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CONTENTS

Sentinel surveillance identifies a high HIV prevalence i population in Zimbabwe

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Objective: Sero surveillance data on HIV assists in planning, allocation of resources to design of new interventions and monitoring trends following information dissemination. aimed to establish the extent of the HIV epidemic over time in a primarily rural provinci
Setting: Antenatal care (ANC) and STD clinics in Masvingo province.
Design: Cross sectional descriptive studies over defined time points.
Main Outcome Measures: Socio-demographic data and HIV prevalence.

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Methods: Socio-demographic linked sentinel blood samples were collected from women presenting for ANC and patients complaining of sexually transmitted diseases between 1991 and 1996 for HIV serology.
Results: The overall HIV prevalence during 1995 among ANC attenders was 42.3%, (95%CI = 38.8 to 45.4) and that for 1996 was 41.5% (95% CI=37.4 to 45.6). Chiredzi had an increase from 40% 1991 to 46.6% (95% CI=41 to 53) in 1996. At each of the time points, women aged 20 to 34 had the highest seroprevalence, with the youngest positive mother aged 14 years. Single, divorced, separated and widowed women were more likely to test positive (63%) compared to 40% in married women $p<0.01$, 95% CI:0.19<OR<0.62). Gravida 2 women had the highest seroprevalence with those with poor previous pregnancy outcome showing a higher seropositive status of 55% ($p<0.01$ 95% CI:0.35<OR<0.86). Regarding serostatus among STD clinic attenders, an overall seropositive status of 65%, (95%CI = 60.4 to 70.4) was recorded in 1995, with Gutu showing a higher prevalence of 72% (95% CI = 65.2 to 78.4). Seventy two percent of STD patients in Masvingo town were HIV positive in 1996, with 86% of vaginal discharge patients testing positive. Patients aged 20 to 44 had the highest prevalence, although females seemed to get infected at a younger age.
Conclusion: The data suggests an increased seroprevalence over time in this rural provincial setting. Risk for infection is defined by demographic factors similar to those in urban settings. Extensive, community based and site specific HIV prevention programmes, which include STD control are required in this and similar settings. The impact of such interventions needs continued monitoring through ongoing serosurveillance.

Introduction

Serosurveillance of the human immunodeficiency virus (HIV) and analysis of the patterns and temporal trends of the acquired immunodeficiency disease (AIDS) epidemic assist in planning for its impact and the continued development and monitoring of preventive strategies. Data regarding differential seroprevalence status in rural versus urban areas of Zimbabwe and indeed many other countries in the region is very sparse. Anecdotal evidence suggests that whereas early infections occurred in mobile urban and high risk populations, the epidemic could now be taking hold in traditionally non-high risk categorized rural populations. The notion of the epidemic being spatially variable with rural areas being less affected may, with time and given the developed road infrastructures, not hold true.

Of approximately 500 000 children born with HIV infection in 1995, 67% were in sub-Saharan Africa.[1] It is estimated that up to 27.9 million people worldwide have been infected with HIV with sub-Saharan Africa having the largest proportion (68%) of the global total.[1]

In Zimbabwe, recent data from an urban setting showed an increase in HIV prevalence from 18 to 30.2% among women presenting for antenatal care[2] and 67% of those reporting for treatment of STDs. The present study aimed to establish HIV seroprevalence among antenatal care attenders and STD patients in a rural setting.

Materials and Methods

Between 1991 and 1996 unlinked HIV serosurveillance was conducted at four sites in the Masvingo province. Blood samples were collected in 1991, 1995 and 1996 and tested for HIV antibody from ANC attenders from Masvingo Municipal Clinics (urban), Chiredzi District Hospital (semi-urban), Gutu Mission Hospital (growth point) and Mashoko Mission Hospital (rural). STD patients were screened at Masvingo town clinics, Gutu Rural Hospital and Mashoko Mission Hospital.

Consecutive demographic data only linked, cross sectional sampling was undertaken in each case.

All blood samples were tested at the Masvingo Public Health Laboratory using the Genelavia Diagnostic kits (Sanofi Pasteur, France). All samples from Chiredzi were retested at the National Public Health Laboratories in Harare using two test kits, Veronostica Uniform II (Organon Technica Germany) and Genelavia Diagnostic kits.

