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REPUBLIC OF SOUTH AFRICA

**NATIONAL HIV AND SYPHILIS
PREVALENCE SURVEY
SOUTH AFRICA
2005**

Directorate: Epidemiology and
Surveillance

Chief Directorate: Health Information,
Epidemiology, Evaluation & Research

**DEPARTMENT OF HEALTH
IN SOUTH AFRICA
2005**

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FOREWORD

This report is the 16th in a series of national antenatal surveys designed to track the magnitude and progression of HIV and AIDS in South Africa. HIV remains an important public health challenge.

The findings of the 2005 survey show that in comparison to the 2004 survey, the 2005 estimates are not too different. This is encouraging to note a great deal of work still needs to be done to ensure that new infections no longer take place at all in South Africa.

This report provides us with valuable information to better position to address the challenges of care and support while sustaining the momentum in prevention activities. The implementation of the Comprehensive Plan for the management of HIV and AIDS has seen thousands of individuals receive a comprehensive package of care, treatment, support and a range of other interventions each day. One of the greatest challenges facing South Africans is a serious commitment by all to prevention activities so as to ensure that new infections are curbed and even stopped in South Africa. I would further like to emphasise the importance of healthy lifestyles such as following sound nutrition advice, exercise, cessation of smoking, and moderate alcohol consumption. These are some of the keys to achieving 'Health for All'.

We acknowledge the contribution of all in responding to prevention and intervention activities against HIV and AIDS. I would once again like to call on all South Africans in all sectors and walks of life to participate actively in the fight against HIV and AIDS.

DR M E TSHABALALA-MSIMANG
MINISTER OF HEALTH

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MR THAMI MSELEKU

DIRECTOR-GENERAL: HEALTH

ACRONYMS

AIDS	Acquired Immuno Deficiency Syndrome
ANC	Antenatal Care
BSS	Behavioural Surveillance Survey
CI 95%	95% Confidence Interval
ELISA	Enzyme Linked Immuno Absorbent Assay
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
(N)DOH	(National) Department of Health
NICD	National Institute for Communicable Diseases
NHLS	National Health Laboratory Service
PMTCT	Prevention of Mother-to-Child Transmission
PPS	Probability Proportional to Size
QA	Quality Assurance
RPR	Rapid Plasma Reagin (A screening test for syphilis)
STI	Sexually Transmitted Infection
TB	Tuberculosis
UNAIDS	United Nations joint program on HIV/AIDS
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
VCT	Voluntary Counselling and Testing
WHO	World Health Organisation

1. INTRODUCTION

The health and social implications of HIV and AIDS on human development are extensive and have a far-reaching global impact. UNAIDS estimates that 40.3 million people globally were living with HIV at in 2005.

The Comprehensive HIV and AIDS Care, Management Prevention and Treatment programme in South Africa is one of the largest and most comprehensive. This programme has continued to place an important focus on prevention of HIV infection and ensure that those people who are HIV negative remain HIV negative. Monitoring of the HIV infection trends remains an important component of the national strategy as this is the means by which HIV infection trends are reviewed on a yearly basis. The HIV prevalence survey, which utilises a methodology devised by WHO and UNAIDS over 10 years ago is the central tool in this methodology. In later years further refinement to the tool have been made to increase the sensitivity of the prevalence estimates. The antenatal survey is an important tool as it not only provides HIV trend estimates but also provides empirical data which is utilised in numerous sectors for various modelling projections.

This report presents the results of the 2005 antenatal survey conducted in all the nine provinces of South Africa.

2. OBJECTIVES OF THE SURVEY

The primary objectives of the 2005 survey were to:

- Estimate HIV prevalence in South Africa in 2005 and present trends in HIV progression
- Describe HIV trends in sub population groups (province) and describe trends in different age groups.
- Estimate HIV infection rates in the general population (men, women and children) using the UNAIDS spectrum model
- Estimate syphilis prevalence among women in 2005 and describe trends in syphilis.

