

The 2005 HIV Antenatal Provincial & Area Surveys WESTERN CAPE



Department of Health

Western Cape

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HIV ANTENATAL SURVEY: WESTERN CAPE 2005

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CONTENTS

FOREWORD	4
1. INTRODUCTION	5
2. OBJECTIVES	5
3. METHODOLOGY	6
3.1. Survey Design and Sampling for Provincial Survey	
3.2. Survey Design for Area Surveys	
3.3. Laboratory Testing	
3.4. Data Analysis	
4. RESULTS	7
4.1. Provincial Survey	
4.1.1. Response Rate	7
4.1.2. Provincial HIV Prevalence	7
4.1.3. HIV Prevalence by Age Group	8
4.1.4. HIV Prevalence and Gravidity and Parity	9
4.1.5. Urban/Rural Differences in HIV Prevalence	10
4.1.6. HIV Prevalence by Education	10
4.1.7. Provincial Syphilis Prevalence	11
4.1.8. The Prevalence of RPR by Urban/Rural Location	11
4.2. Area Survey	
4.2.1. Response Rate	12
4.2.2. HIV Prevalence by Area	12
4.2.3. Syphilis Prevalence Trends of Areas	13
5. DISCUSSION	14
5.1. HIV Prevalence Trends	14
5.2. Syphilis Prevalence Trends	15
5.3. Provincial and Area HIV Survey	16
6. CONCLUSION	16



FOREWORD

As the HIV and AIDS epidemic continues to mature in South Africa (SA), the impact of the epidemic is experienced at all levels of society, disproportionately affecting persons living with the virus. The growing burden of disease as the result of a maturing epidemic is placing a huge strain on the already overburdened public health system.

In order to plan, monitor and evaluate the health services and programmes, over the last 16 years, the National Department of Health have been conducting Anonymous HIV Sero-prevalence Sentinel Surveys in each of the nine provinces. These surveys examine pregnant women attending public sector clinics. Since 2001, the Western Cape Department of Health in addition to the provincial surveys, implemented area-level surveys within the province. These surveys were implemented in order to provide local level information for planning and implementing programmes at the district and sub-district levels. This report presents the results of the 2005 National HIV antenatal Survey for the Western Cape and the 2005 area level HIV antenatal surveys.

The key findings derived from these surveys highlight the following:

The HIV and AIDS epidemic in this province shows no sign of abating. In 2005, 15.7% of women attending public sector antenatal clinics were HIV positive. However, at the sub-provincial level, the prevalence ranges from 4.5% in the Bredasdorp/Swellendam area to 33% in Khayelitsha. The survey reveals that younger women under the age of 30 years are disproportionately affected, with women aged between 25 to 29 years showing the highest HIV prevalence (20.1%).

The burden of disease is disproportionately distributed geographically, with higher levels of HIV infection observed in the urban areas compared with rural areas. This clearly has implications for planning and delivering appropriate health services and underscores the need to strengthen the prevention strategy and treatment programmes in this province.

The Western Cape Department of Health has made significant progress on the treatment front. By the end of March 2006, 16343 people were enrolled on the antiretroviral treatment programme in the public sector facilities in this province, 88836 pregnant women were screened for the Prevention of Mother to Child Transmission (PMTCT) programme and 11257 pregnant women were enrolled into the programme.

However, we recognise that prevention and treatment are interdependent. We need to expand prevention for all people if we are going to make treatment sustainable, and similarly, we need to expand treatment access to make prevention more effective.

These annual surveys continue to provide us with valuable information that would optimise the planning and delivery of appropriate health services. The geographical variation of the epidemic as revealed from the area level surveys reinforces the need for a nuanced approach taking into account the local context.

I would like to convey my appreciation to the project team for their commitment and hard work. My sincere thanks to the staff of the National Health Laboratory Service in the Western Cape, for implementing the laboratory component. Many thanks to the nurses in the various facilities, who have implemented these surveys. None of this would have been possible without the survey participants, and therefore, my sincere gratitude to all the pregnant women who had participated in these surveys.

Mr P Uys

Minister of Health Western Cape

1. INTRODUCTION

The year 2006 marks 25 years since the first Acquired Immune Deficiency Syndrome (AIDS) cases were reported in Africa and the United States of America and yet the Human Immunodeficiency Virus (HIV) pandemic continues to outpace the global response (1). Sub-Saharan Africa (SSA) remains the epicentre of the pandemic, with Southern Africa being most severely affected (1). Within Southern Africa, there is wide heterogeneity in the magnitude of the epidemic. Antenatal surveillance data for the year 2004 revealed that South Africa (29.5%), Botswana (38.5%), Lesotho (28.4%), Swaziland (43%) and Malawi continue to show exceptionally high HIV prevalence and with no evidence of a decline in the HIV rates over time (1).

The HIV epidemic is particularly severe in South Africa (SA) and SA ranks second to India, as a country with the highest number of people living with HIV/AIDS (1). In 2005, the UNAIDS estimated that in SA, 18.6% of adults were HIV positive and an estimated 5.5 million adults were living with HIV (1). The epidemic in SA has evolved from a concentrated epidemic in the early 1980's to a generalised epidemic, predominantly affecting young sexually active heterosexual adults (5).

Much of our understanding of the epidemic in SA in terms of the magnitude, growth and distribution is derived from the national HIV antenatal surveillance system, mortality data from the death registration system and the national household surveys (2,3,4). The antenatal sentinel surveillance method was developed to estimate HIV prevalence in the young, sexually active, heterosexual adult

population in countries where the epidemic is generalised (3). This method of surveillance is applied worldwide and recommended by the World Health Organisation (WHO) and the UNAIDS (3).

In SA, these surveys have been conducted by the National Department of Health in selected clinics in the public sector since the early 1990's. These serial annual surveys of pregnant women show, at the country level, that the epidemic has matured over the last few years and showing no signs of abating. Trend data reveal wide variation in the magnitude of infection at the provincial level, with the highest prevalence reported in the KwaZulu-Natal province and the lowest in the Western Cape (WC).

In 2001, the Western Cape Department of Health in collaboration with the National Department of Health, implemented local-level surveys in each of the twenty-five health districts¹ within the province. These surveys were undertaken in preparation for implementing the Prevention of Mother To Child Transmission (PMTCT) programme within the province. In 2001, the provincial survey revealed an overall HIV prevalence of 8.6%, although at the health district level the prevalence ranged from 1% to 28% (6). By 2004, the range had increased from 1% to 33% (6). These findings highlighted that the relatively low provincial prevalence observed in the WC compared to the other provinces, masked sub-epidemics within the province and emphasised the urgent need to intervene early (6). This report presents the findings of the 2005 National HIV Antenatal Survey in the WC as well as 5th area level HIV survey of the Western Cape province.

2. OBJECTIVES

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|--|---|
| <p>2.1. To estimate the provincial HIV prevalence amongst women attending public sector antenatal clinics in the Western Cape Province during 2005.</p> <p>2.2. To determine the HIV prevalence amongst women attending public sector antenatal clinics in each of the 25 areas within the province during 2005.</p> | <p>2.3. To estimate the syphilis prevalence at provincial and area level amongst antenatal clinics attenders in 2005.</p> <p>2.4. To examine trends of HIV and syphilis prevalence at the provincial and area levels.</p> |
|--|---|

1. In 2004, the new district boundaries were demarcated for the province according to the local government boundaries. The former 25 districts are now referred to as areas. The province consists of 6 districts.

3. METHODOLOGY

The National Department of Health (DoH) in collaboration with Provincial DoH have been conducting HIV antenatal surveys of all the provinces of SA for over 15 years. The WC Provincial Health Department expanded the provincial survey in 2001 and initiated a local-level investigation

simultaneously with the nationally driven provincial HIV surveys. These surveys examined pregnant women attending public sector antenatal clinics for their first booking visit, when routine blood tests are performed for Rh factor analysis and syphilis screening (7).

3.1. Survey Design and Sampling for the National Provincial Survey

A cross sectional survey was conducted in 36 sentinel sites, involving 73 public health facilities within the WC province. In 1996, the sampling method for the national survey was refined and the Probabilities Proportional to Size (PPS) method was implemented. The sentinel sites

and sample size remained the same until 2003. In 2004, the DoH updated the sampling for the WC province due to the numerous changes within the public health services in the province and the sample size was set at 2000.

3.2. Survey Design for the Area Surveys

The area level investigation consisted of 25 separate cross-sectional studies. A stratified proportional sample was drawn for each area and the sample size was determined by specifying a 3-5%² error margin and a 95% confidence interval. The sample for each area was then proportionally allocated to each facility on the basis of the number of first

time antenatal clinic visits, which produced a self-weighting sample for each area. The surveys involved all 400 facilities that provided antenatal care in the public sector and the total number of specimens to be collected was 90284.

3.3. Laboratory Testing

The blood specimens were analysed by the National Health Laboratory Service in the Western Cape. The quality assurance tests for the Rapid Plasma Reagin (RPR) were

co-ordinated by the Medical University of Southern Africa (MEDUNSA) and for the HIV test by National Institute of Virology.

