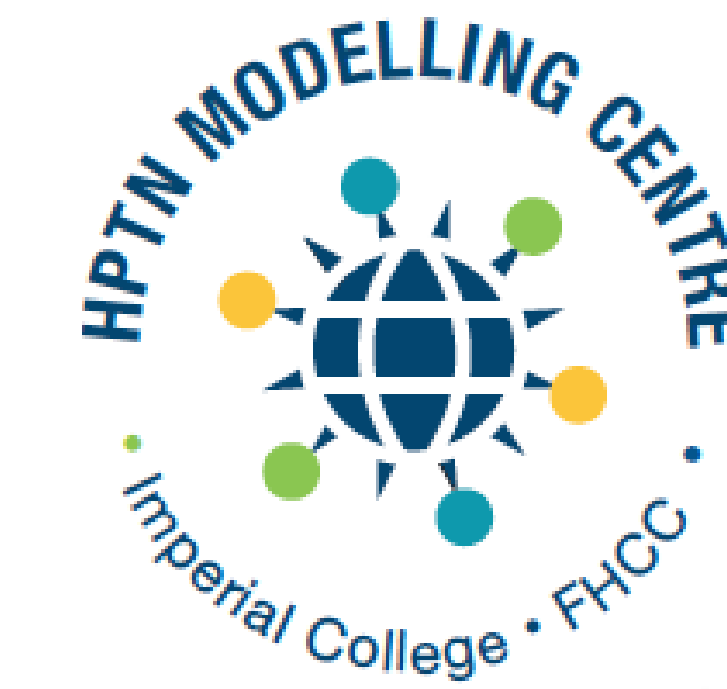# Can intention studies predict PrEP uptake? Systematic review and meta-analysis of PrEP studies on intention and uptake across populations in sub-Saharan Africa

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Background

Real world data on uptake of oral/long-acting (LA)-PrEP are often scarce, especially when new products become available. Instead, intention and preference studies are often used as proxies to uptake when making decisions and/or when assessing population-level impact and in cost-effectiveness analysis.

Objectives

Assess the extent to which data on intention predicts uptake of PrEP in the population.

Methods

Systematic review and meta-analysis to estimate the *proportion intending/willing to use* and *uptake* of PrEP across population subgroups in sub-Saharan Africa.

Searched databases (Medline, Embase, Global Health, Web of Science) over 01/01/2012-11/10/2022 for published literature reporting on PrEP intention and/or uptake.

We Included clinical trials, cross-sectional, and longitudinal studies conducted in countries across sub-Saharan Africa and with sample size > 10 participants. Extracted data on main outcomes (Intention and uptake) and population and study characteristics

We pooled pooled independent study estimates and 95% confidence intervals (95%CI) using random effect models and conducted univariate subgroup analysis by participant and study characteristics in R.

Results: Studies Included

11785 titles and abstracts were identified and reviewed, of which 307 full text records were assessed. Of these, **we included 38 and 45 records that reported one or more estimates on intention and uptake, 6 records reported on both**.

Most of these 83 records were from eastern Africa (Number of records (N_r)=50), from cohort studies (N_r=42) and the most studied population were adolescent girls and young women (AGYW) (N_r=22).

In total, the 83 records provided (N_i)=42 independent estimates for intention and (N_u)=47 for uptake.

Intention to start PrEP

The **pooled proportion who intended to start PrEP was 78.0%** (69.5-84.7, N_e=42, I²=99%; Figure 1).

Intention varied by study population (p-value<0.01) and was highest among FSW (85.7% (73.0-93.0; N_i=11; Table 1)