SURVEY METHODOLOGY

3.1 Study design

This survey was conducted concurrently across all nine provinces in October 2005. The study was an anonymous, unlinked, cross-sectional survey⁶. The study population included pregnant women who attend antenatal clinics (for the first time in the current pregnancy) in the public health sector of South Africa.

Some demographic details, (excluding personal identifiers such as names, addresses and identification number) were collected using standard data collection forms. Blood samples were collected from all participating women and labelled with a unique barcode label. The second barcode label was used on the data collection form. All specimens were transported to participating laboratories where they were tested for HIV using ELISA (WHO Global Programme on AIDS, 1989, Department of Health, 1997, UNAIDS & WHO, 2003). In line with the UNAIDS & WHO guidelines, "a single testing algorithm is used nationwide for surveillance."

3.2 Sentinel population

The study population are pregnant women attending a public sector antenatal clinic for the first time during the current pregnancy. As this is an unlinked survey the identities of women is not recorded. The choice of the first antenatal visit is made to minimise the chance for one woman attending two clinics and being included in the study more than once. The survey builds on routine screening for blood grouping, syphilis, and full blood count (FBC) that takes place during a woman's first antenatal visit.

3.3 Sampling methodology

The same clinics as had participated in the previous surveys were used. These were selected using probability proportional to size (PPS) sampling method. A total of 16 510 women at 399 clinics participated in the survey in 2005.

3.4 Study administration

A review of the study protocol, study methods, planning of field logistics and standard operating procedures, (e.g. Provision of Vacationers with SST gel and dot

activator, paired bar-code labels, and data capture sheets) was as usual the first step in the preparatory process.

Participating laboratories and courier services were prepared to ensure that appropriate testing procedures would be adhered to and that blood specimens would be safely and timely transported from each antenatal clinic to testing laboratories.

The national department's co-ordinating office ensured the overall co-ordination of the survey including support visits to the nine provinces, conducting the procedural audit of the survey countrywide, data processing of the national data set, modelling HIV estimates and compiling this national report. The procedural audit included amongst others; investigation into preparation of sentinel sites, logistics and adherence to the study protocol in general.

3.5 Laboratory testing

Laboratory testing was conducted in accordance with the national standardised survey protocol. Participating laboratories included the NHLS labs in Bloemfontein, Johannesburg, Kimberley, Middleburg, Port Elizabeth, Stellenbosch, MEDUNSA as well as the Virology laboratory of the University of KwaZulu-Natal.

3.6 Quality Assurance

In the course of this survey, careful laboratory and data management quality assurance was conducted. For each of the participating laboratories, the ELISA and RPR tests for HIV and syphilis testing were internally quality assured. The National Institute for Communicable Diseases (NICD) performed external quality control for the HIV testing and the Medical University of Southern Africa (MEDUNSA) Microbiology laboratory conducted quality control for the syphilis testing. Double data-capture was conducted on provincial data sets.

3.7 Data processing and analysis

Data analysis was conducted using the STATA and SPSS software packages. Data analysis was conducted at both the provincial and national levels to verify analysis.

4. RESULTS

4.1 Distribution and characteristics of study participants

A total number of about 16 510 pregnant women participated in the survey, compared to 16 064 in 2004.

Table 1 a. Antenatal survey participants for 2003, 2004 and 2005 by province

Province	2003	%	2004	%	2005	%
Eastern Cape	1919	11.5	1711	10.7	2189	13.3
Free State	1039	6.2	1016	6.3	935	5.7
Gauteng	3146	18.9	3169	19.7	3110	18.8
Kw aZulu-Natal	3406	20.5	3522	21.9	3500	21.2
Limpopo	1890	11.4	1894	11.8	1897	11.5
Mpumalanga	1241	7.5	1114	6.9	1027	6.2
Northern Cape	623	3.7	494	3.1	567	3.4
North West	1388	8.3	1192	7.4	1325	8.0
Western Cape	1991	12.0	1952	12.2	1960	11.9
Total	16 643		16 064		16 510	