3.4. Data Analysis

The provincial data derived from the national survey were entered on EPI Info 5 and analyzed in SPSS and Epi Info 6, after adjusting for the cluster sampling. Bivariate analysis was done for the national data-set after adjusting for age, education, urban/ rural location, parity and

gravity. The area level data were separately analyzed and collated to determine the weighted provincial HIV and RPR prevalence after adjusting for non-response, specimen return rate and clinic utilization rate.

2. The technical and logistical resources to implement the survey dictated Error margins of the order of 3-5% around the district prevalence estimates.)

4. RESULTS

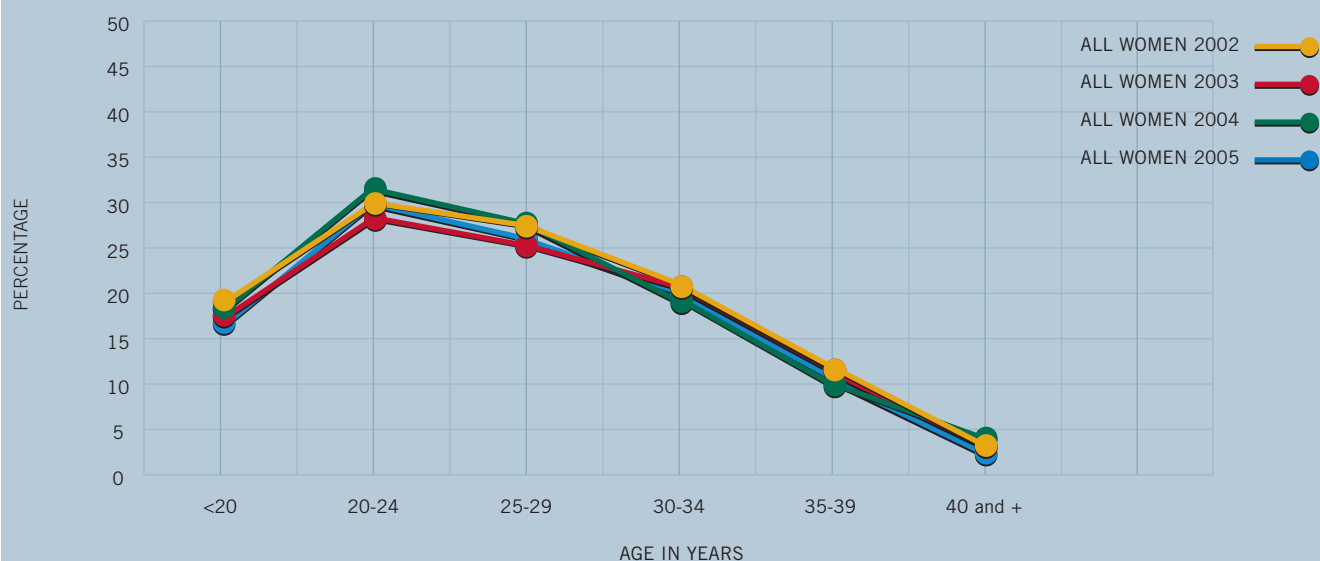
4.1. Provincial Survey

4.1.1. Response Rate and Age Distribution of Participants

The 2005 provincial survey yielded a specimen return rate of 96% and a non-participation rate of 1%. The age profile of the women who participated in the survey over the last four years has remained relatively consistent (Figure 1).

The 20-24 age group formed the largest age group, comprising a third of the total number of women who participated in 2005.

Figure 1. Western Cape HIV Antenatal Survey – Age profile of participants: 2002 - 2005

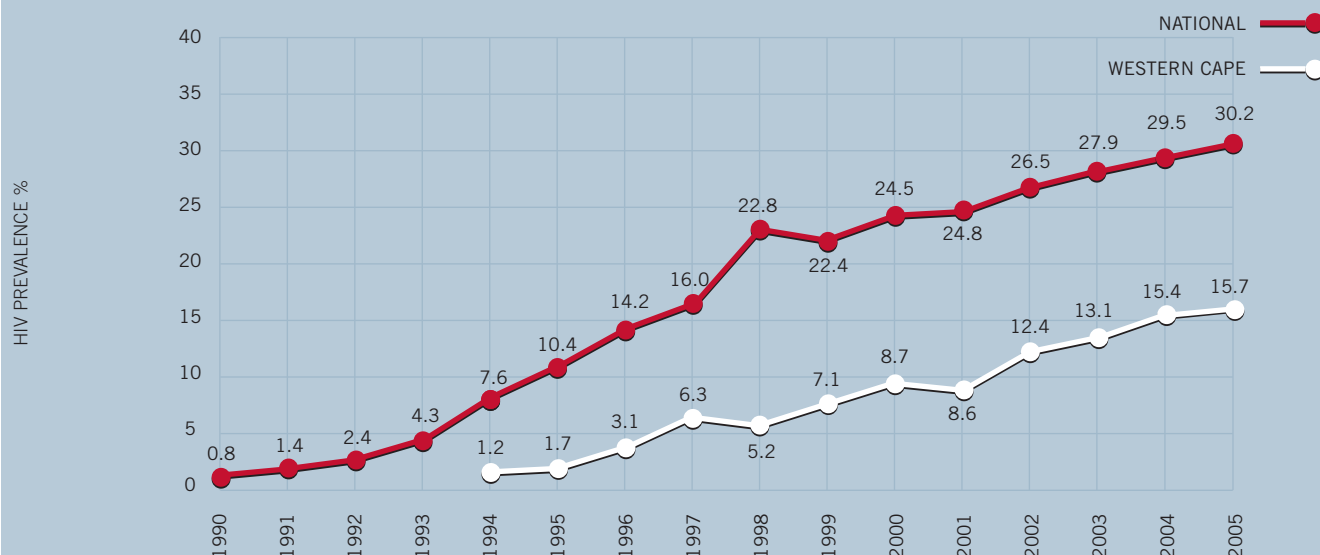


4.1.2. Provincial HIV Prevalence

The 2005 National HIV survey revealed a prevalence of 15.7% (95% CI: 11.2 –20.2) for the Western Cape province. In 2004 the HIV prevalence was 15.4% (95% CI: 12.5 -18.2). Ten-year trends of HIV prevalence for the WC are shown in relation to the national trends in Figure 2. Between 2001 and 2005, the HIV prevalence increased by

7 percentage points in the WC namely, from 8.6% to 15.7% and by 5.7 percentage points at the national level from 24 % in 2001 to 30.5% in 2005. It is clear that there is no evidence of a decline in HIV prevalence at either the provincial or the national level.

Figure 2. HIV Prevalence: National versus Western Cape Trends 1990–2005



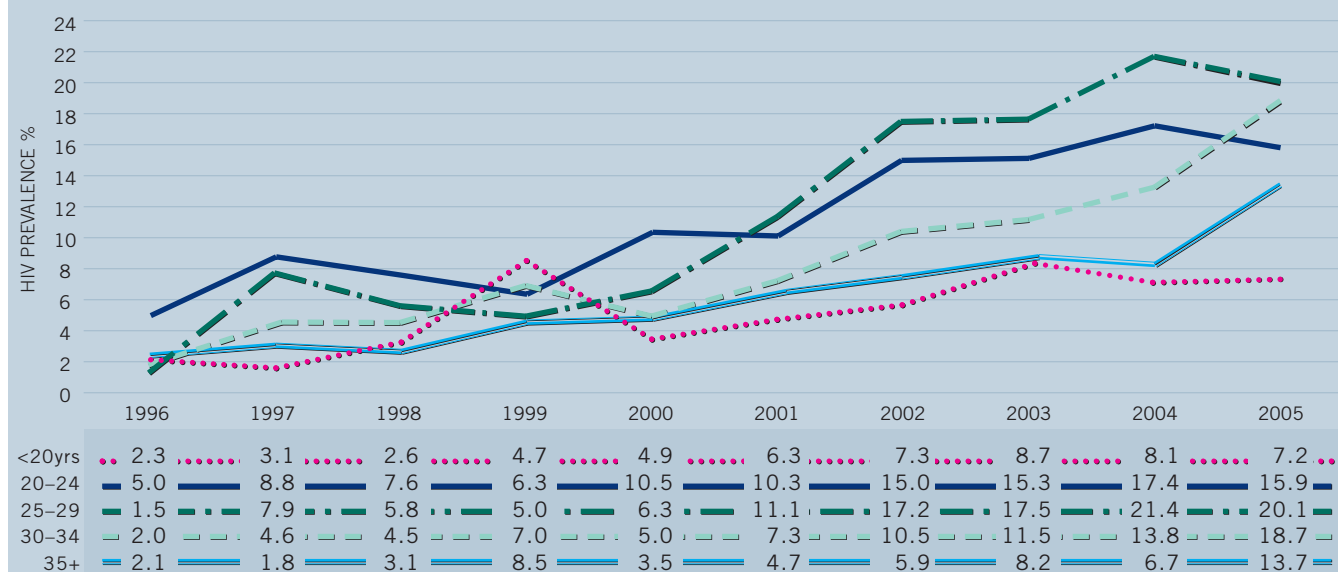
4.1.3. HIV Prevalence by Age Group

The age-specific HIV prevalence data for the years 1996 to 2005 demonstrated a rapid progression of infection across all age groups (Figure 3). Trend data also revealed an astonishing rate of increase in the 25-29 age groups namely, from 1.5% in 1996 to 20.1% in 2005. This group also consistently showed the highest levels of infection over the last five years. Recent trends also demonstrated sharper increases in HIV prevalence in the older age groups namely, in the 30-34 age group (11.5%; CI 95%: 8.1-14.9) in 2003 to 18.7% (CI 95%: 14.4 - 22.9) in 2005 and women aged 35 years or older (8.2%; CI 95%: 4.5-12.1) in 2003 to 13.7% (CI 95%: 8.6-18.1 in 2005), although this increase was not significant.

