

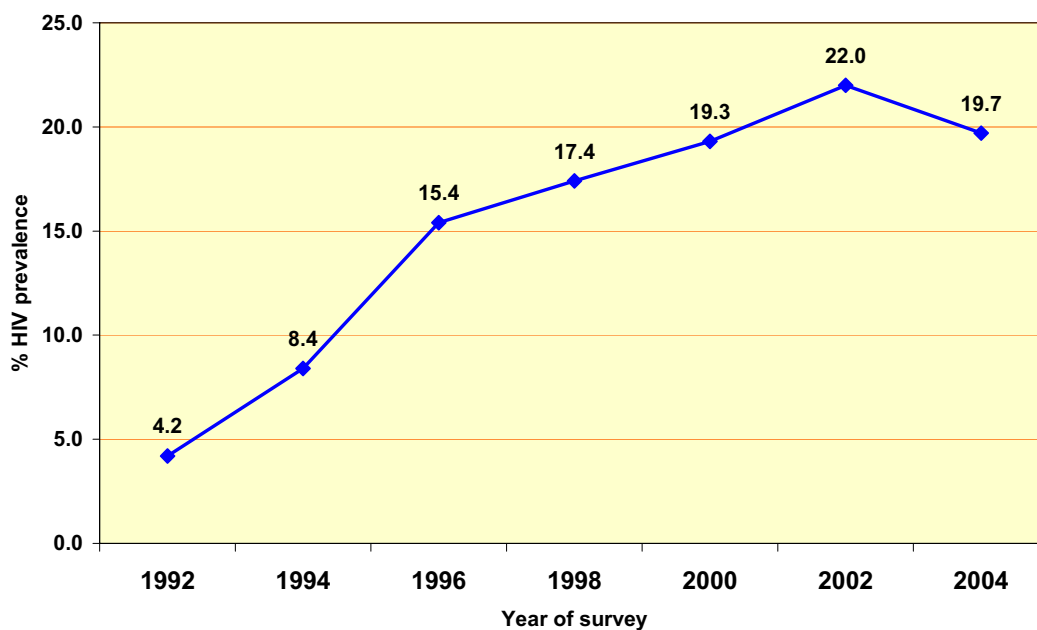
Republic of Namibia

Ministry of Health and Social Services



Report of the 2004 National HIV Sentinel Survey

HIV prevalence rate in pregnant women, biannual surveys 1992-2004, Namibia



Ministry of Health and Social Services

Report of the 2004 National HIV Sentinel Survey

Directorate of Special Programmes
Division: Expanded National HIV Response Coordination
Bell Harris Building
Private Bag 13198 Windhoek
Tel.: 061-203.2272
Fax: 061-224155
E-mail: gorasebm@nacop.net

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FOREWORD

HIV/AIDS is the most important development problem facing sub-Saharan Africa today. It robs the region of scarce human and financial resources and thus shadows the region's brilliant social and economic capacity. It is estimated that 2.3 million people in the region died of HIV-related causes during the calendar year 2004 and 3.1 million were newly infected.

Namibia is one of the countries in the world most affected by the HIV/AIDS pandemic. To protect our people, the Government of Namibia (GRN) has mounted an aggressive and tireless campaign against the disease including surveillance, prevention, treatment, care and support, and impact mitigation. Surveillance forms a critical element in our expanded national response as it allows identification of the geographic and demographic population groups most affected by the virus so that prevention and treatment programmes can be targeted to these groups. In addition, surveillance activities permit the GRN to monitor HIV trends in various groups and thus evaluate the effectiveness of policies and programmes.

Results from the 2004 ANC surveillance are particularly encouraging as they represent the first ever decrease in overall prevalence in Namibia since routine ANC surveillance began in 1992. The national prevalence estimate obtained (19.7%) is 2.3% lower than that obtained in 2002. However, it is evident from this report that HIV/AIDS continued to increase in some of the geographical areas and age groups assessed. Thus more detailed comparisons must be carefully considered by policy makers at all levels of leadership to identify the best ways forward in prevention/treatment efforts.

Every Namibian, particularly those involved in HIV/AIDS prevention activities, should take encouragement from the results presented in this report. These results suggest that our hard work is producing fruit and the spread of HIV/AIDS in Namibia may slowly get under control. However, we should not interpret this as a license for rest, but rather it is a call for continued action. We now know that it can be done in Namibia. We must appreciate that our country faces devastating social impact if dramatic actions are not continued and even further scaled-up. We alone have the power to stop this disease and give our children a more hopeful future.

**MR. RICHARD N. KAMWI, M.P.
MINISTER**

PREFACE

Every two years, the Ministry of Health and Social Services conducts a sentinel survey on HIV prevalence in pregnant women throughout the country. HIV testing is completed on blood samples collected from pregnant women attending ante-natal clinics. Blood samples are stripped of any personal identifying information prior to HIV testing so there is no way that the HIV status of a particular woman can become known during this process and hence there is no possibility of stigma against her. This standardized methodology is recommended by the World Health Organization (WHO) as the most suitable way for countries to monitor the trend of HIV infection in different geographical areas and age groups.

This report describes the objectives of the survey, the methodology used, the ethical considerations, and results obtained. The results are presented in graphic form, by means of tables and figures. Furthermore, the results of the survey are compared with the results of previous surveys. Finally, the report examines the limitations of the survey and it makes recommendations to improve the current survey analysis for future surveys to improve the value of ANC surveillance.

The 2004 survey results show a decrease in overall HIV prevalence in the country for the first time since surveillance of the epidemic began in 1992. Though we received this news with shared optimism, we will take no respite or rest from our work. After all, the report also demonstrates that HIV infection continues to be transmitted widely in Namibia. The Ministry of Health and Social Services will continue to monitor the epidemic through strengthening of surveillance efforts and ensuring the timely dissemination of information.

Of equal importance, as the MOHSS, we will do all in our power to help all sectors to utilize this information for prevention, treatment, and impact mitigation at the local, district, regional, and national levels. In addition to the overall decrease in prevalence, the 2004 survey offers critical information on trends in geographical and age-specific groups. Despite the overall decrease in prevalence, five sites and one age group showed an increase in prevalence. These details can and must be utilized at the local level to improve our efforts.

The Ministry of Health and Social Services would like to express its sincere thanks and appreciation to the local teams of nurses, laboratory technicians, and doctors who have efficiently organized and implemented the survey at each of the 24 sites. The staff of the Department of Immuno-Chemistry of the Namibia Institute of Pathology is commended for their substantial contribution to the success of the survey by testing all collected survey samples in a short period of time.

DR. KALUMBI SHANGULA
PERMANENT SECRETARY

SUMMARY

The Government of Namibia has acknowledged that HIV/AIDS is a serious public health problem and has invested substantially into fighting against the disease. The 2004 ANC HIV sentinel survey, which is the seventh of its kind, was organised by the Directorate for Special Programmes (DSP) of the Ministry of Health and Social Services (MOHSS). Staff at the respective sentinel sites carried out systematic collection of blood samples under the supervision of regional and district management teams. Standardized HIV testing of samples was conducted by the Namibia Institute of Pathology (NIP) in Windhoek.

The purpose of these sentinel surveys has been to monitor trends in HIV prevalence. To improve overall representativeness, three additional sites were added for the 2004 survey, namely Luderitz, Outjo, and Windhoek Central Hospital, bringing the total number of participating sites to 24. From July to October 2004 a total number of 4,373 blood samples from pregnant women were collected and tested for HIV. Pregnant women are utilized for such surveys due to ready accessibility to blood specimens from a representative group of sexually active adults.

Overall HIV prevalence in 2004 was 19.7%, compared to 22.0% in 2002. This represents the first decrease in HIV prevalence since the start of ANC surveillance by MOHSS to monitor the epidemic in 1992.

Site specific prevalence ranged from a high of 42% in Katima Mulilo to a low of 9% in Opuwo. Compared to the 2002 survey, a decreasing or leveling trend in HIV prevalence was observed in 16 (76%) of the 21 sites for which 2002 comparison was possible and an increase in 5 sites (24%). The most pronounced decline in prevalence was noted in Otjiwarongo, Oshakati, Katutura State Hospital, Onandjokwe, and Nyangana. The largest increases were observed in Swakopmund, Nankudu and Walvis Bay.