Table 1 b. Antenatal survey participants for 2002 to 2004 by age group

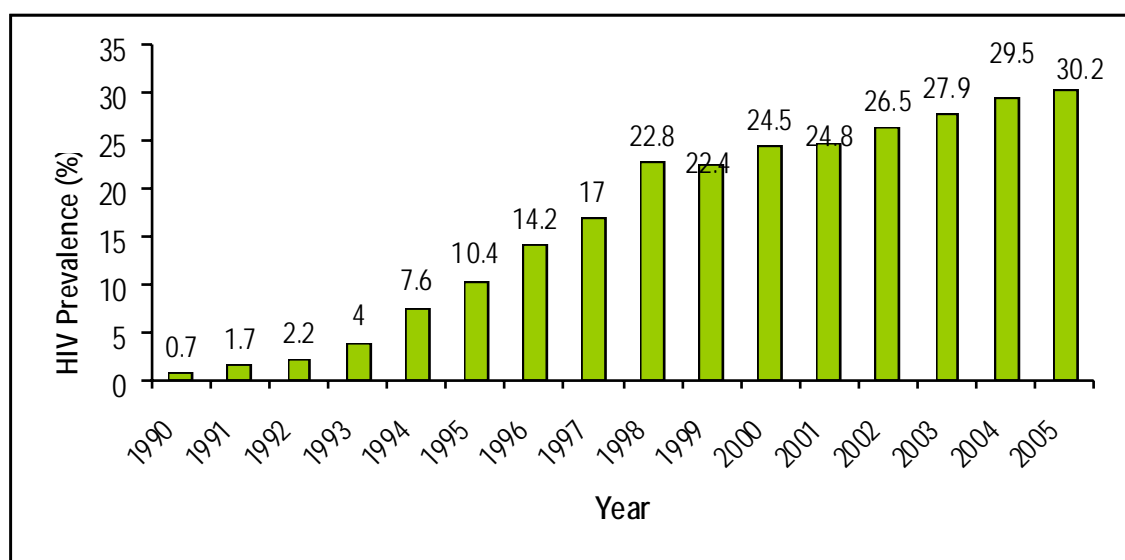
Age group: 2003 – 2005

	2003	Percent of the total sample	2004	Percent of the total sample	2005	Percent of the total sample
Age						
< 20	3198	19.2	3133	19.5	3334	20.2
20-24	5152	30.9	4992	31.1	5068	30.7
25-29	3886	23.4	3702	23.0	3906	23.7
30-34	2612	15.7	2510	15.6	2534	15.3
35-39	1297	7.8	1261	7.9	1246	7.5
40-44	371	2.2	350	2.2	356	2.2
45-49	39	0.2	37	0.2	52	0.3
Missing	88	0.5	79	0.5	14	0.08
Total	16643	100.0	16064	100.0	16510	100

4.2 HIV prevalence

4.2.1 National HIV prevalence

Figure 1 National HIV prevalence trends among antenatal clinic attendees in



Based on the results of the survey, it is estimated that nationally, **30.2%** (CI 29.1% – 31.2%) of pregnant women were HIV positive in 2005. This is in comparison with a prevalence rate of **29.5%** (CI 28.5% - 30.5%) recorded for 2004 (Department of Health, 2005). Figure 1 shows the HIV national prevalence trends from 1990 to 2005.

4.2.2 Provincial HIV prevalence

Provincial prevalence rates show the geographic variations in the HIV epidemic. Table 2 shows the HIV rates over the last three years.

Table 2: Provincial HIV prevalence estimates: Antenatal clinic attendees, South Africa 2003-2005