For the years 2003 to 2005, there has been a marginal decline of 1.5 percentage points in the HIV prevalence in the <20 age group, although the change was not statistically significant (8.7%; CI 95%: 3.9-13.4 in 2003 to 7.2%; CI 95%: 3.2-11.1 in 2005). It is therefore premature to interpret this marginal decline as

stabilization. Several factors may contribute to this change namely, fluctuations due to small sample size, changes in age of sexual debut, fertility levels and in utilization of public health services. It may also reflect the effects of education programmes that have been initiated over the past few years aimed at learners in secondary schools in the province. It would be important therefore to closely monitor HIV trends in this cohort over the next few years. In the 20-24 age group there has also been an apparent stabilization of prevalence in the 15-16% range over the period 2002 to 2005. It may be expected that the availability of ARV treatment could result in the relative shift of HIV prevalence into the older age groups, as appears to have taken place in 2005. While the rollout of the ARV treatment programme in the WC has taken place rapidly over the past two years, it would be surprising if this was already a significant contributor to the age-group prevalence shifts demonstrated in 2005.

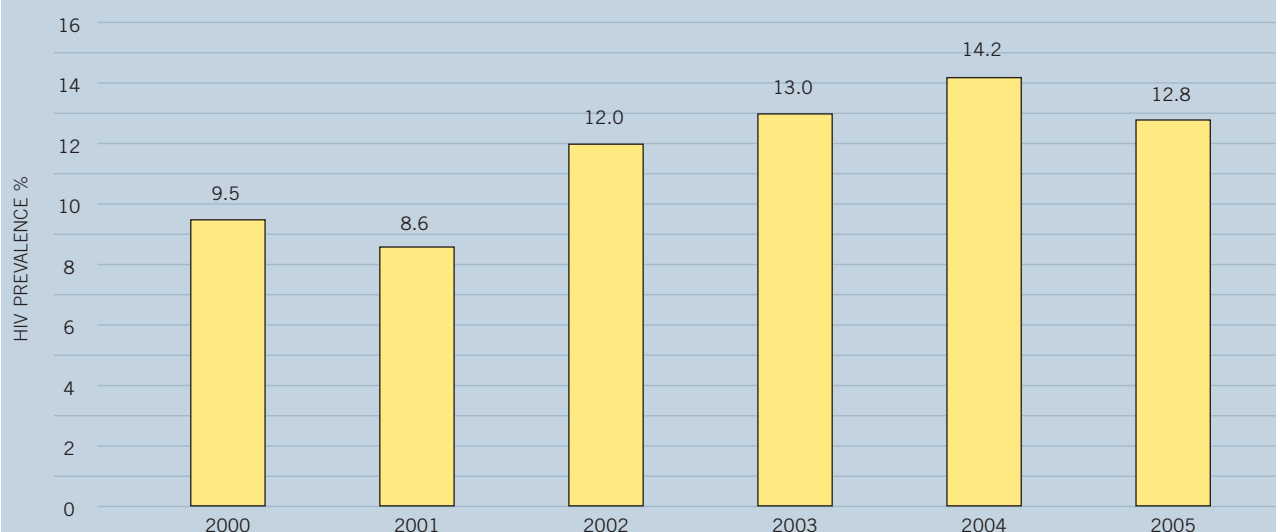
Figure 3: HIV Prevalence by Age group – Western Cape 1996 – 2005



Measuring prevalence of HIV reflects both recent and old infections, whilst incidence measures infections acquired over the past year. Tracking incidence therefore, becomes a critical measure in the context of assessing the growth of an epidemic and for planning, monitoring or implementing prevention interventions.

Since laboratory-based incidence testing is expensive and not feasible for resource constrained environments, the United Nations General Assembly Special Session (UNGASS) group recommended that HIV prevalence in the 15-25 year age group should be used as a proxy indicator

for incidence. Figure 4 shows five-year trends of HIV prevalence for the 15-24 age group in the WC province. It is evident that there has been a significant increase in prevalence from 8.6% (CI 95%: 7.5 - 9.9) in the year 2001 to 12.8% (CI 95%: 10.7-14.9) in 2005. While there may have been a significant increase between 2001 and 2005, it may appear that the major increase took place between 2001 & 2002 and that there may well have been a relative stabilization over the period 2002 and 2005. It would therefore be critical to monitor these trends over the next few years.

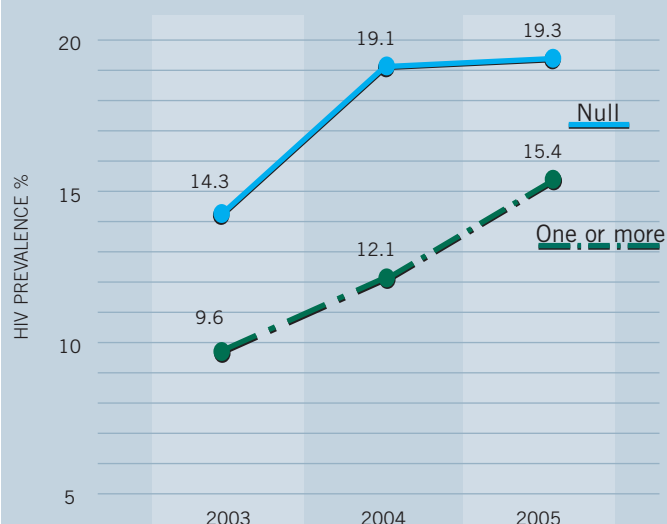
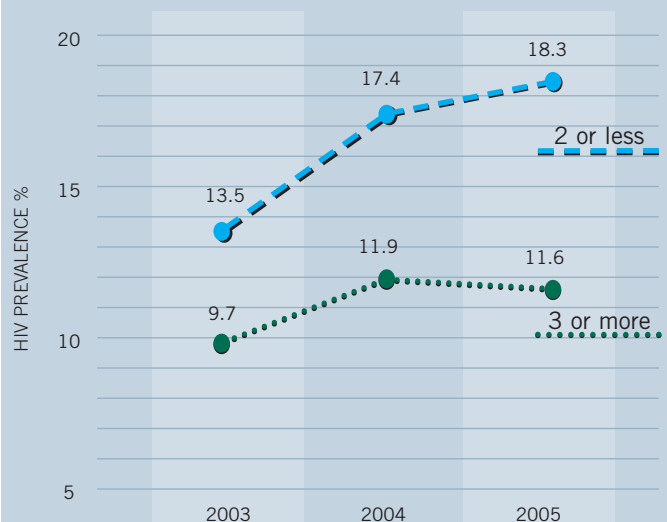
Figure 4. HIV Prevalence by 15 – 24 Age Group: Western Cape Province 2000 – 2005

4.1.4. HIV Prevalence and Gravidity and Parity

The relationship between HIV prevalence and the number of previous births (parity) are shown in Figure 5. Parity adjusted measures of HIV prevalence have also been shown to provide a reliable guide to incidence in the sexually active adults (8).

The survey revealed that women who reported having no previous births (parity 0) had a higher HIV prevalence (19.3%) compared with women who had one or more previous live births (15.4%). However, trend data suggests that the gap between the two groups is narrowing, with women who had reported one of more births showing a more accelerated increase.

