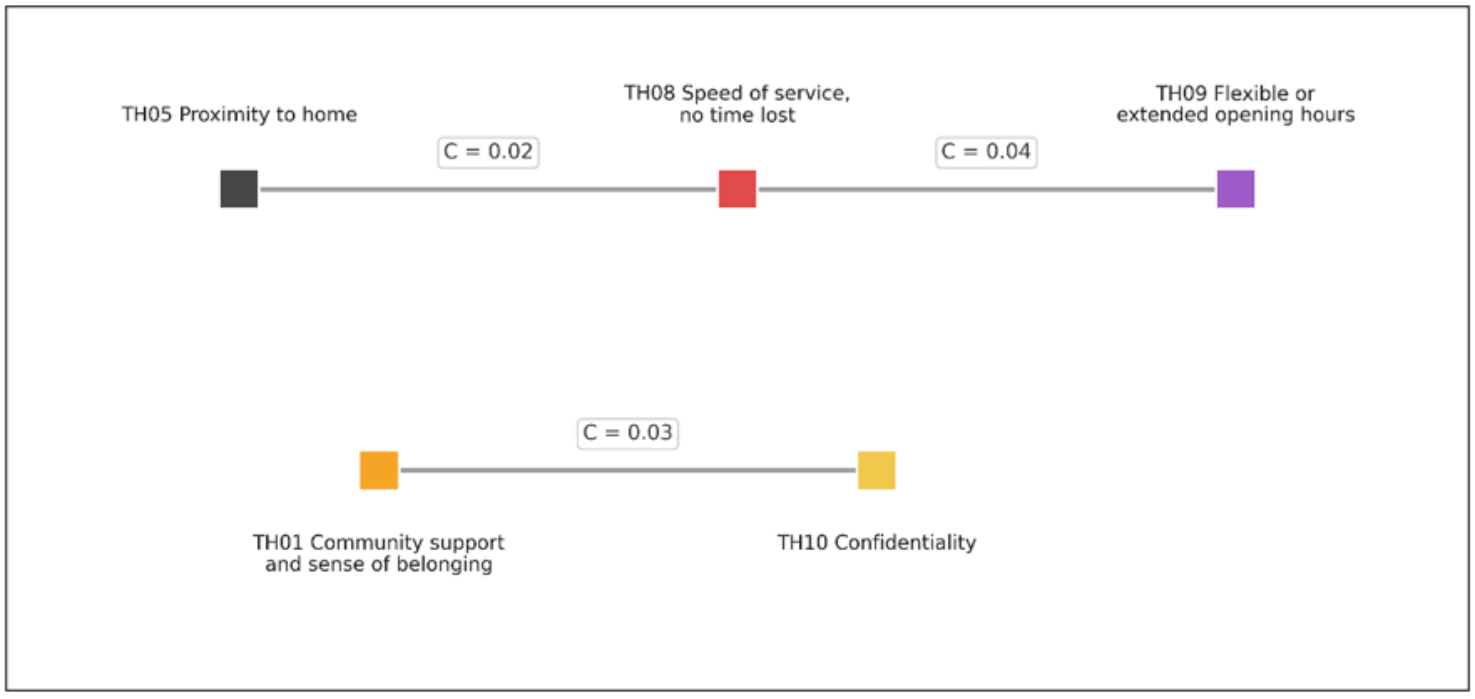


Figure 5

Theme co-occurrence network.

Legend: Links connect themes coded together within the same response; the label is the Jaccard similarity coefficient. Only three theme pairs co-occurred (community support–confidentiality, Jaccard C= 0.03; proximity–speed of service, Jaccard C= 0.02; speed of service–flexible hours, Jaccard C= 0.04), indicating that reasons were largely given singly.