PROVINCE	HIV pos. 95% CI 2003	HIV pos. 95% CI 2004	HIV pos. 95% CI 2005
KwaZulu-Natal	37.5 (35.2 – 39.8)	40.7 (38.8 – 42.7)	39.1 (36.8 – 41.4)
Mpumalanga	32.6 (28.5 – 36.6)	30.8 (27.4 – 34.2)	34.8 (31.0 – 38.5)
Gauteng	29.6 (27.8 – 31.5)	33.1 (31.0 – 35.3)	32.4 (30.6 – 34.3)
North West	29.9 (26.8 – 33.1)	26.7 (23.9 – 29.6)	31.8 (28.4 – 35.2)
Free State	30.1 (26.9 – 33.3)	29.5 (26.1 – 32.9)	30.3 (26.9 – 33.6)
Eastern Cape	27.1 (24.6 – 29.7)	28.0 (25.0 – 31.0)	29.5 (26.4 – 32.5)
Limpopo	17.5 (14.9 – 20.0)	19.3 (16.8 – 21.9)	21.5 (18.5 – 24.6)
Northern Cape	16.7 (11.9 – 21.5)	17.6 (13.0 – 22.2)	18.5 (14.6 – 22.4)
Western Cape	13.1 (8.5 – 17.7)	15.4 (12.5 – 18.2)	15.7 (11.3 – 20.1)
National	27.9 (26.8 – 28.9)	29.5 (28.5 – 30.5)	30.2 (29.1 – 31.2)

N.B. The true value is estimated to fall within the two confidence limits, thus the confidence interval is important to refer to when interpreting data.

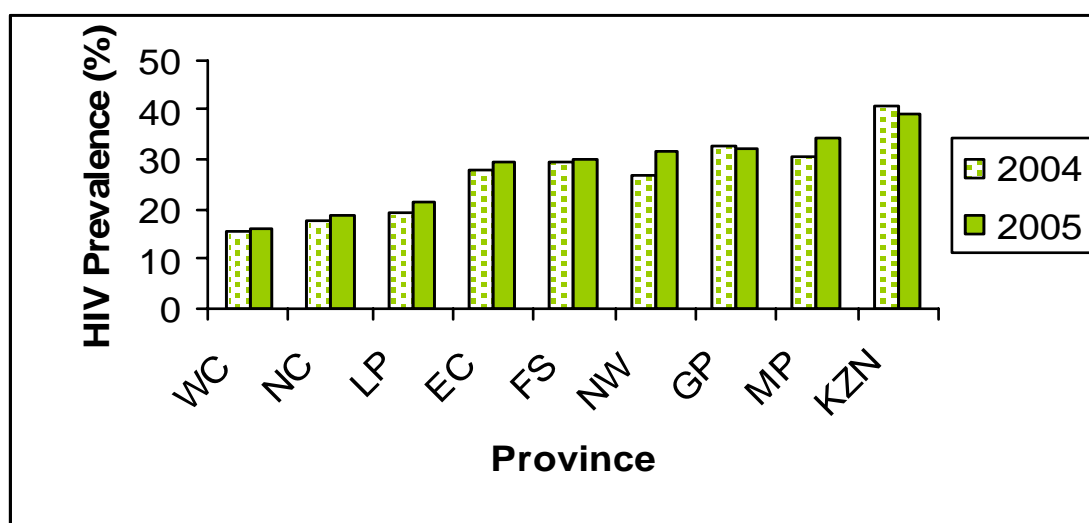


Figure 2 HIV prevalence by province among antenatal clinic attendees in South Africa, 2004-2005

Figure 2 above shows HIV prevalence by province in 2004 and 2005. HIV prevalence has decreased slightly in KwaZulu-Natal and Gauteng between 2004 and 2005. There were slight increases in the seven other provinces, most notably in the North West province.

