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Abstract
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Background

Zambia is well known as one of the most affected countries in the world in terms of the HIV/AIDS pandemic. Efforts to slow the spread of the disease, at all levels of the population, have been substantial. International donors have an extensive presence in the country, and the Ministry of Health has aggressively addressed the behavior changes necessary to slow the spread of HIV.

During the late 1990's, it appeared that all of these efforts had begun to pay off. Antenatal prevalence data from 1994 to 1998 showed a decline in HIV prevalence rates among 15 to 19 year olds.[1] This change was attributed largely to behavior changes resulting from the numerous educational campaigns throughout the country. This young age group represents to some degree an estimate of incidence of HIV. As a result of the reported decrease in prevalence, Zambia was compared to Uganda as one of the few success stories in the fight against HIV/AIDS.

In 2002, another round of ANC prevalence estimates was performed, this time with mixed results for 15 to 19 year old cohort. While the trend varies across the different test sites, many of the decreases in prevalence celebrated in 1998 had largely lessened and some had apparently reversed by 2002 (see Figure 1).

In addition to the ANC data on prevalence rates, the 2001-2 Zambia Demographic and Health Survey (with a module with HIV and syphilis testing) allow for detailed analyses. Most notably, the 2001-2 ZDHS reports a marked difference in HIV prevalence by sex: at the national level, 18% of Zambian women are estimated to be HIV positive, while the corresponding figure for Zambian men is only 13%.

Thus, the aim of this paper is two-fold. First, it is critical to examine the ANC data for 15 to 19 year olds to ascertain the nature of the recent changes in HIV prevalence. An increasing prevalence in this age group is the closest indication that incidence may in fact be increasing. This finding will have critical policy interventions in terms of which interventions may be more or less effective, and which geographical areas may need more attention. Second, using the 2001-2 ZDHS data, it is possible to determine some of the risk factors of HIV for Zambian women as compared to Zambian men.

Data

This paper will use multiple data sources. The Zambian Antenatal Sentinel Surveillance Data from 1994, 1998 and 2002 will be used to show prevalence levels and trends. The 2001-2 Zambian Demographic and Health Survey will be used to provide point prevalence estimates as well as to examine background characteristics. Finally, the Zambian Sexual and Behavior Survey from 1998 and 2000 will be used as auxiliary qualitative data to substantiate the quantitative results.

Methods

The above data will be used to examine levels and trends in the Zambia's HIV-1 pandemic. First, I will use the Antenatal Sentinel Surveillance data to calculate prevalence rates. Comparing these rates throughout the 1990's will show the over-arching trend in HIV prevalence in data. Since the years between sentinel surveillance surveys are approximately equal to the span of the cohort being followed (four versus five years), it is possible to trace a given age cohort over time to some degree.

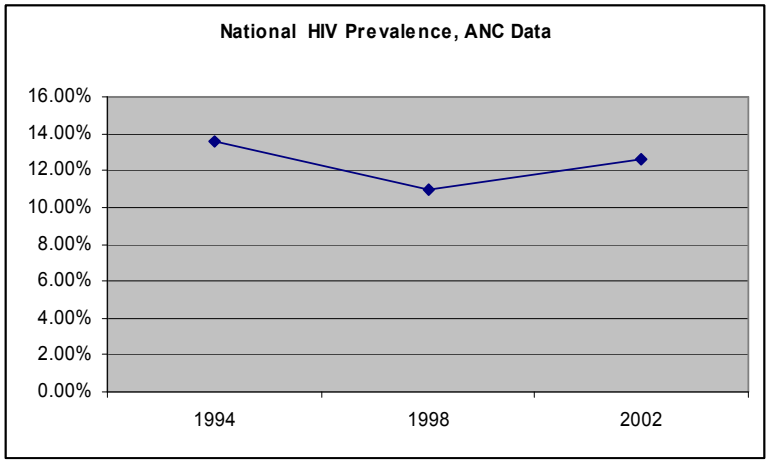
Given the limitations of antenatal data, most particularly the lack of male representation, it is important to examine the Zambian Demographic and Health Survey (ZDHS) 2001-2. This nationally representative survey includes a module with HIV and syphilis blood testing for all of the age groups of interest, in all of the provinces of the country. This survey, then, provides us with an important vehicle for assessing the accuracy and meaning of the trends detected in antenatal data. I will examine the data from the ZDHS 2001-2 looking at prevalence rates with particular attention to sex, age cohort, and province. The results from the ZDHS data will be compared with the antenatal sentinel surveillance data.

