

Circumcision and the Labor Market Consequences of HIV in Developing Countries

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Abstract

Understanding the impact of HIV on economic outcomes is a vital piece of the puzzle when attempting to understand the broad demographic consequences of this epidemic. Estimating this relationship is problematic, however, as it is difficult to determine whether poverty causes HIV, or HIV causes poverty. This paper uses a household level dataset spanning ten countries and exploits a recent finding from the medical literature to identify random variation in HIV prevalence and estimate the impact of HIV on five labor market outcomes.

1 Extended Abstract

The HIV/AIDS epidemic has had a devastating impact on global health. As of 2006, the Joint United Nations Programme on HIV/AIDS estimates that there were 39.5 million individuals living with HIV, resulting in 2.9 million annual AIDS deaths worldwide. Sub-Saharan Africa has been the hardest hit, with an adult prevalence rate of 5.9%, it contains only 10% of the world population but accounts for 63% of those living with HIV (Joint United Nations Programme on HIV/AIDS, 2006). In addition to reduced life expectancy, those suffering from HIV experience symptoms that increase in severity as the disease progresses, including fevers, headaches, chronic diarrhea, weight loss, fatigue, and shortness of breath.

While the impact of HIV on health and mortality has been well documented by the public health community, there has been less progress in understanding the broader implications of the epidemic. In particular, while there has been speculation that high HIV prevalence in Africa may explain the slow economic growth observed in this region over the past thirty years (see, for example, Bell, Devarajan, and Gersbach (2003)), there has been little research identifying the economic consequences of HIV infection. Indeed, while it seems quite likely that the world has paid a severe price in terms of lost productivity, it has been difficult to pin down any rigorous estimates of the causal impact of HIV on economic outcomes.

The primary obstacle to identifying the causal impact of HIV on economic outcomes has been that HIV infection is not randomly assigned, and if those who are HIV positive are systematically different than those who are not, then any economic differences between these two groups may be due to HIV, or may be due to unobserved differences across the two populations. So in order to make headway, it is necessary to find variation in HIV prevalence that is not correlated with unobserved characteristics that also influence labor market outcomes.

This paper utilizes a recent finding from the medical literature, namely that circumcision is protective against HIV infection. Researchers originally suspected this effect because cross-sectional

analysis consistently found a negative correlation between HIV and circumcision. Recently the hypothesis was confirmed by a series of randomized controlled trials conducted in South Africa, Uganda, and Kenya. All three of these studies conclude that circumcision greatly reduces the risk of contracting HIV, by 48% in Uganda, by 53% in Kenya, and by 60% in South Africa (U.S. Department of Health and Human Services, 2006; Bailey, Moses, Parker, Agot, Maclean, Krieger, Williams, Campbell, and Ndinya-Achola, 2007; Auvert, Taljaard, Lagarde, Sobngwi-Tambekou, Sitta, and Puren, 2005).

We leverage this finding to determine the impact of HIV on labor market outcomes. Since those who are circumcised are less susceptible to HIV, the strategy will be to implement a differences strategy, using the circumcised population as a control group in order to measure the impact of HIV on labor market outcomes. The identifying assumption is that circumcision is protective against HIV, but is not correlated with any other factors that have a direct impact on labor market outcomes. The analysis will be conducted using the Demographic and Health Survey, with a sample that spans ten countries: Kenya, Malawi, Burkina Faso, Rwanda, Cameroon, Ghana, Guinea, Senegal, Ethiopia, and Haiti.

Since circumcision in many of these countries typically occurs as a rite of passage in adolescence, one concern with this identification strategy is that higher quality men are potentially more likely to become circumcised, and that these men are also likely to be more successful in the labor market. In response to this concern, we have identified two populations that are unlikely to benefit from the protective effect of circumcision to construct difference-in-difference (DnD) estimates of the impact of HIV on labor market outcomes.

The first DnD estimator uses the fact that, since HIV is typically asymptomatic for several years after infection, the labor force participation of those who have been infected with HIV via sexual intercourse is unlikely to be impacted for those who are sufficiently young (less than 20 years old). A second DnD estimator uses the fact that one would not expect those who have never had sex to benefit from the protective effects of circumcision. Both of these sub-populations will be used to

control for the fact that circumcision may be correlated with unobserved characteristics.

In a preliminary analysis using this empirical strategy we find that circumcision is correlated with reduced labor force participation, increased likelihood that work is unpaid, and a reduced share of household income earned by the respondent. Moreover, the correlation is significantly smaller for those who have never had sex and for those who are too young for sexually transmitted HIV to become symptomatic. This set of results indicate that HIV has an important impact on labor market outcomes. In future analysis we will implement an instrumental variables approach, as this will allow us to estimate the magnitude of the impact of HIV on labor market outcomes.

References

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