Gravidity by HIV status showed that a higher HIV prevalence was observed amongst women who reported to have 2 pregnancies (18.3%) compared to those with 3 or more pregnancies (11.6%). (Fig 6)

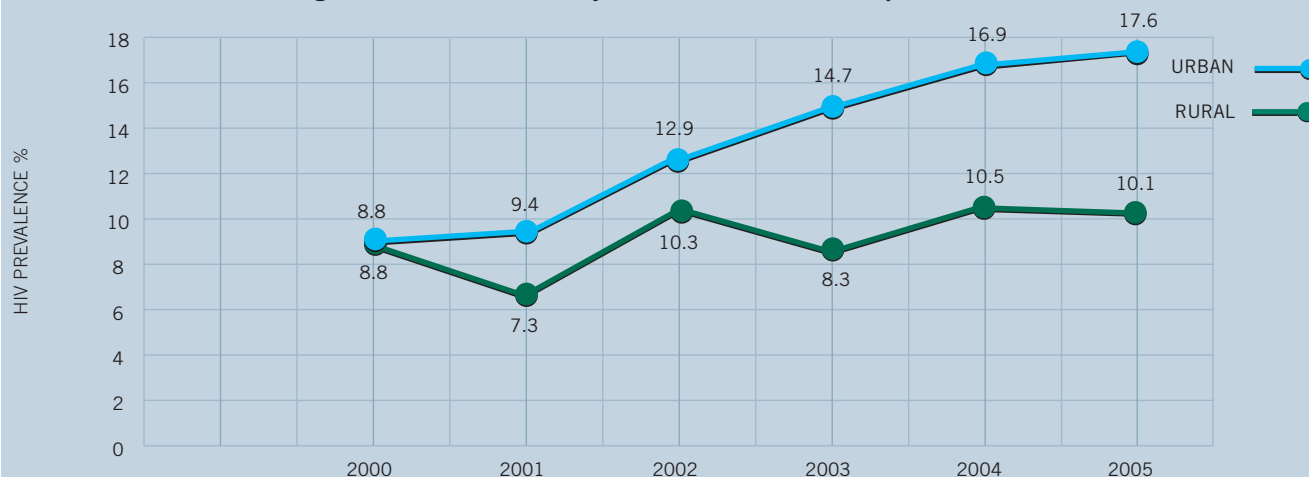
Figure 5. HIV Prevalence by Parity: Adjusted for Age & Urban/Rural**Figure 6. HIV Prevalence by Gravidity: Adjusted for Age & Urban/Rural**

4.1.5. Urban/Rural Differences in HIV Prevalence

HIV prevalence by urban versus rural location, showed significantly higher prevalence in urban settings compared to rural settings. Three-year trend data showed a more rapid

increase in HIV prevalence in urban settings than for the rural areas.

Figure 7. HIV Prevalence by Urban/Rural: Western Cape 2000 – 2005

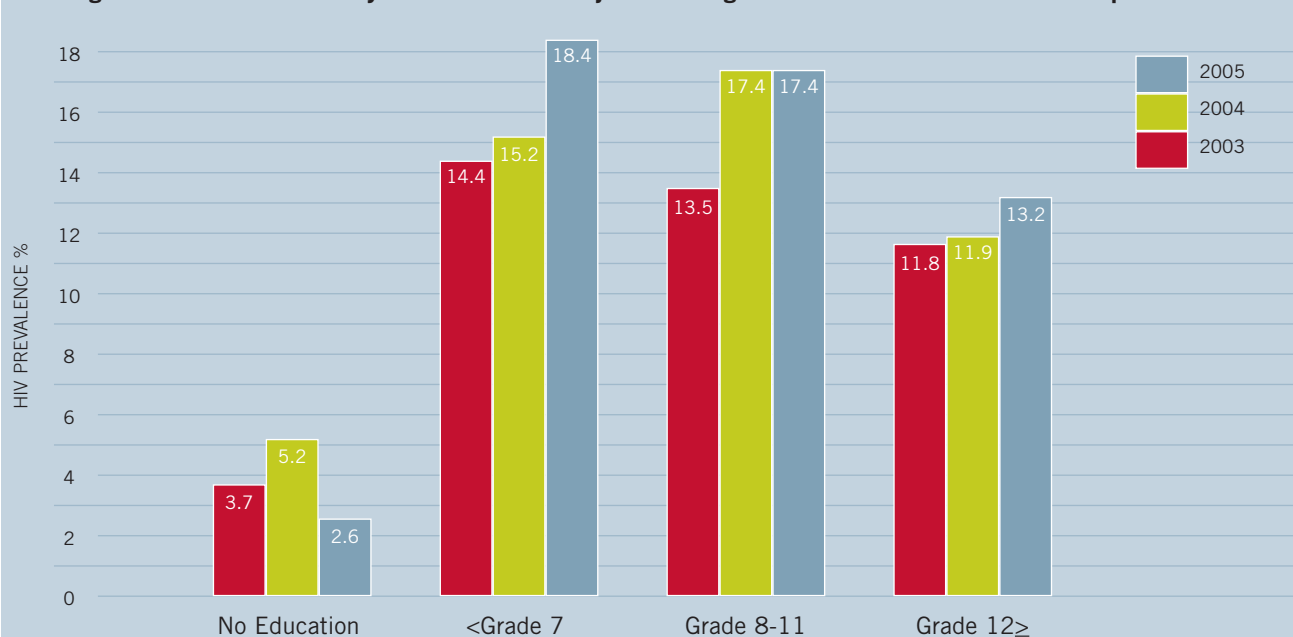


4.1.6. HIV Prevalence by Education

The prevalence of HIV by highest level of education attained, after adjusting for age and urban versus rural location, is shown in Figure 8. The 2005 results revealed that women with some primary or high school had the

highest HIV prevalence compared to those with no formal education. Noting however, that the size of the sample with no formal education was relatively small and therefore subject to fluctuations in the rates.

Figure 8. HIV Prevalence by Education Level adjusted for Age and Urban location: Western Cape 2003 – 2005

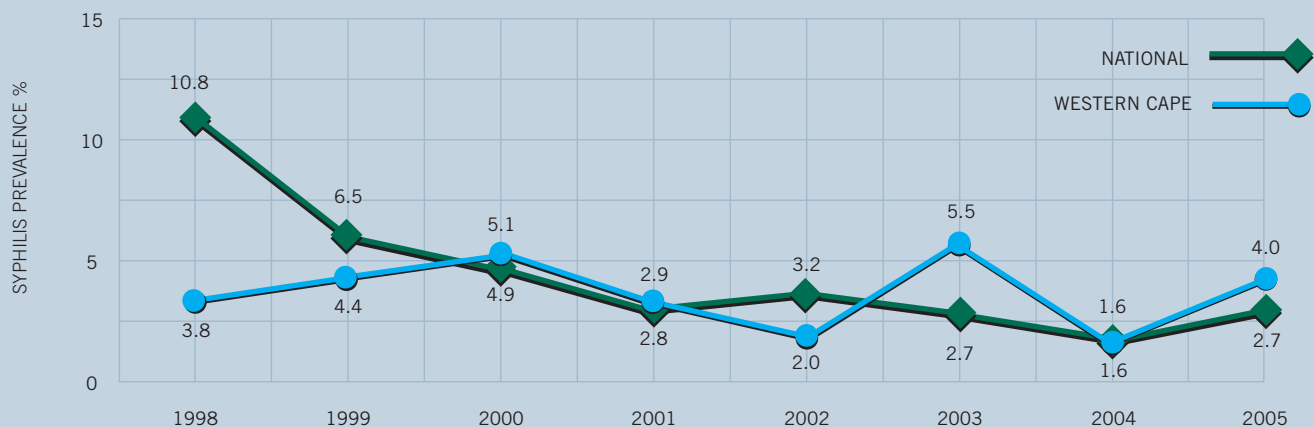


4.1.7. Provincial Syphilis Prevalence

The prevalence of syphilis amongst the pregnant women increased from 1.6% in 2004 to 4.0%. However, trend data showed fluctuations (Figure 9) and these trends for

2002 to 2005 period are not readily explicable. These trends will have to be monitored over the next few years.

Figure 9: Syphilis Prevalence: National versus Western Cape Trends 1998–2005

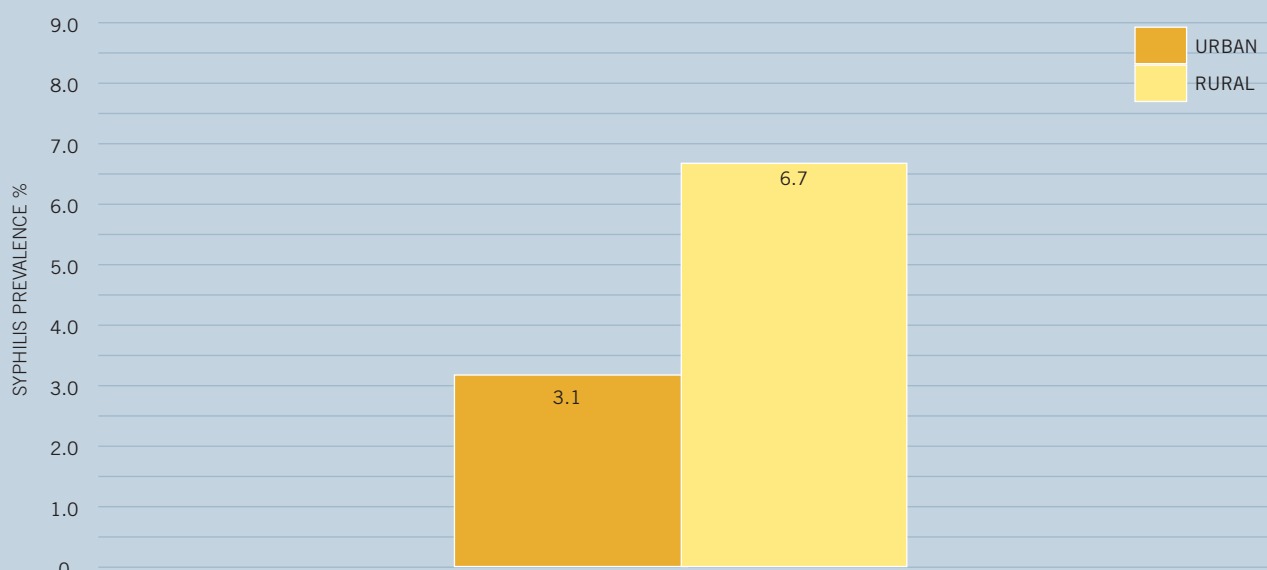


4.1.8. The Prevalence of Syphilis by Urban/Rural Location

Syphilis prevalence in 2005 showed higher rates in rural areas than in urban areas. This is in sharp contrast to the

HIV prevalence, where the prevalence was greater in urban areas (Figures 7,10).

