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HIV incidence and impact of interventions among female sex workers in the Middle East and North Africa

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OBJECTIVES

- To estimate HIV incidence in female sex workers (FSWs), clients, and client spouses, and contribution to the growing epidemic in the Middle East and North Africa (MENA), as well as the impact of interventions on reducing incidence among FSWs.

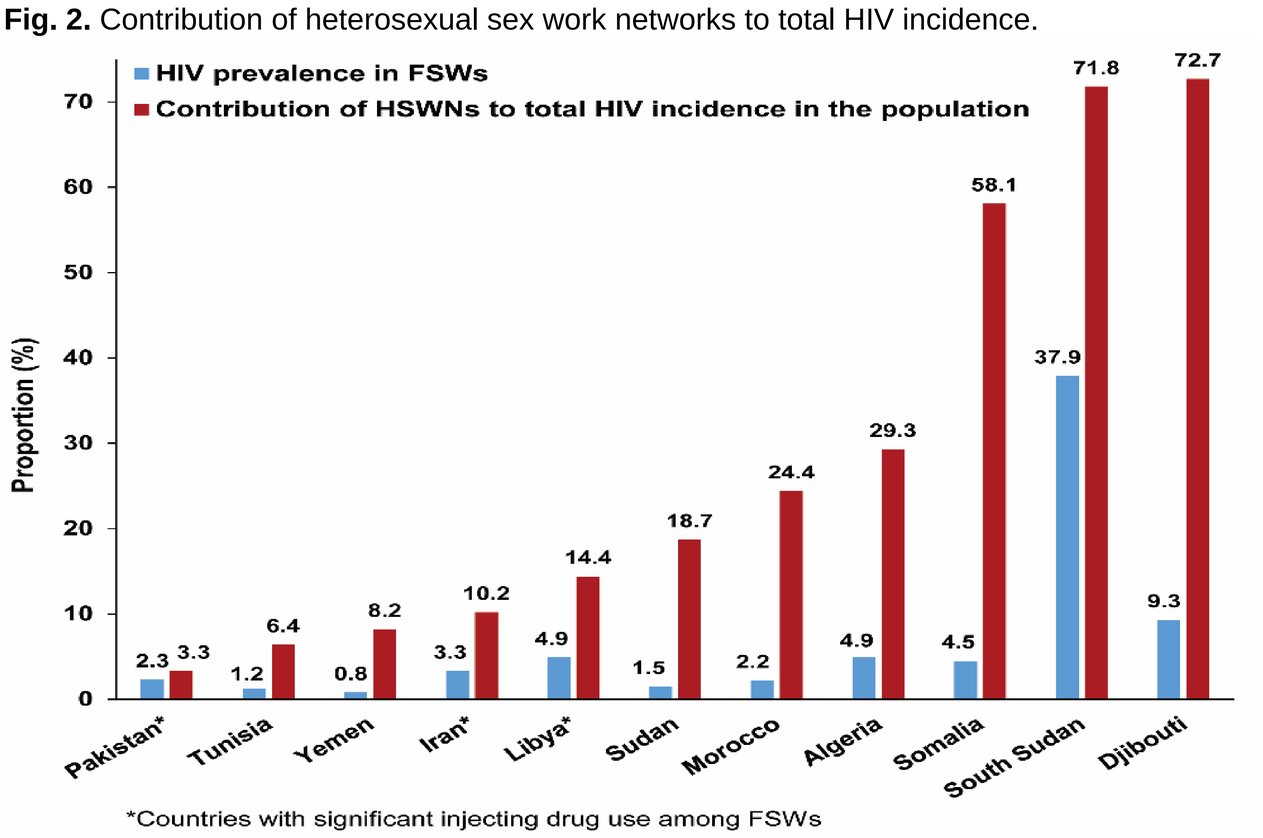
METHODS

- A novel individual-based model that simulates HIV epidemic dynamics in heterosexual sex work networks (HSWNs) was developed and applied to 12 MENA countries with sufficient data (Fig. 1A).
- Model input parameters were provided through a systematic review of HIV prevalence, sexual and injecting behaviors, and risk group size estimates of FSWs and clients.

RESULTS

- Fig. 1B shows the estimated number of new infections in 2020 in the 12 countries.
- HSWNs contributed 25% of total HIV incidence across MENA.
- Contribution of incidence in HSWNs to total incidence ranged from 3.3% in Pakistan to 71.8% in South Sudan and 72.7% in Djibouti (Fig. 2).

