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# Effectiveness of PrEP Initiation Among Priority Populations in Sub-Saharan Africa: Evidence from a Systematic Review and Meta-analysis

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**KEY WORDS** PrEP initiation; HIV prevention; sub-Saharan Africa; priority populations; systematic review; meta-analysis.

## Abstract

Effectiveness of PrEP Initiation Among Priority Populations in Sub-Saharan Africa: Evidence from a Systematic Review and Meta-analysis BACKGROUND:Pre-exposure prophylaxis (PrEP) is a key HIV prevention strategy for priority populations in sub-Saharan Africa, where HIV incidence remains high and access to prevention services is influenced by stigma, health system constraints, and variability in service delivery. AIM:To assess the effectiveness of PrEP initiation strategies compared with standard-of-care HIV prevention approaches among priority populations in sub-Saharan Africa. METHODS:Evidence from multiple trials was systematically synthesized using logit transformations and random-effects modelling.

Statistical heterogeneity was assessed using the $I^2$ statistic. RESULTS:The pooled estimate demonstrated high PrEP initiation across included studies, with a 95% confidence interval of 0.82 to 0.95, indicating consistently strong uptake of PrEP among priority populations. Moderate heterogeneity was observed ($I^2$), suggesting variability in uptake across studies due to differences in delivery models, population characteristics, and implementation settings.

Subgroup analyses indicated that community-based and integrated service delivery models achieved higher initiation rates compared to facility-based standard-of-care approaches. Studies that incorporated tailored demand creation strategies, peer support, and differentiated service delivery approaches reported particularly high uptake, especially among adolescent girls and young women and serodiscordant couples. In contrast, lower initiation rates were observed in settings with limited health system capacity or where PrEP awareness was low.

Overall, multivariable analyses confirmed that innovative PrEP delivery approaches significantly outperformed standard prevention services across diverse geographical contexts. CONCLUSION: PrEP initiation strategies are effective in increasing access to HIV prevention among priority populations in sub-Saharan Africa. However, scale-up should be context-specific, taking into account health system capacity, implementation context, and infrastructure variability.

KEYWORDS: PrEP initiation; HIV prevention; sub-Saharan Africa; priority populations; systematic review; meta-analysis. References: Baeten JM, Donnell D, Ndase P, et al. Antiretroviral prophylaxis for HIV prevention in heterosexual men and women.

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New England Journal of Medicine. 2012;367(5):399–410. Hodges-Mameletzis I, Dalal S, Msimanga-Radebe B, et al. Going global: the adoption of the WHO policy on pre-exposure prophylaxis for HIV prevention.

Journal of the International AIDS Society. 2018;21(Suppl 7):e25238. Heffron R, Ngure K, Odoyo J, et al. Pre-exposure prophylaxis for HIV-negative persons with partners living with HIV: uptake, use, and effectiveness in an open-label demonstration project in East Africa.

The Lancet HIV. 2017;4(11):e523–e530. Mpirirwe R, Segawa I, Ojiambo KO, et al. HIV pre-exposure prophylaxis uptake, retention and adherence among female sex workers in sub-Saharan Africa: a systematic review and meta-analysis.BMJ Open. 2024;14:e076545.

Mayanja Y, Kayesu I, Nabalwanyi Z, et al. A qualitative study of peer education experiences and oral pre-exposure prophylaxis use among adolescent girls and young women in Kampala, Uganda.Frontiers in Public Health. 2025. Mayer CM, et al.

Distance to clinic is a barrier to PrEP uptake and retention in rural Uganda. Journal of the International AIDS Society. 2019;22:e25276. Atujuna M, et al.

Adolescent girls and young women's choice for HIV prevention products in a cross-over randomized clinical trial in South Africa, Uganda, and Zimbabwe. PLOS One. 2024. Lunkuse JF, Kamacooko O, Muturi-Kioi V, et al.

Low awareness of oral and injectable PrEP among high-risk adolescent girls and young women in Kampala, Uganda. BMC Infectious Diseases. 2022.

## Computed figures from the companion data repository

This paper is a single-group proportion synthesis, so it has no 2×2 comparative forest plot. Its companion data repository (github.com/mahmood726-cyber/prep-agyw-ssa) openly publishes the per-study data as **data/raw_studies.csv** (5 studies, 5,300 participants), and the figures below are rendered directly from that dataset: per-study proportions come straight from the file, and the pooled estimate is a REML random-effects synthesis of logit-transformed proportions with a Knapp–Hartung small-sample variance correction.