Figure 10. Syphilis Prevalence by Urban/Rural: Western Cape 2005



4.2. Area Level Surveys

4.2.1. Response Rate

A total of 8656 specimens were collected for the 25 area

surveys and the average return rate was 92.2%.

4.2.1. HIV Prevalence by Area

Table 1. HIV Prevalence Trends by Area: Western Cape 2000 – 2005

AREA	2000	2001	PREVALENCE (95% CI)		2004	2005
Cape Metropole District						
Blaauwberg		0.6 ± 1.1	8.2 ± 6.0*	4.4 ± 3.0	1.2 ± 1.0	7.3 ± 3.6
Cape Town Central		3.7 ± 3.6	11.9 ± 6.0*	11.6 ± 5.0*	13.7 ± 4.7	11.5 ± 3.3
Greater Athlone		6.8 ± 4.6	8.9 ± 4.0	10.1 ± 4.4	16.4 ± 3.6	17.7 ± 3.5
Helderberg		19.0 ± 6.0	19.1 ± 4.5	19.1 ± 4.2	18.8 ± 3.3	12.8 ± 3.0
Khayelitsha		22.0 ± 5.0	24.9 ± 4.2	27.2 ± 4.2	33.0 ± 3.5	32.6 ± 3.2
Mitchell's Plain	5.4 ± 0.1	0.7 ± 1.3	4.0 ± 4.0	6.3 ± 4.0	12.9 ± 3.5	5.1 ± 2.0
Gugulethu/Nyanga		16.1 ± 6.5	27.8 ± 5.2	28.1 ± 4.2	29.1 ± 2.8	29.1 ± 3.9
Oostenberg		5.7 ± 3.3	14.5 ± 6.0	16.1 ± 4.3	14.8 ± 3.3	16.2 ± 3.5
South Peninsula		5.9 ± 3.9	6.0 ± 4.1	9.3 ± 3.8	10.8 ± 3.2	12.4 ± 3.2
Tygerberg Eastern	5.1 ± 3.7	6.1 ± 3.4	10.4 ± 5.0	8.0 ± 3.9	12.7 ± 3.6	15.2 ± 3.5
Tygerberg Western		7.9 ± 3.9	12.7 ± 5.0	8.1 ± 3.3	15.1 ± 4.0	15.0 ± 3.2
Overberg District						
Bredasdorp/Swellendam		1.4 ± 2.7	3.2 ± 4.5	1.1 ± 2.1	10.0 ± 5*	4.5 ± 3.2
Caledon/Hermanus		13 ± 5	10.8 ± 4	14.4 ± 4.6	12.5 ± 3.2	15.4 ± 3.2
Cape Winelands District						
Ceres/Tulbagh		6.2 ± 5.3	9.4 ± 5.6*	7.5 ± 5.1	10.5 ± 3.7	13.8 ± 4.6
Worcester/Robertson	3.2 ± 2.7	5.7 ± 3.9	4.5 ± 3.2	3.9 ± 2.6	8.4 ± 3.3	8.1 ± 2.4
Paarl	4.5 ± 3.2	8.3 ± 3.6	11.4 ± 4.4	10.1 ± 4.2	8.9 ± 3.0	11.4 ± 3.2
Stellenbosch		7.1 ± 3.7	8.5 ± 5*	8.5 ± 4.9	17.8 ± 6.1*	15.5 ± 4.8
West Coast District						
Vredenburg		8.9 ± 5.6	9.0 ± 4.7	10.0 ± 4.5	13.0 ± 4.1	8.9 ± 3.5
Malmesbury		2.7 ± 3	6.7 ± 5.3	10.7 ± 4.8	6.2 ± 3.7	6.9 ± 3.2
Vredendal		1.3 ± 2.4	10.2 ± 7.6*	3.9 ± 3.4	5.8 ± 4.0	9.9 ± 4.0
Central Karoo/Eden District						
Knysna/Bitou		13.3 ± 6.7	15.9 ± 5.2*	15.6 ± 4.0	17.4 ± 3.6	21.1 ± 4.5
Klein Karoo		0.8 ± 1.4	7.8 ± 6.1	5.4 ± 3.2	6.5 ± 4.4	5.3 ± 3.0
Mossel Bay/Hessequa		7 ± 4.7	6.8 ± 4	13.3 ± 4.8	12.5 ± 3.2	8.9 ± 4.5
George	5.6 ± 5.3	10 ± 6*	10 ± 4.2	11.6 ± 3.7	13.3 ± 3.4	13.8 ± 3.5
Central Karoo		5.5 ± 4.5	7.4 ± 5.1*	6.5 ± 4.4	8.9 ± 4.6	8.9 ± 5.5
Western Cape Province		9.2 ± 1 ^Y	12.2 ± 1 ^Y	12.6 ± 1.2 ^Y	14.8 ± 1.2 ^Y	15.03 ^Y

* Results to be treated with caution given the wide confidence intervals

^Y Weighted provincial estimates derived from the collated Area HIV surveys.

4.2.3. Syphilis Prevalence Trends by Area

Table 2. Syphilis Prevalence Trends by Area: Western Cape 2000 – 2005

AREA	2000	2001	RPR PREVALENCE (95% CI)		2004	2005
Cape Metropole District						
Blaauwberg		3.5 ± 2.7	5.5 ± 5.0	2.5 ± 2.2	2.6 ± 2.3	2.4 ± 2.2
CapeTown Central		0.9 ± 1.8	0.9 ± 2.0	8.1 ± 5.0*	0.4 ± 0.3	2.2 ± 1.5
Greater Athlone		1.6 ± 3.3	0.1 ± 0.1	3.9 ± 2.5	1.4 ± 1.2	2.6 ± 1.5
Helderberg		4.0 ± 3.5	3.1 ± 2.0	6.8 ± 2.7	2.4 ± 1.4	4.2 ± 1.7
Khayelitsha		1.2 ± 1.4	1.2 ± 1.1	4.7 ± 2.0	0.8 ± 0.6	2.5 ± 1.1
Mitchells Plain	2.5	0.6 ± 1.4	1.4 ± 2.0	1.4 ± 1.4	0.9 ± 0.2	0.6 ± 0.5
Gugulethu/Nyanga		4.0 ± 3.5	2.8 ± 1.9	7.2 ± 2.4	0.9 ± 0.7	3.9 ± 1.6
Oostenberg		3.7 ± 2.7	1.5 ± 2.1	6.6 ± 2.9	2.8 ± 1.5	5.4 ± 2.2
South Peninsula		0.9 ± 1.8	2.3 ± 0.5	5.3 ± 2.9	0.5 ± 0.3	3.1 ± 1.6
Tygerberg Eastern	6.5	1.6 ± 2.0	0.7 ± 1.5	5.3 ± 3.2	1.3 ± 1.0	4.5 ± 2.0
Tygerberg Western		1.6 ± 1.8	1.2 ± 1.5	6.2 ± 3.1	1.2 ± 0.9	3.0 ± 1.5
Overberg District						
Bredasdorp/Swellendam		2.8 ± 3.8	2.7 ± 1.6	7.4 ± 5.1 *	3.6 ± 3.1	8.9 ± 4.6
Caledon/Hermanus		5.5 ± 4.0	4.7 ± 2.8	8.9 ± 4.0	1.9 ± 1.3	4.5 ± 1.8
Cape Winelands District						
Ceres/Tulbagh		3.7 ± 4.2	7.6 ± 5.0	6.5 ± 4.7	2.7 ± 2.0	6.4 ± 3.3
Worcester/Robertson	7.9	4.3 ± 3.4	3.8 ± 3.0	11.7 ± 4.4	3.0 ± 2.2	6.4 ± 2.1
Paarl	8.3	2.6 ± 2.4	0.5 ± 1.0	7.9 ± 3.1	1.7 ± 1.3	5.2 ± 2.3
Stellenbosch		2.7 ± 2.4	2.5 ± 2.9	6.2 ± 4.0	3.7 ± 2.7	4.6 ± 2.7
West Coast District						
Vredenburg		2.0 ± 2.7	4.9 ± 1.8	5.3 ± 3.3	2.3 ± 1.8	2.7 ± 2.0
Malmesbury		0.9 ± 1.7	2.3 ± 0.1	7.6 ± 4.1	2.5 ± 2.3	5.4 ± 2.7
Vredendal		3.7 ± 1.3	10.2 ± 7.0*	14.1 ± 6.0*	5.8 ± 3.9	6.1 ± 3.2
Central Karoo/Eden District						
Knysna/Bitou		2.2 ± 3.1	4.2 ± 2.9	10.1 ± 3.3	3.9 ± 1.9	4.7 ± 2.3
Klein Karoo		6.9 ± 1.1	5.2 ± 4.0	12.4 ± 4.7	6.5 ± 4.4	3.3 ± 2.5
Mossel Bay/Hessequa		6.9 ± 4.1	5.1 ± 1.0	7.7 ± 3.8	3.6 ± 2.2	10.9 ± 4.9*
George	9.7	4.4 ± 3.6	1.6 ± 1.6	12.0 ± 3.8	1.3 ± 1.2	6.5 ± 2.5
Central Karoo		4.4 ± 4.3	4.6 ± 4.0	13.0 ± 6.0*	3.2 ± 2.0	10.6 ± 5.5*
Western Cape Province		2.9 ± 0.6 ^y	2.2 ± 1.2 ^y	7.2(± 1) ^y	2.04 ± 0.3 ^y	4.5 ± 0.3 ^y

* Results to be treated with caution given the wide confidence intervals

^Y Weighted provincial estimates derived from the collated Area HIV surveys.