With respect to age, prevalence ranged from a low of 10% in those younger than 20 years of age to a high of 26% in those 25-29. Compared to the 2002 survey, HIV prevalence declined in all age groups except the 35-39 year olds where an increase of three percentage points was observed. When prevalence trends were calculated within specific age groups, sites with the greatest decrease in prevalence among younger (<25 years of age) women were Andara, Tsumeb, and Nyangana. The most important prevalence decreases in older (25+ years of age) women were in Oshakati, Onandjokwe and Otjiwarongo.

It will be beneficial to explore potential reasons for the geographic, age group, and chronological (over time) differences noted above. If certain policies or programmes can be credited with lower HIV prevalence, reproduction or adaptation of these approaches to other areas may further reduce the overall burden of HIV/AIDS in Namibia.

ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Clinic
DSP	Directorate of Special Programmes (MOHSS)
ELISA	Enzyme linked immunosorbent assay
GRN	Government of the Republic of Namibia
HIV	Human Immunodeficiency Virus
MOHSS	Ministry of Health and Social Services
NIP	Namibia Institute of Pathology
QC	Quality Control
PMO	Principal Medical Officer
CMO	Chief Medical Officer
STI	Sexually Transmitted Infection
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization

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1. BACKGROUND

According to the 2001 Population and Housing Census, Namibia has a total population of 1,830,330 people, with an annual growth rate of 2.6%³. These individuals live on a surface of area about 824,116 km², giving an average density of just over 2 persons per km². However, people are spread very unevenly across the country, with large areas uninhabited and many other areas very sparsely populated. The population distribution in the country is 33% urban and 67% rural.

The first case of AIDS in Namibia was identified in 1986. Since that time, HIV/AIDS has become an extremely serious public health problem and remains one of the major challenges to the country's socio-economic development. Namibians at high risk for HIV include mobile populations (migrant workers and truck drivers), young women and girls along transportation routes, sexually active youth, uniformed service members, and commercial sex workers. Risk factors for HIV include high unemployment and poverty, cultural norms, alcohol and gender abuse, and stigma. All persons who are having unprotected sex with a partner of unknown HIV status are essentially at risk in Namibia.

Since 1992, Namibia has followed internationally accepted guidelines developed by the World Health Organization (WHO) for implementing HIV Sentinel Surveillance. HIV sentinel surveys among pregnant women attending antenatal care services at various health facilities in the country have been conducted every two years in order to monitor the magnitude and progress of the epidemic in the country. Sentinel surveillance uses anonymous unlinked HIV testing of designated groups at specific sites at regular intervals over a limited period of time.

Results from sentinel surveillance in Namibia have demonstrated a steep rise followed by a leveling of the epidemic. The first survey (1992) found an estimated HIV prevalence of 4.2%. As of the 2002 surveillance round, the prevalence of HIV was estimated at 22.0%.

HIV sentinel surveillance data has helped to map the epidemic and monitor HIV infection trends in the country as well as serving as an advocacy tool. The data are useful for understanding the magnitude of the HIV/AIDS problem in certain geographic areas and among special populations and for monitoring the impact of relevant interventions.

The HIV sentinel surveillance survey in Namibia is implemented by the Directorate of Special Programmes (DSP) in the Ministry of Health and Social Services in collaboration with the Namibia Institute of Pathology (NIP) and a number of development partners.

2. OBJECTIVES

General

To monitor the prevalence of HIV-infection in pregnant women in Namibia and to examine the association of prevalence with age and geographical location.

Specific

The objectives of the HIV sentinel surveillance system are:

1. To monitor the prevalence of HIV infection among pregnant women in different areas in the country.
2. To analyze trends in the magnitude of HIV prevalence amongst pregnant women overall, by age group, and by geographical site.
3. To provide essential information about the status of the HIV epidemic for awareness raising, advocacy and planning purposes.

3. METHODS

In Namibia, HIV sentinel sero-surveillance is conducted every 2 years through serologic HIV screening of ANC clients at sites around the country (cross sectional study). The methods used for HIV surveillance have been based on guidelines developed by the WHO and therefore generate data which can be compared with previous years data and data from other countries that follow the same guidelines.

3.1. Sentinel Sites

Sentinel surveillance sites were chosen taking into consideration regional coverage, the type of the population (urban and rural) and the volume of ANC clients at each site. For the 2004 sero-survey, the sentinel sites selected covered all 13 regions and included sites with both rural and urban characteristics. Three new sites were included in the 2004 sero survey namely: Luderitz in Karas region and Outjo in Kunene region while in Khomas region, the Windhoek Central Hospital ANC clinic was included in addition to the Katutura ANC clinic. Table 1 lists the regions of each site, the site designation, the facilities contributing to the site, and the urban/rural classification of the sites.

Table 1: HIV surveillance 2004 site information

Region	Site	Facilities	Classification
Caprivi	Katima Mulilo	Katima Mulilo Clinic	Urban
Erongo	Swakopmund	All district facilities	District (U+R)
	Walvisbay	All district facilities	District (U+R)
Hardap	Mariental	Main district facilities	Urban
	Rehoboth	Main district facilities	Urban
Karas	Keetmanshoop	Main district facilities	District (U+R)
	Luderitz	Main district facilities	District (U+R)
Okavango	Rundu	Rundu Clinic	Urban
	Andara	Main district facilities	Rural
	Nyangana	Main district facilities	Rural
	Nankudu	Main district facilities	Rural
Khomas	Windhoek	Katutura ANC	Urban
	Windhoek	WHK Central ANC	Urban
Kunene	Opuwo	Opuwo clinic	Rural
	Outjo	Outjo Clinic	District (U+R)
Ohangwena	Engela	Engela Hospital	Rural
Omaheke	Gobabis	Epako clinic	Urban
Omusati	Oshikuku	Oshikuku Hospital	Rural
	Outapi	Outapi Hospital	Rural
Oshana	Oshakati	Oshakati Hospital	Urban
Oshikoto	Onandjokwe	Onandjokwe Hosp.	Rural
	Tsumeb	Tsumeb Hospital	Urban
Otjozondjupa	Otjiwarongo	Otjiwarongo clinic	Urban
	Grootfontein	Grootfontein DH	Urban

3.2. Sentinel Population and Inclusion Criteria

All pregnant women who visited one of the participating ante-natal clinics for the first time ("first visits") during the sampling period and who had blood drawn for routine syphilis screening at the sentinel site during that visit were included in the sample.

3.3. Sample Size

The World Health Organization recommends that a minimum of 200 samples be collected at each site to ensure valid results for each site. For the 2004 Namibia HIV survey, a sample size of 210 was chosen for all sites where such a sample size was feasible in order to obtain 200 valid samples taking into consideration possible accidental losses. At the outset of the survey, however, it was recognized that this sample size was not feasible in the sparsely populated Southern regions.

3.4. Sampling Period

A sampling period of 8 weeks was foreseen for most sites in order to obtain a valid prevalence estimate. However, in sites where the minimal sampling size of 160 had not been reached at the end of 8 weeks, the sampling period was extended up to a maximum of 12 weeks. The 8-week sampling period for the 2004 sero-survey started on the 26th of July and ended on the 17th of September. The last date for sampling was extended to the 15th of October 2004 for those sites that were not able to collect an adequate number of samples during the first 8 weeks.

3.5. Blood Collection and Processing

Blood samples for HIV testing were taken during a routine procedure and processed using an anonymous linked protocol. As part of routine ante-natal care, a tube of blood is drawn by a registered nurse for syphilis testing, blood typing, and hemoglobin analysis. At the same time, a second tube was drawn for survey purposes. Sterile needles, syringes, and yellow-top vacutainer tubes were supplied to the survey sites for this purpose. In addition, all ANCs were equipped with biohazard containers for safe disposal of all potentially contaminated materials.

All blood samples received a code number without a name and names were not registered at any time. The only demographic characteristic collected was age. Testing was carried out in Windhoek at the NIP. Individual results do not exist using this methodology. Therefore the results can not be linked to individual patients.