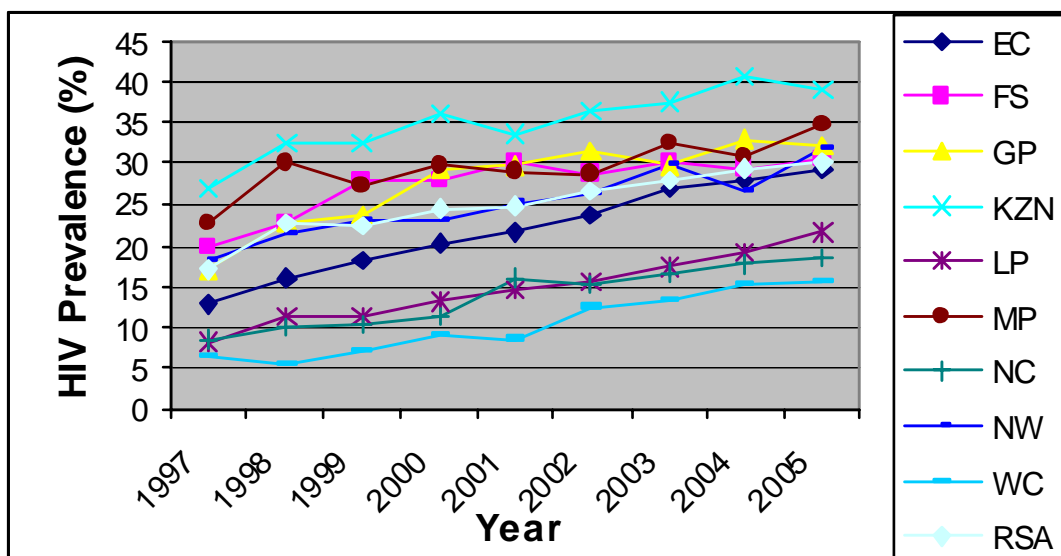


Figure 3 Provincial HIV prevalence trends among antenatal clinic attendees in South Africa, 1997- 2005

Figure 3 shows HIV prevalence trends by province from 1997 to 2005. It shows that the epidemic has progressed at a different pace in different provinces with Limpopo, Northern Cape and Western Cape consistently at lower levels compared to the other provinces and the national average.

4.2.3 HIV prevalence by age group

Different trends have evolved between the younger and older age groups of women. HIV prevalence among teenagers was estimated at 15.9% in comparison to 16.1 in 2004. This is not statistically significant difference but may be an indicator of declines in HIV prevalence in this age group. HIV prevalence in the 20 to 29 year age group has not shown an increase from the previous year whilst there is an increase in HIV prevalence amongst women in the 30 to 39 year age category. This could be partly attributed to a cohort effect referring to the fact that women in the younger age groups, who may already be infected, move into an older age cohort.

Table 3. HIV prevalence by age group among antenatal clinic attendees, South Africa: 2003 – 2005

Age group (Years)	HIV prev (CI 95%) 2003	HIV prev (CI 95%) 2004	HIV prev (CI 95%) 2005
< 20	15.8 (14.3 – 17.2)	16.1 (14.7 – 17.5)	15.9 (14.6 – 17.2)
20 – 24	30.3 (28.8 – 31.8)	30.8 (29.3 – 32.3)	30.6 (29.0 – 32.2)
25 – 29	35.4 (33.6 – 37.2)	38.5 (36.8 – 40.3)	39.5 (37.7 – 41.3)
30 – 34	30.9 (28.9 – 32.9)	34.4 (32.2 – 36.6)	36.4 (34.3 – 38.5)
35 – 39	23.4 (20.9 – 25.9)	24.5 (21.9 – 27.2)	28.0 (25.2 – 30.8)
40+	15.8 (12.3 – 19.3)	17.5 (14.0 – 21.0)	19.8 (16.1 – 23.6)

N.B. The true value is estimated to fall within the two confidence limits, thus the **Confidence interval (CI) is important to refer to when interpreting data**

N.B. The sample size for women in the 40 to 49 year age group is small. Thus the prevalence rate in this group should be read with caution, as confidence intervals are wide.