I will conduct univariate and subsequently multivariable regression models evaluating sex, age cohort and province as significant predictors while controlling for background characteristics.

Analysis

At this stage my findings are very preliminary. Initial findings show a disconcerting trend in prevalence rates among 15 to 19 year olds according to the Zambian Antenatal Surveillance Data (Figure 1).

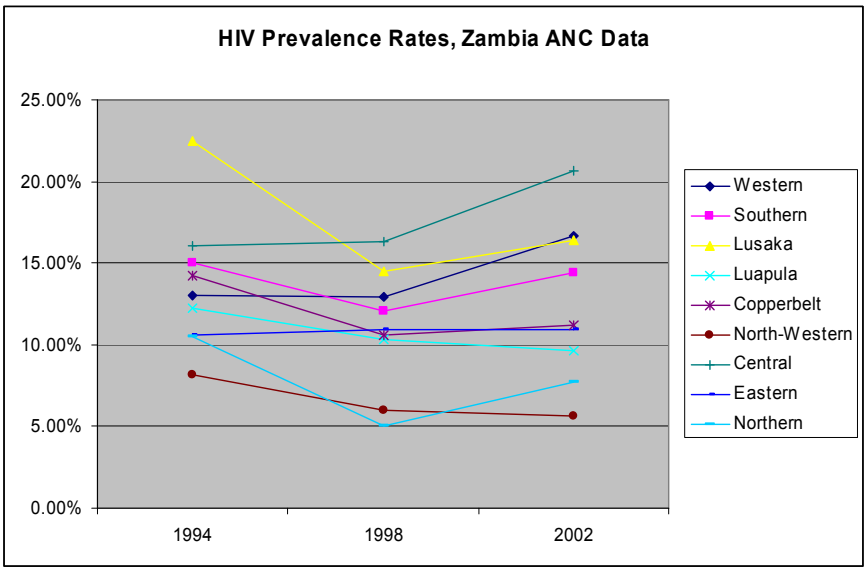
Figure 1. HIV Prevalence among 15 to 19 year olds nation-wide. (ANC data)



Here we see that while the combined decline for 15 to 19 year olds for all provinces was marked from 1994 to 1998, the trend from 1998 to 2002 among 15 to 19 year olds is one of marked increase. Given that prevalence rates among the group making its sexual debut is a reasonable proxy for incidence, this trend is quite worrisome and necessitates a change in programmatic strategies.

If we look at the same data points for the individual provinces, it is a more varied picture, but the overall trend again tends toward an increase (Figure 2).

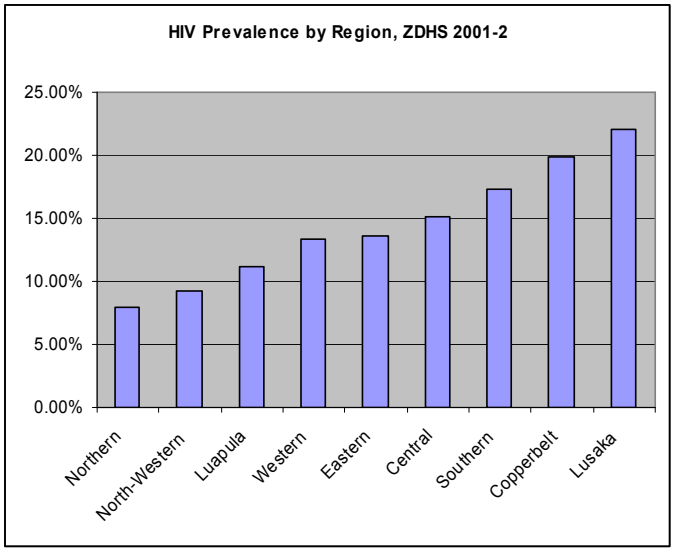
Figure 2. HIV Prevalence among 15 to 19 year olds by province. (ANC data)



According to the Zambian Antenatal Sentinel Surveillance report, only three of the sites monitored as part of the surveillance program registered statistically significant changes from 1994 to 1998, two of these an increase, and one a decrease. Nonetheless, data from the 15 to 19 year old group are critical to understanding the success of education interventions particularly targeted at this vulnerable population.