3.6. Laboratory Investigations

Preparation of specimens

At the participating specimen collection site the survey tube was marked with the code and age of the pregnant woman [code = {6-letter code indicating the site} + {sequential 3-digit number}]. All tubes were then sent to the local NIP district laboratory at the end of the daily ANC and centrifuged (10 min at 4000 rpm). Tubes were then refrigerated prior to transport to the NIP central medical laboratory in Windhoek. All samples were transported on ice by a courier.

A special reporting form was designed to record the unique ID, the age, and the HIV screening result of each pregnant woman. These forms were supplied to the sites prior to specimen collection. The forms contain space for the specimen code, the age of the woman and the HIV test result. The specimen code and age of the woman were entered by the nurses at the sites and these forms were forwarded to the NIP central laboratory with their respective samples.

Testing procedures

The NIP carried out all HIV testing at the Central Reference Laboratory/Immunochemistry Department in Windhoek. HIV testing occurred within one week of blood draw. Testing was done using the Abbott AxSYM System (Abbott Laboratories, Abbott Park, Illinois, USA). Testing results were entered on the laboratory forms mentioned above. Reactive samples were considered positive and non-reactive samples considered negative.

Quality assurance procedures

On a weekly basis, NIP officers at the district laboratories checked that both blood samples and completed data collection forms existed for all IDs. The weekly tubes were then sent to NIP central laboratory by courier. At sites where a NIP laboratory was not available locally, special arrangements were made to centrifuge samples before sending to the central level.

Reactive (positive) results were not confirmed as the Abbott AxSYM System was reported as 100% sensitive and >99.87% specific to HIV in blood samples (Fierz W, Erb P. 10th Conference on Retroviruses and Opportunistic Infections, 2003). Routine NIP quality assurance procedures maintained by NIP applied to the AxSYM System testing. These include daily internal quality assurance using known quality control materials supplied by the manufacturer (Abbott) and monthly external quality assurance provided by EQAS Thistle (Thistle QA, Johannesburg, South Africa).

3.7. Data management and analysis

Completed forms were received by data clerks at the DSP and organized into binders for storage purposes. Data was then electronically entered using Epi Info version 3.3 (Centers for Disease Control and Prevention, Atlanta, Georgia, USA). Digital entry was completed twice by different pairs of data entry clerks to create two independent files from the same hard copy data. These two files were then electronically compared and discrepancies were identified. All discrepancies identified between two separate data files were then rectified by consulting the original data and a cleaned master analytic file was created.

All data analysis was completed using Epi Info version 3.3. Two different age groupings were created for the analysis. The first and more detailed of these (<20, 20-24, 25-29, 30-34, 35-39, 40-44, 45+) was used for cross sectional and trend analyses in which age groups were not considered separately (stratified) by site. For trend analyses completed separately by site, a second age grouping was created by grouping into two groups, a younger group (<25 years of age) and an older group (25+ years of age). The rationale for this second set of age groups was to make site/age-specific trend comparisons more reliable. When site/age-specific comparisons were run using the more detailed age grouping, the sample size within groups became too small to obtain reliable estimates.

Prevalence ratios with 95% confidence limits were then calculated for the following groupings of the sample: overall, by age group (more detailed age categories), by site, and by age group within site (using the less specific age groupings). Point estimates noted above were then charted to facilitate site-specific and trend analyses. In order to measure trends, the same analyses were performed on the 2002 ANC data (using identical age groupings).

3.8. Training and Supervision

A curriculum for pre-survey training of personnel in all the sentinel sites was developed. The pre-survey training was conducted by teams from the DSP, Division of Epidemiology, and the Research Unit in the Planning and Human Resource Development Directorate of the Ministry of Health and Social Services. The target for the pre-survey training included the following personnel from participating sites: Chief Medical Officers (CMO's), Principal Medical Officers (PMO's), Matrons, Registered Nurses working in ANC clinics, and laboratory technicians/technologists.

The training included the following core items (details found in Annex 1):

- General background related to sero surveys
- Feedback on previous surveys with emphasis on survey participants, problems encountered for each specific site
- General survey preparation: focusing on establishment of local survey teams for the new sites and reviving old ones, importance of preparatory meetings, forms to be used, collaboration with other teams e.g. laboratory
- Sampling process and coding of samples
- Monitoring and coordination of survey
- General discussion on concerns of the site in terms of logistics etc

3.9. Ethical Considerations

Means to protect the rights of participants were considered during the planning and implementation of the survey. Procedures applied and personnel training both aimed to minimize the probability that a woman could experience any kind of negative consequence from her participation or non-participation. No personal identifying information was collected with the survey blood sample and women were informed of voluntary counseling and testing services they may utilize should they desire to know their HIV status. Furthermore, sample and data collection were both completed via routine clinical procedures so no woman would feel threatened and women were in no way excluded from available services such as PMTCT based on their inclusion in the survey.

4. RESULTS

4.1. HIV prevalence ratios

Overall Prevalence

The overall HIV prevalence from the 2004 survey was 19.7%, representing a decrease of 2.3% from the 2002 survey, though this decrease was not statistically significant with $\alpha=0.05$. It is notable that the drop in prevalence between 2002 and 2004 is the first decrease observed since HIV surveillance began in 1992.

Prevalence by Site

A total of 4,373 pregnant women were included in the 2004 survey and 863 tested positive for HIV antibodies, yielding a prevalence of 19.7%. Prevalence varied from a low of 8.5% in Opuwo to a high of 42.4% in Katima Mulilo (Figure 1, Table 2). It is evident from confidence intervals that the prevalence in Katima Mulilo is significantly higher than any of the remaining sites around the country and the next 3 highest sites (Swakopmund, Grootfontein, and Oshikuku) are significantly higher than the 3 sites with lowest prevalence (Opuwo, Windhoek Central Hospital, and Mariental). Of the three new sites included for the first time in the 2004 survey, Luderitz recorded the highest prevalence with 22.1%. The other two new sites, Outjo and Windhoek Central Hospital, recorded prevalence rates of 11.8% and 9.9% respectively.

Figure 1: HIV prevalence in Namibia among ANC attendees by site (2004)