Fig. 2. Contribution of heterosexual sex work networks to total HIV incidence.



- Incidence in HSWNs was distributed equally among FSWs, clients, and client spouses.
- Incidence rate was lowest in Yemen and highest in South Sudan ranging from 0.4-34.3 per 1,000 person-years in FSWs, 0.03-2.5 in clients, and 0.07-6.7 in clients' spouses.
- All interventions substantially reduced incidence among FSWs, clients, and client spouses (Fig. 3). Even when a subpopulation did not benefit directly from an intervention, it still benefited indirectly through reduction in onward transmission. The indirect impact was often half as large as the direct impact.

CONCLUSIONS

- Substantial HIV incidence occurs in HSWNs across MENA with client spouses being heavily affected, in addition to FSWs and clients.
- Rapidly scaling up comprehensive treatment and prevention services for FSWs can sizably reduce incidence arising in HSWNs.

Fig. 1. Dynamics of HIV transmission in HSWNs in MENA described using A) a conceptual diagram illustrating the flow of HIV transmission in these networks and B) the estimated annual HIV incidence in FSWs, clients, and client spouses.

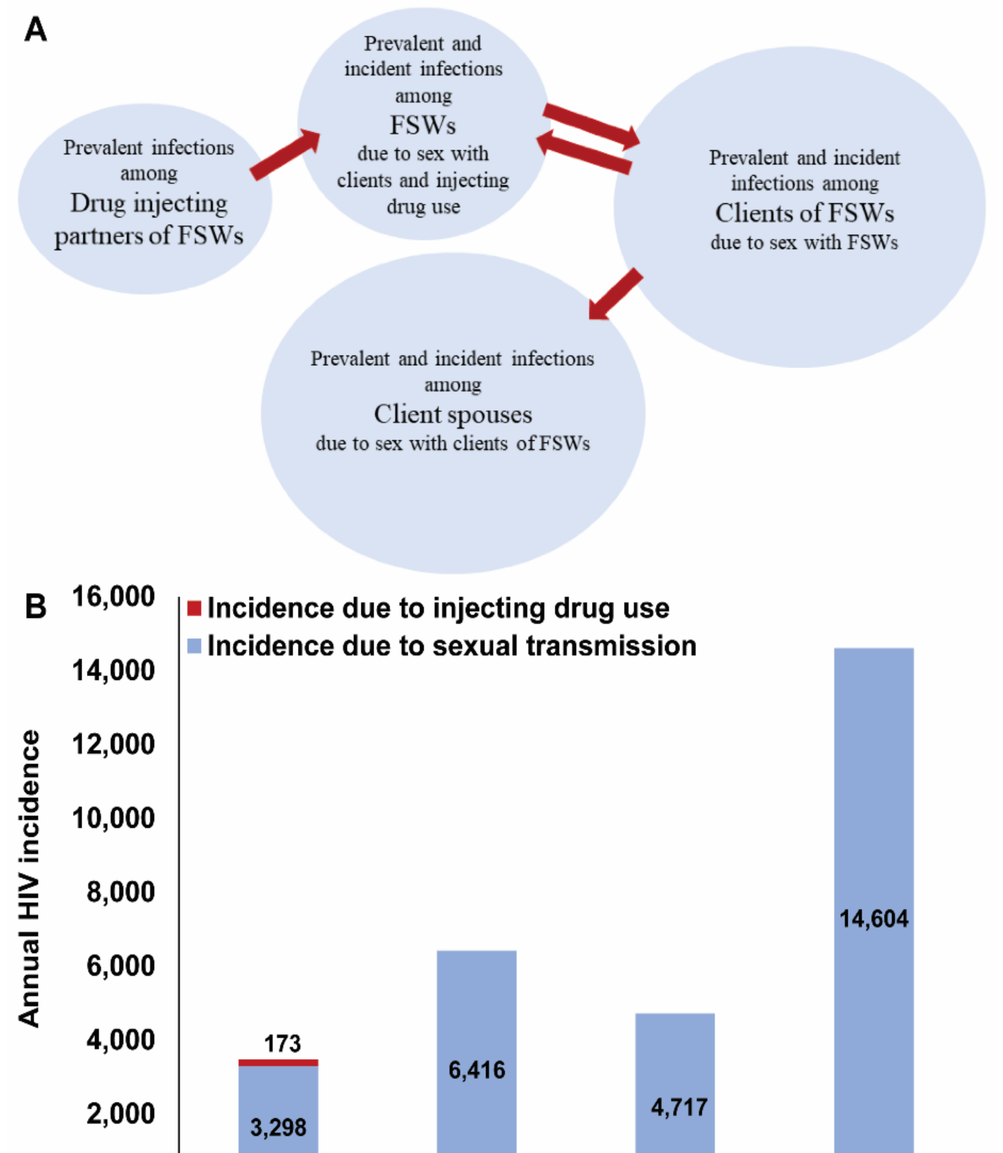
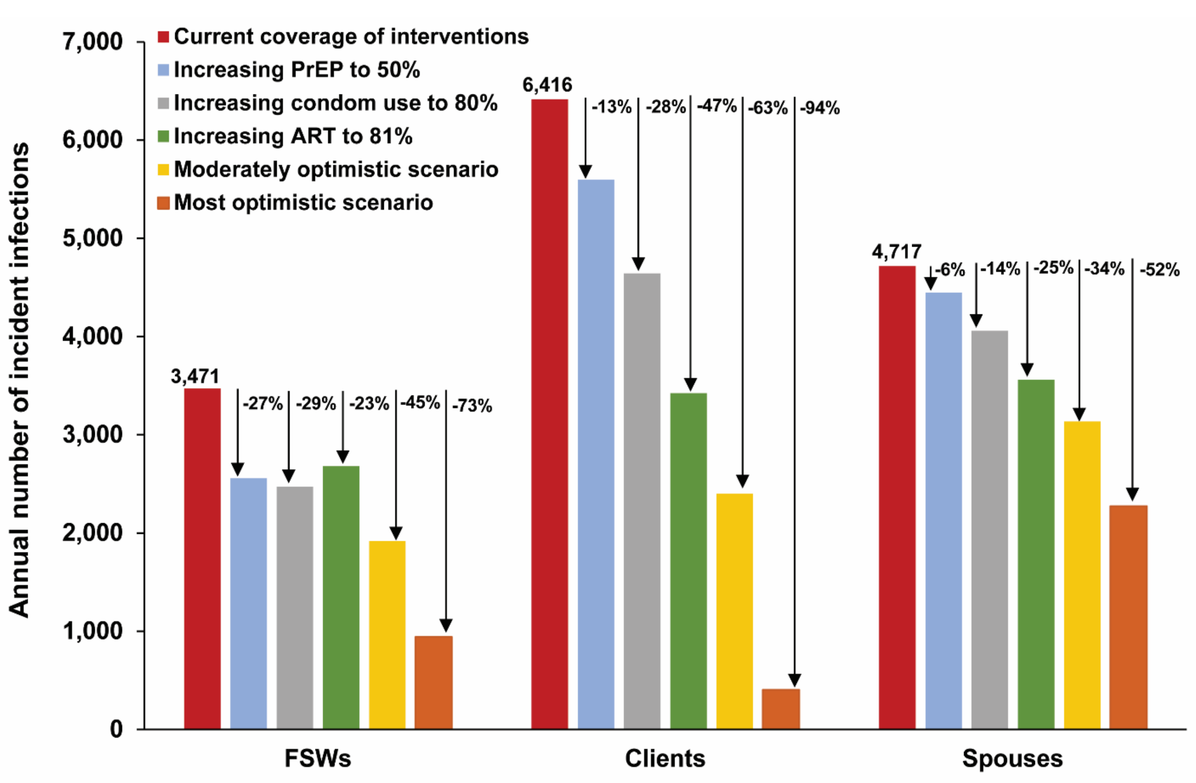


Fig. 3. Impact of expanding coverage of prevention and treatment interventions among FSWs on HIV incidence in HSWNs in MENA. Arrows indicate the proportional decrease in incidence. The moderately optimistic scenario includes expanding PrEP to 25%, condom use to 50%, ART to 50% assuming efficacy of 96% that is optimal adherence, and voluntary male circumcision to 50% in South Sudan. The most optimistic scenario includes expanding PrEP to 50%, condom use to 80%, ART to 81% assuming efficacy of 96%, and voluntary male circumcision to 80% in South Sudan.



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