Results

1. Antenatal Clinic Attenders.

Of the total 1 255 samples tested in 1995, 95 (7.6%) samples had "indeterminate" results. Six percent of 827 samples tested in 1996 had indeterminate results. The overall seropositivity among ANC attenders during 1995 was 42% (95%CI = 38.8 to 45.8). Chiredzi district hospital showed an increase in HIV seropositivity from 40% (95%CI = 31 to 48) in 1991 to 70% (95%CI = 41 to 53) in 1996 among 136 and 276 women respectively. Table I shows the HIV seroprevalence by site for the women presenting for antenatal care.

The youngest positive ANC attender was 14 years old for 1995 and 15 years old in 1996. The largest proportion of women tested belonged to the 20 to 29 years age group. The majority of those positive were aged 20 to 24 years followed by the 25 to 29 years age group. In 1996, the highest positivity of 56% was recorded for the 25 to 29 age group for both survey sites. The distribution of HIV seropositive pregnant women by age is shown in Figure I.

A similar pattern in HIV positivity by age was observed between 1994 and 1996, with 1995 rates increasing by 10 to 15% as shown in Figure II. Except for the 25 to 29 year age group and 35 to 39 year age group, the prevalence for 1996 appeared to have dropped, as compared with 1995, as depicted in Figure II.

The area where ANC clients reported staying most of the time was divided between urban areas, growth points or traditional villages. The positivity rate in the group staying in

le I: HIV seroprevalence in ANC women by site ween 1991 and 1996 in the Masvingo Province, ibution and 95% Confidence Interval (CI).

	HIV Positivity		
	Number Positive/Total	%	95% CI
Hospital			
	54/136	39.7	31-48
	129/276	46.7	41-53
Mission Hospital			
	16/78	20.5	11-30
	107/271	39.5	34-45
Mission Hospital			
	51/282	18.1	14-23
	52/273	19.0	14-24
Urban clinic			
	69/223	30.9	25-37
	103/293	35.2	30-41
	107/293	36.5	31-42

igure I: Distribution of HIV positive pregnant women by age.

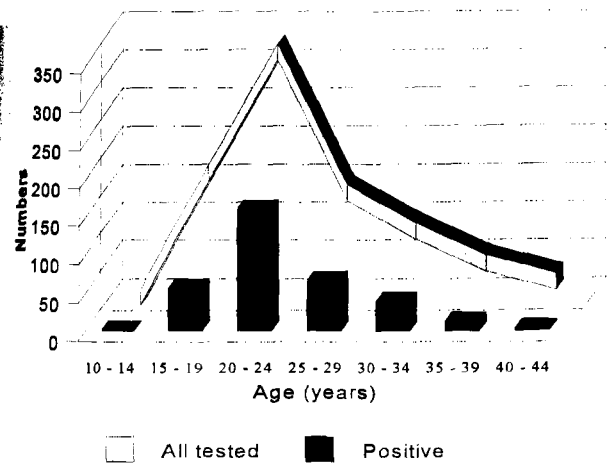
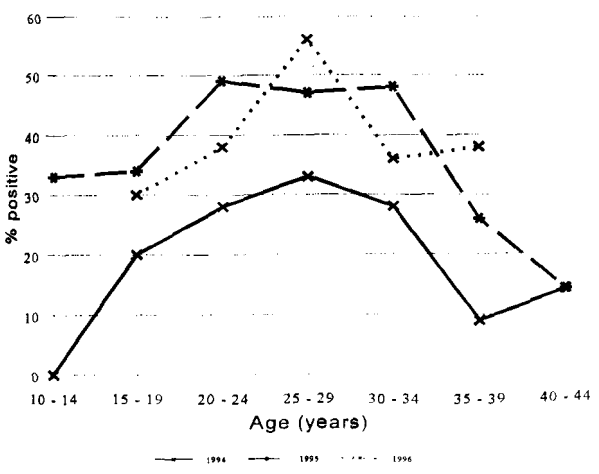


Figure II: Distribution of HIV positive pregnant women by age group for 1994 to 1996.



town was 62% (n = 85), for the growth point this was 45% (n = 31) and for traditional villages 38% (n = 621). There was a significant difference in serostatus between the (semi) urban areas (town and growth point) and the traditional villages ($p<0.01$, 95% CI:0.30<OR<0.69).