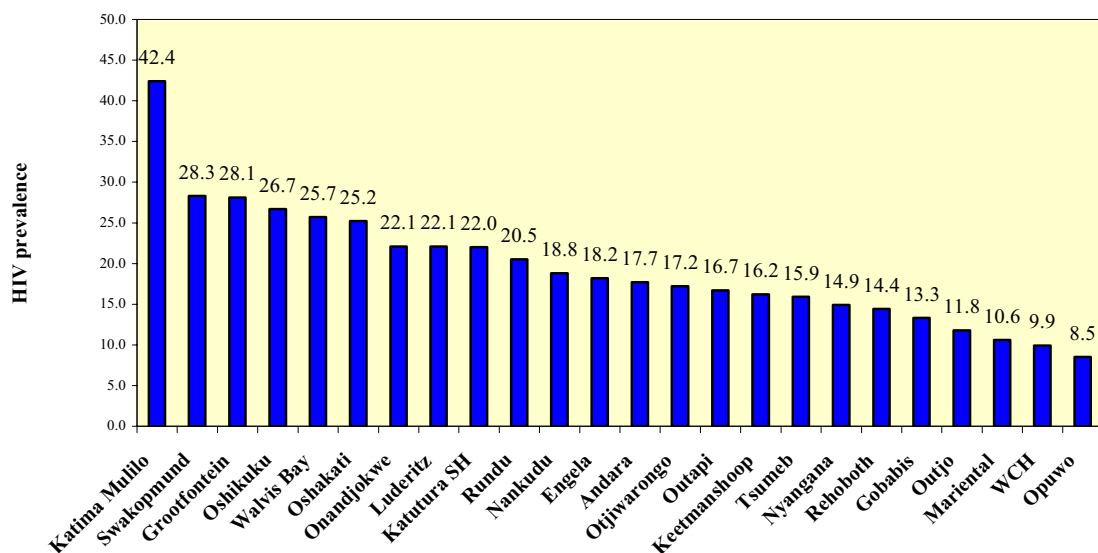


Table 2: HIV prevalence ratio overall and by site

Sentinel Sites	Sample Size	HIV Prevalence and 95% confidence interval
Katima Mulilo	184	42.4 (35.2-49.9)
Swakopmund	187	28.3 (22.0-35.4)
Grootfontein	210	28.1 (22.1-34.7)
Oshikuku	176	26.7 (20.3-33.9)
Walvis Bay	210	25.7 (19.9-32.2)
Oshakati	210	25.2 (19.5-31.7)
Katutura Hospital	209	22.0 (16.6-28.2)
Onandjokwe	208	22.1 (16.7-28.4)
Luderitz	113	22.1 (14.9-30.9)
Rundu	210	20.5 (15.2-26.6)
Nankudu	191	18.8 (13.6-25.1)
Engela	209	18.2 (13.2-24.1)
Andara	141	17.7 (11.8-25.1)
Otjiwarongo	209	17.2 (12.4-23.0)
Outapi	209	16.7 (12.0-22.5)
Keetmanshoop	154	16.2 (10.8-23.0)
Tsumeb	126	15.9 (10.0-23.4)
Nyangana	194	14.9 (10.2-20.8)
Rehoboth	146	14.4 (9.1-21.1)
Gobabis	210	13.3 (9.0-18.7)
Outjo	76	11.8 (5.6-21.3)
Mariental	189	10.6 (6.6-15.9)
Windhoek Central Hospital	203	9.9 (6.1-14.8)
Opuwo	199	8.5 (5.1-13.3)
Overall	4,373	19.7 (18.6-21.0)

Although the methods predicted that a sample size of 210 women per site would be achieved, thus ensuring at least 200 usable samples per site, it is evident that a number of site specific sample sizes did not achieve this minimum. While 11/24 (46%) of the sites obtained the required sample size of 200, the rest of the sites did not. All but 4 of the 24 sites (17%) achieved at least 75% of the anticipated minimum sample size.

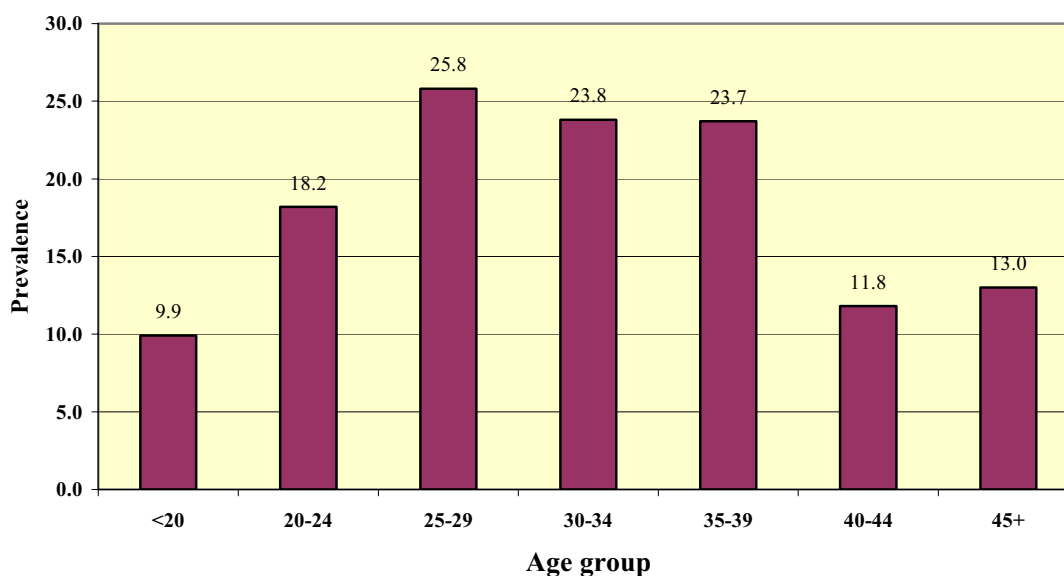
Prevalence by age group

Table 3 and Figure 2 present the sample distribution and HIV prevalence by age group. Just over half of the sample (54%) was between 20 and 29 years of age, while 17% was younger than 20 years old. One quarter (25%) of the sample was between 30-39 years of age and slightly less than 4% was over 40. HIV prevalence was highest in the group 25-29 years of age (25.8%) and, at a confidence level of 95%, this was significantly higher than age groups younger than 25 or older than 40. The lowest HIV prevalence was found in those women less than 20 years of age (9.9%) and, again at the 95% confidence level, this prevalence was significantly lower than age groups between 20-39 years.

Table 3: Distribution of survey sample by age group

Age Group	Sample Size	HIV Prevalence and 95% confidence interval
<20 years	754	9.9 (7.9-12.4)
20-24 years	1345	18.2 (16.2-20.4)
25-29 years	1033	25.8 (23.1-28.6)
30-34 years	707	23.8 (20.7-27.1)
35-39 years	384	23.7 (19.6-28.3)
40-44 years	127	11.8 (6.8-18.7)
45+ years	23	13.0 (2.8-33.6)
Overall	4,373	19.7 (18.6-21.0)

Figure 2: HIV prevalence in Namibian ANC attendees by age group (2004)

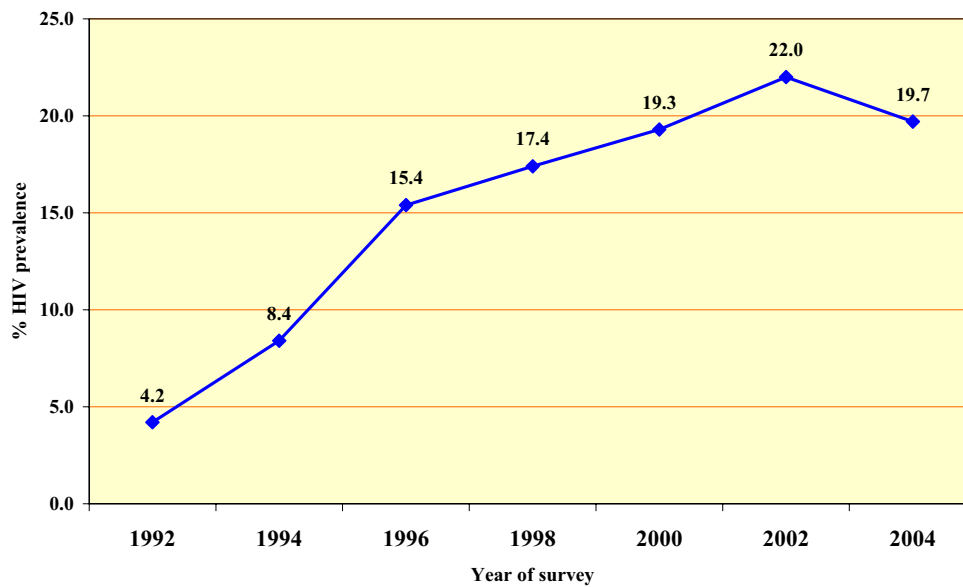


4.2. Trends in HIV prevalence

Prevalence trend overall

The overall trend in HIV prevalence is illustrated in Figure 3. It is evident that the reduction in prevalence between 2002 and 2004 represents the first ever drop in prevalence since Namibia began bi-annual sentinel surveillance. From a 1992 estimate of 4.2%, prevalence rose rapidly over the following 4 years to 15.4% in 1996. Prevalence continued to rise less rapidly for the following 6 years to a peak of 22.0% in 2002.