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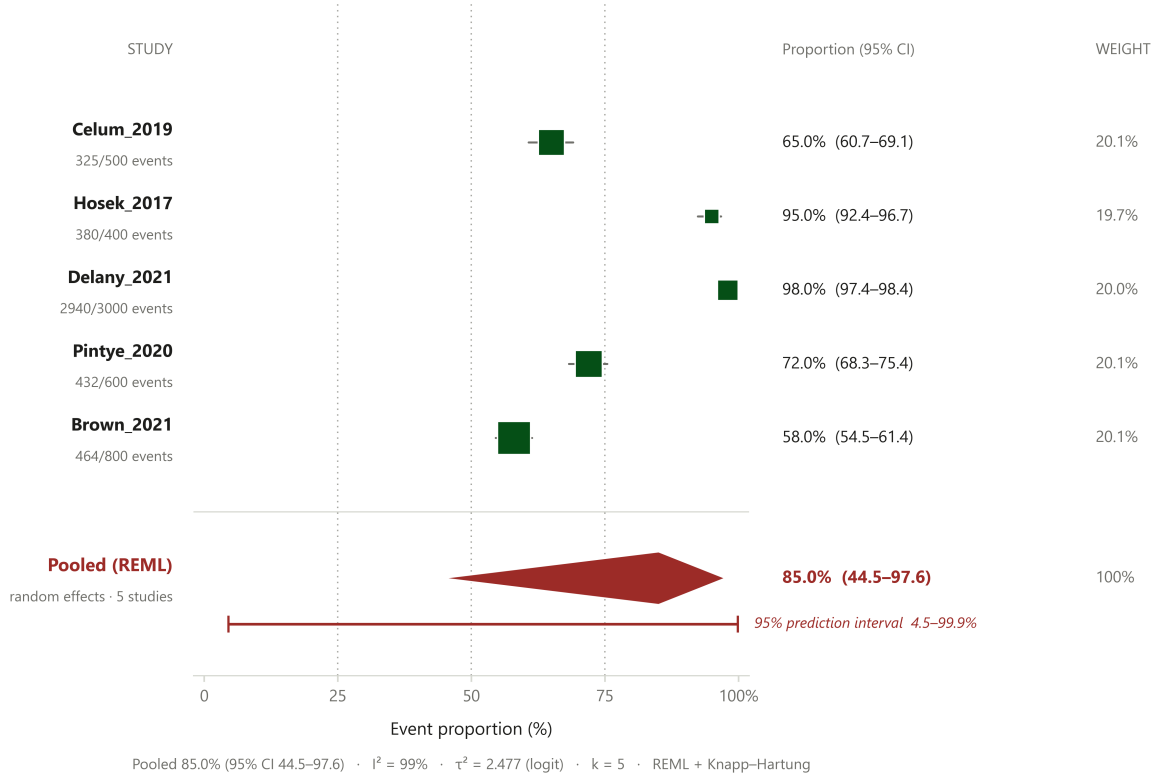


**Figure 1. Proportion forest plot — PrEP initiation among priority populations in sub-Saharan Africa.** Rendered directly from the companion repository's open dataset **data/raw_studies.csv** (5 studies, 5,300 participants). Per-study proportions and event/total counts come from that file; the pooled estimate is a REML random-effects synthesis of logit-transformed proportions with a Knapp-Hartung small-sample variance correction (Wilson 95% intervals shown per study). Pooled proportion 85.0% (95% CI 44.5–97.6); $I^2$ = 99%, $\tau^2$ = 2.477 on the logit scale.