5. DISCUSSION

5.1. HIV Prevalence Trends

In 2005 the HIV prevalence in the Western Cape province was estimated to be 15.7% (95% CI: 11.3-20.1). This prevalence increased marginally from 15.4% in 2004. Temporal data suggests that the province has passed the early phase of the HIV epidemic, which was characterized by an exponential growth in HIV prevalence, and has entered a mature phase of the epidemic, in which the number of deaths begins to offset the number of new cases. However, it is noted that the planned access to ARV treatment by all who need it may alter this “traditional” pattern of the epidemic in the future. The overall HIV prevalence amongst women attending public sector antenatal clinics in the Western Cape for the year 2005 was approximately half of the national average at 30.2% (3). However, the local level data again revealed significant heterogeneity in the HIV prevalence (ranging 4.5-33%) with the existence of sub-epidemics that closely follow or have exceeded the national epidemic (6).

Heterogeneity of the Epidemic

Although the epidemic in SSA is a generalized form, which predominantly affects young heterosexual adults, it is heterogeneous in terms of geographic distribution, age, rural versus urban location and gender. Wide differentials exist at the regional, sub-regional, country and local level. Temporal data over the last five years has shown progression in the spread of the epidemic both in terms of magnitude of infection and geographic spread. What started as a concentrated epidemic, confined mainly in the Cape Metropole areas in the WC, has diffused to the surrounding areas in the province. For example in 2001, three areas reported an HIV prevalence of $\geq 15\%$ namely; Khayelitsha, Gugulethu and Helderberg areas, whilst in 2005 nine areas reported an HIV prevalence of $\geq 15\%$. This has huge implications in terms of the scale of the epidemic as over 54% of the provincial population resides in these nine areas.

Trend data demonstrates that even at the local level, the epidemic has progressed differentially both in absolute terms and in the rate of growth. There is evidence of sub-epidemics within the province, at various stages of development and these can be classified as early, emerging and mature epidemics. For example, the HIV prevalence in Khayelitsha and Gugulethu health areas remain consistently high in absolute and growth terms, whilst the Greater Athlone, Knysna/ Plettenberg Bay and the Stellenbosch areas show very high growth rates over the 2001-2005 period – the latter suggestive of an emerging sub-epidemics. It is also recognised that within low prevalence areas such as Blaauwberg, health service data suggest that the epidemic may be concentrated to a locality, highlighting the need to examine the local context using several sources of data.

These findings underscore the need to tailor interventions and programmes to the local situation, based on local evidence and focussing on the context in terms of locally relevant groups, new infections, sexual networks and risk behaviours.

Apart from geographic variation, at the regional level, epidemic also follows gender and age divisions. Three women are reported to be HIV infected for every male in the 15-24 age group in SSA (1). In SA it is estimated that 60% of HIV positive adults aged 15-49 are women (3). Clear differentials in HIV prevalence have also been observed by urban versus rural location. The 2005 provincial HIV surveys in the WC showed that urban areas reported higher levels of HIV prevalence than rural areas and the rate of increase in HIV prevalence was greater in urban than rural areas. This is evidenced by the HIV prevalence for the urban areas almost doubling from 8.8% in 2000 to 17.6% in 2005, whilst the prevalence in rural areas increased from 8.6% to 10.1%. These findings are consistent with the results demonstrated in the Nelson Mandela National Household Survey of SA as well as in studies in other parts of the continent (2,9). Between 1990 and 1996, the HIV prevalence in the urban areas of Botswana, Lesotho, Namibia and Swaziland increased exponentially from about 5% of the population to more than 25% (11).

The reasons for the variable growth of the epidemic are not clear and a combination of factors are attributed to the variation. It is argued that geographical heterogeneity in HIV tends to reflect the degree of urbanization, in addition to other factors such as sexual risk behaviors, sexual networks, population demographics, unemployment, social deprivation, migration, high population density, unemployment and unstable communities (2,9,10).

In the case of the Western Cape, there has been rapid urbanization and migration from rural areas to towns or from other provinces. Whilst movement of people is not easily quantifiable, it is estimated that 48 000 new residents migrate to this province annually, and the reasons cited are mainly for employment, education and access to services. Whilst the impact of migration may influence the growth of the epidemic, the growth and spread of the epidemic cannot be ascribed to migrancy alone. It is globally recognised, that underlying factors such as socio-demographic and economic factors associated with migrancy and rapid urbanisation influence the spread of the epidemic. Individuals and families associated with migrancy are often faced with poverty, discrimination, alienation, the separation from the family and the breakdown of established community and social networks makes individuals vulnerable. Noting, that the heterogeneity in distribution of the HIV infection in this province, is not unique to the HIV epidemic, but reflects

the wide disparities for a range of factors such as the socio-economic status, unemployment rates, poverty levels and health outcomes.

In light of the heterogeneity of the epidemic, it is no longer appropriate to describe or respond to the HIV epidemic as a single epidemic and that planning a response to the AIDS epidemic must take a more nuanced approach, taking into consideration the factors that influence the variation (11).

The role of educational attainment in relation to HIV prevalence is not clear-cut. In sub-Saharan Africa, higher educational attainment was reported to be associated with a greater risk for HIV infection (12). However, these differentials are not static, as recent evidence from Zambia suggests that in the early stages of an epidemic, the highest burden is amongst those who have attained higher levels of education (12). However, as the epidemic matures the burden shifts to those less educated, with a greater decrease in HIV rates observed amongst the more educated groups. This is due to declining incidence rates amongst those more educated and this is attributed to better access to and, consequently, greater uptake of prevention messages (12).

The Western Cape data revealed that the HIV prevalence peaked in women who attained incomplete high school or primary school education. These findings are particularly significant in terms of planning interventions, given the reported high rates of attrition from high schools in this province (13). It also emphasizes the need to improve access to prevention programmes and expand the prevention programmes beyond the formal education institutions. Lessons learnt from other countries highlight that prevention efforts should be responsive to the shifting HIV trends, emphasize the need to tailor programmes to the local context and the importance of sustaining low HIV rates amongst groups that are perceived to be at low risk of infection.

Measuring Incidence

The year 2006 has been marked as the year of accelerated prevention both globally and at the national level. One of the key indicators to monitor prevention is to track incidence (new cases). In light of the high costs and inappropriate technologies available to assess incidence at the community level through laboratory tests, the UNAIDS recommends that HIV prevalence amongst 15-24 age group is a good proxy measure of incidence (1). In the WC province the HIV prevalence for antenatal attenders aged 15-24 years increased from 8.6% in the year 2000 to 12.8% in 2005, although most of this increase (to 12%) took place between 2000 and 2001. This survey revealed that young women under the age of 30 years continued to be disproportionately affected by HIV infection.

Parity adjusted HIV prevalence is another proxy measure for tracking HIV incidence (8). Three-year trend data from the WC survey consistently showed higher HIV prevalence amongst women who reported no previous live births (parity 0) compared with women who reported one or more births, after adjusting for age and urban location. However, over time, the gap has narrowed, with evidence of a growing increase in prevalence amongst those with previous births. This highlights the need to target both HIV positive and negative women attending antenatal clinics for prevention.

Temporal trends show that the proxy measures of incidence of HIV infection continues to increase in this province, highlighting needs to strengthen prevention efforts in terms of scale and intensity (1). It is argued that the greatest paradox of the AIDS epidemic is that despite its very significant health and social effects, the epidemic to a large extent remains hidden (1). This emphasises the need for renewed and fortified efforts to address the underlying factors driving the epidemic, including stigma, discrimination, gender inequality, poverty and social exclusion.

5.2. Syphilis Prevalence Trends

The RPR trends in this survey revealed wide fluctuations over the last five years. The reasons for these fluctuations remain inexplicable and this will have to be monitored over the next few years. While syphilis prevalence may be indicative of high-risk sexual behaviour (3), its prevalence amongst pregnant women is more a good quality of care measure rather than a measure of STI burden of disease in a

population. It essentially reflects missed opportunity to prevent, diagnose and treat syphilis in family planning and other services (14). Higher levels of syphilis were observed in rural areas compared to urban areas, probably reflecting poorer access to and quality of care in rural areas, which underscores the importance of strengthening STI, maternal health and women's health services in rural areas.