Figure 3: HIV prevalence rate in pregnant women, biannual surveys 1992-2004, Namibia



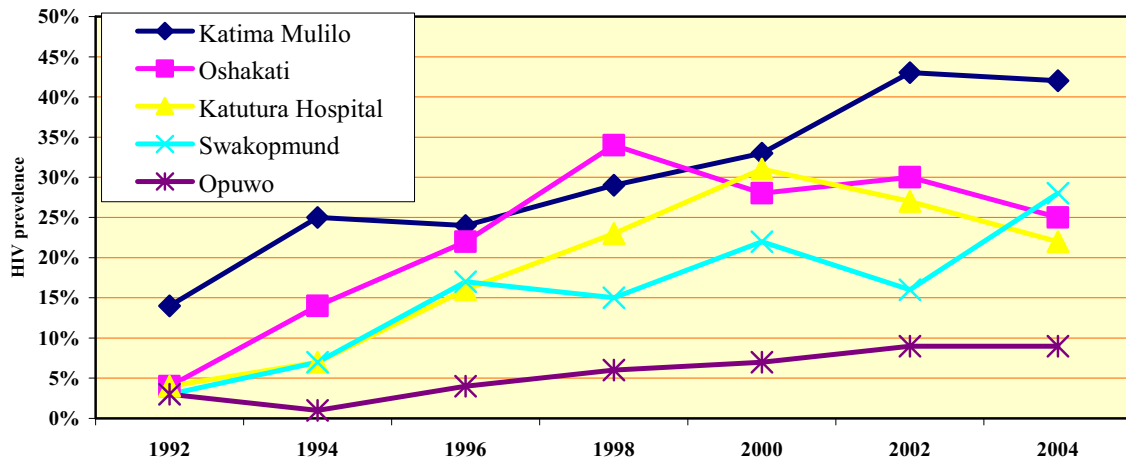
Prevalence trends by site

Trends in site-specific HIV prevalence are presented in Table 4 and Figures 4-6. Figure 4 provides HIV prevalence estimates by year for the 5 sites that have been included in all surveys between 1992 and 2004 (Katima Mulilo, Oshakati, Katutura Hospital- Windhoek, Swakopmund, Opuwo). From this chart, Katima Mulilo shows a constant increase from 14% to 43% between 1992 and 2002, with the 2004 estimate being nearly identical to 2002. Oshakati demonstrates the earliest peak of the 5 sites with an estimate of 34% in 1998 and a decrease to 25% in 2004. Katutura shows the second earliest peak with a high of 31% in 2000 decreasing to 22% in 2004. Opuwo showed the lowest trend of all sites with an estimate of 4% in 1992 growing to 9% in 2002 and then remaining at the same level in 2004. Finally, Swakopmund demonstrated the most widely varying estimates between surveys beginning at 3% in 1992 and ending with 28% in 2004.

Table 4: HIV prevalence at Namibian ANC surveillance sites between 1992 and 2004

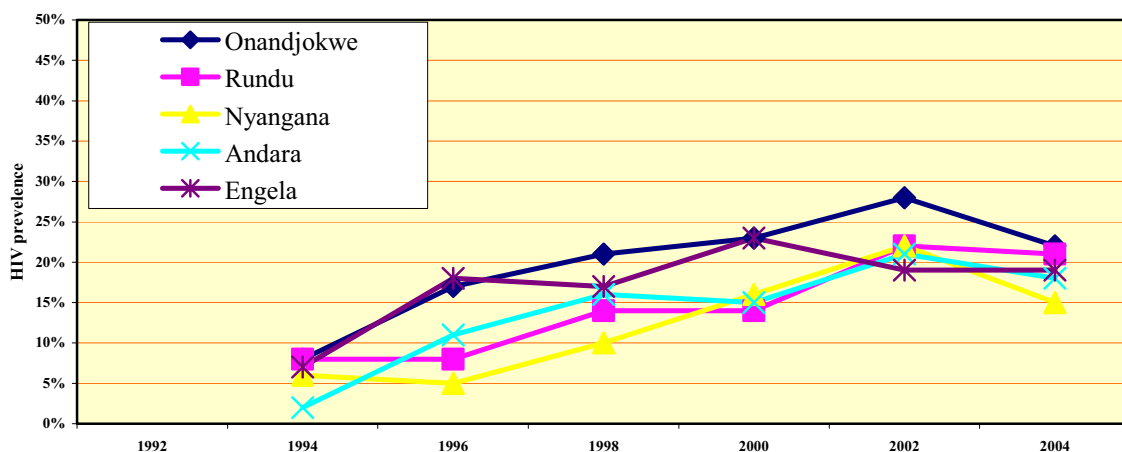
Sentinel site	Year						
	1992	1994	1996	1998	2000	2002	2004
Katima Mulilo	14%	25%	24%	29%	33%	43%	42%
Swakopmund	3%	7%	17%	15%	22%	16%	28%
Grootfontein		9%				30%	28%
Oshikuku					21%	27%	27%
Walvis Bay				29%	28%	25%	26%
Oshakati	4%	14%	22%	34%	28%	30%	25%
Katutura Hospital	4%	7%	16%	23%	31%	27%	22%
Onandjokwe		8%	17%	21%	23%	28%	22%
Luderitz							22%
Rundu		8%	8%	14%	14%	22%	21%
Nankudu				13%	18%	16%	19%
Engela		7%	18%	17%	23%	19%	19%
Andara		2%	11%	16%	15%	21%	18%
Otjiwarongo	2%	9%		16%	18%	25%	17%
Outapi						23%	17%
Keetmanshoop	3%	8%		7%	17%	16%	16%
Tsumeb						25%	16%
Nyangana		6%	5%	10%	16%	22%	15%
Rehoboth		3%			9%	10%	14%
Gobabis	1%			9%	9%	13%	13%
Outjo							12%
Mariental					10%	12%	11%
Windhoek Central H.							10%
Opuwo	3%	1%	4%	6%	7%	9%	9%

Figure 4: HIV Prevalence in pregnant women by selected sites Namibia 1992-2004 (part 1)



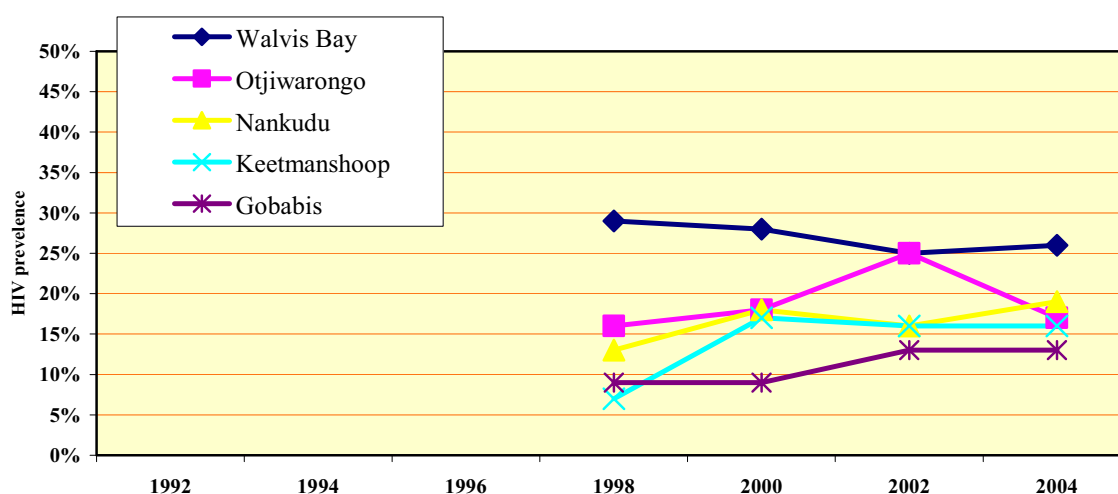
Prevalence from the 5 sites participating in surveys between 1994 and 2004 are illustrated in Figure 5. Of these sites, Onandjokwe experienced a steady increase from 8% in 1994 to 28% in 2002 followed by a decline to 22% in 2004. Rundu also increased between 1994 and 2002 (8% to 22%), but then leveled off between 2002 and 2004. Nyangana experienced a relatively steady increase between 1994-2002 (6% to 22%), with a reduction to 15% by 2004. Andara increased during the first 8 years as well (8% to 22%) with a leveling to 21% in 2004. Finally, Engela increased from 8% to 23% during the first 6 years of surveys, falling to 18% by 2004.

