Can Lotteries Help Prevent HIV Among Youth? Evidence from Lesotho

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Sector(s): Health

Sample: 3,465 individuals

Target group: Urban population

Outcome of interest: HIV/AIDS

Intervention type: Monetary incentives

AEA RCT registration number: AEARCTR-0000567

Data: Download the Dataset from the Open ICPSR

Research Papers: Incentivizing Safer Sexual Behaviour: Evidence from a Lottery Experiment on HIV...

Partner organization(s): World Bank, Ministry of Health and Social Welfare in Lesotho

Despite the high long-term harm of contracting HIV, individuals may still engage in risky sexual behavior if they focus on short-term gains or if they ignore the costs of HIV for themselves and others. Additionally, individuals who take risks in sexual behavior may also enjoy participating in other risk-related activities, such as lotteries. Researchers conducted a randomized evaluation to test the impact of lottery-based financial awards given to young individuals who tested STI-negative on their likelihood of contracting HIV and engaging in risky sexual behavior. The intervention provided frequent rewards at short intervals to bring the benefits of safe sex closer to the present and used a lottery design to try to target higher-risk individuals. Lottery-based financial incentives reduced the prevalence and incidence of HIV by 12 percent and 21 percent respectively, and their impact was largest among individuals with a high tolerance for risk.

Policy issue

In 2016, approximately 1.2 million new HIV infections occurred in Africa, adding to the nearly 26 million people already living with HIV on the continent. Young adults are particularly at risk for infection—one quarter of new cases occur in individuals under 25.[1] AIDS, which is the final stage of the HIV disease, is incurable and no successful vaccine has been developed, so many policies focus on prevention. Ensuring the adoption of safer sexual behavior among youth is critical to preventing the transmission of HIV, but further research is needed to understand why individuals engage in risky sexual behavior when the potential costs of becoming infected are so high.

For example, individuals may be more likely to engage in risky sexual behavior despite the high costs of HIV if they prioritize short-term gains over the long-run benefits of safe sex. Individuals may also ignore the costs that their risky behavior may impose on the rest of society through the spread of HIV, thereby having fewer reasons to take safety precautions during sex. Additionally, individuals who take risks in sexual behavior may also enjoy participating in other risk-related activities, such as lotteries. Lotteries

may also be more effective incentives for encouraging positive behavior than traditional cash incentives as individuals tend to prefer a small chance at a large reward than a small reward for sure.

Can lottery-based financial incentives help target individuals with the highest risk of HIV and reduce the spread of HIV overall?

Context of the evaluation

In 2016, Lesotho had the second highest HIV prevalence in the world, with about one quarter of the population infected with HIV. Largely due to the HIV and AIDS epidemic, life expectancy at birth is amongst the lowest in the world at 48 years. Among the 18-32-year-old rural and peri-urban population in this study, 16.7 percent tested positive for HIV, with the HIV prevalence rate highest for females (20.4 percent compared to 8.7 percent for males). Furthermore, there is a strong positive relationship between HIV and Sexually Transmitted Infection (STI) status (in the case of syphilis and trichomoniasis), as STI-positive individuals in this study were approximately 2.5 times more likely than STI-negative individuals to be HIV positive.

This high HIV prevalence rate has remained relatively unchanged since 2005. In response, the government of Lesotho created the National HIV/AIDS Strategic Plan in 2004. The plan included a policy of universal voluntary counseling and testing, and launched a national campaign to encourage the people of Lesotho to know their HIV status. Since 2004, the government has updated the plan to focus on control efforts.[2]



HIV testing kit

Thomas Chupein

Details of the intervention

Researchers conducted a randomized evaluation to test the impact of lottery-based financial incentives on young individuals' risky sexual behavior. The lottery provided rewards every four months. Only individuals who tested negative for syphilis and trichomoniasis, two curable STIs which have high co-infection rates with HIV, were eligible to receive lottery rewards. Payouts were conditional on STI status, rather than HIV status, to allow HIV-positive individuals to participate in the lottery and engage in safer sexual behavior. Researchers used a lottery design with frequent short-term payouts to bring the benefits of safe sex closer to the present and to target individuals who enjoy taking risks.

Study participants from 29 rural and peri-urban villages across five districts were randomly divided into three groups:

1. *Low-price lottery group:* Eligible for lottery to win prizes worth LSL 500 (US$50) conditional on testing negative for two STIs;
2. *High-price lottery group*: Eligible for lottery to win prizes worth LSL 1,000 (US$100), conditional on testing negative for two STIs
3. *Comparison group:* Not eligible for either lottery.

The study population consisted of 3,029 men and women aged 18-32 years old. All three groups received sexual health counseling sessions, free HIV and STI testing, free counseling before and after each STI/HIV test, and free male and female condoms every four months before each lottery draw, starting in February-May 2010. At the time of each lottery draw, participants in both lottery groups who were already STI positive, or who had become STI positive since the previous round, received free STI treatment and were eligible to participate in future lottery rounds. HIV-positive individuals, while eligible for lottery rewards, were referred to public health clinics offering AIDS treatment for an appropriate follow-up.