There was no relation between the chance to be HIV positive and the level of income. Positivity rates in the paying group (n = 207) and the non-paying group (n = 567) were similar at 42 to 43%. In 1994 a significant difference was found between paying ANC clients (33% positive) and non-paying clients (15% positive).

In the analysis, the marital status was divided into two groups, married and others (single/divorced/separated/widowed). There was a significant difference between the two groups in that "the others" had a higher prevalence (66% versus 44%, $p<0.01$ 95% CI: 0.19<OR<0.62).

Besides the marital status, the clients reported on whether they stayed together with their partner or not. There was no significant difference regarding HIV status within the married group, whether they stayed together or apart from their partner.

Regarding gravidity, women who were gravida 2 and 3 were mostly affected by HIV during 1995. In 1996 gravidae 2 up to 6 were equally affected.

The outcome of the previous pregnancy was analyzed and it showed that 429 women (54%) had a child before the index pregnancy, ie. were gravida (G) 2 or more. The pregnancy outcome of 420 clients in this group was known (98%). A comparison was made between the group with a "healthy baby" and the "others" (baby often sick/child died before the first to fifth birthday/neonatal deaths/stillbirths/ premature birth/abortion). There was a significant difference between the two groups in seroprevalence. In 1995, the "healthy baby group" had a positivity rate of 43%, whilst the "others" showed a rate of 58% ($p<0.01$ 95% CI: 0.35<OR<0.86). In 1996 the "health baby group" had a positivity rate of 46%, whereas that of the "others" was 68% ($p<0.01$, 95% CI:0.21<OR<0.77)

There were 194 women who were G4 or more and the pregnancy outcome preceding the latter pregnancy was known for 189 women (97%). Differences for HIV positive mothers were significantly in favour of the "healthy" group compared with the "other" group. ($p<0.01$ 95% CI: 0.10<OR<0.77)

2. Persons with STD.

As for patients presenting with STDs, the overall HIV seroprevalence was 65%, (95%CI = 60.4 to 70.4) in 1995 and 71.8% (95% CI = 66 to 78) for Masvingo town in 1996. This was increased when compared to the rate of 68% found in 1994 . Gutu rural hospital had the highest prevalence of 72%, compared with 58% for Mashoko mission hospital in 1995 is shown in Table II.

The mean ages for HIV positive STD patients were 29 and 28 years for males and females respectively. The youngest positive STD patient was 16 years and the oldest was 63 years of age, with more females infected in the younger (15 to 19 years) age group than males.

More women than men presented to the health facilities for STD treatment, with a male to female ratio of 1:1.7. More female patients (69%) than male patients (60%) were likely to test positive for HIV.

Table I: HIV seroprevalence in ANC women by site between 1991 and 1996 in the Masvingo Province, distribution and 95% Confidence Interval (CI).

Site	HIV Positivity Number Positive/Total	%	95% CI
Chivodzi Hospital			
1992	54/136	39.7	31-48
1996	129/276	46.7	41-53
Gutu Mission Hospital			
1994	16/78	20.5	11-30
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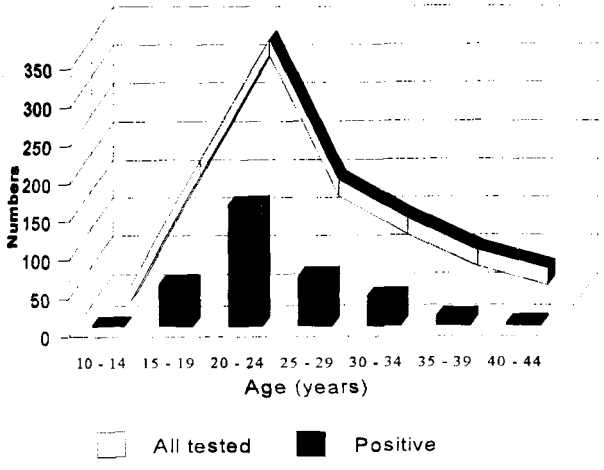
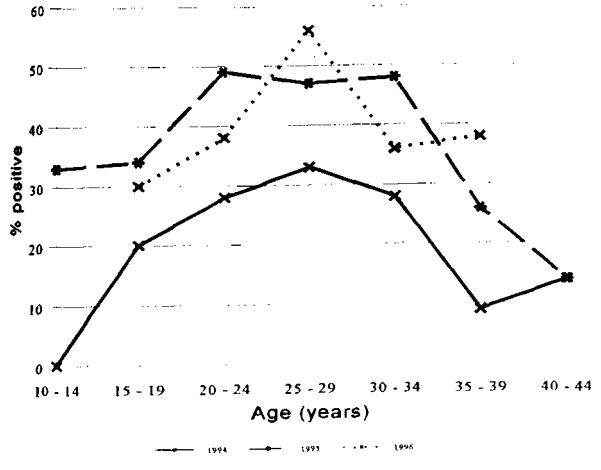