Figure 5: HIV Prevalence in pregnant women by selected sites in Namibia 1994-2004 (part 2)



Prevalence trends in the 5 sites participating only in the last 4 surveys (1998-2004) showed considerably less variation than the trends noted above (Figure 6). These sites include Walvis Bay, Otjiwarongo, Nankudu, Keetmanshoop, and Gobabis. In Walvis Bay, the 1998 prevalence of 29% dropped to 25% by 2002 and remained level after that. Prevalence in Otjiwarongo was estimated at 16% in 1998, climbing to 25% in 2002 and then dropping back to 17% in 2004. Nankudu demonstrated a fairly constant climb from 13% in 1998 to 19% in 2004 while Keetmanshoop climbed from 7% to 17% between 1998 and 2000, remaining at that level until 2004. The prevalence in Gobabis climbed modestly from 9% to 13% between these 6 years.

Figure 6: HIV Prevalence in pregnant women by selected sites in Namibia 1998-2004 (part 3)



Prevalence trends by age group

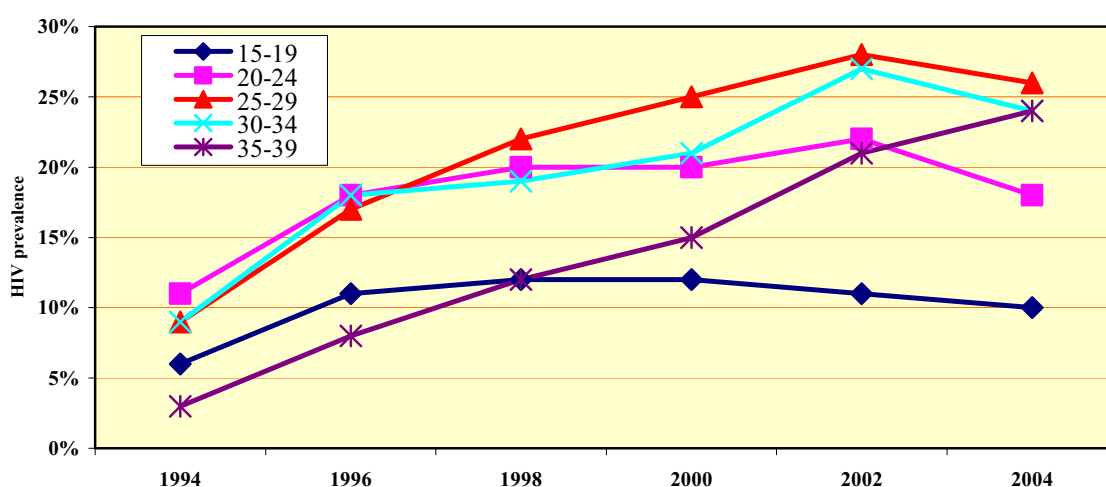
Prevalence trends by age group (15-39 year groups) are found in Table 5 and illustrated in Figure 7. Trends for ages 40+ are not included due to low numbers of women in this group resulting in unstable estimates. Prevalence trends are included only for the bi-annual surveys between 1994 and 2004.

Table 5: HIV prevalence by age group for the period 1994-2004

Age Group	Year					
	1994	1996	1998	2000	2002	2004
15-19	6%	11%	12%	12%	11%	10%
20-24	11%	18%	20%	20%	22%	18%
25-29	9%	17%	22%	25%	28%	26%
30-34	9%	18%	19%	21%	27%	24%
35-39	3%	8%	12%	15%	21%	24%
40-44	1%	12%	14%	9%	16%	12%
45+	12%	1%	13%	8%	12%	13%

It is evident from Figure 7 that all age groups except 35-39 experienced a decrease in HIV prevalence between 2002 and 2004. Examining the 10 year trends by age group, the age group 35-39 has climbed consistently from 3% in 1994 to 28% in 2004. Prevalence in the next younger age group, 30-34 years of age, grew consistently between 1994 (8%) and 2002 (27%), with a decrease to 24% in 2004. Similarly, the 25-29 year age group prevalence grew consistently from 8% in 1994 to 28% in 2002 with a decrease to 26% in 2004. The 20-24 year age group showed a rapid rise from 1994 (11%) to 1996 (18%) then a gradual rise over the next 6 years to 22% in 2002, followed by a substantial decrease to 19% in 2004. The 15-19 year age group demonstrated a rapid rise from 6% in 1994 to 11% in 1996, a gradual rise and leveling by 2000 (12%) and then a gradual decrease over the past 4 years to 10% in 2004.

Figure 7: HIV prevalence in pregnant women by age group, Namibia 1994-2004



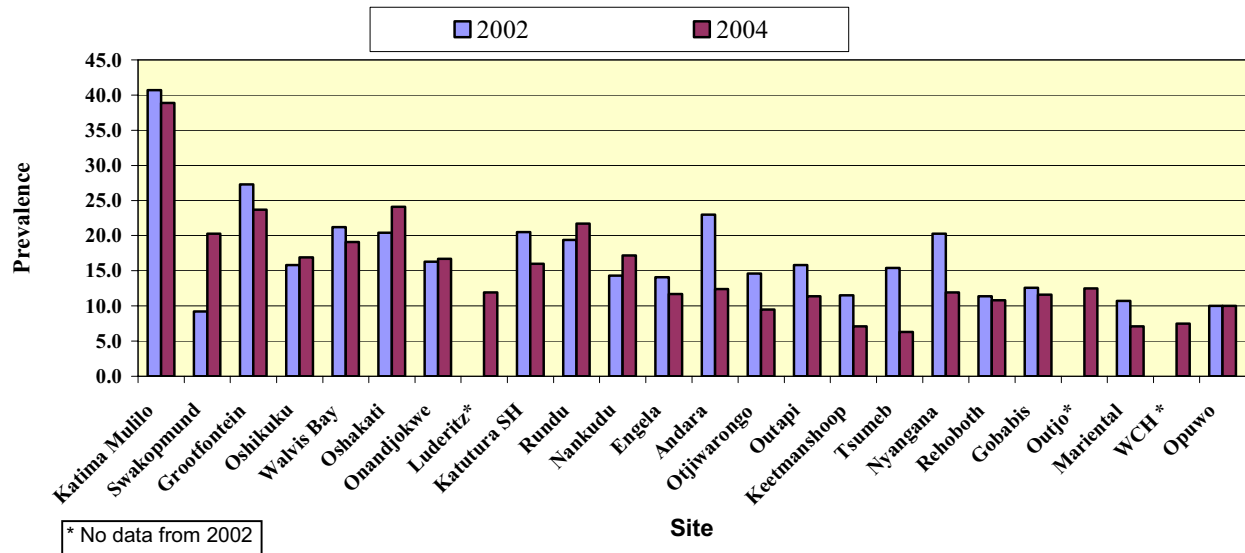
4.3. Prevalence trends by age group and site

Table 6 lists prevalence by site completed separately by age group (<25 years, 25+ years) while this data is illustrated in Figures 8-9. Although HIV prevalence in the <25 year age range decreased overall between 2002 and 2004, Figure 8 demonstrates a substantial increase in Swakopmund (11 percentage points) and Oshakati (4 percentage points). In addition, slight increases (2 percentage points) were noted in Rundu and Nankudu. The most striking decreases in <25 year HIV prevalence were observed in Andara (11 points), Tsumeb (9 points), Nyangana (8 points), and three sites with decreases of 5 points (Otjiwarongo, Outapi, and Keetmanshoop).

Table 6: HIV prevalence by year (2002 and 2004) and by age group (<25, 25+).