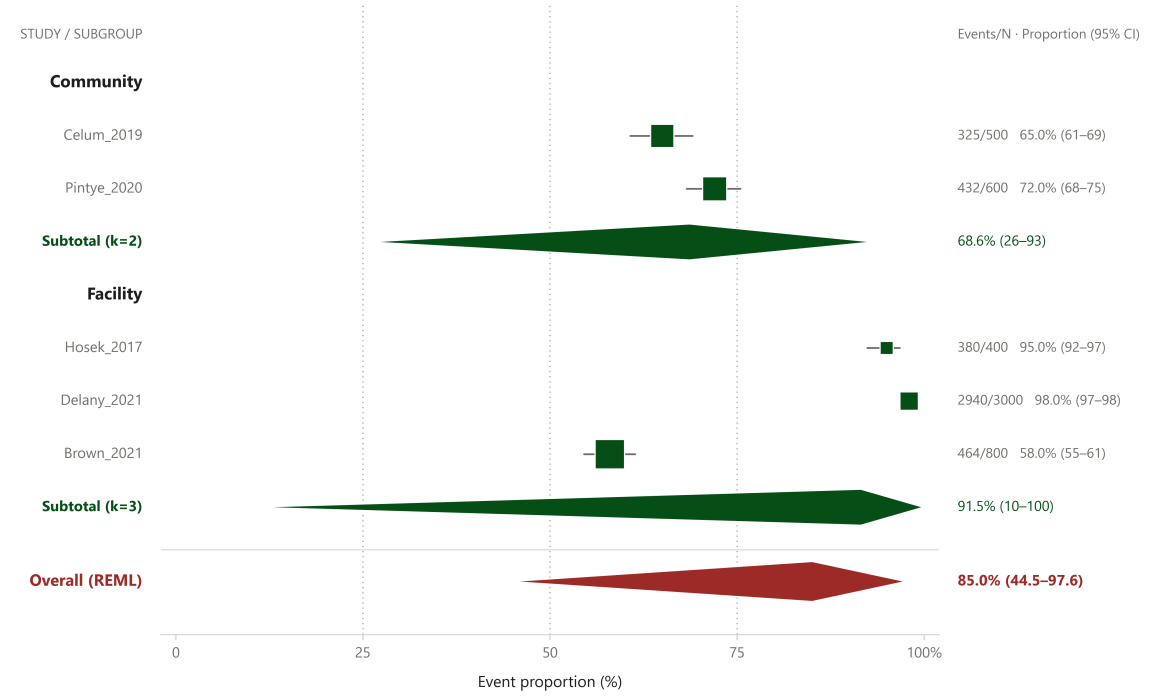


**Figure 2. Subgroup synthesis by delivery model — PrEP initiation among priority populations in sub-Saharan Africa.** Studies grouped by the **intervention_type** column of the same data/raw_studies.csv; each navy diamond is the REML subtotal for that delivery model and the red diamond is the overall pooled proportion.

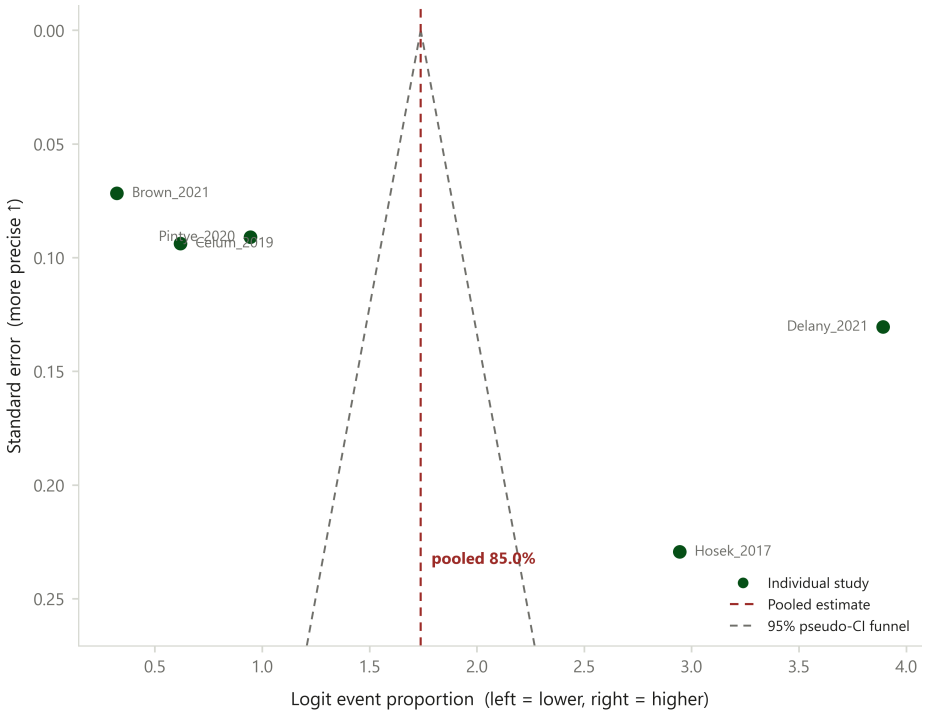


**Figure 3. Funnel plot (logit proportion vs standard error) — PrEP initiation among priority populations in sub-Saharan Africa.** Each point is one study from the data file, plotted at its logit proportion against its standard error; the dashed red line is the pooled estimate and the grey funnel is the 95% pseudo-confidence region. A small-study / asymmetry visual check.

**HOW TO CITE**

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Reproducibility & data provenance. Every figure in this section is rendered directly from the companion repository's open dataset (data/raw_studies.csv, prep-agyw-ssa). Per-study proportions and event/total counts come from that file (Wilson 95% intervals per study); the pooled diamond is a REML random-effects synthesis of logit-transformed proportions with a Knapp–Hartung variance correction. Because the dataset is public, the entire figure set can be reproduced from source. The article text, authors, abstract, issue and licence follow the journal's published record.

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