Intention varied by region but not statistically significantly (p-value=0.08).
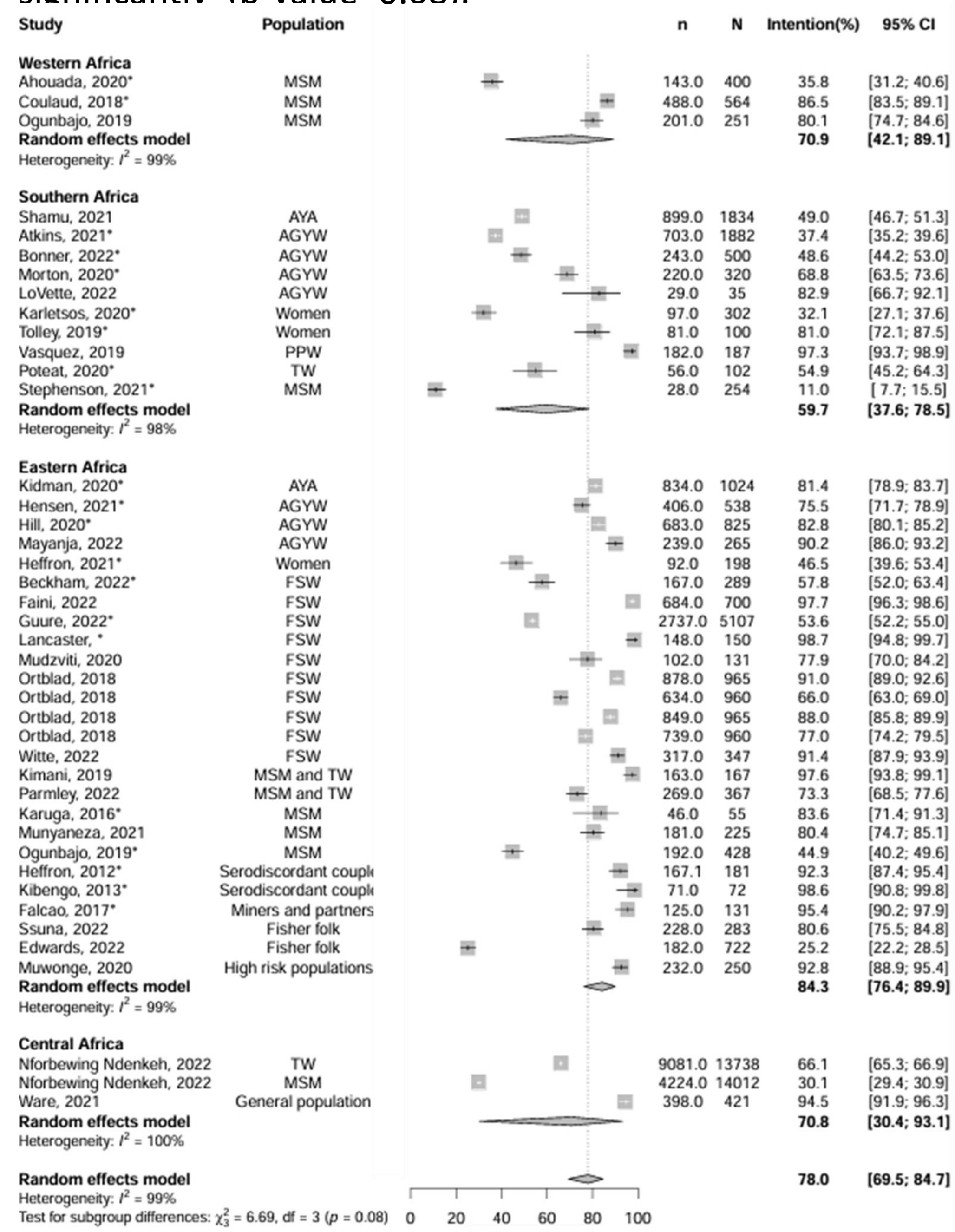
MSM= men who have sex with men, AYA = adolescents and young adults, AGYW= adolescent girls and young women, PPW= pregnant and postpartum women, FSW= female sex workers, TW= transgender women

Figure 1. Forest plot showing proportions of study population intending to start PrEP, by region

Population	Pooled proportion (95% CI, Number of estimates, N_i)
Female sex workers (FSW)	85.7% (73.0-93.0; N_i=11)
Adolescent girls and young women (AGYW)	71.9% (56.6-83.4; N_i=7)
Adolescents and young adults (AYA)	67.2% (41.7-85.5; N_i=2)
Transgender women (TW)	66.0%(65.2-66.8; N_i=2)
Men who have sex with men (MSM)	57.9% (34.9-77.9; N_i=8)
Women	54.2% (29.4-77.1; N_i=3)

Table 1. Pooled estimates of intention to start PrEP per the most studied populations

PrEP uptake

The **pooled proportion or PrEP uptake was 54.7%** (41.4-67.4, N_e=47, I² =99%; Figure 2).