5.3. LIMITATIONS AND STRENGTHS OF THE HIV ANTENATAL SURVEYS

Sero-prevalence surveys of sentinel populations were primarily designed to estimate the HIV prevalence in countries experiencing a generalized epidemic. In SA, these surveys are conducted on women attending antenatal clinics in the public sector. The primary aim is to estimate the prevalence of HIV infection amongst young sexually active heterosexual adults. The key limitations of unlinked surveys of pregnant women in SA are that they do not examine men, children, and women attending private sector clinics, women who are not fertile, older women or women who choose not to have children.

In addition, these surveys do not allow for extrapolation of HIV prevalence by race group, as fewer White and Indian women attend the public health clinics in SA. Despite

these biases, this approach is robust and is internationally applied in countries experiencing a generalized epidemic (1, 5, 15).

Five-year trends comparing the provincial HIV estimates derived from the area surveys and the provincial survey showed a very close fit, suggesting consistency in the findings. The area survey therefore functioned as a validation tool for the provincial survey whilst, more importantly, highlighting the variation in HIV prevalence at sub-provincial level in the Western Cape. These findings clearly indicate the existence of sub-epidemics that vary in growth and magnitude and consequently will follow their own course over time.

6. CONCLUSION

The overall picture in the Western Cape over the last five years showed a continued increase in HIV prevalence, with wide geographical variation at the local level. It is also evident that the sub-epidemics are spreading and maturing at various rates. HIV prevalence by age group revealed the highest prevalence amongst women aged 25-29 years of age. The evidence also suggests that the HIV epidemic has not stabilized in this province.

It is therefore essential that prevention strategies be reinforced with clear and non-ambiguous messages aimed

at the community level as well as at the individual level. These findings also suggest the need for improvements in access to reproductive health services, expanded availability of HIV testing, early detection and treatment of sexually transmitted infections and focused prevention interventions for HIV and STIs with groups at increased risk. The differential distribution of HIV disease in this province suggests the need for a more nuanced approach in the development of local level interventions.

Key findings of this survey

- By the end of 2005 the HIV prevalence was estimated to be 15.7% amongst pregnant women attending public sector clinics and 30.2% at the national level.
- HIV and other STIs are not uniformly distributed throughout the province and there is marked geographical heterogeneity in prevalence.
- The HIV prevalence at the local level ranges from 4.5-33%, with 9 of the 25 areas reporting an HIV prevalence of 15% or greater.
- The prevalence of HIV amongst pregnant women attending public health clinics remained the highest in women aged 25-29 years.
- The HIV prevalence in the 15-24 years (proxy of incidence) increased from 8.6% (CI 95%: 7.5-9.9) in the year 2000 to 12.8% (CI 95%: 10.7-14.9) in 2005, although most of this increase took place between the years 2000 and 2001.
- Women who had reported no previous births (19.3%) were at greater risk of HIV infection than women with one or more previous births (15%).
- Trend data shows a more accelerated increase in HIV prevalence amongst women who reported previous births than those with no previous births. This highlights the need to strengthen prevention in antenatal settings, namely, by targeting both HIV positive and HIV negative women in the PMTCT programme.
- The HIV prevalence in certain areas such as Khayelitsha, Gugulethu, Knysna/Bitou and Helderberg remains high, while areas such as Oostenberg, Greater Athlone and Stellenbosch showed rapid growth over the last 5 years, which is characteristic of emerging sub-epidemics.

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Appendix 1

Figure 11. HIV Prevalence by District versus the Western Cape and South Africa: 2005

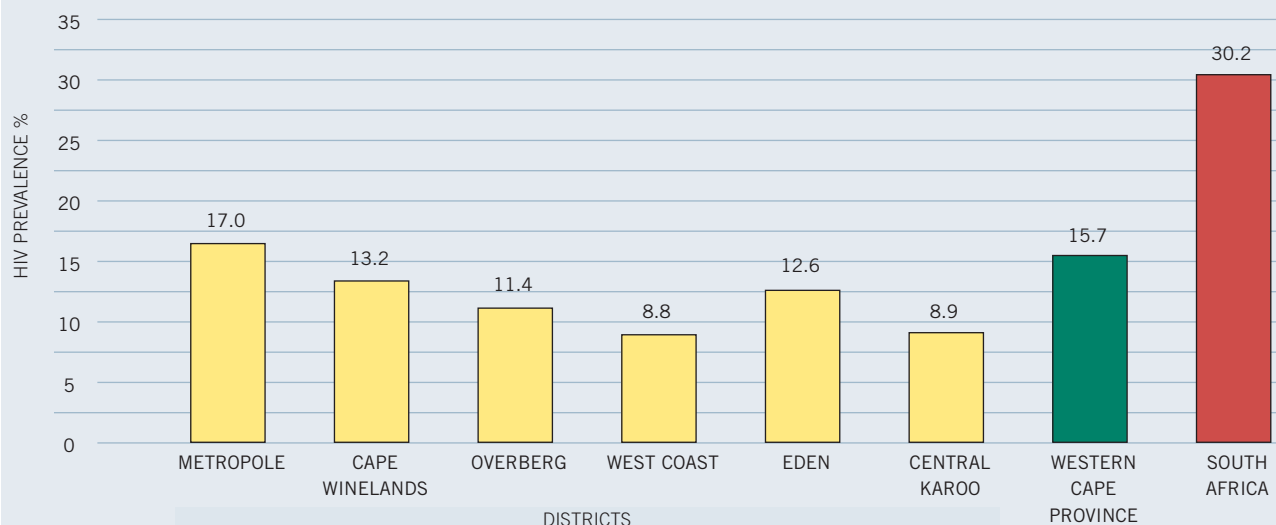


Table 1. HIV Prevalence by Districts in the Western Cape, 2005

District	2005 HIV Prevalence %	95% Confidence Interval
Metropole	17.0	16.0–18.1
Cape Winelands	13.2	10.6–16.1
Overberg	11.4	9.7–13.1
West Coast	8.8	6.9–11.1
Eden	12.6	10.7–14.6
Central Karoo	8.9	3.8–14.1
Western Cape Province	15.7	11.3–20.1

Table 2. Syphilis Prevalence by Districts in the Western Cape, 2005

District	2005 Syphilis Prevalence %	95% Confidence Interval
Metropole	3.3	3.1–3.4
Cape Winelands	5.4	5.2–5.6
Overberg	3.8	3.0–3.7
West Coast	4.9	4.8–5.0
Eden	6.3	5.7–6.8
Central Karoo	10.6	8.9–12.4
Western Cape Province	4.0	3.1–4.9

Figure 12. Syphilis Prevalence by District versus the Western Cape and South Africa: 2005

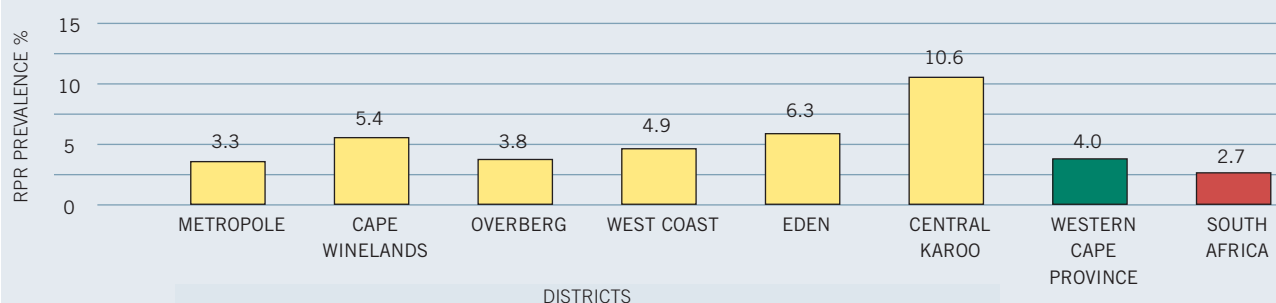
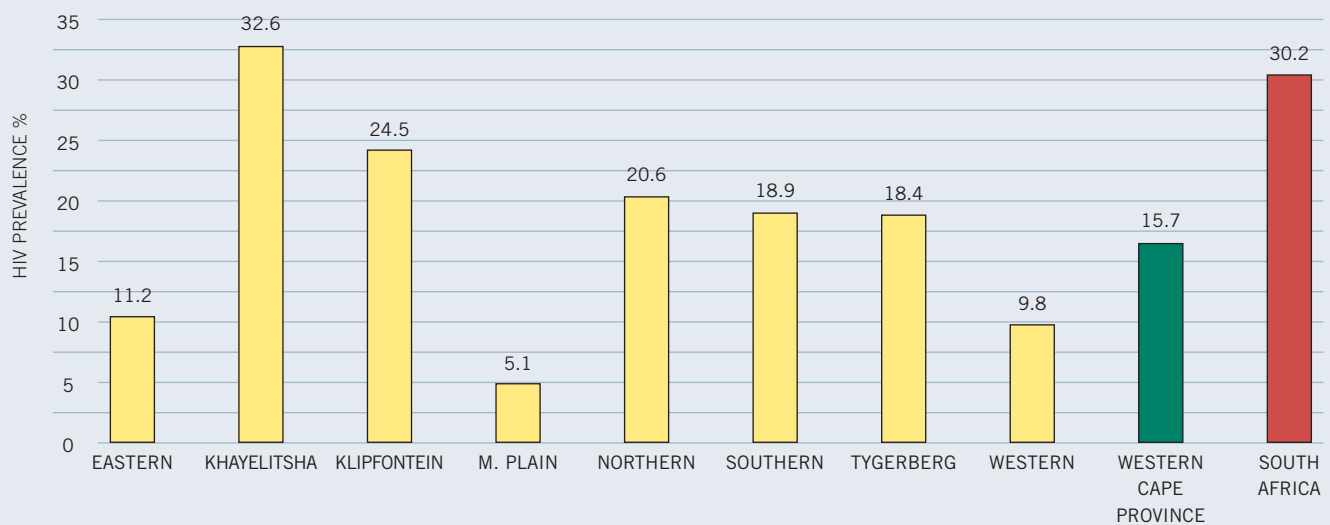
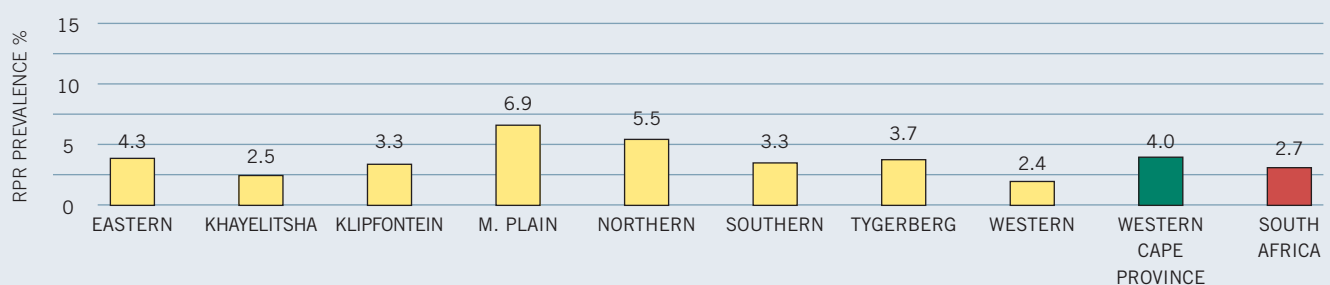