The variation in HIV prevalence rates by province is substantial (Figure 3). The Northern province ranks lowest with a prevalence among men and women ages 15 to 49

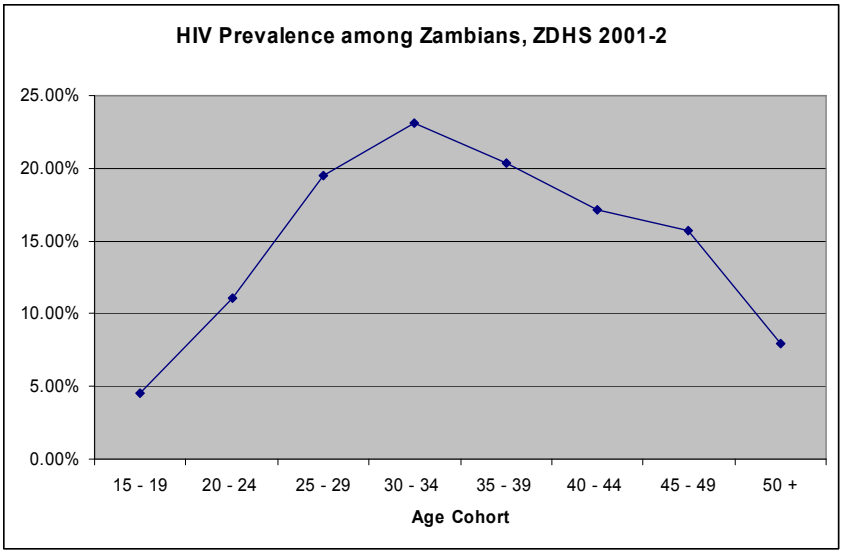
Figure 3. HIV Prevalence by province. (ZDHS 2001-2 data)



of less than 10% prevalence to the province of Lusaka with prevalence of more than 20%.

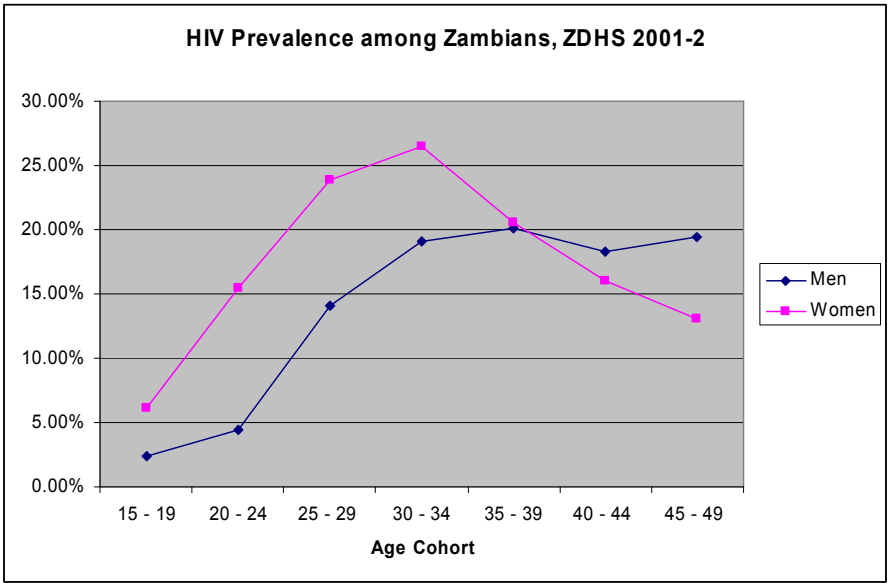
Finally, we see the prevalence rates for the whole population by age cohort (Figure 4). This is generally what we would expect to see given the stage of the HIV pandemic in Zambia.

Figure 4. HIV Prevalence by age cohort. (ZDHS 2001-2 data)



The difference in HIV prevalence rates by sex (Figure 5) show the extent to which women have been more severely affected in Zambia's HIV epidemic. The reasons for this difference are varied, from biological and social vulnerabilities leaving women more exposed to transmission.

Figure 5. HIV Prevalence by sex and age cohort. (ZDHS 2001-2 data)



At this stage in my analysis I do not have more findings to present. As discussed above I will perform a variety of analyses to clarify the risk factors for HIV vulnerability in light of the data available.

[1] Central Board of Health of Zambia. Antenatal Sentinel Surveillance of HIV/Syphilis Trends in Zambia 1994 – 2002.