Uptake varied by region (p-value<0.01) and study population (p-value <0.01)(Table 2). It was highest for western Africa (84.7% (81.1-87.7, N_u=2; Figure 2)) and for general population at elevated HIV risk (74.6% (25.8-96.1; N_u=4; Table 2)).
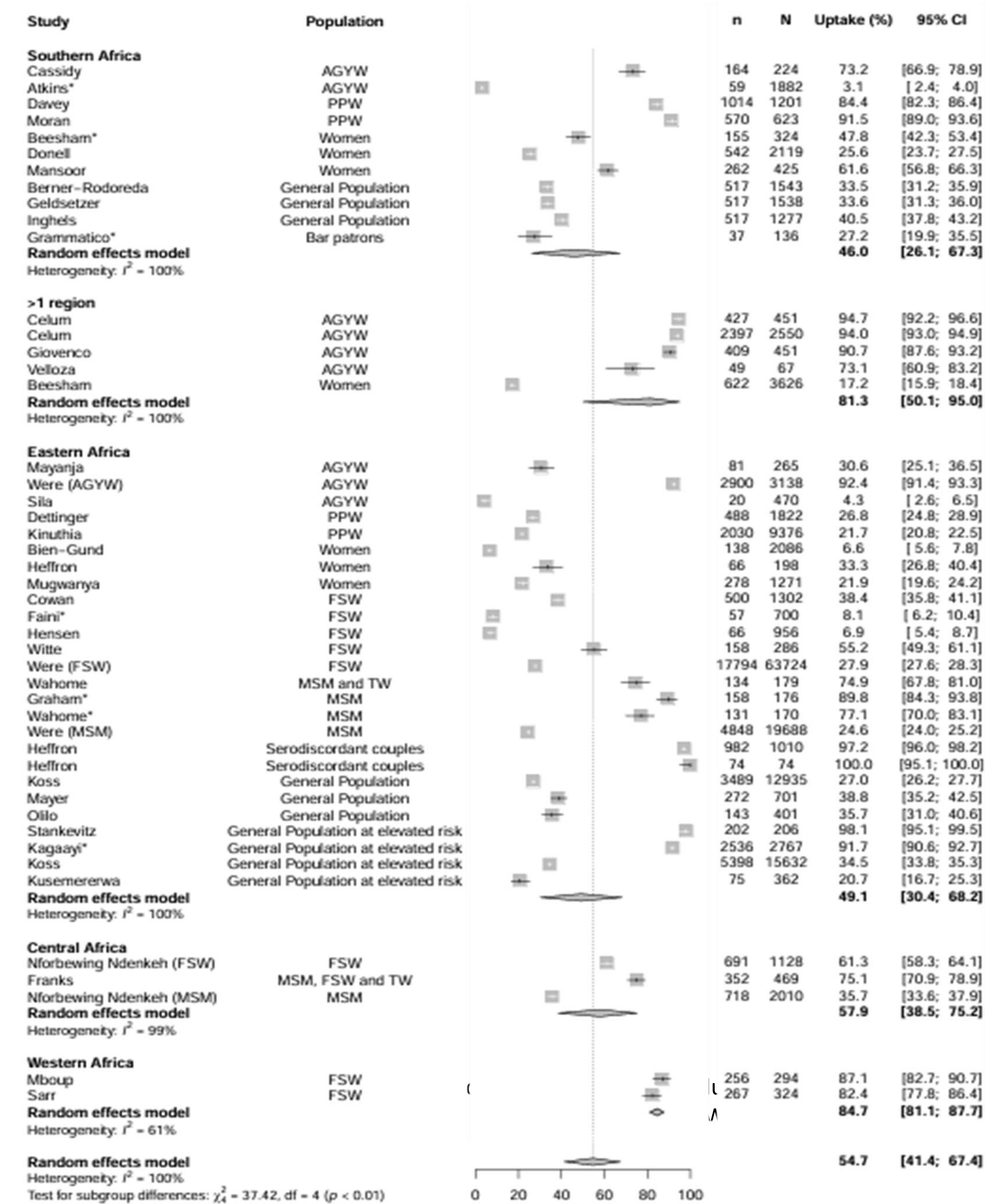

Figure 2. Forest plot showing proportions of PrEP uptake in the study population, by region