Figure II: Distribution of HIV positive pregnant women by age group for 1994 to 1996.



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More women than men presented to the health facilities for STD treatment, with a male to female ratio of 1:1.7. More female patients (69%) than male patients (60%) were likely to test positive for HIV.

Table II: HIV seroprevalence in STD patients by site between 1991 and 1996 in Masvingo province, distribution and 95% Confidence Interval (CI).

Site	HIV Positivity Number Positive/Total	%	95% CI
Gutu Mission Hospital			
1994	20/38	52.6	36-69
1995	135/188	71.8	65-78
Mashoko Mission Hospital			
1994	27/52	51.9	38-66
1995	101/173	58.4	51-66
Masvingo Urban clinic			
1991	110/188	58.5	51-66
1994	66/111	59.5	59-69
1996	144/191	75.4	69-82

STD patients living in a growth point (semi-urban area) were significantly more likely to test positive than those from a traditional village ($p < 0.05$, 95% CI: $0.36 < OR < 0.98$). No difference was observed on the likelihood of testing HIV positive among the patients by either income or marital status.

The positivity rate of patients with genital ulcers and urethral discharge was 66 and 55% respectively for 1995 and 72% for both in 1996. For the female patients, vaginal discharge was the most common complaint (63%) with seropositivity of 64% and 72% in patients with vaginal discharge and genital ulcer respectively in 1995. This rose to 86% for vaginal discharge in 1996 and 82% for genital ulcer.

The distribution of HIV positive patients with the various types of STIs by gender is shown in Figure III.