Lottery prize amounts were substantial when compared to monthly earnings: on average, men earned LSL 235 (US$23.50) and women earned LSL 135 (US$13.50) per month in these areas in 2008. However, because prizes were lottery-based and winning was uncertain and contingent on behavior change, the value of the prize was about US$5 per month when accounting for the odds of winning the lottery.

The intervention lasted from 2010 to 2012 and researchers collected follow-up data in 2013. They gathered individual data on HIV, syphilis, and trichonomiasis to measure overall HIV rates (or prevalence rates) as well as the rate of people who tested HIV negative when the study began, but tested HIV positive after two years (or incidence rates). Researchers also asked individuals about their sexual behavior to measure whether the lottery-based incentives directly prompted individuals to reduce risky behavior, such as extramarital sex and condom use. Researchers also measured participants' preferences for risk before the program started to see if the lottery affected participants differently, depending on their level of comfort with risk.

Results and policy lessons

Lottery-based financial incentives reduced the prevalence and incidence of HIV as well as the prevalence of STIs, and their impact was largest among individuals with a high tolerance for risk.

HIV Incidence and Prevalence: High and low-price lottery incentives reduced HIV prevalence and incidence rates, with the high-price lottery having the strongest effects. The high-price lottery reduced HIV prevalence by 4.1 percentage points (a 15 percent decrease relative to the prevalence rate of 26.9 in the comparison group) and HIV incidence by 3.3 percentage points (a 28 percent decrease relative to a rate of 11.7). On the other hand, the low-price incentive reduced HIV prevalence by 2.7 percentage points (a 10 percent decrease), and did not significantly reduce HIV incidence. Looking at both groups together, participating in any of the two lotteries reduced the prevalence of HIV by 3.4 percentage points (a 12.6 percent decrease) and HIV incidence by 2.5 percentage points (a 21 percent decrease).

These effects appear to be driven primarily by reducing HIV incidence among participants with a high level of comfort with risk. Before the lotteries began, these participants were more likely to be HIV positive and had a higher average STI prevalence rate

compared to participants with a low comfort with risk. Over two years, risk-comfortable individuals in the comparison group were more than twice as likely to become infected with HIV relative to individuals with a low comfort with risk. With the lotteries, however, these risk-comfortable individuals were not significantly more likely to become infected with HIV than individuals with a low risk comfort. Furthermore, while the lotteries reduced HIV incidence among risk-comfortable individuals by 11 percentage points, the lotteries did not significantly lower HIV incidence among individuals with low risk comfort. Consequently, the lottery program appears to have reduced HIV incidence by making risk-comfortable individuals behave similarly to individuals adverse to risk in terms of their sexual behavior.

STI Prevalence: Individuals in lottery-eligible groups also had larger declines in STI prevalence rates than those in the comparison group. At baseline, STI prevalence in the comparison group was 13.5 percent. However, because participants across all three groups received regular screening and free treatment for the duration of the evaluation, STI prevalence fell by 9.7 percentage points in the comparison group and was near-zero in the other two groups. The high-price lottery reduced STI prevalence by 89 percent (to 0.2 percent prevalence), and the low-value lottery reduced STI prevalence by 82 percent (to 0.5 percent prevalence).

Impact on Sexual Behaviors: Participants who received a lottery-based financial incentive were more likely to self-report having practiced safer sex (for example, by using condoms or having less extramarital sex) than the comparison group. Additionally, women in both lottery groups were 22.3 percent less likely to have given birth in the past four months or to be pregnant at the time of the endline survey.

Long-term Impacts and Cost-effectiveness: The impact of the lotteries persisted when researchers collected follow-up data one year after the evaluation. HIV prevalence rates in the lottery-eligible group remained lower than in the comparison group (by 3.8 percentage points, or 11 percent). Researchers estimated the cost of averting HIV at US$882 per person in lottery payment costs and $3,324 when adding the costs of STI testing and the cost of administering the program.

Bjorkman Nyqvist, Martina, Lucia Corno, Damien de Walque, and Jakob Svensson. "Using Lotteries to Incentivize Safer Sexual Behavior: Evidence from a Randomized Controlled Trail on HIV Prevention." World Bank Policy Research Working Paper No. 7215, March 2015.

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1. Dupas, Pascaline. 2011. “Do Teenagers Respond to HIV Risk Information? Evidence from a Field Experiment in Kenya.”*American Economic Journal: Applied Economics* 3 (1): 1–34 http://www.aeaweb.org/articles.php?doi=10.1257/app.3.1.1
2. World Health Organization (WHO). 2005. Lesotho: Summary Country Profile for HIV/AIDS Treatment Scale-Up.