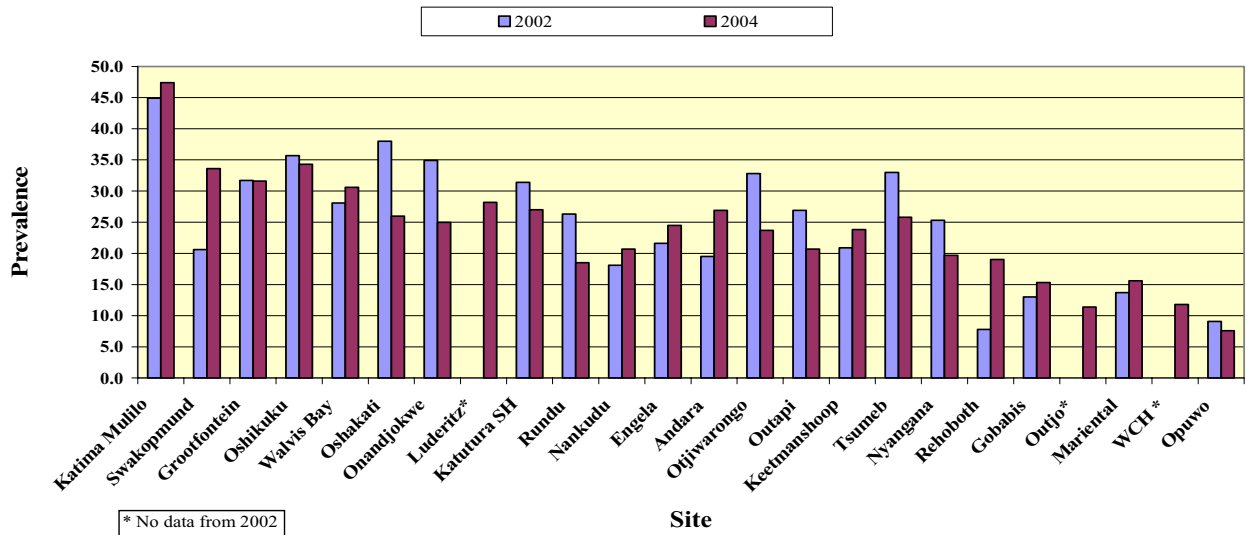
Site	<25 years of age				25+ years of age			
	2002		2004		2002		2004	
	Sample size	% HIV+	sample size	%HIV+	Sample size	%HIV+	sample size	%HIV+
Katima Mulilo	118	40.7	108	38.9	89	44.9	76	47.4
Swakopmund	87	9.2	74	20.3	141	20.6	113	33.6
Grootfontein	88	27.3	93	23.7	101	31.7	117	31.6
Oshikuku	95	15.8	77	16.9	112	35.7	99	34.3
Walvis Bay	99	21.2	89	19.1	121	28.1	121	30.6
Oshakati	93	20.4	83	24.1	121	38.0	127	26.0
KSH	88	20.5	94	16.0	118	31.4	115	27.0
Onandjokwe	80	16.3	72	16.7	126	34.9	136	25.0
Luderitz*			42	11.9			71	28.2
Rundu	129	19.4	129	21.7	80	26.3	81	18.5
Nankudu	112	14.3	99	17.2	94	18.1	92	20.7
Engela	85	14.1	103	11.7	125	21.6	106	24.5
Andara	100	23.0	89	12.4	87	19.5	52	26.9
Otjiwarongo	103	14.6	95	9.5	128	32.8	114	23.7
Outapi	76	15.8	88	11.4	134	26.9	121	20.7
Keetmanshoop	87	11.5	70	7.1	91	20.9	84	23.8
Tsumeb	78	15.4	64	6.3	91	33.0	62	25.8
Nyangana	118	20.3	118	11.9	91	25.3	76	19.7
Rehoboth	70	11.4	83	10.8	64	7.8	63	19.0
Gobabis	103	12.6	112	11.6	100	13.0	98	15.3
Outjo*			32	12.5			44	11.4
Mariental	75	10.7	112	7.1	95	13.7	77	15.6
WCH *			93	7.5			110	11.8
Opuwo	80	10.0	80	10.0	154	9.1	119	7.6
All	1964	17.9	2099	15.2	2263	25.6	2274	23.9

Figure 8: HIV prevalence in Namibia among ANC attendees by region for the age group <25, 2002-2004



Similarly, Figure 9 illustrates the 2-year HIV prevalence trend in women 25+ years of age. Although the overall trend in this age range was downward when all sites were combined, four sites showed a substantial increase including Swakopmund (13 points), Rehoboth (11 points), Andara (7 points), and Katima Mulilo (5 points). However, substantial decreases were noted in 7 sites including Oshakati (12 points), Onandjokwe (10 points), Otjiwarongo (8 points), Rundu (7 points), Tsumeb (7 points), Outapi (6 points), and Nyangana (6 points).

Figure 9: HIV prevalence in Namibia among ANC attendees by site for the age 25+, 2002-2004



5. CONCLUSIONS

The decline in HIV prevalence from 22.0% to 19.7% between the 2002 and 2004 ANC surveys represents the first decline in overall HIV prevalence since Namibia began ANC surveillance in 1992. This is welcome news for the MOHSS and all stakeholders in Namibia who have laboured to prevent HIV transmission. However, the decrease in prevalence was not observed in all geographical regions and age groups and this may have important implications for prevention, control, care and support. In particular, increases in prevalence among women <25 years of age were noted in Swakopmund, Oshakati, Rundu, and Nankudu while increases in women older than 25 years of age were observed in Swakopmund, Rehoboth, Andara, and Katima Mulilo.

Trends in HIV prevalence among various geographical locations and age groups provide valuable information, but these trends must be examined carefully before conclusions are reached. It is possible that changing HIV prevalence may be influenced by policies or prevention efforts, but it is also possible that these are unrelated. In addition to prevention efforts, trends in HIV prevalence are sensitive to

- (a) Survival of those infected: If survival time increases due to availability of anti-retroviral medications or better living conditions (including nutrition), prevalence will increase without change in new infections. If survival time decreases due to an increased death rate among those HIV infected, prevalence will decline with no change in incidence.
- (b) Changes in risk behaviour resulting from social or psychological trends unrelated to prevention efforts (such as school attendance or economic/political conditions).

Thus trends should be examined carefully at a local level to identify potential factors that may account for the change. If, however, certain policies or prevention activities can be credited with a change in prevalence, this information should guide future decision making and should be used as models elsewhere. In light of the points above, it would be highly advisable for Namibia to complement ANC surveillance data by implementing behavioural surveys to understand better the behavioural and socio-demographic variables associated with infection.

Important policy/prevention information can also be gained by examining the variation in prevalence by geographical and age groups in 2004 alone. Prevalence ranged from a high of 42% in Katima Mulilo to a low of 9% in Opuwo. In addition to the varied need for diagnostic and treatment services, this suggests that population characteristics, policies and prevention efforts are not the same throughout the country. These and the potential reasons for differences in prevalence should be explored to design policies and prevention programmes that are effective. Similarly, the wide range of age-specific prevalence should be considered in design of prevention and treatment programmes to target those most in need and most at risk.

The following limitations are noted in the current surveillance system:

- Surveillance only included pregnant women and thus generalization of results is limited.
- Weighting of the data was not completed and thus estimates are not representative of all pregnant women in the country.
- The data have not yet been used to make future projections as to the magnitude and impact of the epidemic.

- Sample sizes at some sites did not achieve the minimum target size of 200 samples. Various aspects of the surveillance effort can be modified to avoid this problem in future surveys. These include (a) inclusion of additional ANC clinics, (b) staff training to improve the number of implementing staff and their capacity, (c) extension of the sample collection period.
- Behavioural surveillance data to complement the sero-surveillance data presented here is not currently available on a national scale.
- Comparison between the sentinel surveillance data presented here and available behavioural surveillance data has not yet been completed.
- PMTCT data has not yet been compared to ANC surveillance data. Now that a high proportion of pregnant women are being provided with PMTCT services, a comparison of HIV infection rates found by PMTCT services may be completed to assess the utility of PMTCT services as a data source for HIV surveillance.
- The proportion of new (incident) HIV infections in the population has not yet been evaluated.
- The Namibia HIV sentinel survey is carried out every 2 years due to resource limitations and not annually as recommended by the WHO.

Other 'ways forward' in the Namibian sentinel surveillance program include a revised protocol for the 2006 surveillance round. Particularly, as recommended by the WHO, this protocol may exclude the collection of a second tube of blood (specifically for the survey) as one tube is sufficient for both syphilis testing and HIV analysis. In addition, this revised protocol may include other socio-demographic information (such as education) be collected from participating women. This will permit identification of other HIV risk factors in Namibia and hence more detailed recommendations for prevention, treatment, care, and support.

Sentinel surveillance in pregnant women has been a critical component of the MOHSS response to HIV/AIDS. The 2004 results provide valuable information with both programmatic and policy implications. Results from this survey should be carefully considered by those participating in the fight against HIV/AIDS in Namibia.