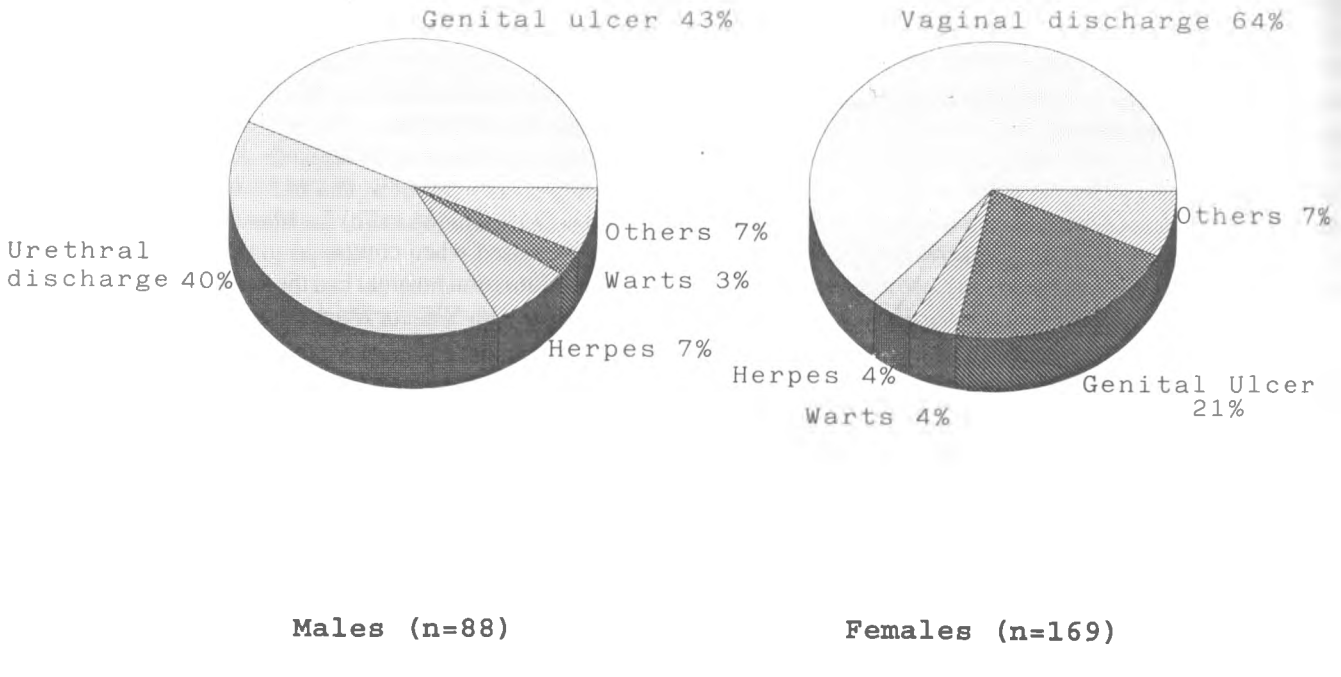
Discussion

Results of the sentinel surveillance show increased rates of HIV affecting this rural population. The seroprevalence reported for pregnant women in Chiredzi was higher than that reported for other settings. This could be as a result of Chiredzi serving a large commercial estate which comprises primarily male workers in concentrated groups. The workers are also mobile especially during the cane cutting season and earn more than workers on settler farms and therefore attract commercial sex workers. Sex workers move around the various working communities during pay days and it is possible that the workers could be sharing a common pool of infected sex workers and, in turn, infecting their wives or partners who get pregnant. There are also single women employed within the estates. Furthermore, in this drought ridden area poverty could be driving a number of women into commuting between urban and farming areas for commercial sex work.

The community has also been characterized by extensive labour migration and previous military mobilization. Social outlet facilities available to this community are limited. There is one beer hall that serves the workforce of surrounding areas. Young females from the surrounding community are attracted to the area for commercial sex work and a concentration of bus drivers and travellers who use the 'stop' in Chiredzi.

The economic underpinnings of sex work in propagation of HIV are well recognized. However, data from this rural population indicates that there is interdigitation of commercial sex work and other social transactions with movements of men and women to rural commercial towns in search of economic opportunities, posing heightened HIV risk. The pregnant women could be getting infected through their husbands or sex partners who, in turn, could be getting infected from a common or closed pool of infected sex workers serving the commercial centre. Thus, vulnerability of this community could be as a result of intersections of commercial sex work, military mobilization, limited social and economic opportunities and having a central bus stop.

Figure III: Distribution of sexually transmitted diseases in HIV positive patients.



The present findings call for the institution of interventions to protect this and similar vulnerable groups in rural communities. Increased STD control through community interventions in such settings should be carried out. Epidemiological research, elucidating the role of vulnerable groups, other STDs and circumcision, has provided windows of opportunity for intervention.[3] Availing and actively promoting condoms should be another avenue. Targetting such prevention programmes through identification of vulnerable social groups and geographic areas with high rates of HIV infection should be carried out alongside implementation of intensive programmes of behavioural change.[4]

There are lessons to be derived from events surrounding such high prevalence which can be used towards prevention in similar settings. The global pandemic of HIV infection comprises many different epidemics[5], each with its own dynamics and influenced by many factors, such as time of introduction, population density and cultural and social issues. Even within same regions, the HIV epidemic consists of a multitude of smaller ongoing epidemics, which although related, pursue their own course with different velocities.

In the early years of the HIV/AIDS epidemic prevalence data based on sound scientific research for use in designing prevention programmes was met with moral denial. This far in the epidemic, few behavioural or STD control interventions towards HIV prevention have been evaluated, or, implemented. It is unethical to withhold from the community something that might work and this could dilute even further the goal of establishing effective ways of tackling the spread of the disease.[6]

Thus, this surveillance data identifies a need for the urgent allocation of resources towards HIV/STD prevention. Community based STD treatment for men and women in high risk categories alongside behavioural change/health education messages might be important research backed approaches. It is important that the various approaches that have been shown to reduce HIV infection and those that can also show a positive impact be tested in this vulnerable population.

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