Figure 13. HIV Prevalence by Area in the Cape Metropole District versus the Western Cape and South Africa: 2005**Table 3. HIV Prevalence 2005 by Metropole Areas**

Area	2005 HIV Prevalence %	95% Confidence Interval
Eastern	11.2	4.9–17.5
Khayelitsha	32.6	28.2–37.1
Klipfontein	24.5	20.3–28.6
M Plain	5.1	3.0–7.2
Northern	20.6	12.7–28.4
Southern	18.9	3.9–11.6
Tygerberg	18.4	13.5–23.4
Western	9.8	5.4–14.1

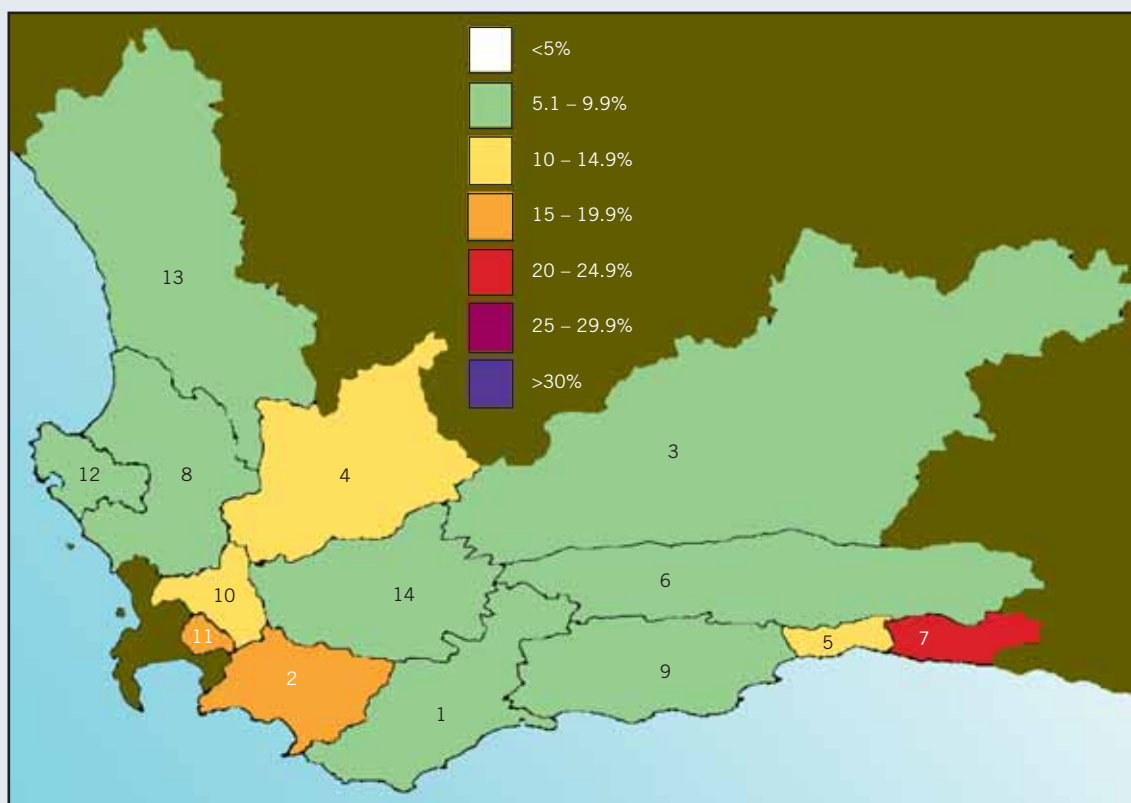
Table 4. Syphilis Prevalence 2005 by Metropole Sub-Structure

District	2005 Syphilis Prevalence %	95% Confidence Interval
Eastern	4.3	2.7–6.1
Khayelitsha	2.5	1.0–3.9
Klipfontein	3.3	1.6–5.0
M Plain	6.9	0.01–1.5
Northern	5.5	2.9–8.1
Southern	3.3	1.4–4.7
Tygerberg	3.7	2.5–4.9
Western	2.4	1.1–3.7

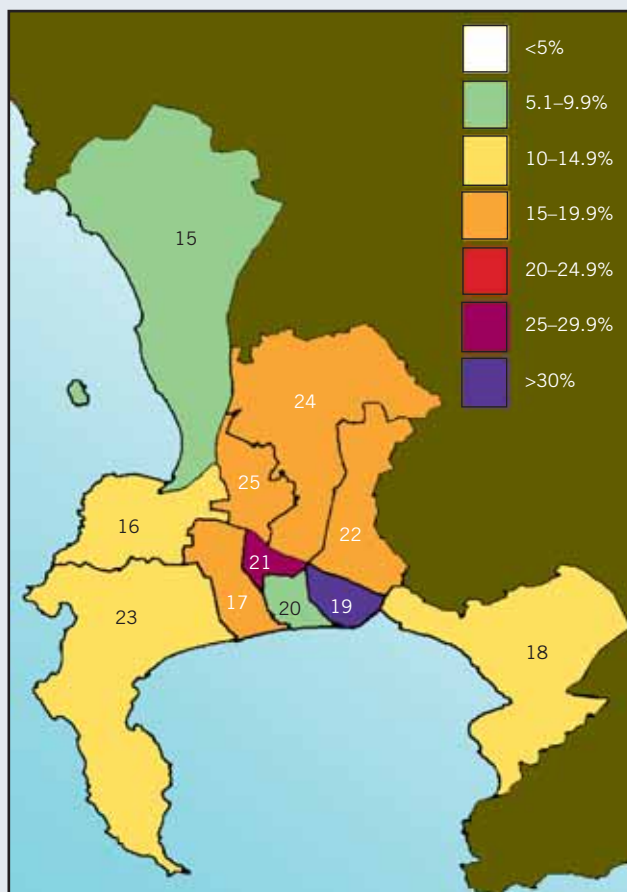
Figure 14. Syphilis Prevalence by Area in the Cape Metropole District versus the Western Cape and South Africa: 2005

Appendix 2

8.1. HIV Prevalence: Non-Metropole Areas 2005



8.2. HIV Prevalence: Metropole Areas 2005



1. Bredasdorp/Swellendam
2. Caledon/Hermanus
3. Central Karoo
4. Ceres/Tulbagh
5. George
6. Klein Karoo
7. Knysna/Bitou
8. Malmesbury
9. Mossel Bay/Hessequa
10. Paarl
11. Stellenbosch
12. Vredenburg
13. Vredendal
14. Worcester/Robertson

15. Blaauwberg
16. Cape Town Central
17. Greater Athlone
18. Helderberg
19. Khayelitsha
20. Mitchell's Plain
21. Nyanga/Gugulethu
22. Oostenberg
23. South Peninsula
24. Tygerberg Eastern
25. Tygerberg Western