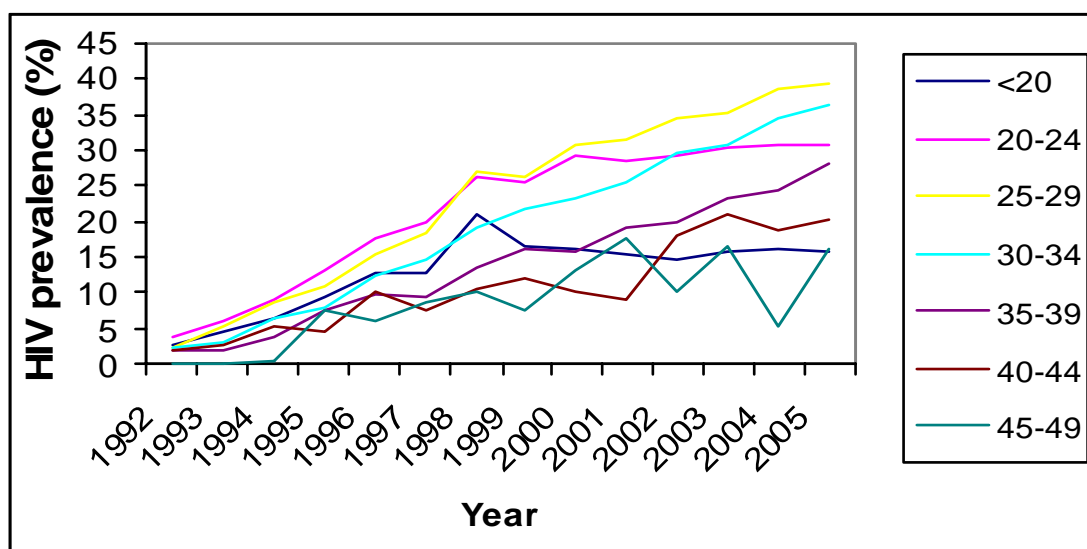


Figure 4 HIV prevalence by age group among antenatal clinic attendees in South Africa, 1992-2005

4.3 Syphilis prevalence

4.3.1 National syphilis prevalence

This study found that 2.7% of pregnant women presenting at public antenatal care clinics had syphilis infection. This figure is slightly higher than the 1.6% prevalence recorded for 2004. The syphilis prevalence trend is similar to the 2003. Syphilis prevalence in the Northern Cape requires closer monitoring as it has shown a significant increase in syphilis prevalence between 2004 and 2005.

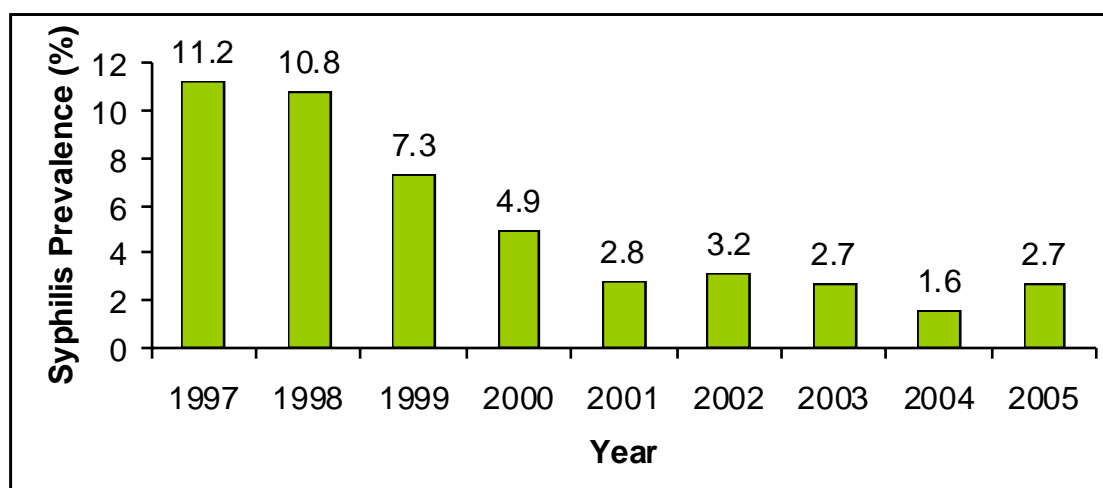


Figure 4 National Syphilis Prevalence among antenatal clinic attendees in South Africa: 1997-2005

4.3.2 Syphilis prevalence by province

The table below shows syphilis prevalence trends by province. In general syphilis prevalence has been declining over the years although this trend has not been shown in this survey. In 2005 however it is still relatively high in the Northern Cape (7.0%) in comparison with the other provinces. KwaZulu-Natal shows the lowest rate at 0.8% and is one of three provinces with syphilis prevalence rates in 2004 lower than one percent. The other two are Limpopo and Gauteng.