REFERENCES

1. UNAIDS- Epidemic Report, December, 2004.
2. Report of the 2002 National HIV Sentinel Survey, NACOP, 2003.
3. 2001 Population and Housing Census, Central Bureau of Statistics, 2001.

GLOSSARY

Antibody

A protein produced in the blood of vertebrates following exposure to an antigen. The antibody binds specifically to the antigen and thus stimulates its inactivation by other parts of the immune system.

Antigen

A substance (protein, polysaccharide, glycolipid, tissue transplant, etc.) that is capable of inducing a specific immune response. Introduction of antigen may be by the invasion of infectious organisms, immunization, inhalation, ingestion, etc.

Confidence interval

A range of values for a variable of interest, e.g., a rate, constructed so that this range has a specified probability of including the true value of the variable. The specified probability is called the confidence level, and the end points of the confidence interval are called the confidence limits.

Cross-sectional study

(Syn: disease frequency survey, prevalence study). A study that examines the relationship between diseases (or other health-related characteristics) and other variables of interest as they exist in a defined population at one particular time (point in time or period of time). The presence or absence of disease and the presence or absence of the other variables (or, if they are quantitative, their level) are determined in each member of the study population or in a representative sample at one particular time.

Cumulative incidence, cumulative incidence rate

The number or proportion of a group of people who experience the onset of a health-related event during a specified time interval: this interval is generally the same for all members of the group.

Epidemic

The occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy. The community or region, and the period, in which the cases occur, are specified precisely.

Epidemiology

The study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to control of health problems.

Incidence rate

The number of instances of illness commencing, or of persons falling ill, during a given period in a specified population. More generally, the number of new events, e.g., new cases of a disease in a defined population, within a specified period of time.

Infection (Syn: colonization)

The entry and development or multiplication of an infectious agent in the body of humans or animals. Infection is not synonymous with infectious disease; the result may be unapparent or manifest. The presence of living infectious agents on exterior surfaces of the body is called "infestation" (e.g., pediculosis, scabies). The presence of living infectious agents' upon articles of apparel or soiled articles is not infection, but represents contamination of such articles.

Pandemic

An epidemic occurring over a very wide area (usually more than one continent) and usually affecting a large proportion of the population

Population

1. All the inhabitants of a given country or area considered together, the number of inhabitants of a given country or area.
2. (In sampling) The whole collection of units from which a sample may be drawn. The sample is intended to give results that are representative of the whole population.

Prevalence

The number of instances of a given disease or other condition in a given population at a designated time, sometimes used to mean prevalence rate. When used without qualification the term usually refers to the situation at a specified point in time (point prevalence).

Prevention

The goals of medicine are to promote health, to preserve health, to restore health when it is impaired, and to minimize suffering and distress. These goals are embodied in the word "prevention", which is easiest to define in the context of levels, customarily called primary, secondary, and tertiary prevention.

Primary prevention is aimed at reducing incidence of disease and other departures from good health, secondary prevention aims to reduce prevalence by shortening the duration, and tertiary prevention is aimed at reducing complications.

Representative sample

The term "representative" as it is commonly used is undefined in the statistical or mathematical sense, it means simply that the sample resembles the population in some way. On the whole, it seems best to confine the word "representative" to samples which turn out to be so, however chosen, rather than apply it to those chosen with the object of being representative.

Sample

A selection from a population. A sample may be random or non-random and may be representative or non-representative. Several types of samples can be distinguished.

Screening

Screening was defined in 1951 by the USA Commission on Chronic Illness as, "The presumptive identification of unrecognised disease or defect by the application of tests, examinations or other procedures, which can be applied rapidly. Screening tests sort out apparently well persons who probably have a disease from those who probably do not. A screening test is not intended to be diagnostic. Persons with positive or suspicious findings must be referred for diagnosis and necessary treatment."

Sero-survey, sero-surveillance

Epidemiological study or activity based on the detection on serological testing of characteristic change in the serum level of specific antibodies. Latent, sub clinical infections and carrier states can thus be detected, in addition to clinically overt cases.

Statistics

The science and art of collecting, summarizing, and analyzing data that are subject to random variation. The term is also applied to the data themselves and to summarizations of the data.

Surveillance of disease

The continuing scrutiny of all aspects of occurrence and spread of a disease that are pertinent to effective control.

Survey

An investigation in which information is systematically collected but in which the experimental method is not used.

ANNEX 1: CHECKLIST FOR SURVEY TRAINING

Background on sero-surveys

- Importance of sero-surveys for monitoring of the epidemic (see protocol)
- Why 200 samples per site? (see protocol)

Feedback about 2004 sero-survey

- Samples collected during the 2002 sero-survey (see report 2002)
- Problems encountered in 2002 (specific for each site)

General information on the HIV sentinel sero-survey for the year 2002

- Why only ANC clients and sites for the 2004 sero-survey?
- Survey period: from 26/7 until 210 samples have been collected (usually less than 8 weeks). Maximum duration 12 weeks up to 15/10/2004 in sites with low numbers of clients.

Preparation of the survey

- Establishment of 2004 survey committee with representation of NACOP, Epidemiology and surveillance, NIP and Planning & HRD research unit
- Selection of facilities participating in the survey
- Preparatory meeting with NACOP, Epidemiology, NIP and Research Unit staff
- Appointment of local survey team (see letter PS)
- All local laboratories will receive vacutainer tubes and needles from the Central laboratory: NIP during the week of 12 July 2004.
- Distribute survey forms and vacutainer tubes to the relevant staff during the week of 28th June 2004.

Blood sampling and processing

- Include all first visiting ANC-women who attend on your specific ANC-days during the survey period
- Take blood as usual for RPR, Hemoglobin, etc. and complete the usual lab forms.
- Take a second vial of blood for HIV
- Label this second vial with the code number:

Code number:

Use code of the site as already indicated on the form, for example:

Rundu: RUNANC001, RUNANC002, RUNANC003,etc.

Katima Mulilo: KMANC001, KMANC002, KMANC003,etc.

If more than one facility is used for sampling, it is advisable to give each facility a specific range of numbers, for example:

Walvisbay Kuisebmond Clinic: WBANC001, WBANC002,etc.

Walvisbay Narraville Clinic: WBANC201, WBANC202,etc.

Report of the 2004 National HIV Sentinel Survey

The local survey team should closely monitor the process and stop sampling when a total of 210 samples have been reached.

- Note down the same code number as written on the tube as well as the age of the ANC client and date of collection on the survey form (do not write names!).
- Forward all the survey samples together with the completed survey forms after finishing the collection to the laboratory.

Laboratory

- Distribute the Vacutainer tubes
- Make sure that the same code is on the forms and on the tubes
- Centrifuge blood
- Forward coded tubes with forms to the Central Laboratory in Windhoek
- Keep record of the total number of tubes sent to Windhoek

Monitoring of the survey

- To ensure effective coordination of survey activities local survey teams need to be established for each site
- Each local survey team should convene a brief weekly meeting to monitor the progress of the survey and to identify and address constraints (for remote clinics, this information can be collected by telephone).
- Weekly monitoring forms should be sent by fax to NACOP (see attached form). Contact NACOP for any questions or comments. Feed-back from NACOP if difficulties are encountered and to confirm reception required number of 200-210 samples.

Questions or comments?

For more information please contact one of the following persons:

Mr. Abner Axel Xoagub Tel: 061-2032825
Ms. Rosalia Indongo Tel: 061- 2032829
Ms. Christine Weiss Tel: 061-2032625 (NIP: Central Laboratory Services)

NACOP

Fax: 061-224155, e-mail: xoaguba@nacop.net
indongor@nacop.net

Information package for each sentinel site:

Each team should have the following for each sentinel site for the field visits:

- Copy of survey report 2002
- Protocol of the 2004 HIV sero-survey
- 10 copies of the checklist
- 20 copies of the survey forms
- 1 copy of the contact form
- 12 copies of the weekly monitoring form
- ANC statistics per health facility for districts with low numbers of ANC clients during the 2002 sero-survey