Population	Pooled proportion (95% CI, Number of estimates, N_u)
General population at elevated HIV-risk	74.6% (25.8-96.1; N_u=4)
Adolescent girls and young women (AGYW)	63.8% (27.7-89.0; N_u=9)
Pregnant and postpartum women (PPW)	60.9% (24.3-88.3; N_u=3)
Men who have sex with men (MSM)	60.9% (24.3-88.3; N_u=4)
Female sex workers (FSW)	42.8% (20.2-68.7; N_u=8)
General population	34.5% (30.9-38.4; N_u=6)

Table 2 Pooled estimates of PrEP uptake per the most studied populations

Difference between PrEP intention and uptake within the same study

Only six records reported (5 independent estimates) on both intention and uptake within the same study (Celum and Morton report on the same study population).
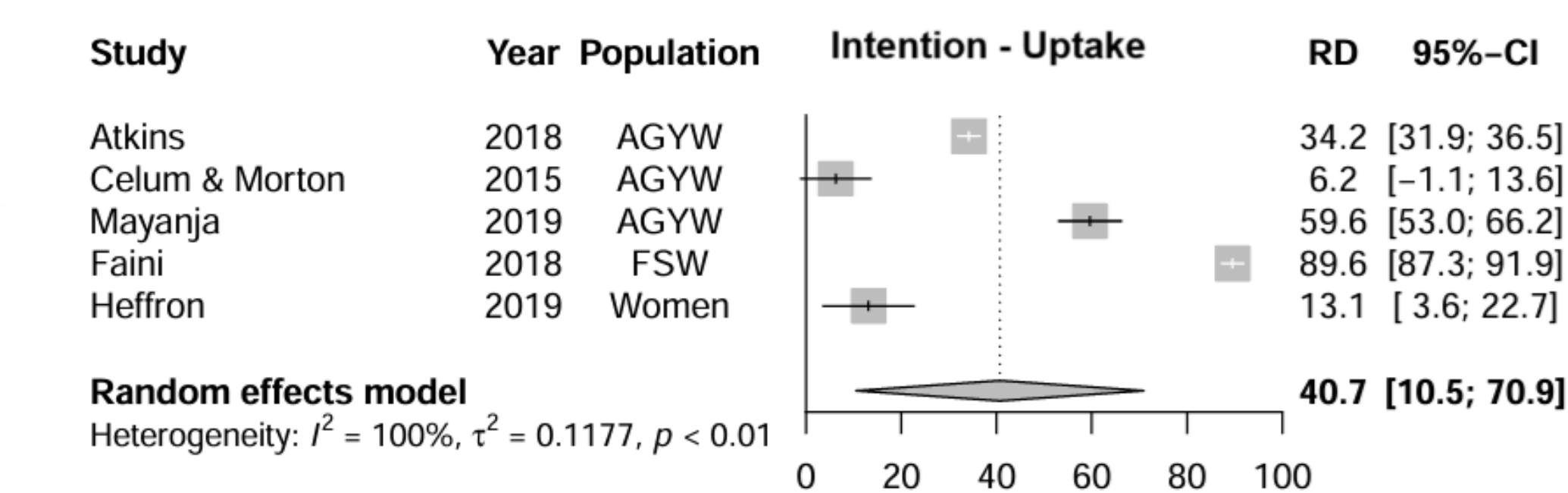

Figure 3. Forest plot of the difference between the proportion reporting intending to start PrEP and PrEP uptake for the subset of studies reporting both (Nr =6). RD: risk difference.

Discussion

- Intention and uptake estimates were heterogeneous.

- Intention to start PrEP was generally high (78%), especially among FSW (86%) and lowest among adult women (54%) (Table 1).

- PrEP uptake was much lower than intention (55%), particularly in southern Africa (46%) and highest in western Africa (85%) (Figure 2). Uptake was highest for general population at elevated HIV risk (75%) (Table 2).

- Differences between intention and uptake was greater for FSW (~ 40%). This might be partially explained by structural and non-structural factors such as stigma and access to heath care.

- In within study analysis (Fig 3) : ~41% of the study participants had not initiated PrEP despite reporting intending to.

- Both in between- and within-study comparisons suggest that intention overestimated uptake by 20-40%.

Conclusion

Intention is a weak predictor of PrEP uptake and should be interpreted with caution. More real-world data on PrEP uptake and continued use are needed.