Table 5. Syphilis prevalence by province among antenatal clinic attendees, South Africa 2003 – 2005

Province	RPR prev (CI 95%) 2003	RPR prev (CI 95%) 2004	RPR prev (CI 95%) 2005
Northern Cape	8.6 (5.9 – 11.3)	7.0 (3.8 – 10.3)	8.5 (6.1 – 10.8)
Gauteng	2.1 (1.6 – 2.6)	0.9 (0.5 – 1.3)	4.3 (3.5 – 5.1)
Western Cape	5.5 (4.5 – 6.5)	1.6 (0.9 – 2.3)	4.0 (3.1 – 4.9)
Free State	3.8 (2.6 – 5.1)	3.8 (2.9 – 4.8)	3.0 (2.0 – 4.0)
Mpumalanga	1.8 (1.1 – 2.6)	1.3 (0.5 – 2.0)	2.9 (1.6 – 4.2)
Eastern Cape	3.8 (2.5 – 5.1)	2.4 (1.5 – 3.3)	2.5 (1.9 – 3.1)
North West	2.0 (1.2 – 2.8)	2.1 (1.1 – 3.1)	1.9 (1.2 – 2.6)
Kw aZulu-Natal	1.4 (1.0 – 1.8)	0.8 (0.5 – 1.1)	1.2 (0.7 – 1.6)
Limpopo	1.7 (1.1 – 2.4)	0.9 (0.4 – 1.4)	1.1 (0.6 – 1.5)
South Africa	2.7 (2.4 – 3.0)	1.6 (1.3 – 1.8)	2.7 (2.5 – 3.0)

N.B. The true value is estimated to fall within the two confidence limits, thus the Confidence interval (CI) is important to refer to when interpreting data

Provincial prevalence trends (see Figure 6) across the nine provinces show overall increase in syphilis infection across all but two provinces between 2004 and 2005.

4.3.3 Syphilis prevalence by age group

Figure 6 shows a decrease in prevalence between 2004 and 2005 in all age groups. The lowest syphilis prevalence rate in 2005 was noted among women aged below 20 years.

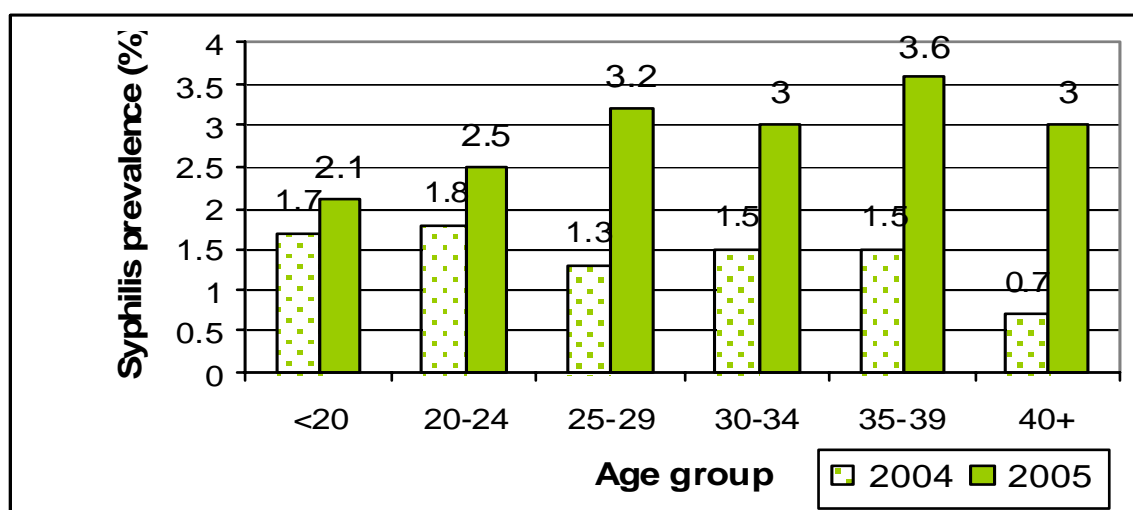


Figure 6 Syphilis prevalence trends by age group among antenatal clinic attendees in South Africa, 2004-2005

4.3.4 Extrapolation of HIV prevalence to the general population

Antenatal surveys cannot in themselves provide estimates of the number of individuals in the rest of the population (men, non-pregnant women and even children) who have HIV infection. These estimates are derived using mathematical model, which are utilized to make these projections.

