

HIV Pre-exposure prophylaxis use on a global scale among men who have sex with men: a systematic review and meta-analysis

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Background

Knowledge about the proportion of men who have sex with men (MSM) using pre-exposure prophylaxis (PrEP) and specific gaps in PrEP use can stimulate discussion around improvements to HIV prevention policies. This systematic review summarizes the proportion of MSM using PrEP globally and explores temporal trends and factors associated with PrEP use in this group.

Methods

- We searched PubMed, Embase, Web of Science Core Collection, and APA PsycINFO for studies reporting on the use of HIV PrEP among MSM before April 2022.
- Inclusion criteria were as follows: (1) cross-sectional, cohort, case-control and mixed method studies; (2) studies referring to HIV-negative MSM, including gay men, bisexual men, transgender women, male sex workers and other men who had sex with men, or had a clearly defined subgroup of MSM; (3) studies referring to HIV, and PrEP use or primary studies reporting the number or proportion of PrEP users among the study participants; (4) studies providing separate data on MSM (distinguishing them from other groups, such as those who identified themselves as female at birth); (5) studies published in peer-reviewed journals as of April 2022.
- Freeman-Tukey double arc-sine transformation and random-effects models were used to pool estimates.
- Beta-regression (logit link) was conducted to investigate trends in the proportion of MSM using PrEP.
- A random-effects model was used to generate pooled *odds ratios (OR)* with 95% *confidence intervals (CI)* for factors associated with PrEP use among MSM.

Results

- A total of 147 articles involving 395,218 MSM were included after 9082 papers were initially reviewed (Figure 1).
- The pooled proportion of MSM using PrEP was 11.23% (95% CI: 9.71-12.84) varying among countries and regions (Figure 2), with a significant increase in this proportion over time from 10.6% in 2016 to 26.4% in 2020 (Figure 3, $\beta=0.29$, $P<0.01$).
- The main factors associated with PrEP use among MSM were shown in Table.

Table. The main factors associated with PrEP use among MSM

Factors (number of studies included)	aOR (95%CI)
Condomless anal sex (n=10)	1.83 (1.36-2.45)
Having group sex (n=2)	2.53 (1.48-4.31)
Having more male sexual partners (n=2)	2.67 (1.89-3.77)
Having sex with a HIV-positive partner (n=4)	3.44 (2.69-4.40)
Prior sexually transmitted infections (n=9)	2.52 (1.85-3.42)
Having health insurance (n=9)	1.76 (1.06-2.91)
Having a regular medical provider (n=3)	3.06 (1.32-7.11)
Prior HIV testing (n=3)	4.23 (3.19-5.62)
Prior use of Post-exposure prophylaxis (n=2)	20.58 (13.79-30.72)
Engagement in a relationship (n=4)	1.47 (1.06-2.05)
Stigma (n=1)	0.90 (0.76-0.98)
Having a male partner of unknown HIV status (n=2)	0.33 (0.19-0.56)
Having a part-time job (n=3)	0.42 (0.24-0.74)
Being in a longer relationship (n=1)	0.35 (0.17-0.70)

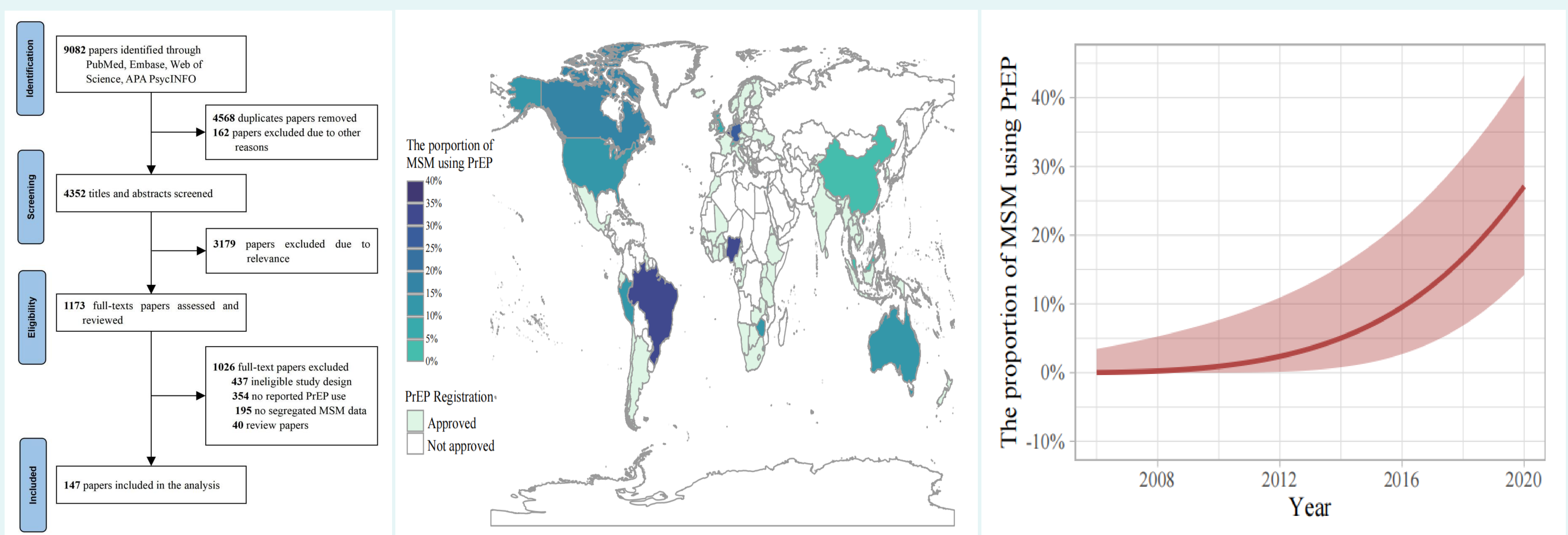


Figure 1 Study selection flow diagram. Figure 2. The proportion of MSM using PrEP on a global scale. Figure 3. The temporal trend for the proportion of MSM using PrEP.

Conclusion

The proportion of MSM using PrEP globally has increased but remains below 30%. Relieving the financial burden and stigma of PrEP, providing health education and consultation before use will likely be beneficial to promote PrEP use.

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