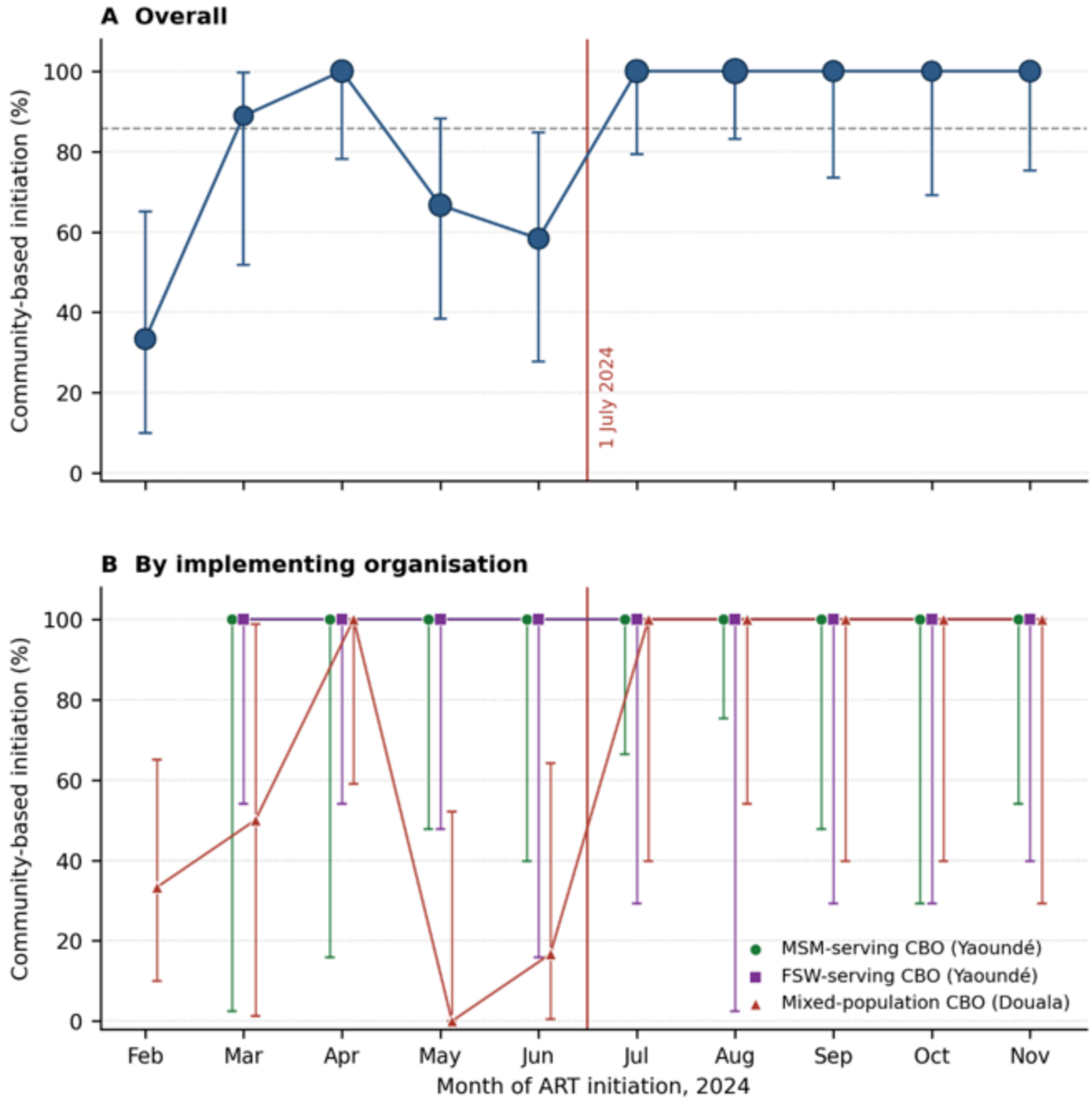


Figure 6

Monthly proportion of community-based ART initiation over the roll-out period, February–November 2024 (n = 134)

Legend: Panel A, overall; panel B, by implementing organisation. Proportions are shown with exact (Clopper–Pearson) 95% confidence intervals; in panel A point area is proportional to the monthly denominator. The dashed horizontal line in panel A marks the overall estimate for the period (85.8%). The vertical line marks 1 July 2024, the midpoint of the observation window. Month of initiation was missing for one participant, who is excluded. The two Yaoundé organisations initiated every participant in the community in every month in which they recruited, so no trend could be estimated for either; both began enrolling in March 2024. Implementing organisations are identified by the key population they serve rather than by name, to avoid identifying the sites at which criminalised populations receive care.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Supplementarymaterial1Structuredstudyquestionnaire.docx
- Supplementarymaterial2SEWIconstruction.xlsx
- Supplementarymaterial3Thematiccodingframework.xlsx
- Supplementarymaterial4Varianceestimatorcomparison.xlsx