Following the 2005 survey the Department of Health collaborated with UNAIDS, WHO and other modelling groups in South Africa to make these estimates using the Estimation and Projection Package (EPP) and Spectrum software UNAIDS Spectrum model (UNAIDS, 2002)

There has recently been significant development and improvements to mathematical models for HIV to give them greater sensitivity and greater ability to come closer to more accurate estimates. These developments have resulted in adjustments in different models used in South Africa as well as in spectrum model estimates for other countries. Adjustments are made on the basis of new empirical research evidence and effects such as the impact of prevention interventions on infections.

Using the spectrum model the estimate of the number of people who are *estimated* to have HIV infection is in the region of 5.54 million. Whilst the number of people living with HIV infection is high, this adjusted estimate is encouragingly more conservative. In comparison prior to adjustments in 2004, estimates ranged on the lower side from 5.7 with a mid estimate or 6.2 million infections. The current estimates for different groups are shown in table 6.

Table 6. HIV and AIDS estimates for South Africa in 2005

Parameter	Estimate
Adults age 15-49 years	
HIV prevalence (%)	18.78
Number living with HIV (millions)	
Total	4.90
Men	1.96
Women	2.94
Adults age 15+ years	
HIV prevalence (%)	16.25
Number living with HIV (millions)	
Total	5.30
Men	2.19
Women	3.12
Children age 0-14 years	
Number living with HIV (thousands)	235.06
Total population	
Number living with HIV (millions)	5.54

DISCUSSION

HIV prevalence estimates show that HIV is still an important public health area. The prevalence rates of 2004 and 2005 are very similar. When the estimates are looked at over a 6 year period, there is evidence that there has been a minor increase. This is not unusual for a stabilizing epidemic. The prevalence profile continues to confirm the expectation and projections of numerous models, which suggests that South Africa will begin to see a decline in the prevalence profile.

Encouragingly, HIV prevalence among young women (< 20 years old) has continued to decline, suggesting a decline in new cases (incidence). This might imply a sustained change in behaviour among young people including engaging in safer sexual practices such as being in mutually faithful relationships. These gains need to be taken a step further to result in reduced teenage pregnancies as well. Currently teenagers constitute 20% of the sampled population.

Syphilis infection is an important indicator of possible high-risk behaviour of the infected individual, such as engaging in unprotected sex within a relationship that may not be mutually exclusive. The 2005 antenatal survey has shown a slight increase in rates of syphilis in women at antenatal care facilities, overall however; syphilis has shown a downward trend since 1998. This decline may be attributed to a number of intervention activities and in particular syndromic treatment and management of STIs at public health facilities.

Syphilis trends are generally low across all provinces except in the Northern Cape, where this remains high. Effective prevention and treatment is key to successes in this area. The STI syndromic management programme and the screening and treatment of syphilis are routine activities conducted at antenatal clinics. This programme alongside others is beginning to show the effectiveness of some intervention programmes.

The studies conducted over the years have begun to show that intervention programmes, which emphasise prevention, have a very important place in moderating HIV prevalence and the epidemiology of HIV infections in general. This has enabled the Department of Health to collaborate with UNAIDS and WHO in adjusting model estimates of overall population infections to take into account the cumulative effects of interventions which would have moderated the estimates on the number of people in the general population with HIV infection.

The study once again has provided useful information on trends in HIV infection and provides information to assist government and partners alike to further strengthen of HIV programmes and to ensure that HIV infection rates see no further growth.

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